# 320 Series
# Single Stage End Suction Pumps

- *Capacities to 400 G.P.M. (75 $M^3$/HR)*
- *Heads to 210 Feet (42 Meters)*
- *Temperatures to 225°F (107°C)*



*Model 324A*

*Model 323*

*Model 321*

AURORA®

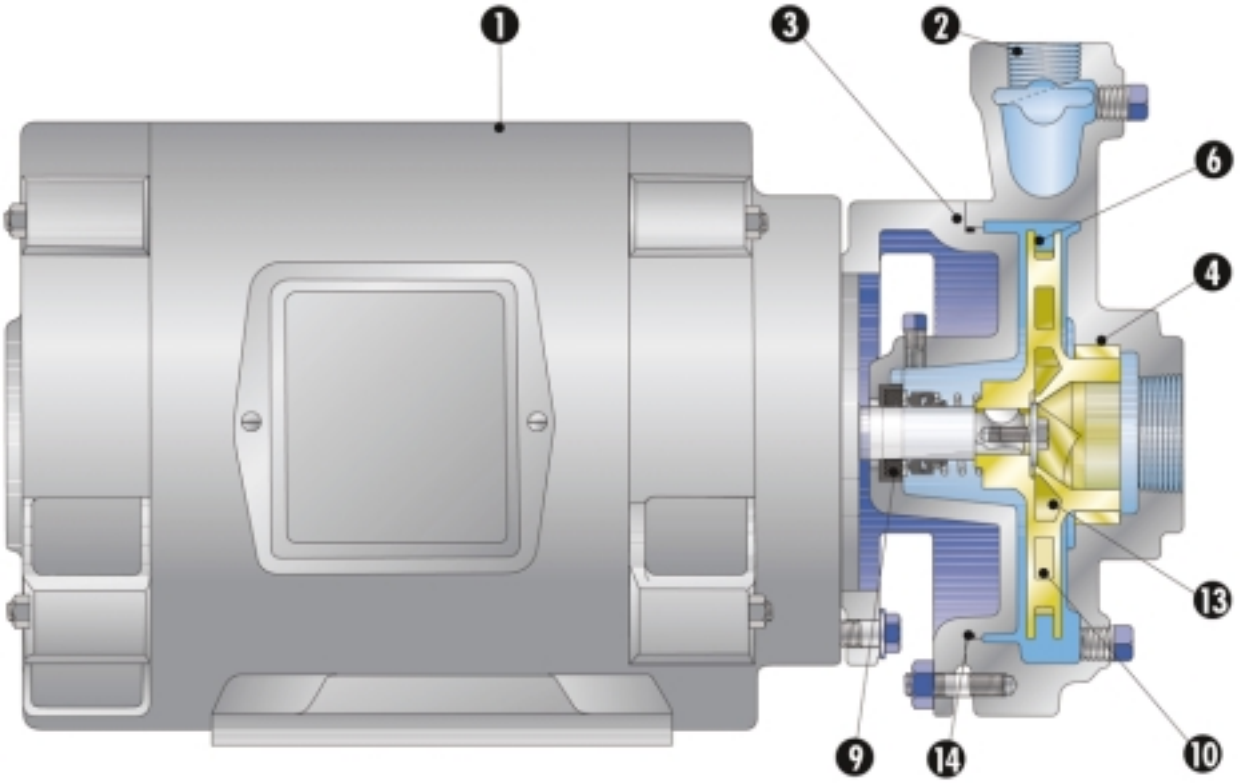
PENTAIR PUMP GROUP

motralec
4 rue Lavoisier . ZA Lavoisier . 95223 HERBLAY CEDEX
Tel. : 01.39.97.65.10 / Fax. : 01.39.97.68.48
Demande de prix / e-mail : service-commercial@motralec.com
www.motralec.com

# Aurora 320 Pump

## Setting New Standards of Efficiency

Liquid handling requirements are much more involved than they were five years ago. The variety of liquids being handled has increased along with temperatures and pressures. Today's installations demand quiet, smooth running pumps with long life. Aurora Pump's 80 years of experience with design, sales and manufacturing of centrifugal pumps has lead to the 320 Series. These modern pumps with a clean, straightforward design were developed with maximum interchangeability in mind. Let Aurora's highly reliable 320 pumps, offer an economical solution to your liquid handling problems.




**Quick Reference 320 Series Feature Selector**

### Standard

Top center-line mounted casing
Stainless steel shaft
"O" ring casing gasket
Case wearing ring
"Buna-N" and 316 stainless steel mechanical seal
Grease lubricated bearings (Model 324A)
Vacuum cast impeller
Coupling guard (Model 324A)

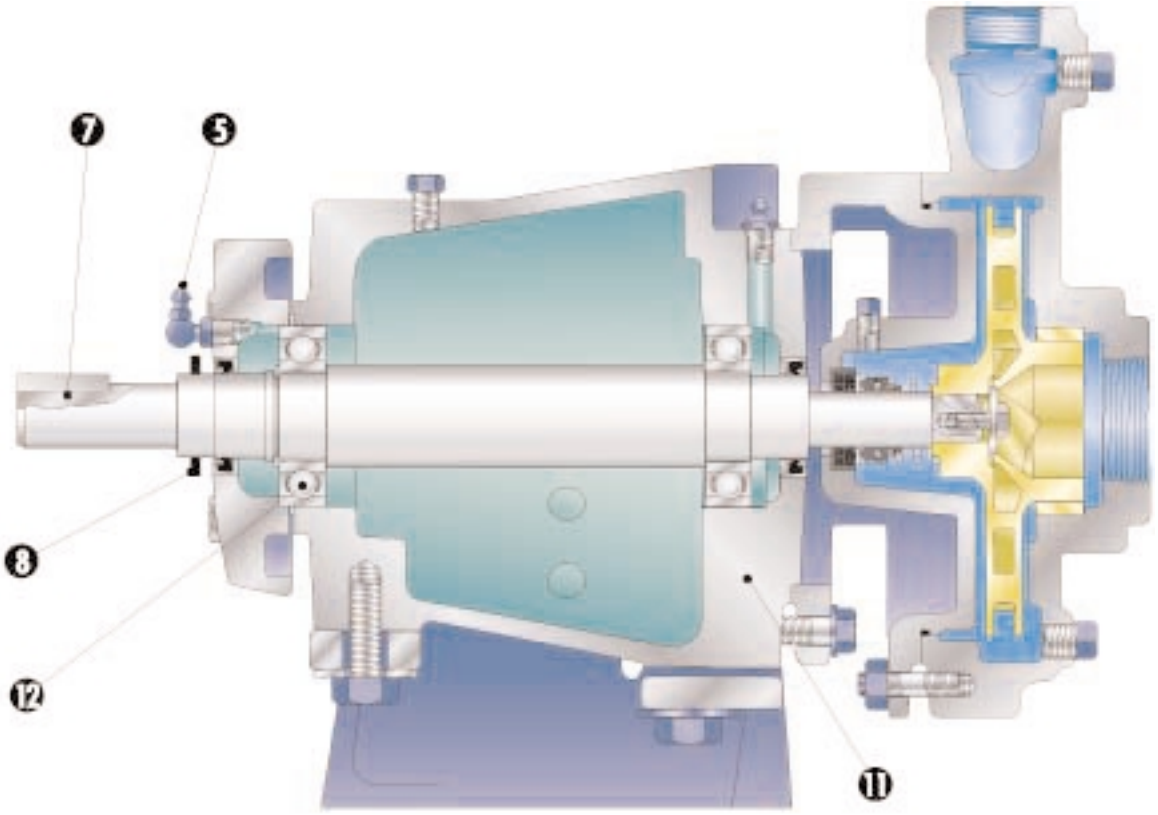
### Optional

Totally enclosed motors
Optional discharge positions (see page 4)

### Optional–Model 324A Only

Oil lubricated bearings and sealed bearings
Formed steel base
Steel drip-rim bases
Explosion proof motors

## Features




1 LOW NOISE LEVEL CLOSE-COUPLED MOTORS are built to Aurora Pump's exacting vibration specifications.

2 VERTICAL CENTER-LINE DISCHARGE makes pump Self-Venting, avoids vapor locks and minimizes pipe strain.

3 BACK PULL-OUT DESIGN simplifies disassembly. The suction and discharge piping is not disturbed.

4 CASE WEARING RING prevents wear on casing and is easily and inexpensively replaced. Standard ring is bronze.

5 LUBRICATION FITTINGS are conveniently located for quick accessibility and provide positive bearing lubrication.

6 DYNAMICALLY BALANCED IMPELLER is keyed to the shaft and secured by a 316 stainless steel capscrew and washer.

7 STAINLESS STEEL SHAFT designed for minimum deflection, not to exceed .002" at the sealing faces at maximum load.

8 OIL SEALS AND NON-SPARKING NEOPRENE rotating slingers protect both bearings during pump operation and wash-down.

9 MECHANICAL SEAL has "Buna-N" bellows and cup with 316 stainless steel parts precision made for long life.

10 ENCLOSED IMPELLER design provides highest efficiency and lowest wear for long service life.

11 COMPUTER MACHINED major components with 360 degree registered fits to assure concentricity of all parts.

12 BEARINGS selected for 2 year minimum life at maximum conditions of load. Available as grease, oil lubricated or sealed.

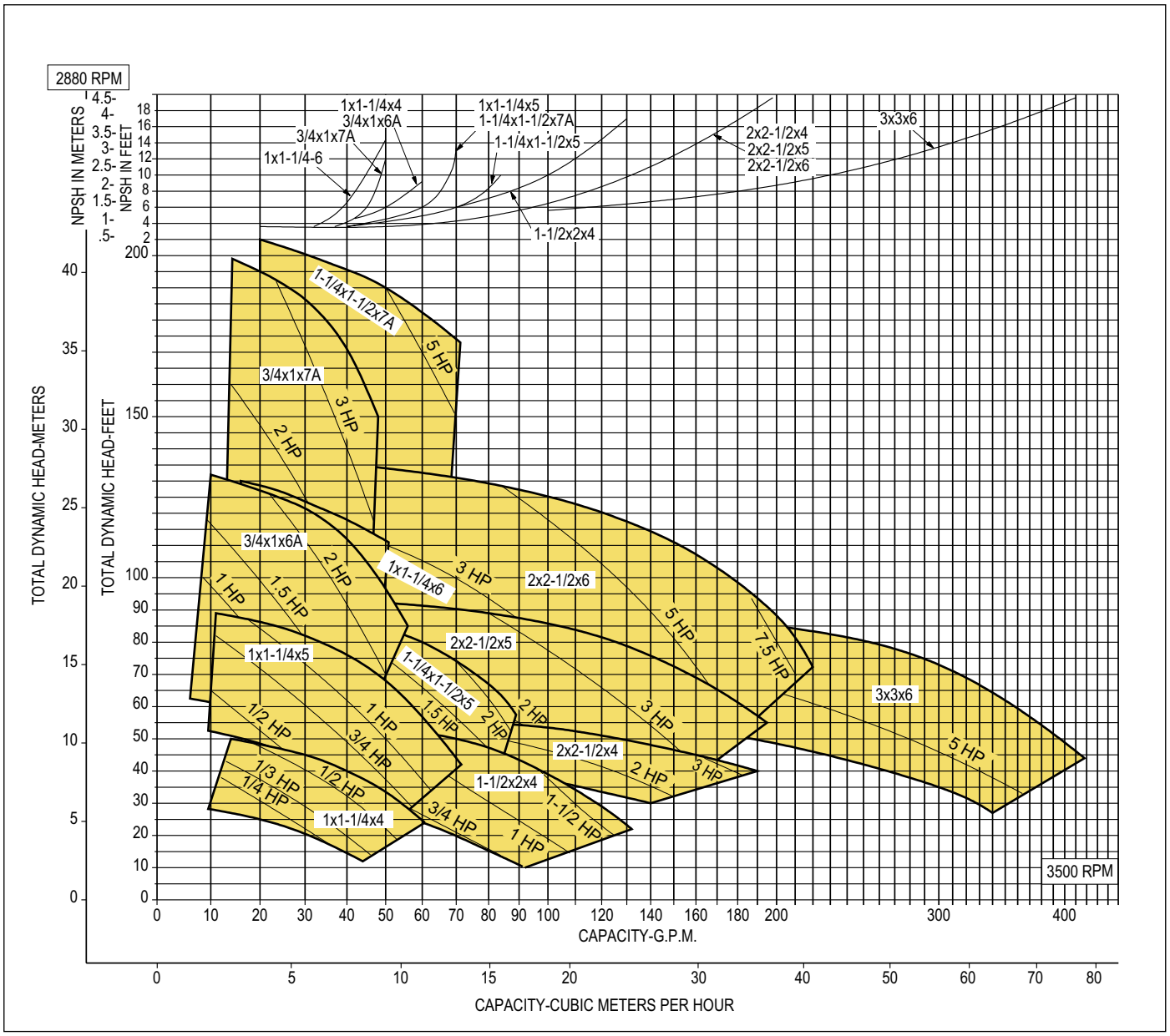
13 VACUUM CAST IMPELLER quality controlled manufacturing process assures consistently high performance.

14 "O" RING SEAL … no gaskets pierced by bolts or studs … assures maximum trouble-free sealing.

# 320 Range Chart

**3500 RPM**

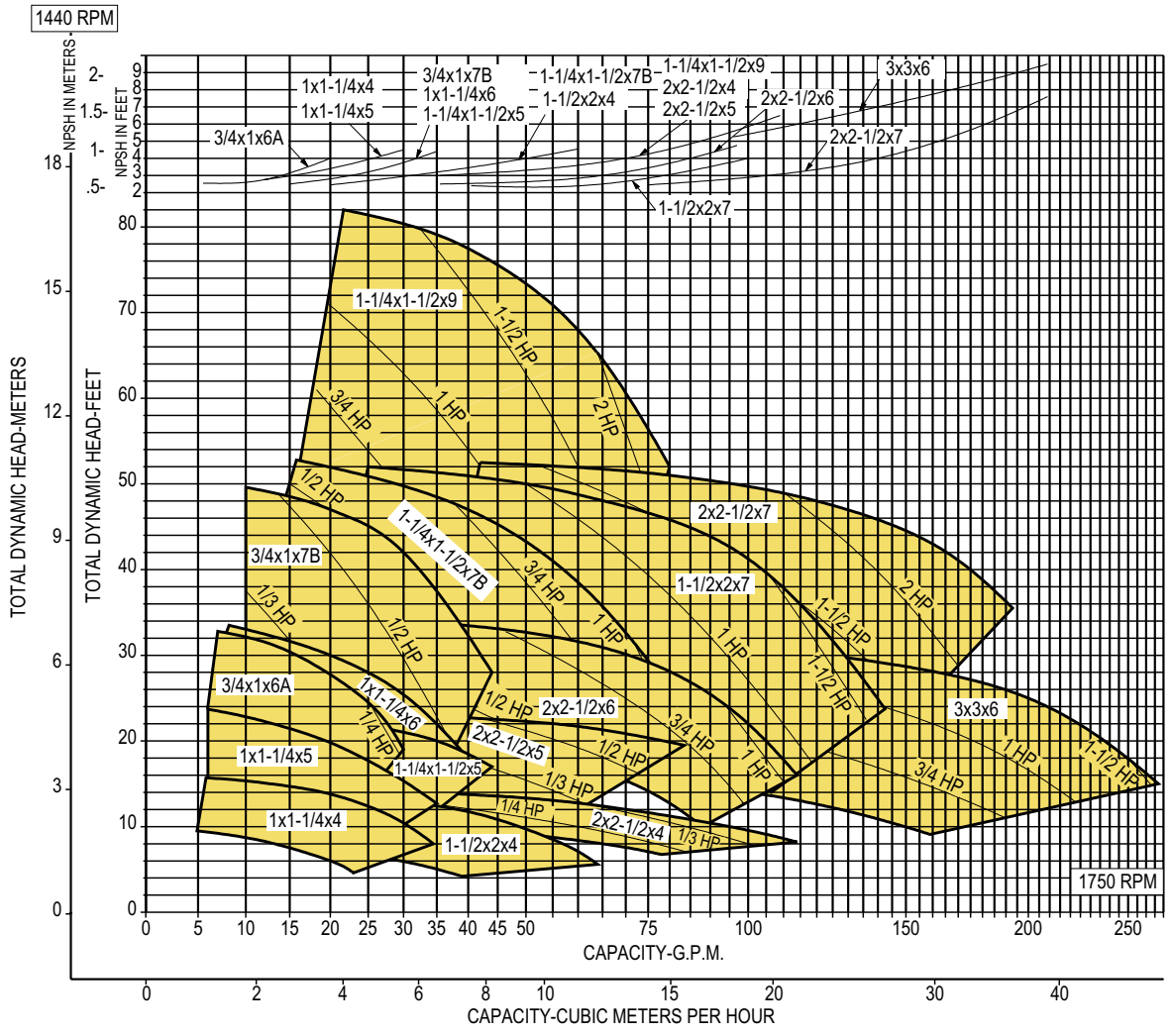
INDIVIDUAL PERFORMANCE CURVES SHOULD BE CHECKED FOR FINAL SELECTION. FOR SELECTIONS NOT SHOWN ON THE CHART PLEASE REFER TO THE FACTORY.



# 320 Range Chart

**1750 RPM**

INDIVIDUAL PERFORMANCE CURVES SHOULD BE CHECKED FOR FINAL SELECTION. FOR SELECTIONS NOT SHOWN ON THE CHART PLEASE REFER TO THE FACTORY.



# Engineering Specifications

| Pump Part | Bronze Fitted | All Iron | All Bronze* (See Note 1) |
|---|---|---|---|
| Casing | Cast Iron ASTM A48 | Cast Iron ASTM A48 | Bronze ASTM B62 |
| Case Wearing Ring | Bronze ASTM B62 | Cast Iron ASTM A48 | Bronze ASTM B62 |
| Impeller | Bronze ASTM B584 | Cast Iron ASTM A48 | Bronze ASTM B584 |
| Motor Bracket | Cast Iron ASTM A48 | Cast Iron ASTM A48 | Bronze ASTM B52 |
| Shaft | Stainless Steel AISI 416 | Stainless Steel AISI 416 | Stainless Steel** AISI 316 |
| Power Frame Frame 324A | Cast Iron ASTM A48 | Cast Iron ASTM A48 | Cast Iron ASTM A48 |
| Mechanical Seal | Stainless steel metal parts, "Buna-N" elastomer parts, Ni-resist seat and carbon washer. *All bronze has Viton elastomer parts and ceramic seat. | | |

**Notes:** 1. Model 323 not available in all bronze construction.
** Close coupled 321 all bronze pumps must have a motor with 316 stainless steel shaft extension.

### Design Details

| Area | Description | Dimensions |
|---|---|---|
| **Liquid End** | Pipe Connections–threaded N.P.S.F. | Varies |
| | Rotation–facing suction | CCW |
| **Pump Shaft** | Diameter at impeller | 19/32 |
| | Diameter at seal | 3/4 |
| | Diameter between bearings | 1-3/8 |
| | Diameter at coupling end | 7/8 |
| | Coupling keyway | 1-3/8 long x 3/32 deep |
| | Max. deflection at seal face | .002 |
| **Ball Bearings** | Bearing (inboard radial) | 206K |
| | Bearing (outboard thrust) | 206 KG |
| | Bearing centers | 5-11/16 |
| | Bearing type | Ball |
| | Min $B_{10}$ bearing life under maximum load | 2 Years |

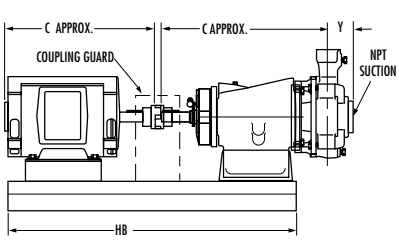
### Limitations

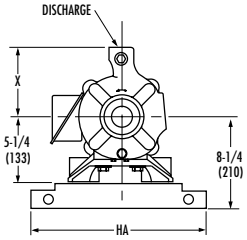
| Maximum Based on Standard Materials and Water | | |
|---|---|---|
| Speed–RPM | | 3500 |
| Horsepower | | 7-1/2 |
| Temperature–°F | Close Coupled | 225 |
| | Frame Mounted | 225 |
| Hydrostatic Test–P.S.I. | | 220 |
| Case Working Press–P.S.I. | | 175 |
| Suction Press–P.S.I. | | 175 |



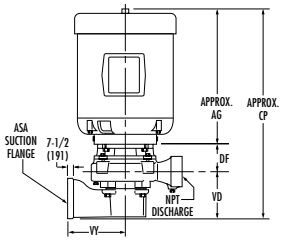
*End suction products such as the flexible coupled horizontal pump are used in offices and high rise buildings for internal environment control. End suction pumps for HVAC installation come in a variety of configurations including close coupled, flexible coupled, horizontal or vertical mounted units.*

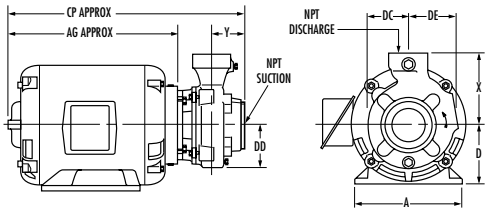
# Dimensions

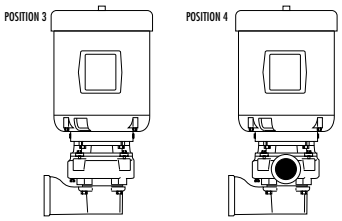



**Pump Dimensions–323** (See Note 7)




## Models 321-323

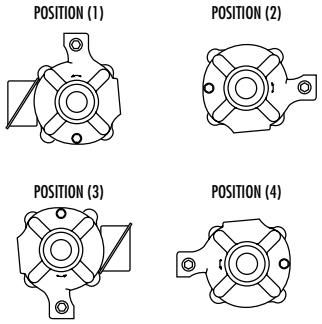
| Frame | Horsepower 3500 RPM | Horsepower 1750 RPM | Motor Weight (Lbs.) | A | D | AG | CP 321 | CP 323 |
|---|---|---|---|---|---|---|---|---|
| 56 | 1/3 | 1/3 | 29 | 6-3/4 (171) | 3-1/2 (89) | 11 (279) | 17-1/2 (445) | 20 (508) |
| | 1/2 | 1/2 | 46 | | | | | |
| | 3/4 | 3/4 | 56 | | | | | |
| | 1 | 1 | 56 | | | | | |
| | 1-1/2 | 1-1/2† | 65 | | | | | |
| | 2 | N/A | 80 | | | | | |
| 145T | | 1-1/2* | 42 | 7 (178) | 3-1/2 (89) | 11 (279) | 17-1/2 (445) | 20 (508) |
| | 3† | 2† | 48 | | | | | |
| 182T | 3* | 2* | 65 | 9 (229) | 4-1/2 (114) | 11 (279) | 17-1/2 (445) | 20 (508) |
| | 5 | 3 | 69 | | | | | |
| 184T | 7-1/2† | 3 | 79 | 9 (229) | 4-1/2 (114) | 12 (305) | 18-1/2 (470) | 21 (533) |
| | | 5† | 83 | | | | | |

* Single phase only. † Three phase only.

## Model 324A

| Frame | Horsepower 3500 RPM | Horsepower 1750 RPM | Weight in (Lbs.) Motor | Weight in (Lbs.) Base | C | CP | HA | HB |
|---|---|---|---|---|---|---|---|---|
| 48 | 1/3 - 1/2 | 1/3 | 30 | 100 | 10 (254) | 27 (659) | 15 (381) | 22-1/2 (572) |
| 56 | 3/4 - 1 | 1/2 - 3/4 | 50 | 100 | 12 (305) | 29 (737) | 15 (381) | 22-1/2 (572) |
| 143T | 1-1/2 | 1 | 34 | 100 | 12 (305) | 28 (711) | 15 (581) | 22-1/2 (572) |
| 145T | 2 - 3 | 1-1/2 - 2 | 42 | 100 | 13 (330) | 29 (737) | 15 (581) | 26-1/2 (673) |
| 182T | 5 | 3 | 65 | 100 | 13 (330) | 30 (762) | 15 (581) | 26-1/2 (673) |
| 184T | 7-1/2 | 5 | 79 | 100 | 14 (356) | 31 (787) | 15 (581) | 26-1/2 (673) |
| 213T | 10 | 7-1/2 | 155 | 100 | 16 (406) | 33 (838) | 17-1/4 (438) | 30-1/2 (762) |

DISCHARGE POSITIONS




| Pump Size Discharge | Pump Size Suction | Pump Size Case Bore | Pump Weight (lbs) 321 | Pump Weight (lbs) 323 | Pump Weight (lbs) 324 | X | Y | DC | DD | DE | VD 323 | VE | VY 323 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 3/4 | 1 | 6A | 25 | 30 | 55 | 5-1/2 (30) | 1-3/4 (3) | 3-5/16 (11) | 3-7/16 (12) | 3-7/8 (15) | 3-5/8 (13) | 2-3/8 (6) | 5 (25) |
| 3/4 | 1 | 7 | 35 | 40 | 65 | 6-1/4 (39) | 1-7/8 (3) | 3-15/16 (16) | 4 (16) | 4-7/16 (20) | 3-3/4 (14) | 2-3/8 (6) | 8-1/2 (72) |
| 1 | 1-1/4 | 4 | 21 | 26 | 51 | 4-1/8 (17) | 1-11/16 (3) | 2-3/8 (6) | 2-3/8 (6) | 2-7/16 (6) | 2-5/8 (7) | 2-3/8 (6) | 4 (16) |
| 1 | 1-1/4 | 5 | 27 | 32 | 57 | 5 (25) | 2 (4) | 2-13/16 (8) | 2-7/8 (8) | 3 (9) | 3-3/4 (14) | 2-3/8 (6) | 5 (25) |
| 1 | 1-1/4 | 6 | 29 | 34 | 59 | 5-1/2 (30) | 1-15/16 (4) | 3-5/16 (10) | 3-3/8 (11) | 3-7/8 (15) | 3-13/16 (15) | 2-3/8 (6) | 5 (25) |
| 1-1/4 | 1-1/2 | 5 | 27 | 32 | 57 | 5 (25) | 1-15/16 (4) | 2-7/8 (8) | 2-15/16 (9) | 3-7/16 (12) | 4 (16) | 2-3/8 (6) | 5 (25) |
| 1-1/4 | 1-1/2 | 7A | 37 | 42 | 67 | 6-1/4 (39) | 2 (4) | 4 (16) | 4-1/16 (17) | 4-1/2 (20) | 3-7/8 (15) | 2-3/8 (6) | 8-1/2 (72) |
| 1-1/4 | 1-1/2 | 7B | 37 | 42 | 67 | 6-1/4 (39) | 2-7/16 (6) | 4 (16) | 4-1/8 (17) | 4-5/8 (21) | 4-5/16 (19) | 2-3/8 (6) | 8-1/2 (72) |
| 1-1/4 | 1-1/2 | 9 | 52 | 57 | 82 | 8 (64) | 2-1/4 (5) | 5-13/16 (34) | 5-3/16 (27) | 5-13/16 (34) | 4-1/8 (17) | 2-3/8 (6) | 8-1/2 (72) |
| 1-1/2 | 2 | 4 | 24 | 29 | 54 | 5 (25) | 2-1/8 (5) | 2-1/2 (6) | 3 (9) | 2-3/4 (8) | 4-15/16 (24) | 3-1/2 (12) | 6 (36) |
| 1-1/2 | 2 | 7 | 38 | 43 | 68 | 7 (49) | 2-1/4 (5) | 4-1/16 (17) | 4-1/4 (18) | 4-7/8 (24) | 5 (25) | 3-1/2 (12) | 6 (36) |
| 2 | 2-1/2 | 4 | 28 | 33 | 58 | 5 (25) | 3-1/16 (9) | 2-1/2 (6) | 3 (9) | 2-13/16 (8) | 5-3/8 (29) | 3-1/2 (12) | 6 (36) |
| 2 | 2-1/2 | 5 | 31 | 36 | 61 | 6 (36) | 2-11/16 (7) | 3 (9) | 3-3/16 (10) | 3-7/16 (12) | 5-3/16 (27) | 3-1/2 (12) | 6 (36) |
| 2 | 2-1/2 | 6 | 36 | 41 | 66 | 6 (36) | 2-3/4 (8) | 3-1/2 (12) | 3-11/16 (14) | 4-3/8 (19) | 5-1/4 (28) | 3-1/2 (12) | 6 (36) |
| 2 | 2-1/2 | 7 | 43 | 48 | 73 | 7 (49) | 2-15/16 (9) | 4-1/16 (17) | 4-5/16 (19) | 4-7/8 (24) | 5-1/8 (26) | 3-1/2 (12) | 6 (36) |
| 3 | 3 | 6 | 48 | 53 | 78 | 8 (64) | 3-5/8 (13) | 3-7/8 (15) | 4-7/16 (20) | 5-7/8 (35) | 7-3/4 (60) | 2-1/4 (5) | 8-1/2 (72) |

**Notes:**

1. Dimensions and weights are approximate.
2. All dimensions are in inches (mm) and may vary ±1/4 (6).
3. Frame sizes, "C" and "AG", dimension and motor weight are for open drip-proof motors only.
4. Conduit box is shown in approximate position. Dimensions are not specified as they vary with each motor manufacturer.
5. Add pump, base and motor weight for unit weight.
6. Not for construction purposes unless certified.
7. Discharge position No. 3 is not available on Models 323 and 324A. Position No. 1 is furnished as standard unless otherwise specified.
8. Model 323 not available in all bronze construction.

## Engineering Specifications

**Engineering Specifications**
The contractor shall furnish (and install in location as shown on the plan) an Aurora Type (321 horizontal) (323 flange mounted) (324A horizontal) centrifugal pump size … (bronze fitted) (all bronze) (all iron) construction. Each pump shall have a capacity of … GPM at … ft. total head and … specific gravity. The pump is to be furnished with case wearing ring and a mechanical seal, with all metal parts to be 316 stainless steel, "Buna-N" bellows, Ni-resist seat, and carbon washer.

**Flexible Coupled Pumps Model 324A**
The pump shaft is to be stainless steel with (grease lubricated) (oil lubricated) (sealed) bearings. The pump is to be flexible coupled to a standard horizontal NEMA motor of …HP, …phase, …hertz,… voltage, … RPM (open drip proof) (totally enclosed fan cooled) (explosion proof) enclosure. The pump shall be mounted on a (fabricated steel drip rim) (steel) baseplate. Pump and motor alignment shall be checked in accordance with the Standards of the Hydraulic Institute after the pump has been installed.

**Close Coupled Model 321-323**
The pump is to be close coupled to a NEMA motor of …HP, …phase,…hertz,…voltage,…RPM (open drip proof) (totally enclosed fan cooled) enclosure, with stainless steel motor shaft. The motor shall be designed to Aurora Pump specifications as to vibration limits.

Many thousands of Aurora pumps serve building facilities, municipalities, utilities, industries, institutions, and maritime, government, and armed services throughout the world...the result of dedication to creative pump engineering since 1919, when the firm was founded as the Aurora Pump and Manufacturing company. New product development, product refinement, and expansion of sizes to accommodate broader ranges of applications have been continuous and aggressive since that date. The resulting company growth has elevated Aurora to its present prominent industry position.



**NOTE:** Aurora Pump reserves the right to make revisions to its products and their specifications, and to this bulletin and related information, without notice.

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**EMAIL:** aurora_info@pentairpump.com

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AURORA® Pentair Pump Group

AP-320/Rev. H 12.98 (3M 2.01)

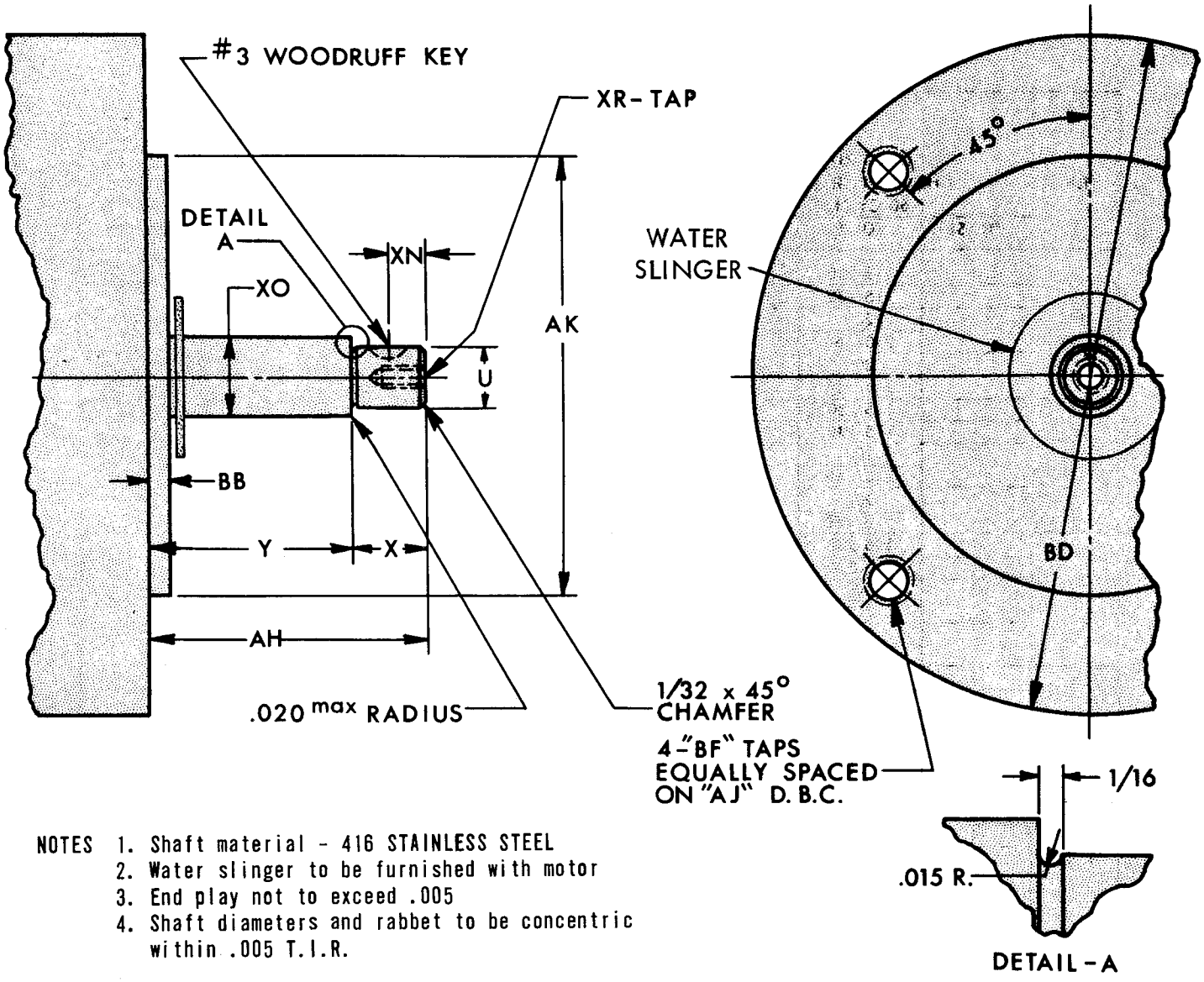
# 60 HERTZ MOTOR DATA SHEET
# 1 PHASE: 115-230 VOLTS
# 3 PHASE: 200 (ONLY) OR 230/460 VOLTS
# AURORA MOTOR FRAMES

SUPERSEDES PAGE 73
DATED SEPTEMBER 1969

| H.P. | ELECTRICAL CHARACTERISTICS 60 CYCLE | | | HORIZONTAL AND VERTICAL | | | |
|---|---|---|---|---|---|---|---|
| | PHASE | VOLT | R.P.M. | OPEN DRIPPROOF FRAME | SERVICE FACTOR O.D.P. | TEFC & EXP PROOF FRAME | SERVICE FACTOR TEFC & EXP PROOF |
| 1/3 | 1 | 115-230 | 1750 | 56 | 1.35 | | |
| | 1 | 115-230 | 3500 | 56 | 1.60 | | |
| | 3 | 200 | 1750 | 56 | 1.35 | 56 | 1.0 |
| | | 230/460 | 1750 | | | | |
| | 3 | 200 | 3500 | 56 | 1.75 | 56 | 1.0 |
| | | 230/460 | 3500 | | | | |
| 1/2 | 1 | 115-230 | 1750 | 56 | 1.25 | 56 | 1.0 |
| | 1 | 115-230 | 3500 | 56 | 1.60 | 56 | 1.0 |
| | 3 | 200 | 1750 | 56 | 1.25 | 56 | 1.0 |
| | | 230/460 | 1750 | | | | |
| | 3 | 200 | 3500 | 56 | 1.60 | 56 | 1.0 |
| | | 230/460 | 3500 | | | | |
| 3/4 | 1 | 115-230 | 1750 | 56 | 1.25 | 56 | 1.0 |
| | 1 | 115-230 | 3500 | 56 | 1.50 | 56 | 1.0 |
| | 3 | 200 | 1750 | 56 | 1.25 | 56 | 1.0 |
| | | 230/460 | 1750 | | | | |
| | 3 | 200 | 3500 | 56 | 1.50 | 56 | 1.0 |
| | | 230/460 | 3500 | | | | |
| 1 | 1 | 115-230 | 1750 | 56 | 1.25 | 56 | 1.0 |
| | 1 | 115-230 | 3500 | 56 | 1.40 | 56 | 1.0 |
| | 3 | 200 | 1750 | 56 | 1.25 | 56 | 1.0 |
| | | 230/460 | 1750 | | | | |
| | 3 | 200 | 3500 | 56 | 1.40 | 56 | 1.0 |
| | | 230/460 | 3500 | | | | |
| 1-1/2 | 1 | 115-230 | 1750 | 145T | 1.15 | 145T | 1.0 |
| | 1 | 115-230 | 3500 | 56 | 1.40 | 56 | 1.0 |
| | 3 | 200 | 1750 | 56 | 1.20 | 56 | 1.0 |
| | | 230/460 | 1750 | | | | |
| | 3 | 200 | 3500 | 56 | 1.40 | 56 | 1.0 |
| | | 230/460 | 3500 | | | | |
| 2 | 1 | 115-230 | 1750 | 182T | 1.15 | 182T | 1.0 |
| | 1 | 115-230 | 3500 | 56 | 1.20 | 145T | 1.0 |
| | 3 | 200 | 1750 | 145T | 1.15 | 145T | 1.0 |
| | | 230/460 | 1750 | | | | |
| | 3 | 200 | 3500 | 56 | 1.20 | 145T | 1.0 |
| | | 230/460 | 3500 | | | | |
| 3 | 1 | 115-230 | 1750 | 184T | 1.15 | 184T | 1.0 |
| | 1 | 115-230 | 3500 | 182T | 1.15 | 182T | 1.0 |
| | 3 | 200 | 1750 | 182T | 1.15 | 182T | 1.0 |
| | | 230/460 | 1750 | | | | |
| | 3 | 200 | 3500 | 145T | 1.15 | 182T | 1.0 |
| | | 230/460 | 3500 | | | | |
| 5 | 3 | 200 | 1750 | 184T | 1.15 | 184T | 1.0 |
| | | 230/460 | 1750 | | | | |
| | 3 | 200 | 3500 | 182T | 1.15 | 184T | 1.0 |
| | | 230/460 | 3500 | | | | |
| 7-1/2 | 3 | 200 | 3500 | 184T | 1.15 | N.A. | 1.0 |
| | | 230/460 | 3500 | | | | |

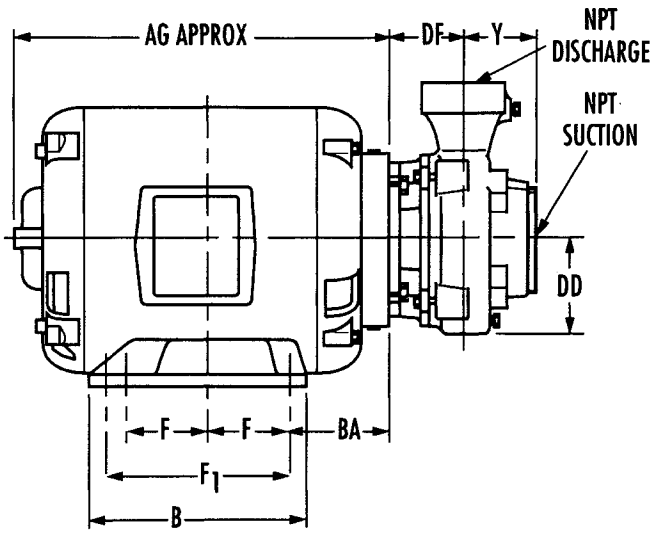
# AURORA MODELS 321, 323
## SHAFT EXTENSION

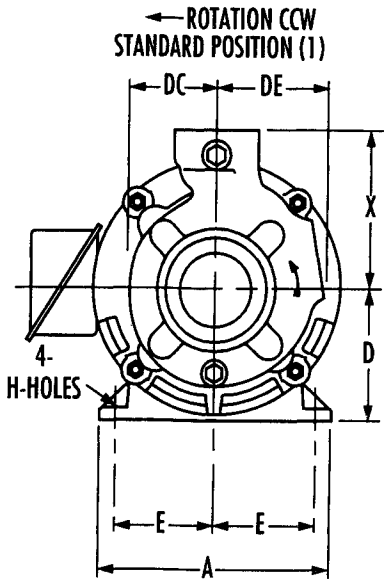
SUPERSEDES SECTION 320 PAGE 74
DATED MARCH 1966




NOTES
1. Shaft material - 416 STAINLESS STEEL
2. Water slinger to be furnished with motor
3. End play not to exceed .005
4. Shaft diameters and rabbet to be concentric within .005 T.I.R.

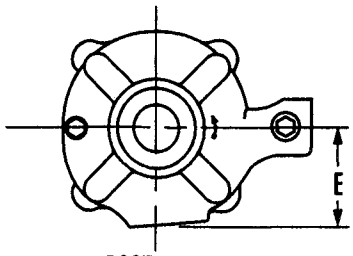
| FRAME SIZE | U | X | Y | AH | AJ | AK | BB | BD | BF | XN | XO | XR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 56 | .5900 / .5895 | 11/16 | 1-7/8 | 2-9/16 | 5-7/8 | 4.500 / 4.497 | 1/8 | 6-1/2 | 3/8-16 N.C. 5/8 DEEP | 5/16 | .7500 / .7495 | 1/4-28 N.F. 1/2 DEEP |
| 145T | | | | | | | | | | | | |
| 182T | | | | | | | | | | | | |
| 184T | | | | | | | | | | | | |



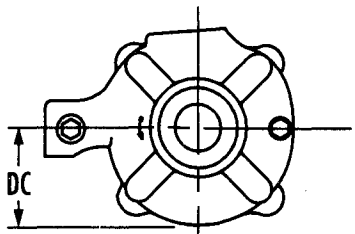




| FRAME | A | B | D | E | F | F1 | H | AG | BA |
|---|---|---|---|---|---|---|---|---|---|
| 56 | 6-3/4 | 4 | 3-1/2 | 2-7/16 | 1-1/2 | — | 11/32 SLOT | 11 | 2-9/16 |
| 143T | 7 | 6 | 3-1/2 | 2-3/4 | 2 | — | 11/32 SLOT | 10 | 2-7/8 |
| 145T | 7 | 6 | 3-1/2 | 2-3/4 | 2-1/2 | — | 11/32 SLOT | 11 | 2-7/8 |
| 182T | 8-3/4 | 6-5/8 | 4-1/2 | 3-3/4 | 2-1/4 | — | 13/32 SLOT | 11 | 3-5/8 |
| 184T | 8-3/4 | 6-5/8 | 4-1/2 | 3-3/4 | — | 5-1/2 | 13/32 SLOT | 12 | 3-5/8 |

OPTIONAL DISCHARGE POSITIONS




POSITION (2)



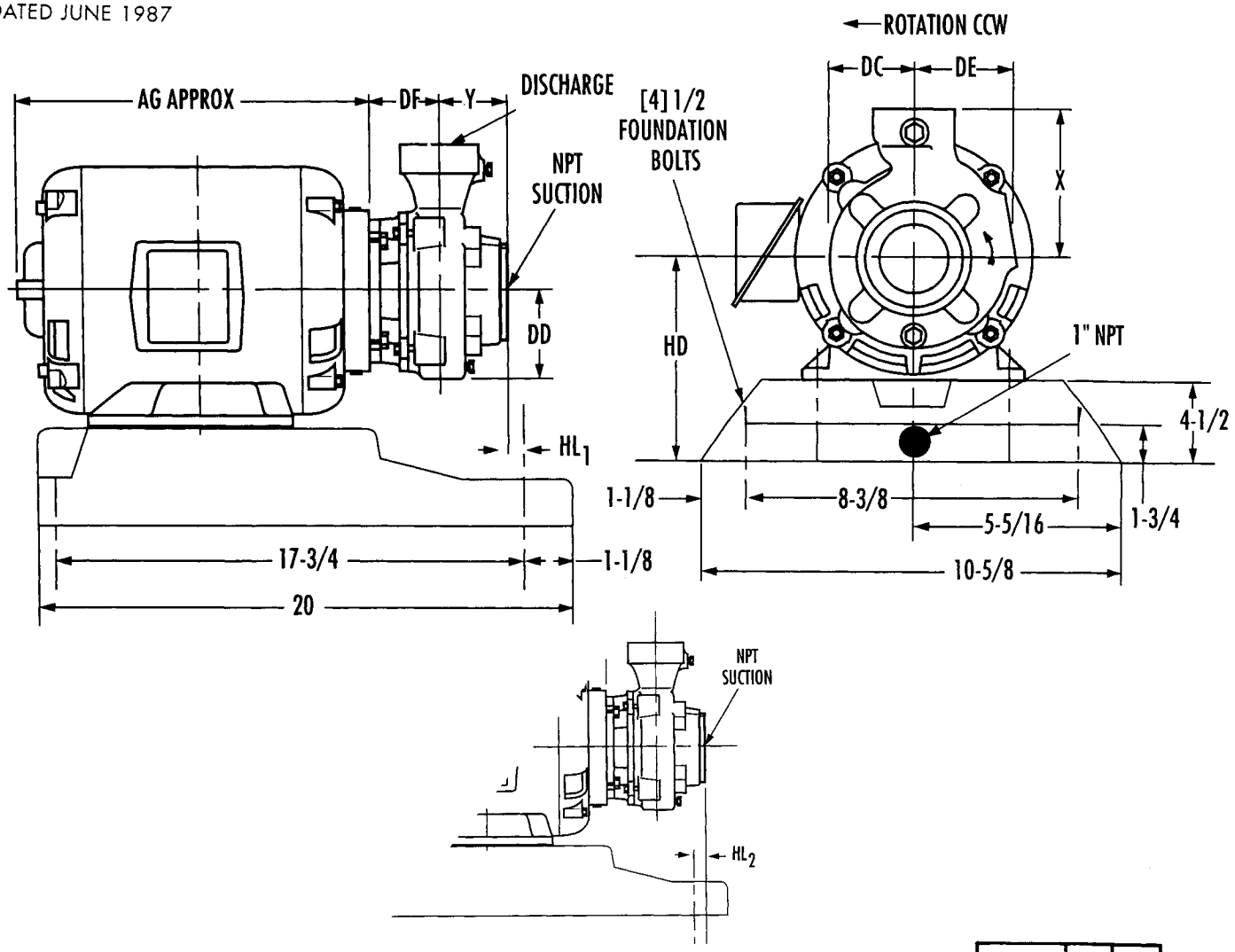

POSITION (4)

| PUMP SIZE | | | X | Y | DC | DD | DE | DF |
|---|---|---|---|---|---|---|---|---|
| DISCH | SUCT | CASE BORE | | | | | | |
| ¾ | 1 | 6 | 5 ½ | 1 ¾ | 3 5/16 | 3 7/16 | 3 7/8 | 2 13/16 |
| ¾ | 1 | 7 | 6 ¼ | 1 7/8 | 3 15/16 | 4 | 4 7/16 | 2 13/16 |
| 1 | 1 ¼ | 4 | 4 ⅛ | 1 11/16 | 2 3/8 | 2 3/8 | 2 7/16 | 2 15/16 |
| 1 | 1 ¼ | 5 | 5 | 2 | 2 13/16 | 2 7/8 | 3 | 2 7/8 |
| 1 | 1 ¼ | 6 | 5 ½ | 1 15/16 | 3 5/16 | 3 3/8 | 3 7/8 | 2 7/8 |
| 1 ¼ | 1 ½ | 5 | 5 | 1 15/16 | 2 7/8 | 2 15/16 | 3 7/16 | 2 15/16 |
| 1 ¼ | 1 ½ | 7A | 6 ¼ | 2 | 4 | 4 1/16 | 4 ½ | 2 15/16 |
| 1 ¼ | 1 ½ | 7B | 6 ¼ | 2 7/16 | 4 | 4 ⅛ | 4 5/8 | 2 7/8 |
| 1 ¼ | 1 ½ | 9 | 8 | 2 ¼ | 5 13/16 | 5 3/16 | 5 13/16 | 2 7/8 |
| 1 ½ | 2 | 4 | 5 | 2 ⅛ | 2 ½ | 3 | 2 ¾ | 3 1/16 |
| 1 ½ | 2 | 7 | 7 | 2 ¼ | 4 1/16 | 4 ¼ | 4 7/8 | 2 7/8 |
| 2 | 2 ½ | 4 | 5 | 3 1/16 | 2 ½ | 3 | 2 13/16 | 3 7/16 |
| 2 | 2 ½ | 5 | 6 | 2 11/16 | 3 | 3 3/16 | 3 7/16 | 3 1/16 |
| 2 | 2 ½ | 6 | 6 | 2 ¾ | 3 ½ | 3 11/16 | 4 3/8 | 3 |
| 2 | 2 ½ | 7 | 7 | 2 15/16 | 4 1/16 | 4 5/16 | 4 7/8 | 3 1/16 |
| 3 | 3 | 6 | 8 | 3 5/8 | 3 7/8 | 4 7/16 | 5 7/8 | 3 ¼ |

NOTES
1. ALL DIMENSIONS IN INCHES.
2. NOT FOR CONSTRUCTION PURPOSES UNLESS CERTIFIED.
3. CONDUIT BOX IS SHOWN IN APPROXIMATE LOCATION. CAPACITOR WHEN FURNISHED NORMALLY APPEARS ON TOP OF MOTOR. DIMENSIONS ARE NOT SPECIFIED AS THEY VARY WITH EACH MOTOR MANUFACTURER.
4. DIMENSIONS MAY VARY ± 1/4".
5. CHECK DISCHARGE POSITION, CASING DIMENSIONS WHICH EXCEED DIMENSION "D" MAY REQUIRE PADS FOR THE MOTOR.

# AURORA MODEL 321 PUMPS
## ON CAST IRON BASES

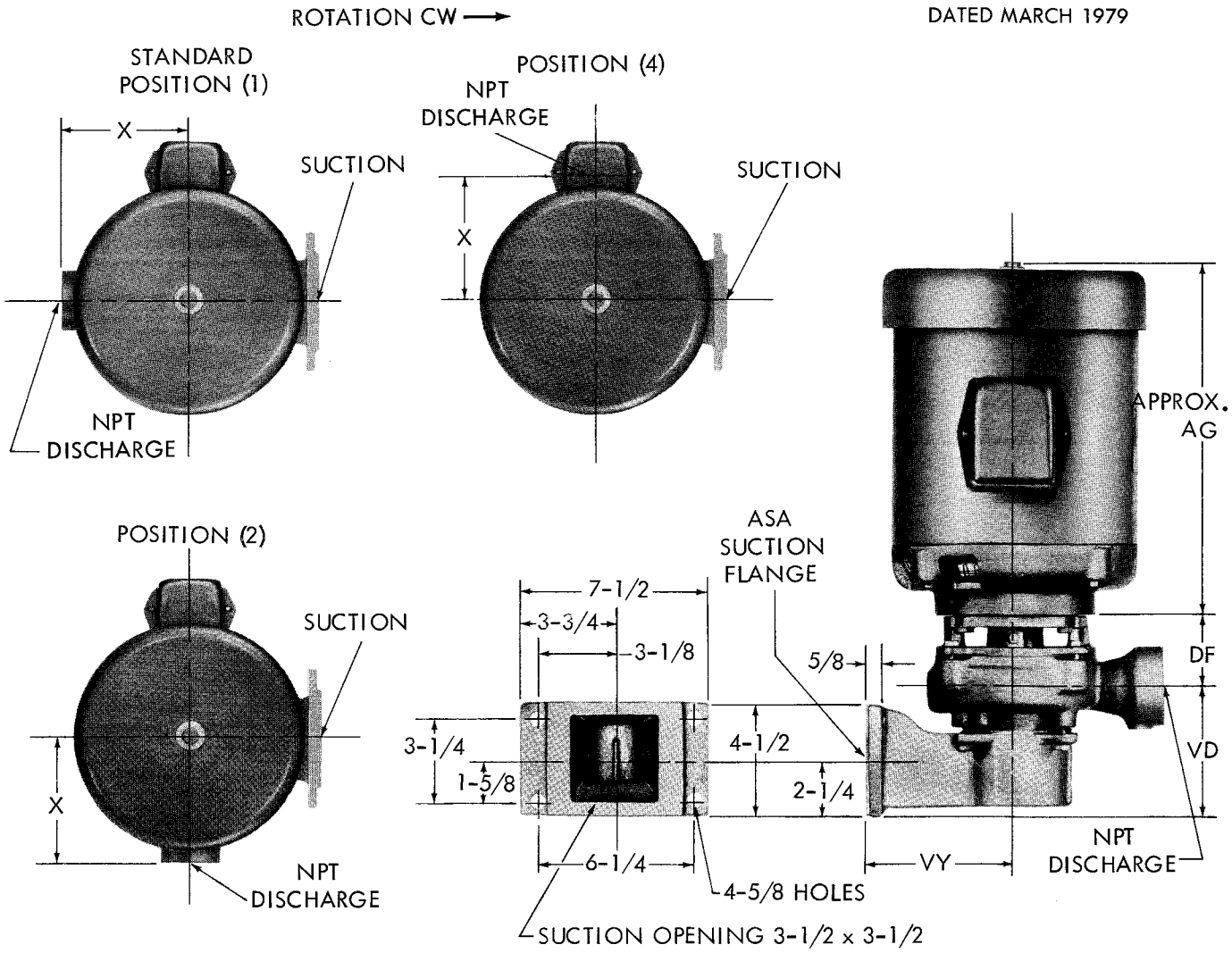
SUPERSEDES PAGE 202
DATED JUNE 1987




| PUMP SIZE | | | X | Y | DC | DD | DE | DF | $HL_1$ | $HL_2$ |
|---|---|---|---|---|---|---|---|---|---|---|
| DISCH | SUCT | CASE BORE | | | | | | | | |
| ¾ | 1 | 6 | 5 ½ | 1 ¾ | 3 5/16 | 3 7/16 | 3 ⅞ | 2 13/16 | 1 7/16 | — |
| ¾ | 1 | 7 | 6 ¼ | 1 ⅞ | 3 15/16 | 4 | 4 7/16 | 2 13/16 | 1 5/16 | — |
| 1 | 1 ¼ | 4 | 4 ⅛ | 1 1/16 | 2 ⅜ | 2 ⅜ | 2 7/16 | 2 15/16 | 1 ⅜ | — |
| 1 | 1 ¼ | 5 | 5 | 2 | 2 13/16 | 2 ⅞ | 3 | 2 ⅞ | 1 ⅛ | — |
| 1 | 1 ¼ | 6 | 5 ½ | 1 15/16 | 3 5/16 | 3 ⅜ | 3 ⅞ | 2 ⅞ | 1 3/16 | — |
| 1 ¼ | 1 ½ | 5 | 5 | 1 15/16 | 2 ⅞ | 2 15/16 | 3 7/16 | 2 15/16 | 1 ⅛ | — |
| 1 ¼ | 1 ½ | 7A | 6 ¼ | 2 | 4 | 4 1/16 | 4 ½ | 2 15/16 | 1 1/16 | — |
| 1 ¼ | 1 ½ | 7B | 6 ¼ | 2 7/16 | 4 | 4 ⅛ | 4 ⅝ | 2 ⅞ | 1 1/16 | — |
| 1 ¼ | 1 ½ | 9 | 8 | 2 ¼ | 5 13/16 | 5 3/16 | 5 13/16 | 2 ⅞ | ⅞ | — |
| 1 ½ | 2 | 4 | 5 | 2 ⅛ | 2 ½ | 3 | 2 ¾ | 3 1/16 | 13/16 | — |
| 1 ½ | 2 | 7 | 7 | 2 ¼ | 4 1/16 | 4 ¼ | 4 ⅞ | 2 ⅞ | ⅞ | — |
| 2 | 2 ½ | 4 | 5 | 3 1/16 | 2 ½ | 3 | 2 13/16 | 3 7/16 | — | ½ |
| 2 | 2 ½ | 5 | 6 | 2 1/16 | 3 | 3 3/16 | 3 7/16 | 3 1/16 | ¼ | — |
| 2 | 2 ½ | 6 | 6 | 2 ¾ | 3 ½ | 3 1/16 | 4 ⅜ | 3 | ¼ | — |
| 2 | 2 ½ | 7 | 7 | 2 15/16 | 4 1/16 | 4 5/16 | 4 ⅞ | 3 1/16 | 0 | — |
| 3 | 3 | 6 | 8 | 3 ⅝ | 3 ⅞ | 4 7/16 | 5 ⅞ | 3 ¼ | ⅛ | — |

| FRAME | AG | HD |
|---|---|---|
| 56 | 11 | 8 |
| 143T | 10 | 8 |
| 145T | 11 | 8 |
| 182T | 11 | 9 |
| 184T | 12 | 9 |

NOTES
1. ALL DIMENSIONS IN INCHES.
2. NOT FOR CONSTRUCTION PURPOSES UNLESS CERTIFIED.
3. CONDUIT BOX IS SHOWN IN APPROXIMATE LOCATION. CAPACITOR WHEN FURNISHED NORMALLY APPEARS ON TOP OF MOTOR. DIMENSIONS ARE NOT SPECIFIED AS THEY VARY WITH EACH MOTOR MANUFACTURER.
4. DIMENSIONS MAY VARY ± 1/4".

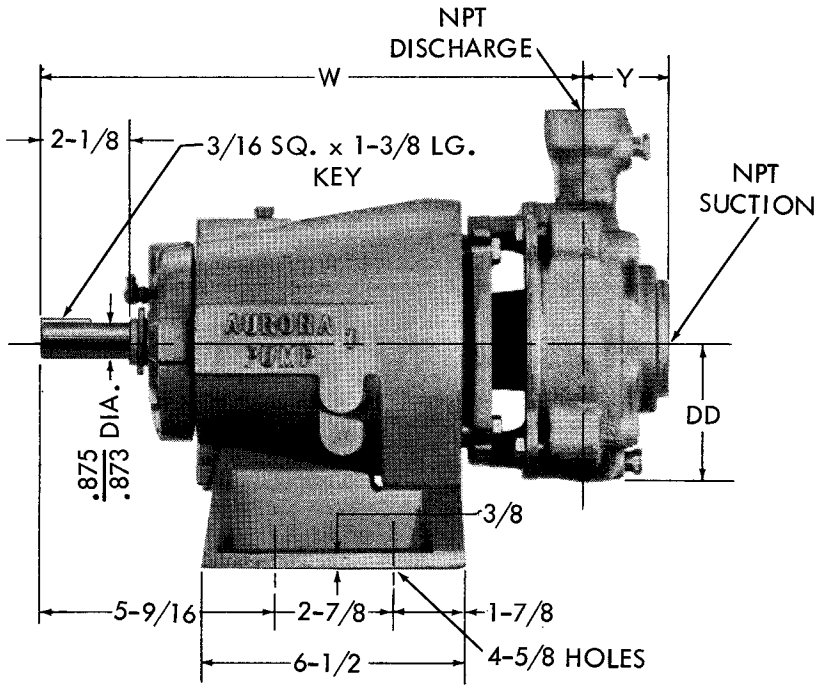


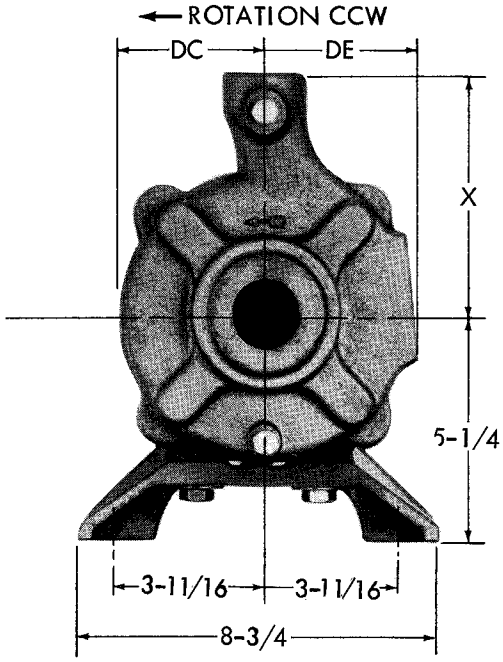

| PUMP SIZE | | | | | |
|---|---|---|---|---|---|
| DISCH. | CASE BORE | X | DF | VD | VY |
| 3/4 | 6A | 5-1/2 | 2-13/16 | 3-11/16 | 5 |
| 3/4 | 7 | 6-1/4 | 2-13/16 | 3-13/16 | 8-1/2 |
| 1 | 4 | 4-1/8 | 2-15/16 | 2-5/8 | 4 |
| 1 | 5 | 5 | 2-7/8 | 3-13/16 | 5 |
| 1 | 6 | 5-1/2 | 2-7/8 | 3-15/16 | 5 |
| 1-1/4 | 5 | 5 | 2-15/16 | 4 | 5 |
| 1-1/4 | 7B | 6-1/4 | 2-7/8 | 4-5/16 | 8-1/2 |
| 1-1/4 | 7A | 6-1/4 | 2-15/16 | 3-7/8 | 8-1/2 |
| 1-1/4 | 9 | 8 | 2-7/8 | 4-3/16 | 8-1/2 |
| 1-1/2 | 4 | 5 | 3-1/16 | 4-15/16 | 6 |
| 1-1/2 | 7 | 7 | 2-7/8 | 5 | 6 |
| 2 | 4 | 5 | 3-7/16 | 5-3/8 | 6 |
| 2 | 5 | 6 | 3-1/16 | 5-3/16 | 6 |
| 2 | 6 | 6 | 3 | 5-1/4 | 6 |
| 2 | 7 | 7 | 3-1/16 | 5-1/8 | 6 |
| 3 | 6 | 8 | 3-1/4 | 7-13/16 | 8-1/2 |

NOTES

1. ALL DIMENSIONS IN INCHES.
2. NOT FOR CONSTRUCTION PURPOSES UNLESS CERTIFIED.
3. CONDUIT BOX IS SHOWN IN APPROXIMATE LOCATION. CAPACITOR WHEN FURNISHED, NORMALLY APPEARS ON SIDE OF MOTOR. DIMENSIONS ARE NOT SPECIFIED AS THEY VARY WITH EACH MOTOR MANUFACTURER.
4. DIMENSIONS MAY VARY ±1/4".

| FRAME | AG APPROX. |
|---|---|
| 56 | 11 |
| 143T | 10 |
| 145T | 11 |
| 182T | 11 |
| 184T | 12 |



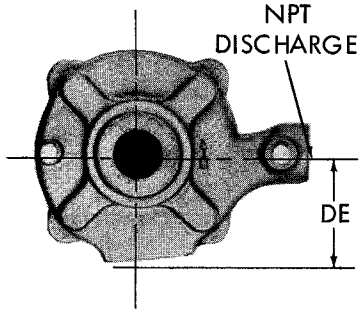




STANDARD POSITION (1)

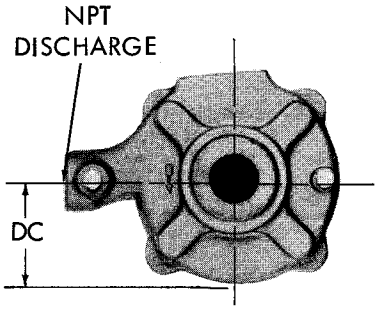
NOTES

1. ALL DIMENSIONS IN INCHES.
2. NOT FOR CONSTRUCTION PURPOSES UNLESS CERTIFIED.
3. DIMENSIONS MAY VARY ± 1/4.
4. CHECK DISCHARGE POSITION, CASING DIMENSIONS WHICH EXCEED DIMENSION 5-1/4 MAY REQUIRE PADS FOR THE MOTOR.

OPTIONAL DISCHARGE POSITIONS

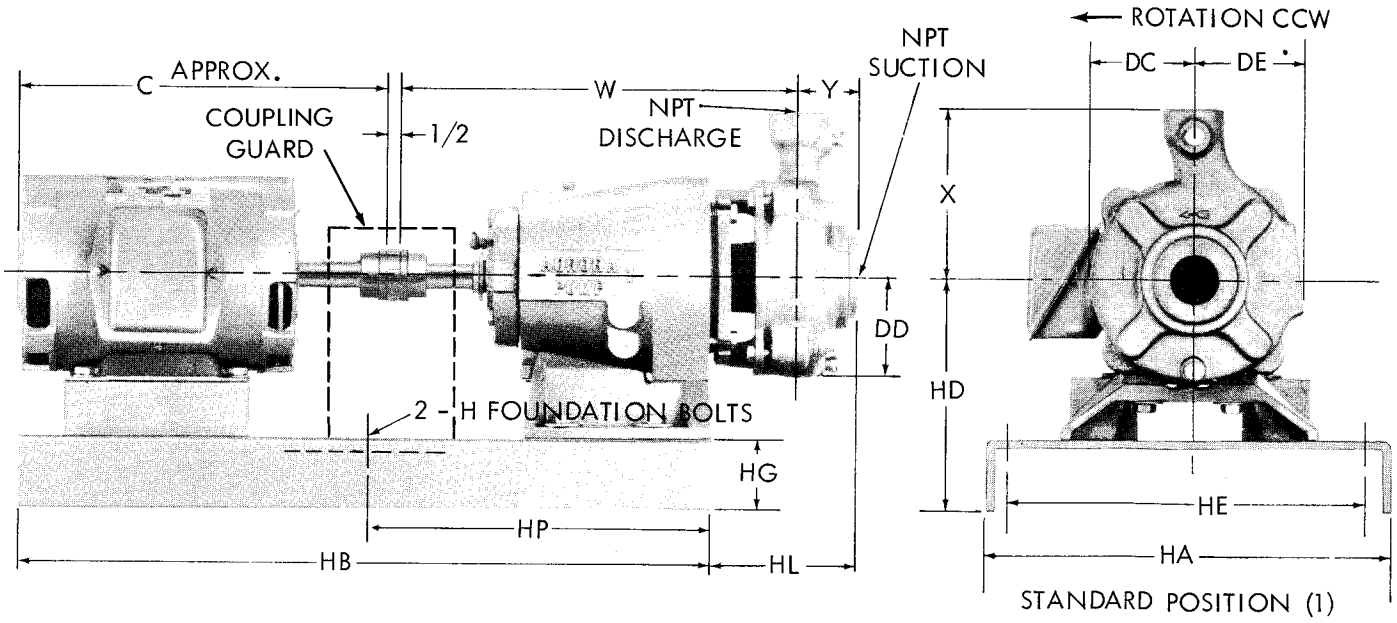



POSITION (2)

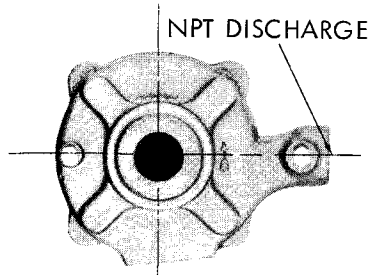



POSITION (4)

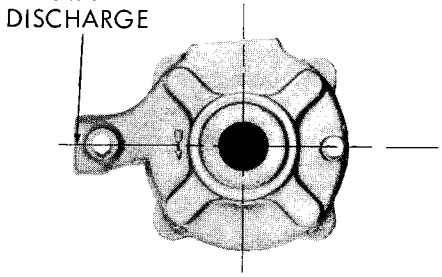
| PUMP SIZE | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| DISCHARGE | SUCTION | CASE BORE | W | X | Y | DC | DD | DE |
| 3/4 | 1 | 6A | 13 1/8 | 5 1/2 | 1 3/4 | 3 5/16 | 3 7/16 | 3 7/8 |
| 3/4 | 1 | 7 | 13 1/8 | 6 1/4 | 1 7/8 | 3 15/16 | 4 | 4 7/16 |
| 1 | 1 1/4 | 4 | 13 1/4 | 4 1/8 | 1 11/16 | 2 3/8 | 2 3/8 | 2 7/16 |
| 1 | 1 1/4 | 5 | 13 3/16 | 5 | 2 | 2 13/16 | 2 7/8 | 3 |
| 1 | 1 1/4 | 6 | 13 3/16 | 5 1/2 | 1 15/16 | 3 5/16 | 3 3/8 | 3 7/8 |
| 1 1/4 | 1 1/2 | 5 | 13 1/4 | 5 | 1 15/16 | 2 7/8 | 2 15/16 | 3 7/16 |
| 1 1/4 | 1 1/2 | 7A | 13 1/4 | 6 1/4 | 2 | 4 | 4 1/16 | 4 1/2 |
| 1 1/4 | 1 1/2 | 7B | 13 3/16 | 6 1/4 | 2 7/16 | 4 | 4 1/8 | 4 5/8 |
| 1 1/4 | 1 1/2 | 9 | 13 3/16 | 8 | 2 1/4 | 5 13/16 | 5 3/16 | 5 13/16 |
| 1 1/2 | 2 | 4 | 13 3/8 | 5 | 2 1/8 | 2 1/2 | 3 | 2 3/4 |
| 1 1/2 | 2 | 7 | 13 3/16 | 7 | 2 1/4 | 4 1/16 | 4 1/4 | 4 7/8 |
| 2 | 2 1/2 | 4 | 13 3/4 | 5 | 3 1/16 | 2 1/2 | 3 | 2 13/16 |
| 2 | 2 1/2 | 5 | 13 3/8 | 6 | 2 11/16 | 3 | 3 3/16 | 3 7/16 |
| 2 | 2 1/2 | 6 | 13 5/16 | 6 | 2 3/4 | 3 1/2 | 3 11/16 | 4 3/8 |
| 2 | 2 1/2 | 7 | 13 3/8 | 7 | 2 15/16 | 4 1/16 | 4 5/16 | 4 7/8 |
| 3 | 3 | 6 | 13 1/2 | 8 | 3 5/8 | 3 7/8 | 4 7/16 | 5 7/8 |




| FRAME | C APPROX. | H | HA | HB | HD | HE | HG | HP |
|---|---|---|---|---|---|---|---|---|
| 48 | 10 | 3/8 | 9 | 21 | 7 11/16 | 7 | 2 7/16 | 10 1/2 |
| 56 | 12 | 3/8 | 9 | 21 | 7 11/16 | 7 | 2 7/16 | 10 1/2 |
| 143T | 12 | 3/8 | 9 | 21 | 7 11/16 | 7 | 2 7/16 | 10 1/2 |
| 145T | 13 | 3/8 | 9 | 21 | 7 11/16 | 7 | 2 7/16 | 10 1/2 |
| 182T | 13 | 1/2 | 10 | 24 | 7 7/8 | 7 | 2 5/8 | 12 |
| 184T | 14 | 1/2 | 10 | 24 | 7 7/8 | 7 | 2 5/8 | 12 |
| 213T | 16 | 1/2 | 12 | 27 | 8 1/4 | 9 | 3 | 13 1/2 |




POSITION (2)



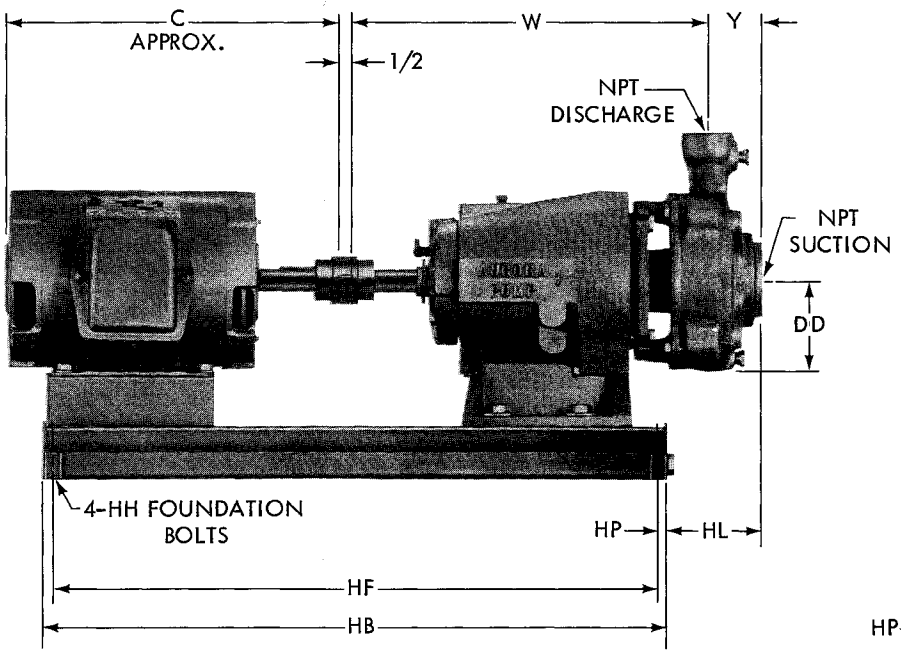

POSITION (4)

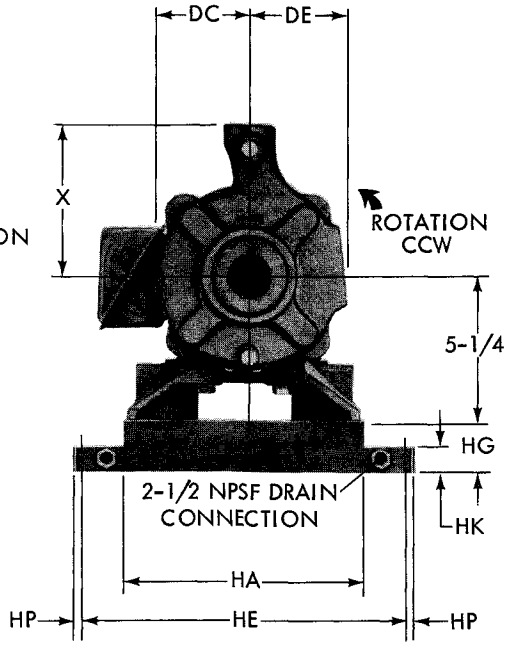
| PUMP SIZE | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| DISCHARGE | SUCTION | CASE BORE | W | X | Y | DC | DD | DE | HL |
| 3/4 | 1 | 6A | 13 1/8 | 5 1/2 | 1 3/4 | 3 5/16 | 3 7/16 | 3 7/8 | 4 9/16 |
| 3/4 | 1 | 7 | 13 1/8 | 6 1/4 | 1 7/8 | 3 15/16 | 4 | 4 7/16 | 4 11/16 |
| 1 | 1 1/4 | 4 | 13 1/4 | 4 1/8 | 1 11/16 | 2 3/8 | 2 3/8 | 2 7/16 | 4 5/8 |
| 1 | 1 1/4 | 5 | 13 3/16 | 5 | 2 | 2 13/16 | 2 7/8 | 3 | 4 7/8 |
| 1 | 1 1/4 | 6 | 13 3/16 | 5 1/2 | 1 15/16 | 3 5/16 | 3 3/8 | 3 7/8 | 4 13/16 |
| 1 1/4 | 1 1/2 | 5 | 13 1/4 | 5 | 1 15/16 | 2 7/8 | 2 15/16 | 3 7/16 | 4 7/8 |
| 1 1/4 | 1 1/2 | 7A | 13 1/4 | 6 1/4 | 2 | 4 | 4 1/16 | 4 1/2 | 4 15/16 |
| 1 1/4 | 1 1/2 | 7B | 13 3/16 | 6 1/4 | 2 7/16 | 4 | 4 1/8 | 4 5/8 | 5 5/16 |
| 1 1/4 | 1 1/2 | 9 | 13 3/16 | 8 | 2 1/4 | 5 13/16 | 5 3/16 | 5 13/16 | 5 1/8 |
| 1 1/2 | 2 | 4 | 13 3/8 | 5 | 2 1/8 | 2 1/2 | 3 | 2 3/4 | 5 3/16 |
| 1 1/2 | 2 | 7 | 13 3/16 | 7 | 2 1/4 | 4 1/16 | 4 1/4 | 4 7/8 | 5 1/8 |
| 2 | 2 1/2 | 4 | 13 3/4 | 5 | 3 1/16 | 2 1/2 | 3 | 2 13/16 | 6 1/2 |
| 2 | 2 1/2 | 5 | 13 3/8 | 6 | 2 11/16 | 3 | 3 3/16 | 3 7/16 | 5 3/4 |
| 2 | 2 1/2 | 6 | 13 5/16 | 6 | 2 3/4 | 3 1/2 | 3 11/16 | 4 3/8 | 5 3/4 |
| 2 | 2 1/2 | 7 | 13 3/8 | 7 | 2 15/16 | 4 1/16 | 4 5/16 | 4 7/8 | 6 |
| 3 | 3 | 6 | 13 1/2 | 8 | 3 5/8 | 3 7/8 | 4 7/16 | 5 7/8 | 6 13/16 |

NOTES

1. ALL DIMENSIONS IN INCHES.
2. DIMENSIONS MAY VARY ± 3/8.
3. NOT FOR CONSTRUCTION PURPOSES UNLESS CERTIFIED.
4. CONDUIT BOX SHOWN IN APPROXIMATE LOCATION. CAPACITOR, WHEN FURNISHED, NORMALLY APPEARS ON TOP OF MOTOR. DIMENSIONS ARE NOT SPECIFIED AS THEY VARY WITH EACH MOTOR MANUFACTURER.

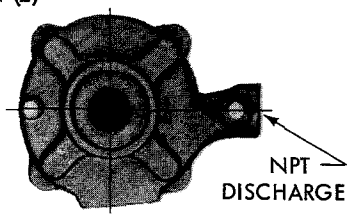
# AURORA MODEL 324A PUMPS
## ON STEEL DRIP RIM BASE



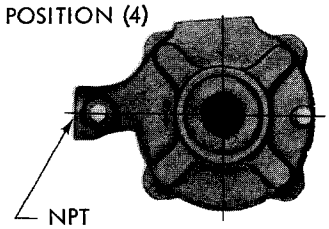




| FRAME | C APPROX. | BASE SIZE | HH | HA | HB | HE | HG | HK | HF | HP |
|---|---|---|---|---|---|---|---|---|---|---|
| 48 | 10 | 9 x 22 | 3/8 | 9 | 22-1/2 | 13-3/4 | 3 | 1-1/2 | 21-1/4 | 5/8 |
| 56 | 12 | 9 x 22 | 3/8 | 9 | 22-1/2 | 13-3/4 | 3 | 1-1/2 | 21-1/4 | 5/8 |
| 143T | 12 | 9 x 22 | 3/8 | 9 | 22-1/2 | 13-3/4 | 3 | 1-1/2 | 21-1/4 | 5/8 |
| 145T | 13 | 9 x 26 | 3/8 | 9 | 26-1/2 | 13-3/4 | 3 | 1-1/2 | 25-1/4 | 5/8 |
| 182T | 13 | 9 x 26 | 3/8 | 9 | 26-1/2 | 13-3/4 | 3 | 1-1/2 | 25-1/4 | 5/8 |
| 184T | 14 | 9 x 26 | 3/8 | 9 | 26-1/2 | 13-3/4 | 3 | 1-1/2 | 25-1/4 | 5/8 |
| 213T | 16 | 11 x 30 | 1/2 | 11 | 30-1/2 | 15-7/8 | 3 | 1-1/2 | 29-1/8 | 11/16 |

POSITION (2)




POSITION (4)




| PUMP SIZE | | CASE BORE | W | X | Y | DC | DD | DE | HL |
|---|---|---|---|---|---|---|---|---|---|
| DISCH | SUCT | | | | | | | | |
| 3/4 | 1 | 6A | 13-1/8 | 5-1/2 | 1-3/4 | 3-5/16 | 3-7/16 | 3-7/8 | 3-1/16 |
| 3/4 | 1 | 7 | 13-1/8 | 6-1/4 | 1-7/8 | 3-15/16 | 4 | 4-7/16 | 3-3/16 |
| 1 | 1-1/4 | 4 | 13-1/4 | 4-1/8 | 1-11/16 | 2-3/8 | 2-3/8 | 2-7/16 | 3-1/8 |
| 1 | 1-1/4 | 5 | 13-3/16 | 5 | 2 | 2-13/16 | 2-7/8 | 3 | 3-3/8 |
| 1 | 1-1/4 | 6 | 13-3/16 | 5-1/2 | 1-15/16 | 3-5/16 | 3-3/8 | 3-7/8 | 3-5/16 |
| 1-1/4 | 1-1/2 | 5 | 13-1/4 | 5 | 1-15/16 | 2-7/8 | 2-15/16 | 3-7/16 | 3-3/8 |
| 1-1/4 | 1-1/2 | 7A | 13-1/4 | 6-1/4 | 2 | 4 | 4-1/16 | 4-1/2 | 3-7/16 |
| 1-1/4 | 1-1/2 | 7B | 13-3/16 | 6-1/4 | 2-7/16 | 4 | 4-1/8 | 4-5/8 | 3-13/16 |
| 1-1/4 | 1-1/2 | 9 | 13-3/16 | 8 | 2-1/4 | 5-13/16 | 5-3/16 | 5-13/16 | 4-5/8 |
| 1-1/2 | 2 | 4 | 13-3/8 | 5 | 2-1/8 | 2-1/2 | 3 | 2-3/4 | 3-11/16 |
| 1-1/2 | 2 | 7 | 13-3/16 | 7 | 2-1/4 | 4-1/16 | 4-1/4 | 4-7/8 | 3-5/8 |
| 2 | 2-1/2 | 4 | 13-3/4 | 5 | 3-1/16 | 2-1/2 | 3 | 2-13/16 | 5 |
| 2 | 2-1/2 | 5 | 13-3/8 | 6 | 2-11/16 | 3 | 3-3/16 | 3-7/16 | 4-1/4 |
| 2 | 2-1/2 | 6 | 13-5/16 | 6 | 2-3/4 | 3-1/2 | 3-11/16 | 4-3/8 | 4-1/4 |
| 2 | 2-1/2 | 7 | 13-3/8 | 7 | 2-15/16 | 4-1/16 | 4-5/16 | 4-7/8 | 4-1/2 |
| 3 | 3 | 6 | 13-1/2 | 8 | 3-5/8 | 3-7/8 | 4-7/16 | 5-7/8 | 5-5/16 |

NOTES:

1. All Dimensions in inches.
2. Dimensions may vary ± 3/8.
3. Not for construction purposes unless certified.
4. Conduit box shown in approximate location. Capacitor, when furnished, normally appears on top of motor. Dimensions are not specified as they vary with each motor manufacturer.

AURORA PUMP
A member of PENTAIR PUMP GROUP

# INSTRUCTION MANUAL
## INSTALLATION
## CLOSE COUPLED PUMP

2

GENERAL. The life of your Aurora pump can be extended considerably by carefully following the installation instructions contained herein. Each step of the pump installation instructions plays a vital part in assuring long life, efficient operation, and reduced maintenance, from the initial location of the pump through prestarting directions.

UNPACKING YOUR PUMP. The crate containing your pump should be opened immediately upon receipt from the factory, and the pump generally inspected for damage and shortage of parts. Particular attention should be given to the discharge and suction nozzle threads or flanges. Any damage or shortage of parts should be reported to the carrier immediately.

CLEANING. If your pump is to be installed immediately, it will be necessary to remove the protective covers from all openings, and to clean the exposed metal parts thoroughly with a cleaning solvent to remove the preservative coating.

STORAGE. If your pump is not to be put in service immediately it should be covered and stored in a clean dry area. The protective covers and preservative should be left intact until the pump is put into service. For extended storage, the pump should be dried internally with hot air or some other suitable means, and once free of moisture, filled with a protective fluid such as light oil or kerosene. Accordingly, at time of installation, the pump will have to be completely dismantled and thoroughly cleaned.

PLANNING THE PUMP LOCATION. You probably have spent considerable time planning where your pump will be located. However you may have overlooked some factor which may affect pump operation or efficiency.

The pump should be located as close to the liquid source as possible so that the suction line can be short and direct. It should be located in a clean, open area, where it is easily accessible for inspection, disassembly and repair. Pumps installed in dark, dirty areas or in cramped locations are often neglected which can result in premature failure of both the pump and the driver.

Your pump should be located so that a hoist or crane can be used to move it without interference from piping. This factor is often overlooked in the advance planning stage.

Protect your pump against the possibility of flooding. Although water will not seriously damage the pump, the drive motor can be damaged.

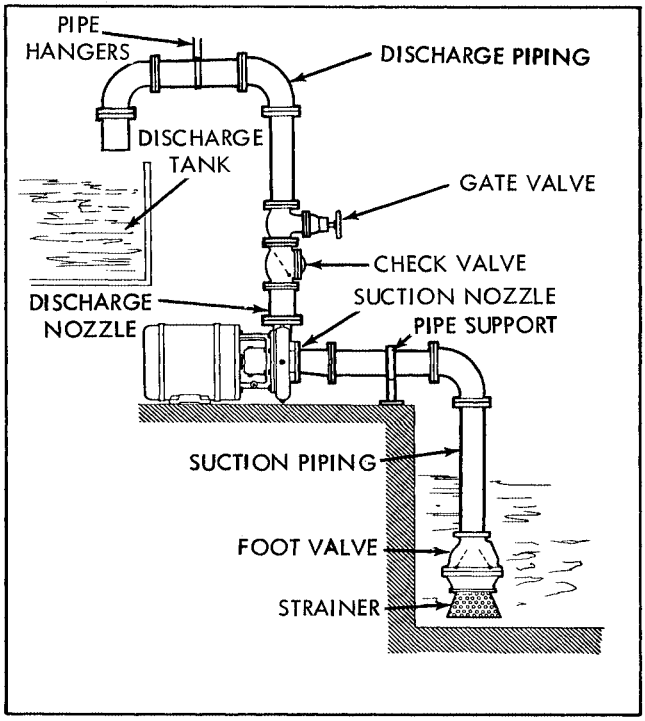



FIGURE 1. RECOMMENDED LOCATION - SHORT DIRECT SUCTION

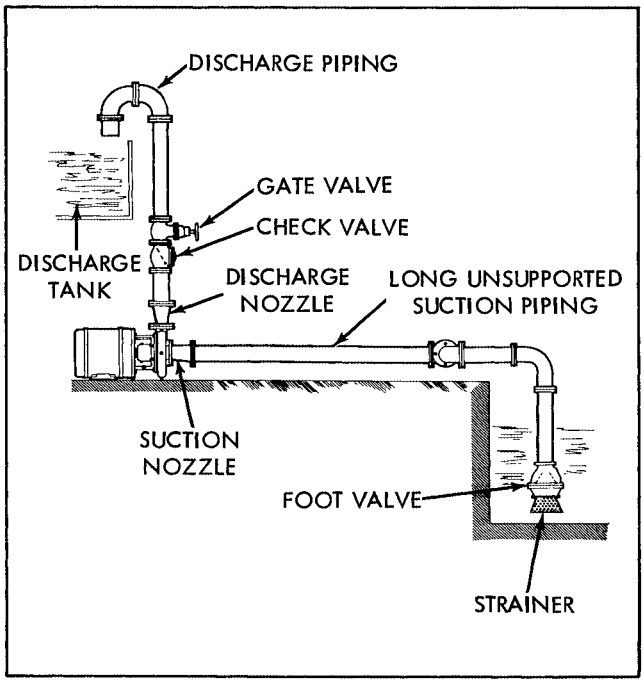



FIGURE 2. UNSATISFACTORY LOCATION - LONG INDIRECT SUCTION WITH NO SUPPORT

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## CLOSE COUPLED PUMP INSTALLATION

The pump should be located in an area where moisture, either from leakage through the packing or from condensation, can be adequately drained off. Moisture dripping on exposed metal or wood can cause rapid deterioration of the area. Also, wet floors produce safety hazards.

Adequate provisions should be made for electrical wiring to the pump motor. A switch and overload protection should be installed near the pump unless it is impractical. The electrical conduit should be positioned in such a way as to preclude the possibility of moisture entering the conduit or the motor and causing short circuits.

Outdoor installation will normally provide all of the above mentioned conditions. However it is advisable to provide a weather shelter for your pump.

FOUNDATION. The foundation for your pump must be sufficiently rigid to absorb any vibration and stress encountered during pump operation. A raised foundation of concrete is preferable for most floor mounted pumps. The raised foundation assures a satisfactory base, protects against flooding, simplifies moisture drainage, and facilitates keeping the area clean.

Your pump should be firmly bolted to the foundation, whether it is a raised concrete base, steelwork wall, or structural member. The mounting bolts or lag-screws should be accurately located per the applicable Aurora dimension sheet.

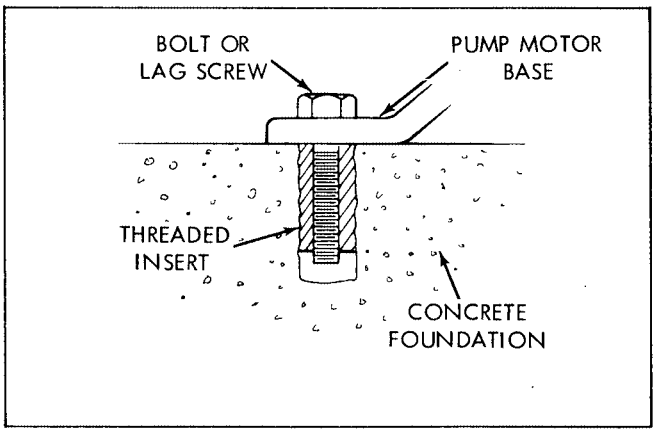



FIGURE 3. TYPICAL CLOSE COUPLED PUMP MOUNTING

Lag screws or bolts screwed into threaded inserts in the concrete are recommended for mounting close coupled pumps, rather than studs set into concrete. This permits removal of the drive motor without disturbing the pump liquid end or the piping.

If a large pump is to be mounted on steelwork or other structure, adequate support should be provided to prevent deflection of the structure which could produce excessive strain on the pump casing and piping.

SETTING THE PUMP. Check the mounting surfaces of the pump unit and the foundation to make sure they are clean and free of obstructions.

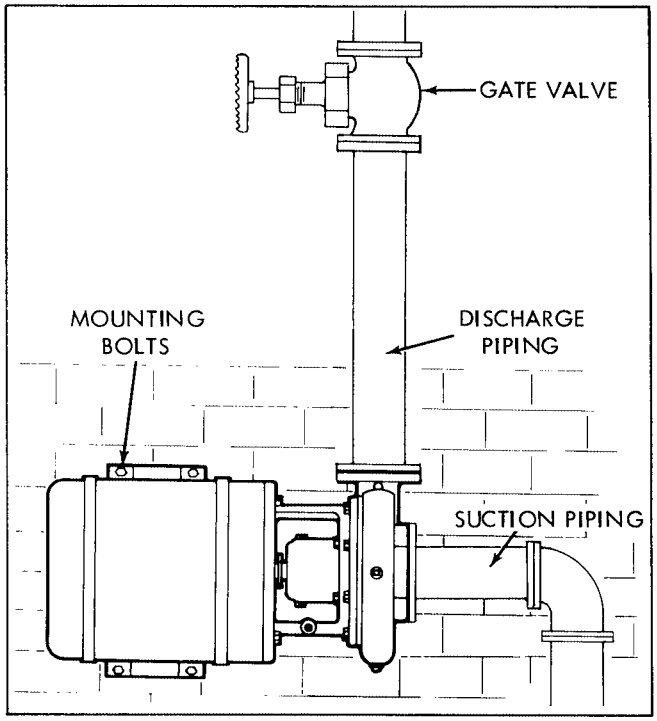



FIGURE 4. WALL MOUNTED PUMP

Set the pump on the foundation, being careful not to damage the foundation bolts or studs, if used.

Tighten the nuts or bolts finger tight.

LEVELING THE PUMP. Level the pump unit using the suction and discharge nozzles or flanges as reference points. Insertion of a short piece of pipe in the threaded nozzles will facilitate use of a spirit level to determine whether or not the pump unit is level in all directions. A spirit level also can be used on the machined faces of the suction and discharge flanges. Insert shims under the mounting feet as required until the pump is level. Firmly tighten the nuts or bolts securing the pump to the foundation.

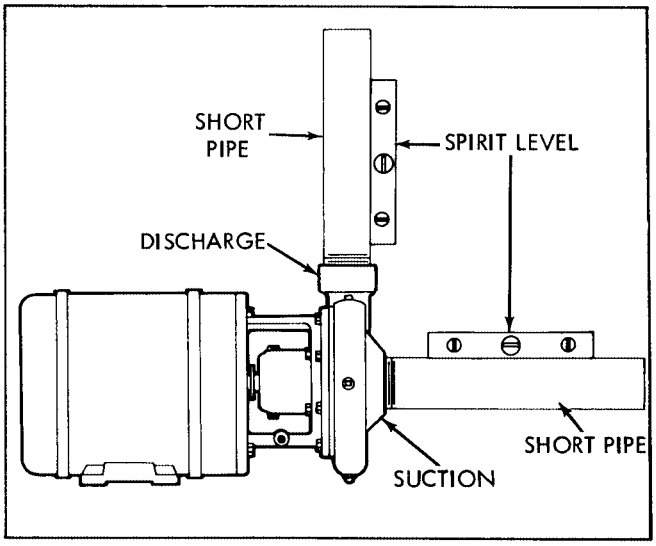



FIGURE 5. LEVELING PUMP WITH SPIRIT LEVEL AND SHORT LENGTHS OF PIPE

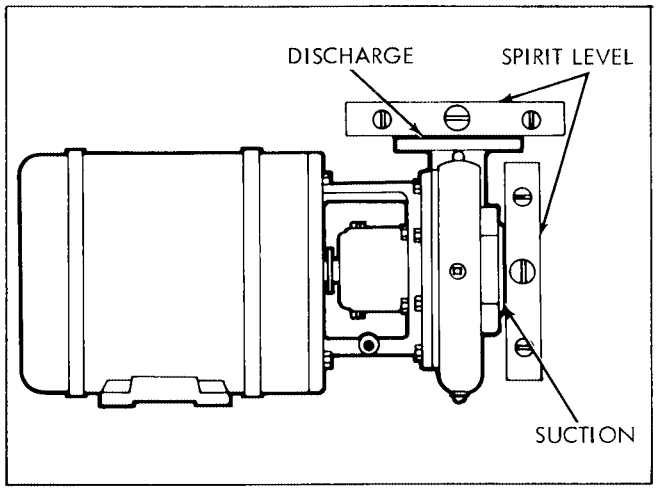



FIGURE 6. LEVELING WITH SPIRIT LEVEL ON PUMP FLANGES

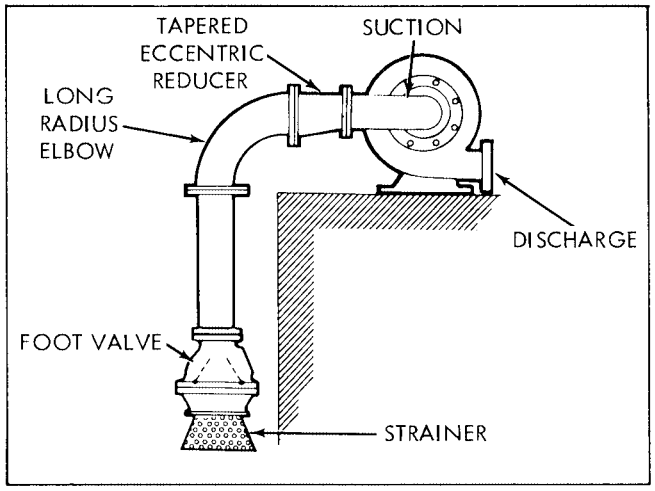



FIGURE 8. RECOMMENDED SUCTION LIFT PIPING - SHORT AND DIRECT

PIPING. Your pump unit is now ready to be piped. The piping practices you follow will directly affect the efficiency and power consumption of your pump. Pay particular attention to the seemingly insignificant details involved in piping your pump for they make the difference between a good and bad installation.

SUPPORTING THE PIPE. Both the suction and the discharge piping should be independently supported near the pump. Liberal use of pipe hangers and support blocks will prevent excessive strain on the pump casing and on the pipe joints.

SUCTION PIPING. The suction piping should be short, but no less than ten pipe diameters in length, and direct with as few elbows and fittings as possible to keep head loss, from friction, at a minimum. However, the suction pipe should provide a minimum uninterrupted length, equal to ten pipe diameters, to the pump suction flange. A horizontal suction line should have a gradual rise to the pump, and pass under any interfering piping.

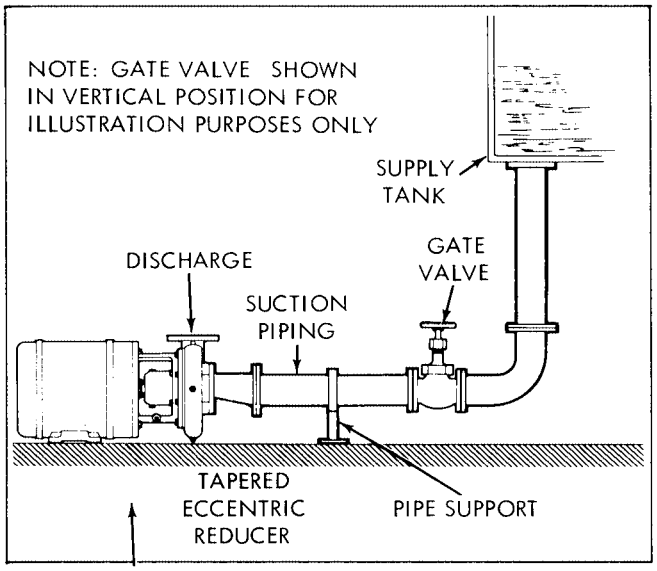



FIGURE 9. RECOMMENDED FLOODED SUCTION PIPING - SHORT AND DIRECT

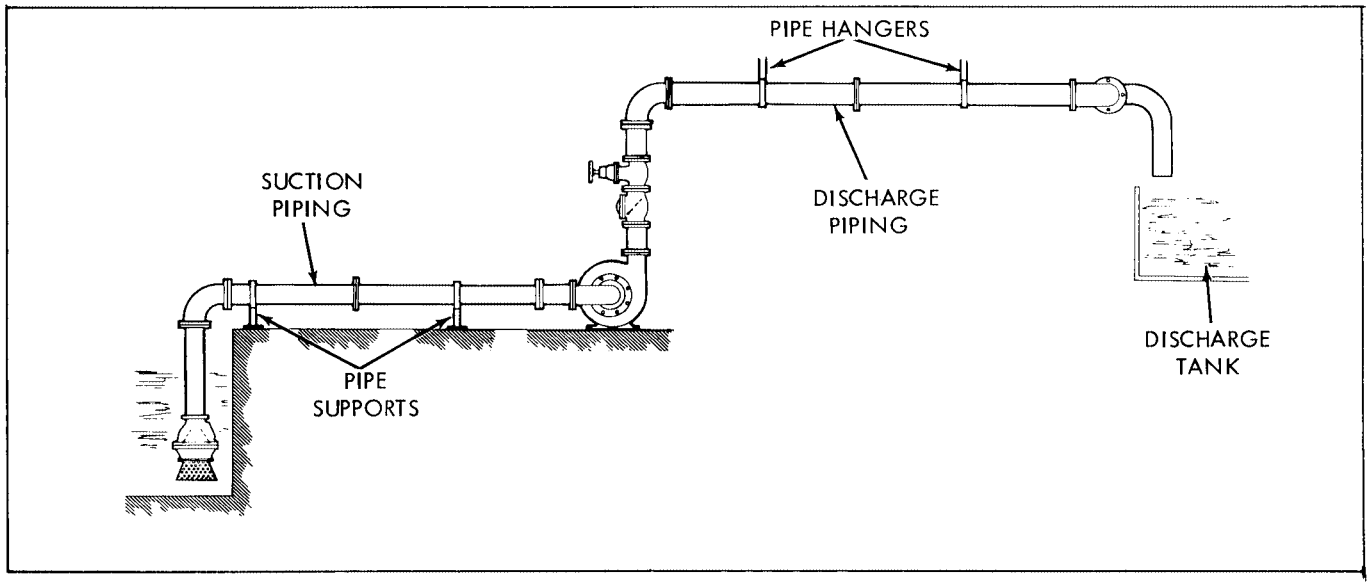



FIGURE 7. SUPPORTING PIPING

PIPE. The suction pipe diameter should be at least the same diameter as the suction nozzle on the pump, and preferably larger. Use of a smaller diameter pipe will result in loss of head due to friction. All joints must be tight to maintain prime on the pump.

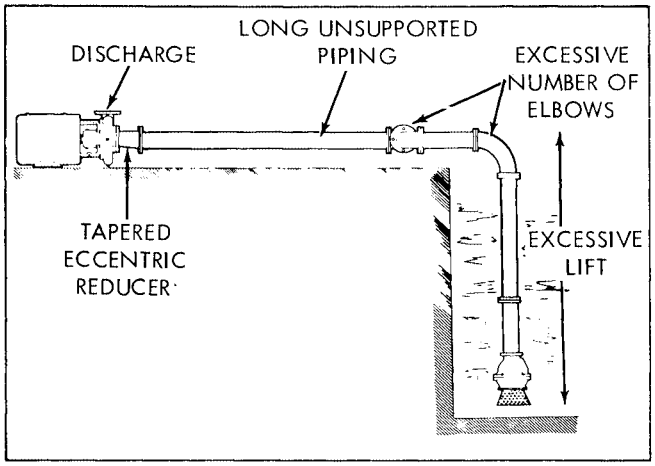



FIGURE 10. UNSATISFACTORY SUCTION LIFT PIPING - LONG AND INDIRECT WITH NO SUPPORT

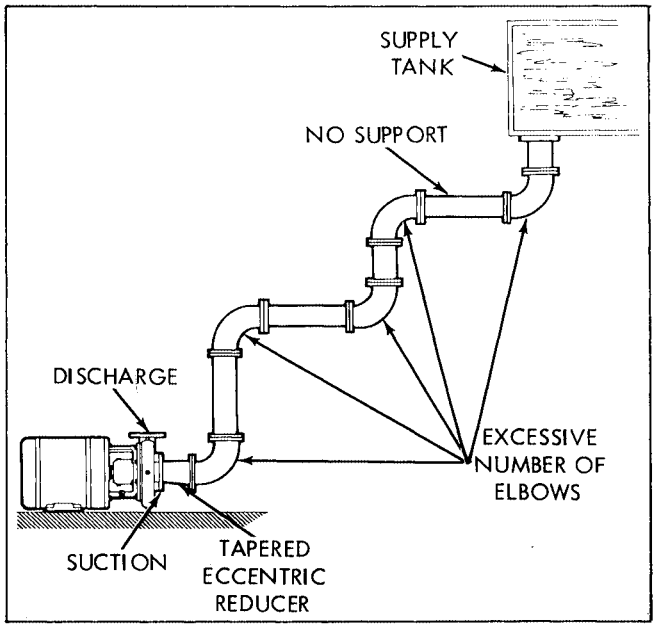



FIGURE 11. UNSATISFACTORY FLOODED SUCTION PIPING - LONG AND INDIRECT WITH NO SUPPORT

ELBOWS. Long radius elbows should be used in place of standard elbows wherever possible, because of their superior flow characteristics. For instance, head loss in a standard four inch elbow is equivalent to the head loss in a piece of pipe 11 feet long, while the head loss in a long radius elbow is approximately half as much. Elbows should not be used at the suction nozzle, but if it is unavoidable, they should be installed in a vertical position. Elbows installed in any position at the suction nozzle have a tendency to distribute the liquid unevenly in the impeller chamber, causing a reduction in capacity, and creating an undersirable thrust condition.

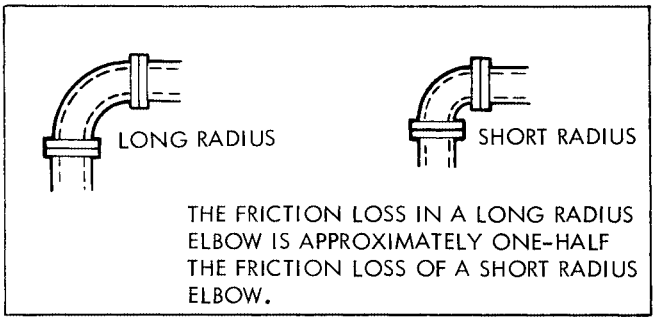



FIGURE 12. LONG VERSUS SHORT RADIUS ELBOWS

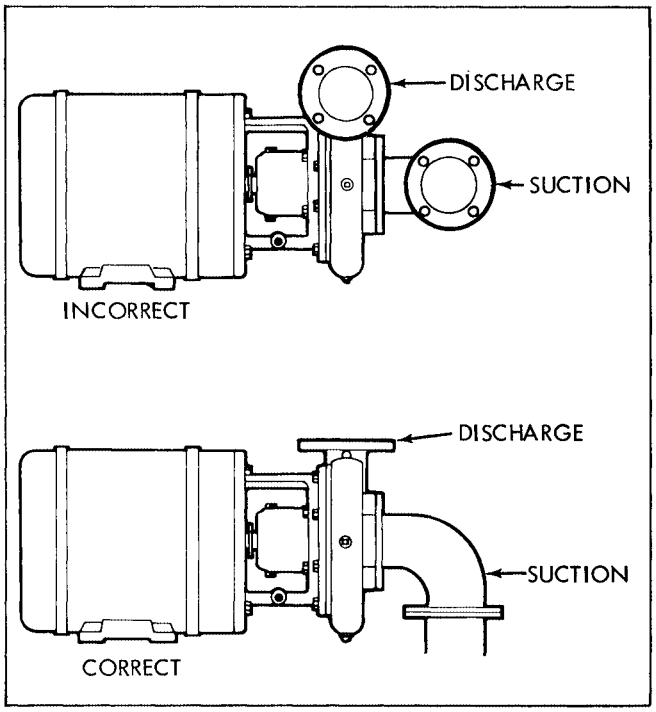



FIGURE 13. ELBOW INSTALLATION ON SUCTION NOZZLE

REDUCERS. Eccentric reducers should be installed directly at the suction nozzle, with the taper at the bottom to prevent air pockets from forming. Straight taper reducers should never be used in a horizontal suction line because of the air pocket that is formed at the leg of the reducer and the pipe.

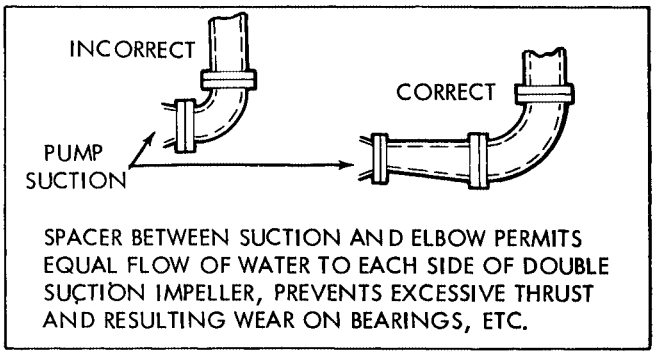
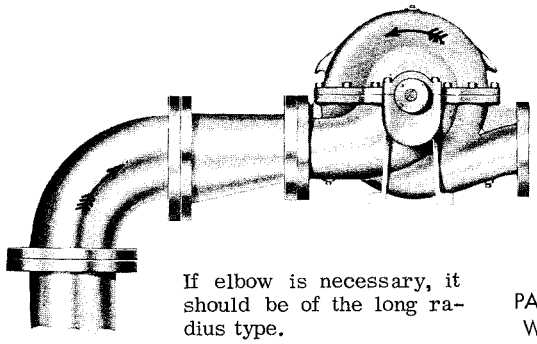


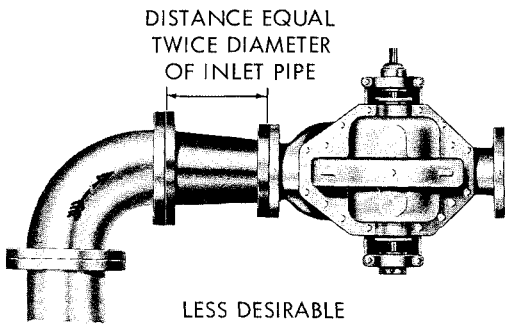

FIGURE 14. REDUCER BETWEEN ELBOW AND PUMP SUCTION NOZZLE

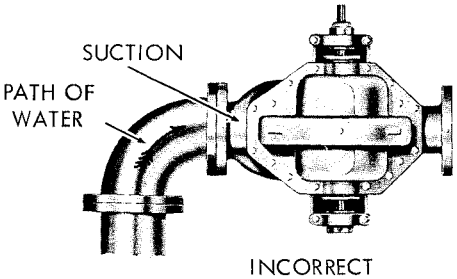
SPECIAL SUCTION PIPING SPECIFICATIONS FOR HORIZONTAL DOUBLE SUCTION PUMPS



If elbow is necessary, it should be of the long radius type.

CORRECT



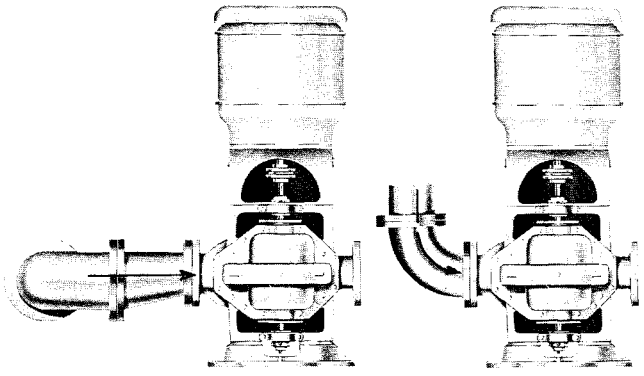




Discharge piping and suction piping should be supported close to the pump flange to prevent vibration and strain on pump casing.

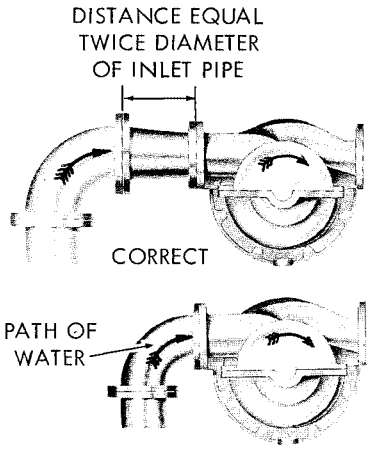
The suction pipe on horizontal double suction pumps, should not be installed so that there is an elbow close to the suction nozzle unless the elbow is mounted vertically. There is always an uneven flow of liquid through an elbow and when the elbow is installed at any angle other than vertical more water will enter one side of the impeller than enters the other side. This causes a reduction in capacity and efficiency and creates an axial thrust load which may over heat and possibly cause rapid wear of the thrust bearing.

FIGURE 15

SPECIAL SUCTION PIPING SPECIFICATIONS FOR VERTICAL DOUBLE SUCTION PUMPS



CORRECT INCORRECT




Suction connections for vertical mounted double suction pumps should be installed the opposite of horizontal pumps. That is, if an elbow is installed close to the suction nozzle it should only be mounted horizontally. Any angle other than horizontal will cause more water to enter one side of the impeller than enters the other side. This causes a reduction in capacity and efficiency and creates an axial thrust load which may over heat and possibly cause rapid wear of the thrust bearing.

FIGURE 16

TYPICAL PIPING FOR DOUBLE SUCTION PUMPS

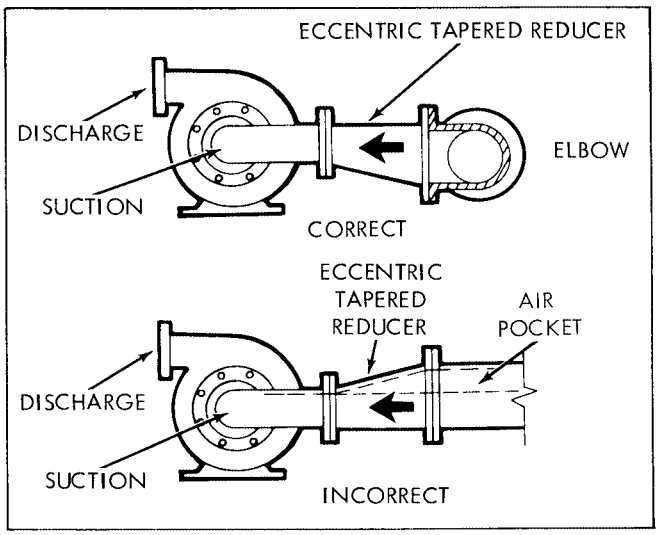



FIGURE 17. INSTALLATION OF TAPERED REDUCERS

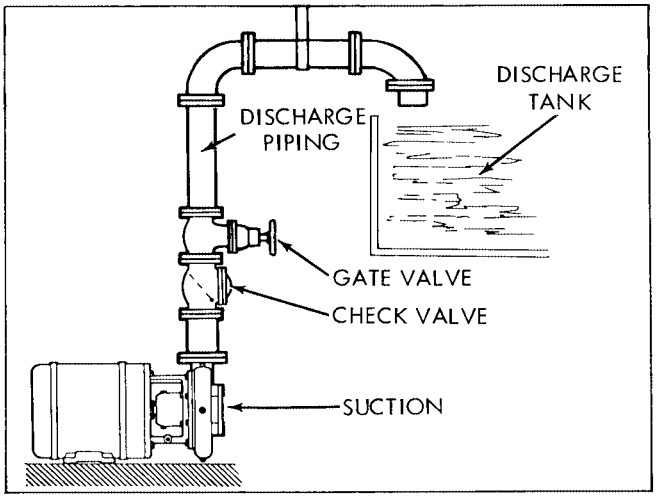



FIGURE 18. RECOMMENDED DISCHARGE PIPING - SHORT AND DIRECT

DISCHARGE PIPING. Discharge piping should also be short and direct as possible, with few elbows and fittings, to reduce head loss from friction.

PIPE. The discharge pipe diameter should be the same as, or larger than, the discharge nozzle diameter. The size of discharge pipe to be used is dependent upon the application. The recommended pipe diameter can be obtained from your nearest Aurora Pump Sales Office.

ELBOWS. Long radius elbows should be used in the discharge piping as well as in the suction piping, to prevent excessive head loss due to friction. Whenever possible, elbows should not be installed directly at the discharge nozzle as the turbulence created by the elbow will affect pressure gauge readings.

REDUCERS AND INCREASERS. An increaser should be installed at the discharge nozzle if larger diameter discharge piping is used. Straight taper increasers and/or reducers are satisfactory in discharge piping, because air pockets on the discharge side do not affect pump efficiency.

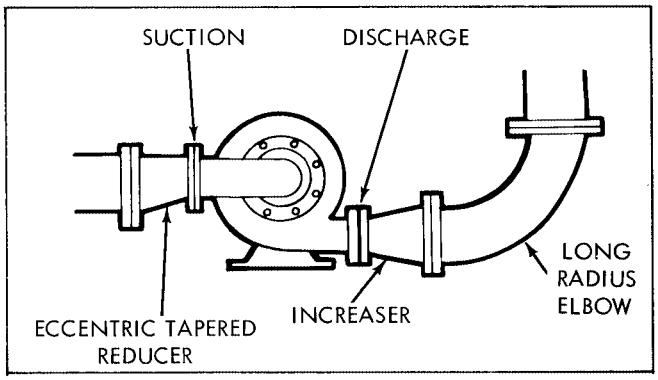



FIGURE 20. REDUCER INCREASER INSTALLATION

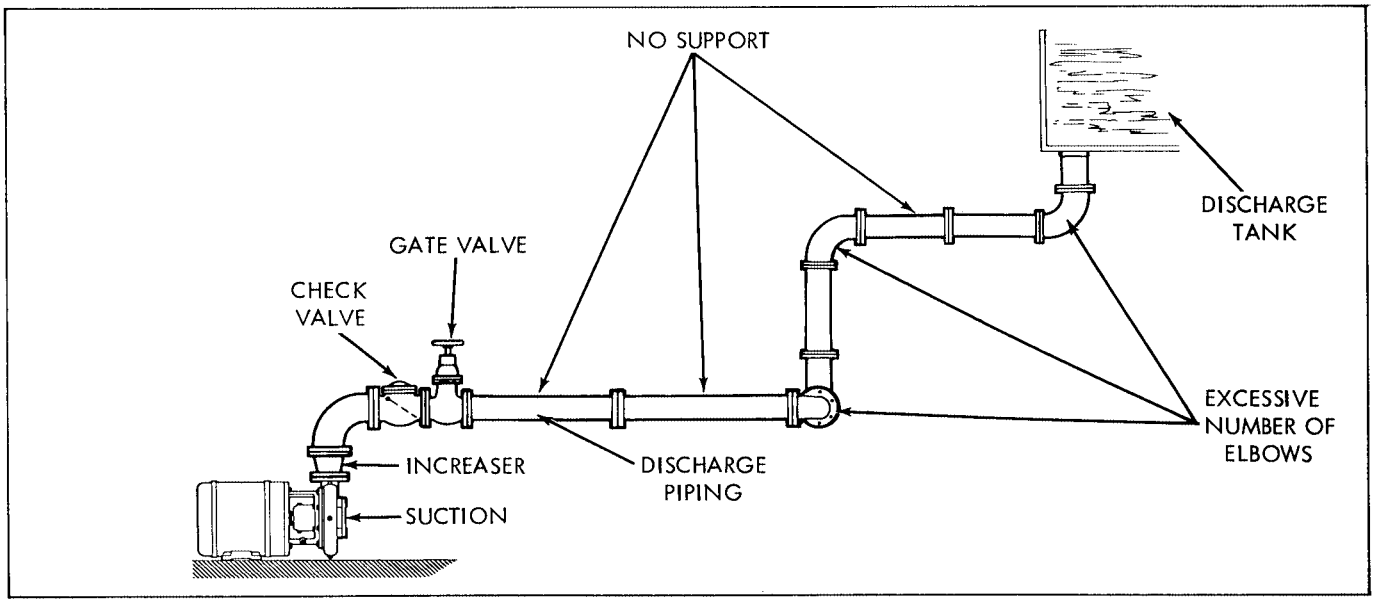



FIGURE 19. UNSATISFACTORY DISCHARGE PIPING - LONG WITH EXCESSIVE ELBOWS AND JOINTS

EXPANSION JOINTS. Expansion joints are used primarily to prevent transmission of piping strain, caused by thermal expansion and contraction, piping misalignment, pressure changes, or other causes, to the pump casing. They are also used to suppress any noise that may be transmitted through the piping. It is recommended that the flexible metal type of expansion joint be used because rubber expansion joints, while costing less, have a tendency to deteriorate, making frequent replacement necessary.

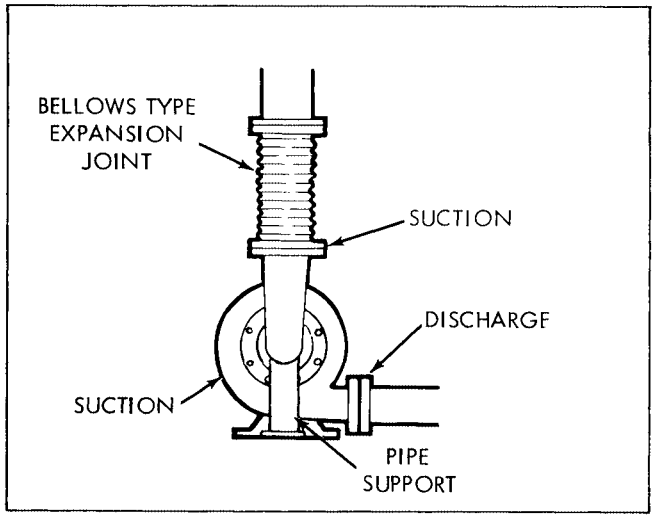



FIGURE 21. EXPANSION JOINT IN SUCTION LINE

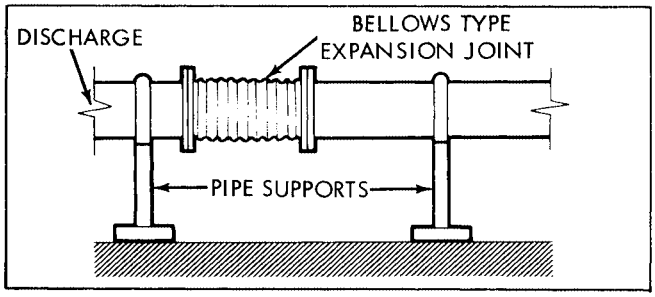



FIGURE 22. EXPANSION JOINT IN DISCHARGE PIPING

If an expansion joint must be used, an anchor or restraining device should be installed between the joint and the pump to prevent objectionable forces from being transmitted to the pump. If an anchor is not installed at this point, a force equal to the area of the expansion joint times the pressure in the pipe is developed and transmitted to the pump. This force may exceed the allowable flange loading and could result in damage to the pump or piping.

PIPE ALIGNMENT. Proper piping alignment is essential before connection is made. Piping alignment should never be achieved by force, as this could produce strain on the piping and the pump casing. Proper supports should be installed for the piping to keep its weight off the pump casing.

When flange bolts are used, line up the piping first, then loosely install flange bolts. Check the piping alignment, and tighten the flange bolts until all bolts are tightened securely.

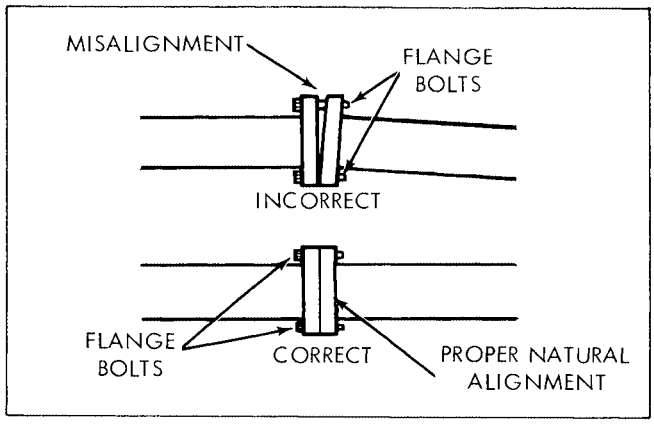



FIGURE 23. PIPE ALIGNMENT

AIR IN PIPING. One of the most common conditions affecting pump efficiency is the formation of air pockets in the suction line. The air pockets are a result of high points and improper installation of elbows, reducers, and valves in the suction piping.

For suction lift applications, lantern rings are required to prevent air from leaking into the pump through the stuffing box.

The pump seals or packings depend on the liquid being pumped for lubrication. Excessive air can prevent proper lubrication with resultant damage to them.

In suction lift applications, the suction pipe in the liquid well must be sufficiently submerged to prevent exposure of the end of the pipe when the well is at its minimum level and to prevent vortexing action (whirlpool effect) of the liquid at the suction pipe, which will draw air into the pipe. Also, care should be taken to keep the suction pipe located away from the well inlet since the incoming liquid may be carrying air bubbles. Another cause of air in the liquid is dropping of the liquid from too high a point into the well.

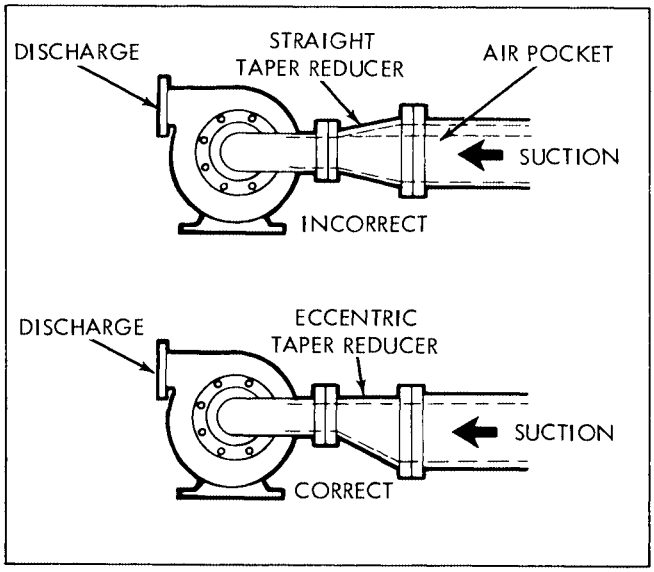



FIGURE 24. AIR POCKET IN REDUCER

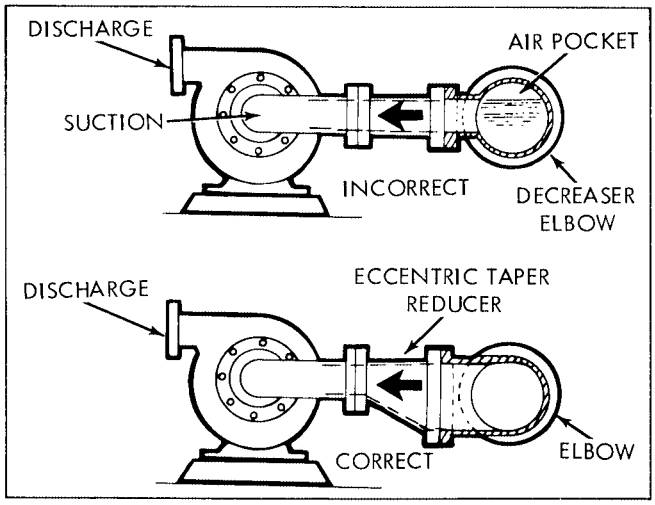



FIGURE 25. AIR POCKET IN ELBOW

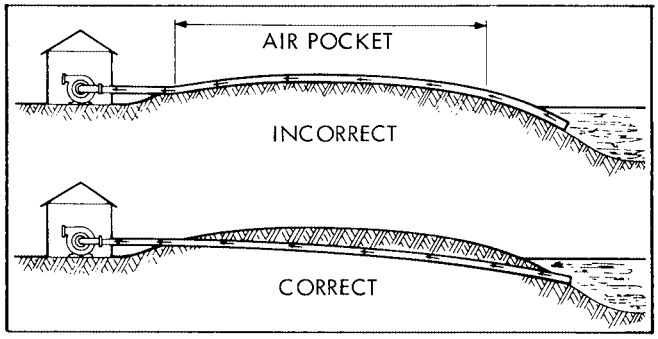



FIGURE 26. AIR POCKET IN HORIZONTAL SUCTION PIPING

VALVES. Valves are an important part of your installation, for they facilitate priming of the pump, and control the volume of the pumped liquid.

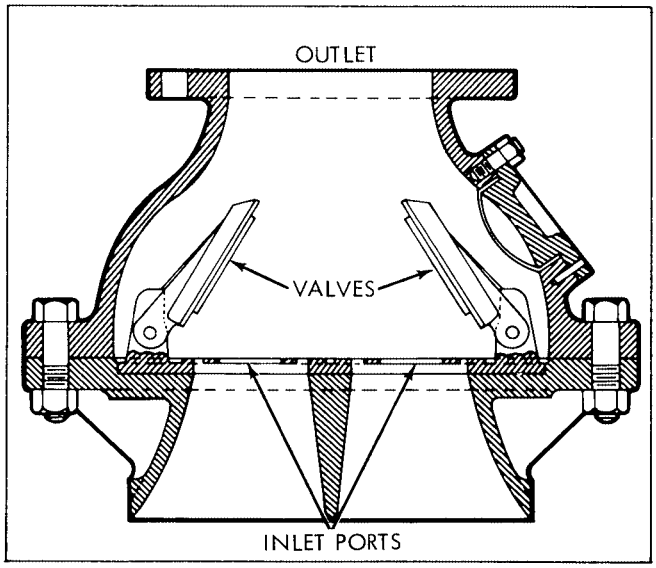



FIGURE 27. FOOT VALVE

SUCTION LIFT. In suction lift applications where the suction lift is low a foot valve can be installed, to maintain the prime on the pump. A foot valve is essentially a check valve, allowing flow in one direction only, toward the pump. When the pump is shut down, the pressure of the liquid returning to the well, causes the valve to close, retaining the liquid in the suction line.

A slow closing check valve should be installed when the static discharge head is high. A foot valve should not be used under these conditions, as failure of the driver would allow the water to rush back rapidly thus causing a heavy water hammer.

Foot valves, when used, should be of the flat type rather than multiple spring type. The valve should have a large inlet area, because the friction loss in a foot valve is high. Install check and foot valves as indicated by arrow to ensure proper installation.

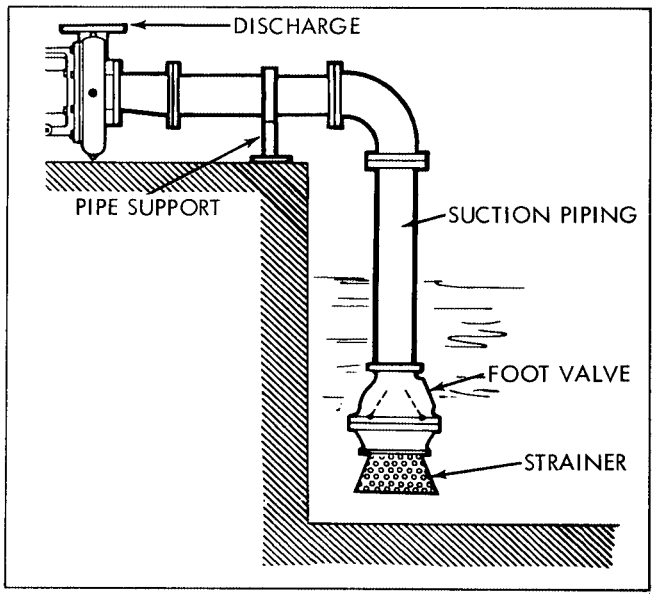



FIGURE 28. FOOT VALVE INSTALLED WITH SCREEN

FLOODED SUCTION. When the liquid source is above the pump centerline, a flooded suction condition exists, and a gate valve is required to shut off the liquid supply for pump inspection and maintenance. The gate valve should be installed with the stem in a horizontal or downward position to prevent formation of an air pocket in the valve.

DISCHARGE VALVES. The discharge piping should include a check valve and a gate valve. The check

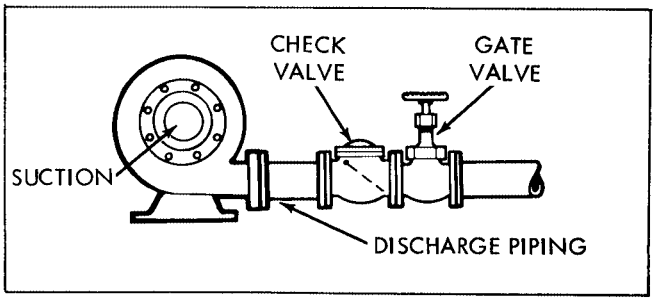



FIGURE 29. GATE VALVE AND CHECK VALVE

valve should be located between the gate valve and the pump. If an increaser is used in the discharge piping, the increaser should be installed between the pump nozzle and the check valve. The check valve protects against a reverse flow of the liquid if the driver fails.

The gate valve is used in the priming operation, as a throttling valve to control pump volume, and to shut down the pump for inspection and maintenance.

AIR VENT VALVE. Vent valves are installed at the high points in the pump casing to allow air or vapor to escape. These valves are used to release trapped air from the pump casing during priming and when pump becomes air bound.

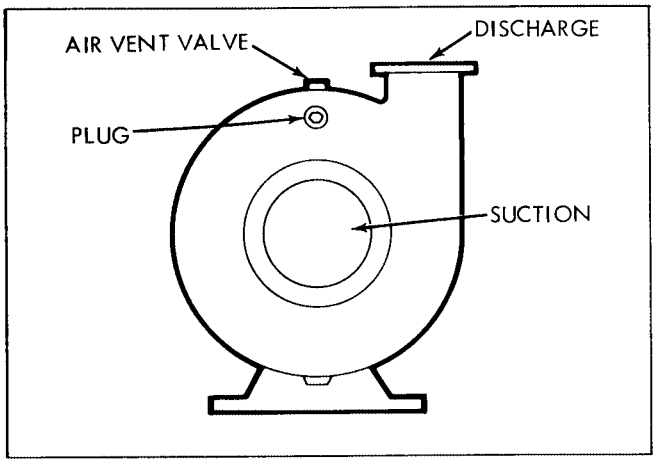



FIGURE 30. AIR VENT VALVE OR PLUG

STRAINERS AND SCREENS. It is important to remove foreign matter that can clog the pump and impair its capacity, or stop it completely. Small particles such as sand, dirt, scale from inside pipe and other extraneous materials can get into the close clearance parts of the pump and cause considerable damage to the parts.

Strainers should be selected so as to have a total area of holes equal to at least four times the suction pipe area.

In applications where sticks, twigs, leaves and other large debris are present, a larger outside screen should be placed around the suction inlet to prevent choking of the strainer. This screen should have sufficient openings so that flow velocity does not exceed two feet per second.

PRIMING THE PUMP. Your pump will not operate satisfactorily until it is primed. All air must be expelled from the suction piping and pump casing, and replaced by the liquid to be pumped. There are several methods of priming pumps. The one you select will depend on your specific requirements.

FLOODED SUCTION PRIMING. This method of priming a pump is relatively simple. The liquid source is located above the pump, and all that is necessary to prime the pump is to open the air vent

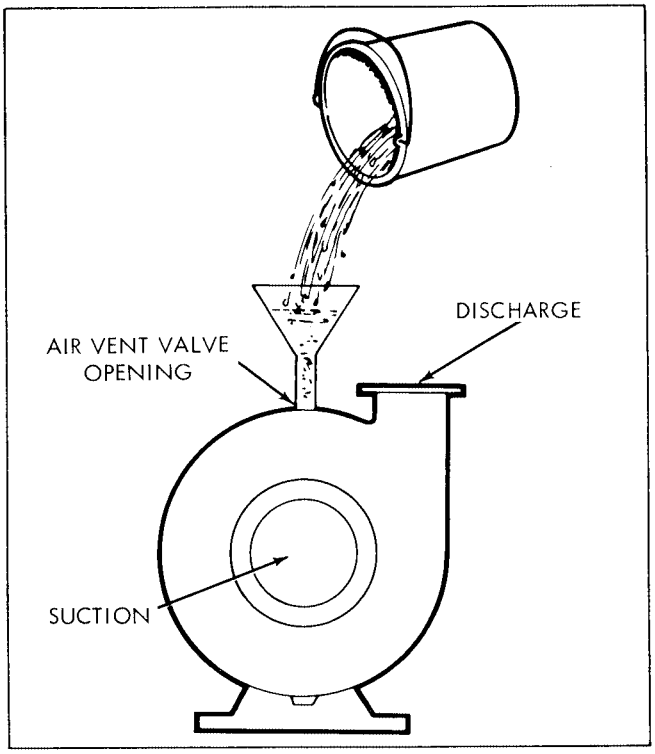



FIGURE 31. PRIMING BY HAND

valve or plug in the pump casing, and to crack the gate valve in the suction line. The suction line and pump should be filled slowly until a steady stream of liquid is observed flowing from the air vent. After your pump is operating, it is recommended that the air vent valve or plug be opened again to insure that all air has been expelled from the pump casing.

FOOT VALVE PRIMING. A foot valve can be used for priming on suction lift applications. The foot valve, located at the bottom end or foot of the suction piping, functions as a check valve which allows flow in one direction only, toward the pump.

Initial priming is accomplished by completely filling the suction piping and pump casing with the liquid to be pumped. This can be done by removing the air vent valve or plug at the top of the pump casing and inserting a pipe nipple in the orifice, with an appropriate increaser to accommodate a hose connection. A priming line can also be inserted in the discharge piping between the check valve and the pump or the priming can be done with a bucket and funnel. The important thing is to completely fill the suction pipe and pump casing with liquid.

When the pump is started, the vacuum created by pumping the priming fluid, combined with atmospheric pressure in the liquid well, forces liquid into the suction piping, thus opening the valve and keeping it open until the pump is shut down. When the pump is shut down, the liquid being pumped reverses its flow, causing the valve to close, trapping the liquid in the suction piping and pump casing, thus maintaining a prime on the pump.

VACUUM PRIMING. Vacuum priming consists of removing air from the pump casing and suction

piping and drawing liquid into them by means of a vacuum creating device. The types of vacuum equipment range from a simple hand pump to complex central priming systems. Your specific priming requirements will govern what type of vacuum primer you use.

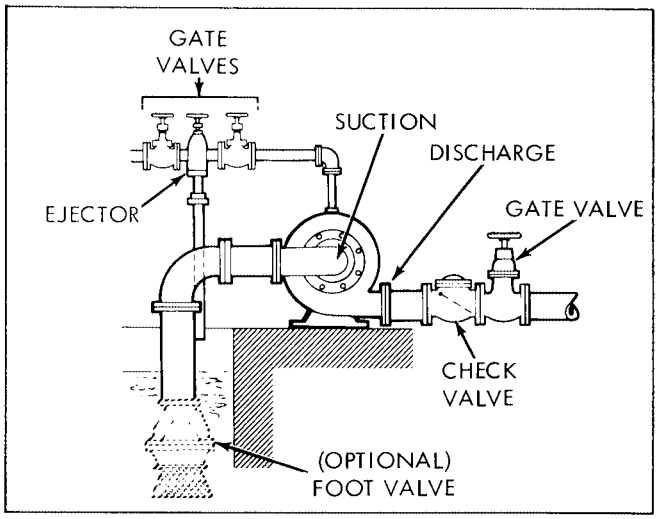



FIGURE 32. PRIMING BY EJECTOR

AIR EJECTOR. One type of vacuum primer is the air ejector. If liquid under pressure or steam is available, an ejector can be used. The ejector is connected to the air vent orifice. A stream of the ejecting medium is passed through the ejector creating a vacuum in the ejector, and drawing air from the pump casing and suction piping. When liquid flows steadily from the ejector discharge pipe, the pump is primed.

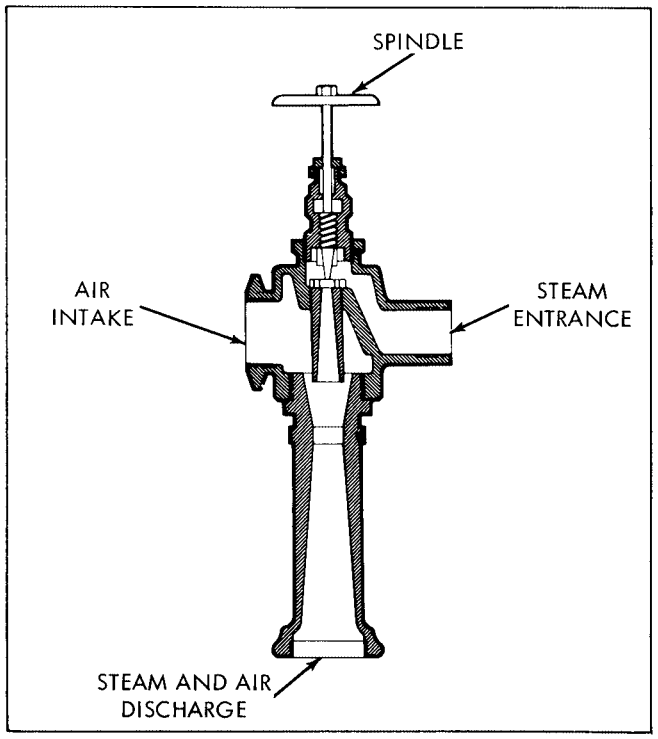



FIGURE 33. EJECTOR CUTAWAY

VACUUM PUMPS. Rotary or reciprocating pumps are frequently used as vacuum pumps. They fall into two categories, wet-vacuum and dry-vacuum. The principle of operation is essentially the same, however, the dry-vacuum pump cannot accommodate a liquid and air mixture while the wet-vacuum pump can accommodate liquid, air or a combination of both.

Vacuum pumps can be installed as part of a central priming system servicing many pumps, as an automatic priming system, or as a manually controlled independently driven pump.

The suction piping of the vacuum pump is connected to the air vent orifice on the pump to be primed. The vacuum produced by the vacuum pump removes air from the centrifugal pump suction piping and casing, and draws liquid from the liquid well into the centrifugal pump. Dry-vacuum pumps must be installed so that no liquid is taken into the air pump. Installation of a water trap, or use of a vacuum tank are recommended for dry vacuum pumps.

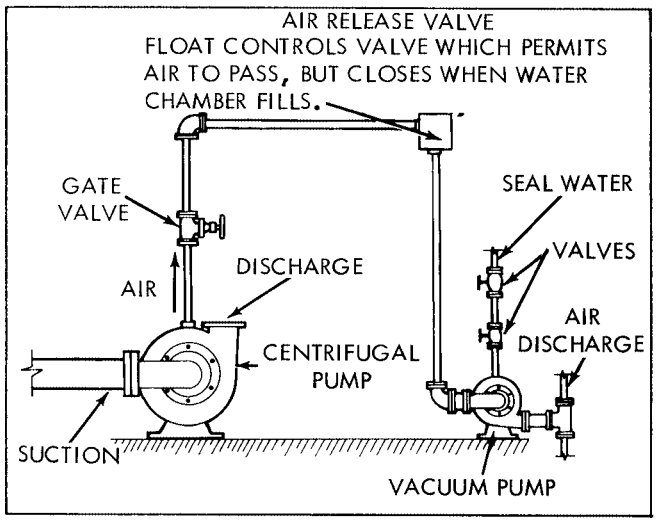



FIGURE 34. PRIMING BY VACUUM PUMP

INDUCTOR PRIMING. On suction lift applications it may be desirable to prime your pump with a priming inductor. This type of primer is comprised of a liquid nozzle and an inductor at the foot end of the suction piping. The nozzle and inductor are connected to a high pressure liquid supply such as a city water service.

The pump is primed by opening the valve in the pressure line, which allows the liquid to flow through the nozzle into the inductor. The velocity of the high pressure liquid drives the liquid into the suction piping and up to the pump, priming it.

ELECTRICAL WIRING. Normally, your pump will be supplied with an attached drive motor. The motor should be wired in accordance with the wiring diagram found on the motor name plate. Be sure the voltage, frequency, and phase of your power supply corresponds with the name plate data. It is advisable to provide a separate switch and overload protection for your pump motor to protect against power

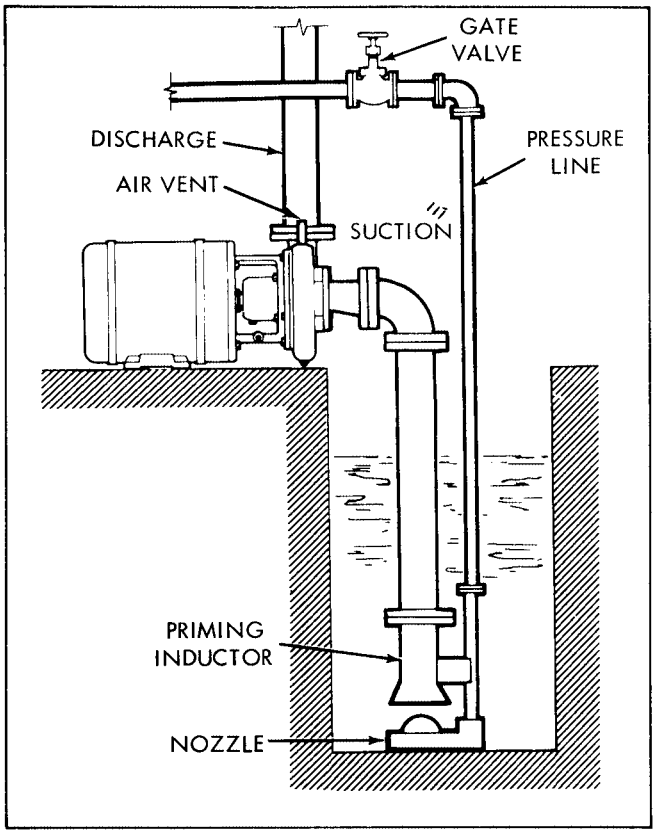



FIGURE 35. PRIMING BY INDUCTOR

failure in some other area. Conversely, if the pump motor develops electrical problems, it will be isolated from other equipment.

PRESTARTING INSTRUCTION. Before starting the pump, check the direction of rotation. Make sure that the rotation is the same as the arrow on the casing, or as otherwise indicated.

**CAUTION**

Do not operate the pump without liquid. Pump seals or packing depend on the liquid being pumped for lubrication.

Be sure the pump is primed and that no air exists in the suction pipe and pump casing.

Check the various valves to make sure they are open or closed as required by your specific application.

AURORA PUMP
A member of PENTAIR PUMP GROUP

# INSTRUCTION MANUAL 2
## INSTALLATION
## FRAME MOUNTED

GENERAL. The life of your Aurora pump can be extended considerably by carefully following the installation instructions contained herein. Each step of the pump installation instructions plays a vital part in assuring long life, efficient operation, and reduced maintenance, from the initial location of the pump through prestarting directions.

UNPACKING YOUR PUMP. The crate containing your pump should be opened immediately upon receipt from the factory, and the pump generally inspected for damage and shortage of parts. Particular attention should be given to the discharge and suction nozzle threads or flanges. Any damage or shortage of parts should be reported to the carrier immediately.

CLEANING. If your pump is to be installed immediately, it will be necessary to remove the protective covers from all openings, and to clean the exposed metal parts thoroughly with white gasoline or other suitable solvent to remove the preservative coating.

STORAGE. If your pump is not to be put in service immediately it should be covered and stored in a clean dry area. The protective covers and preservative should be left intact until the pump is put into service. For extended storage, the pump should be dried internally with hot air or some other suitable means, and once free of moisture, filled with a protective fluid such as light oil or kerosene. Accordingly, at time of installation, the pump will have to be completely dismantled and thoroughly cleaned.

PLANNING THE PUMP LOCATION. You probably have spent considerable time planning where your pump will be located. However you may have overlooked some factor which may affect your pump operation or efficiency.

The pump should be located as close to the liquid source as possible so that the suction line can be

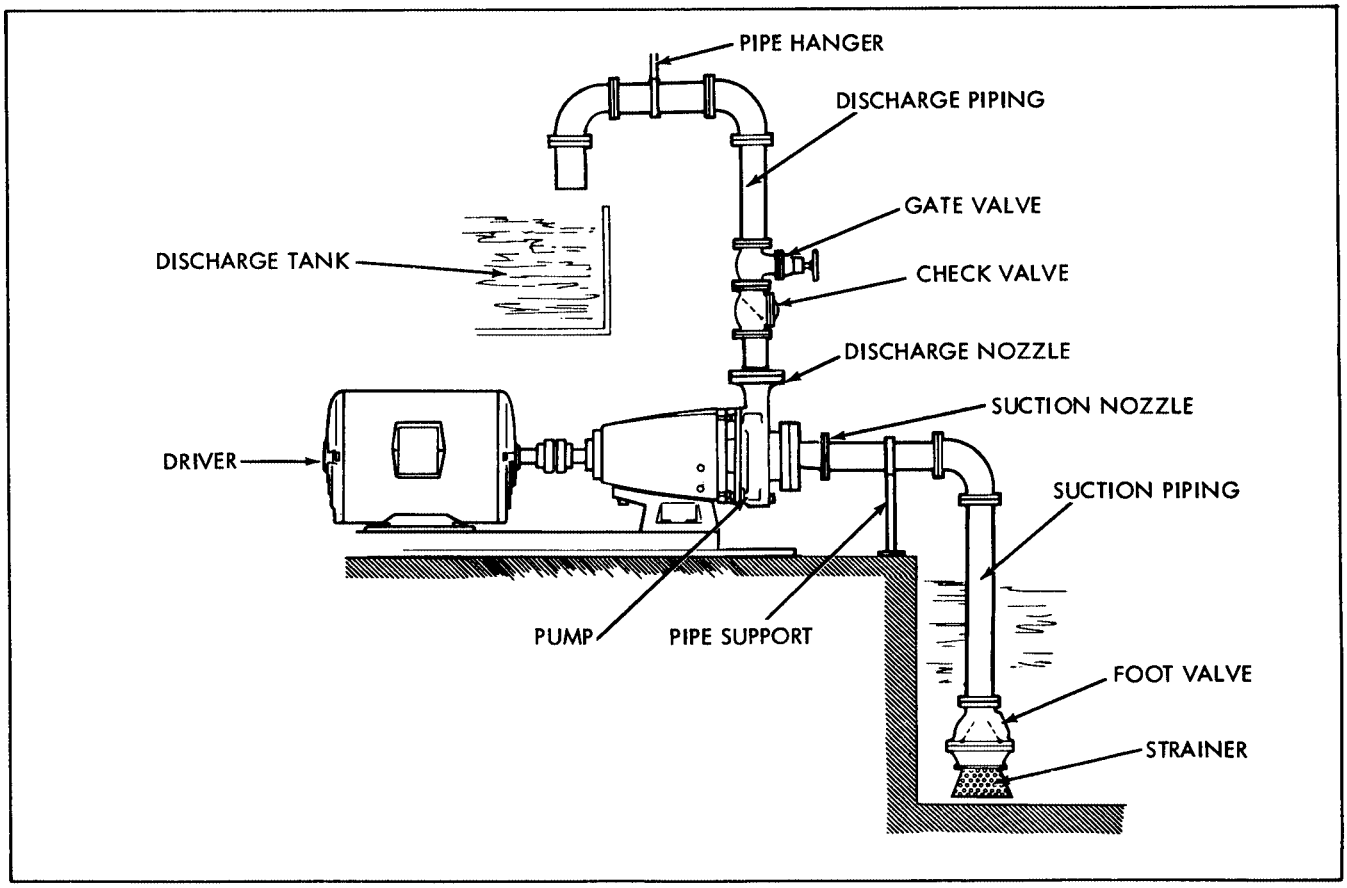



FIGURE 1. RECOMMENDED LOCATION - SHORT DIRECT SUCTION

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short and direct. It should be located in a clean, open area, where it is easily accessible for inspection, lubrication, and repair. Pumps installed in dark, dirty areas or in cramped locations are often neglected which can result in premature failure of both the pump and the driver.

Your pump should be located so that a hoist or crane can be used to move it without interference from piping. This factor is often overlooked in the advance planning stage.

Protect your pump against the possibility of flooding. Although water will not seriously damage the pump, the drive motor can be damaged.

The pump should be located in an area where moisture, either from leakage through the packing or from condensation, can be adequately drained off. Moisture dripping on exposed metal or wood can cause rapid deterioration of the area. Also, wet floors produce safety hazards.

Adequate provisions should be made for electrical wiring to the pump motor. A switch and overload protection should be installed near the pump unless it is impractical. The electrical conduit should be positioned in such a way as to preclude the possibility of moisture entering the conduit or the motor and causing short circuits.

Outdoor installation will normally provide all of the above mentioned conditions. However it is advisable to provide a weather shelter for your pump.

FOUNDATION. The foundation for your pump must be sufficiently rigid to absorb any vibration and stress encountered during pump operation. A raised foundation of concrete is preferable for most floor mounted pumps. The raised foundation assures a satisfactory base, protects against flooding, simplifies moisture drainage, and facilitates keeping the area clean.

Your pump should be firmly bolted to the foundation, whether it is a raised concrete base, steelwork wall, or structural member. The mounting bolts or studs should be accurately located per the applicable Aurora dimension sheet. Foundation bolts should be enclosed by a sleeve 2 to 4 diameters larger than the bolt to allow movement for proper alignment with the pump mounting holes. Refer to figure 3.

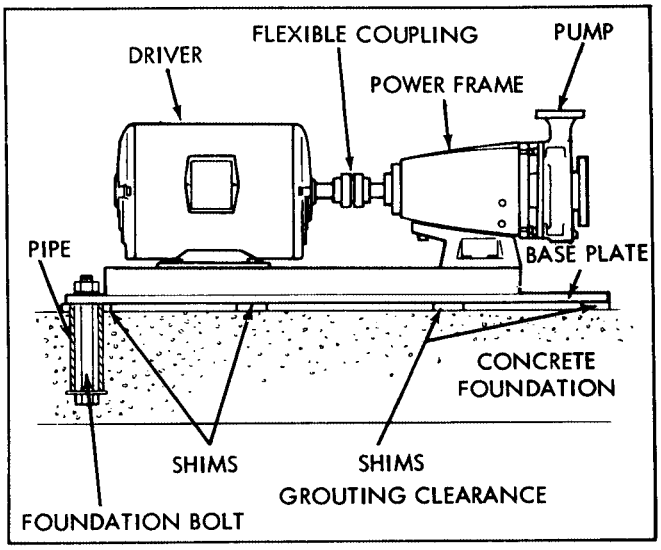



FIGURE 3. FOUNDATION FOR FRAME MOUNTED PUMPS

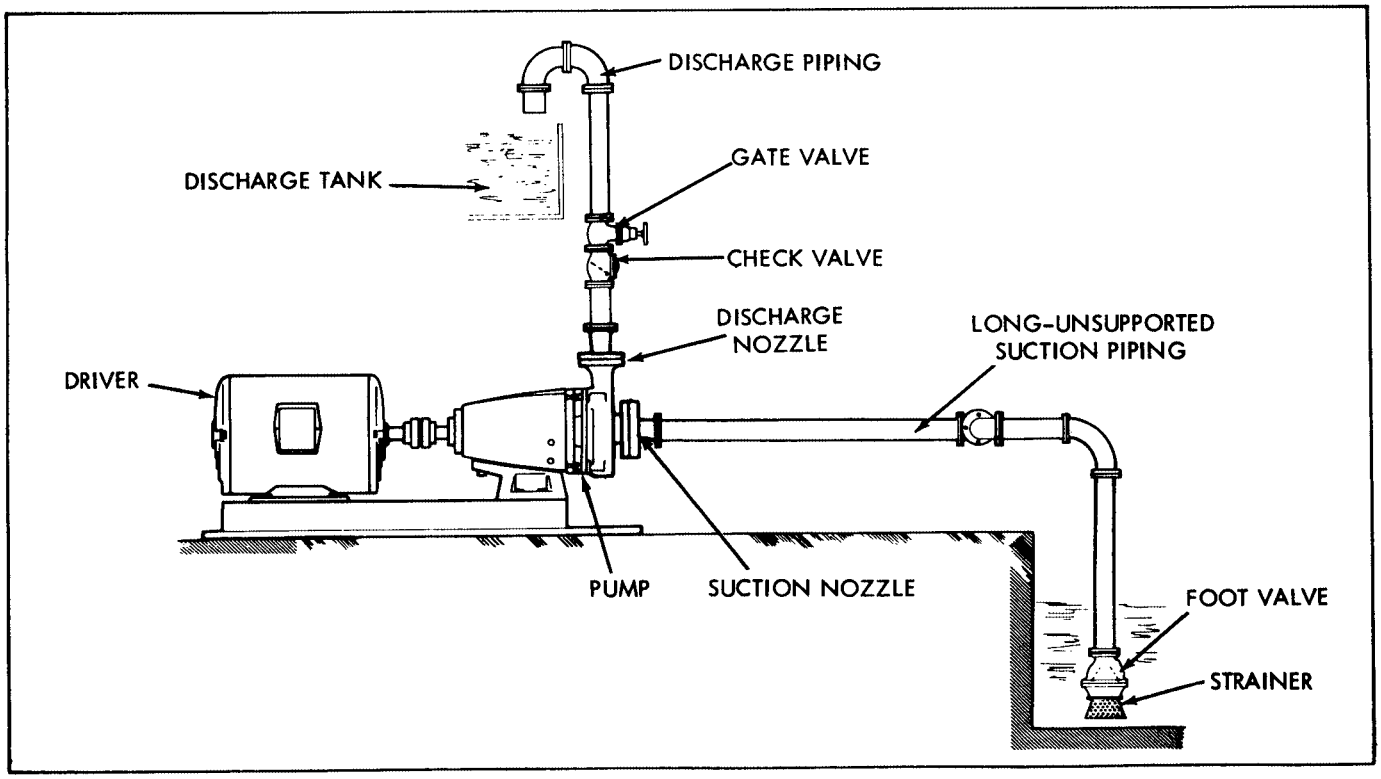



FIGURE 2. UNSATISFACTORY LOCATION - LONG INDIRECT SUCTION WITH NO SUPPORT

## FRAME MOUNTED INSTALLATION

If the pump is to be mounted on steelwork or other structure, adequate support should be provided to prevent distortion of the base plate or the structure, which could produce excessive strain on the pump casing and piping, and seriously affect alignment of the pump and driver.

PREPARING TO INSTALL YOUR PUMP. Your pump and driver unit will normally be mounted on a common base plate. The unit has been accurately aligned and securely mounted to the base plate at the factory. However, the alignment cannot be maintained during shipping and the complete unit must be leveled and realigned at the time of installation.

LEVELING THE PUMP. Leveling the pump will require enough shims to support the base plate near the foundation bolts, and at any points of the base plate carrying a substantial weight load. The shims should be large enough to allow a gap of 3/4" to 1-1/2" between the base plate and foundation for grouting.

The pump unit should be set on the foundation, being careful not to damage the threads on the foundation bolts. The flexible coupling halves should then be disconnected. The shims should be inserted and the pump leveled. A spirit level should be used on the faces of the flexible coupling halves, and on the suction and discharge flanges. If your pump has threaded nozzles, a short piece of pipe inserted in the nozzles will serve as a smooth surface for a leveling reference point. The shims should be adjusted until the pump is leveled horizontally and vertically. Tighten the foundation bolts finger tight.

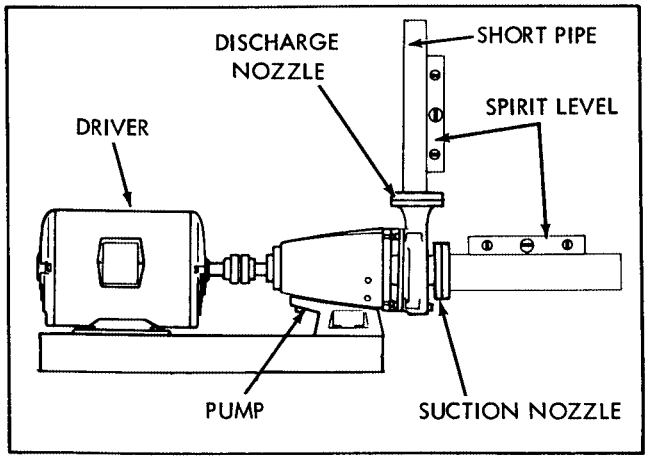



FIGURE 4. LEVELING PUMP UNIT WITH SPIRIT LEVEL AND SHORT LENGTHS OF PIPE

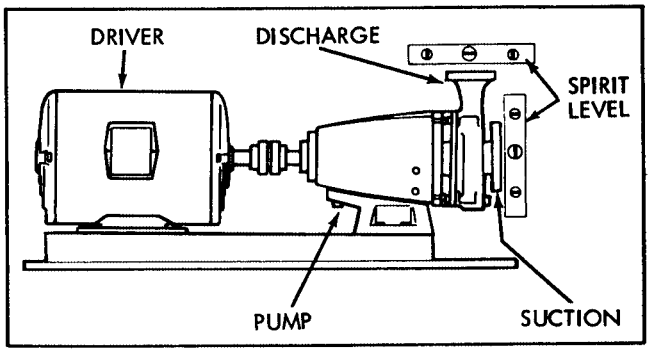



FIGURE 5. LEVELING PUMP UNIT WITH SPIRIT LEVEL ON PUMP FLANGES

INITIAL ALIGNMENT OF THE FLEXIBLE COUPLING. The pump and driver were accurately aligned at the factory. However, it is impossible to maintain this alignment during shipping and handling. Therefore it will be necessary for you to realign the pump and driver. Flexible couplings are not universal joints. They should not be used to compensate for misalignment of the pump and motor shafts. Their function is to transmit power from the driver to the pump while compensating for thermal expansion and shaft end movement. The coupling faces should be far enough apart so that they do not make contact when the motor shaft is forced to the limit of the bearing clearance toward the pump shaft.

In order to properly align the coupling, you will need a taper gauge or set of feeler gauges, and a straight edge, or if available, a dial indicator.

There are two types of misalignment encountered with flexible couplings: angular misalignment, in which the shafts are not parallel, and parallel misalignment where the shafts are parallel but not on the same axis.

To check angular alignment, insert a feeler gauge or taper gage at any four places 90° apart around the

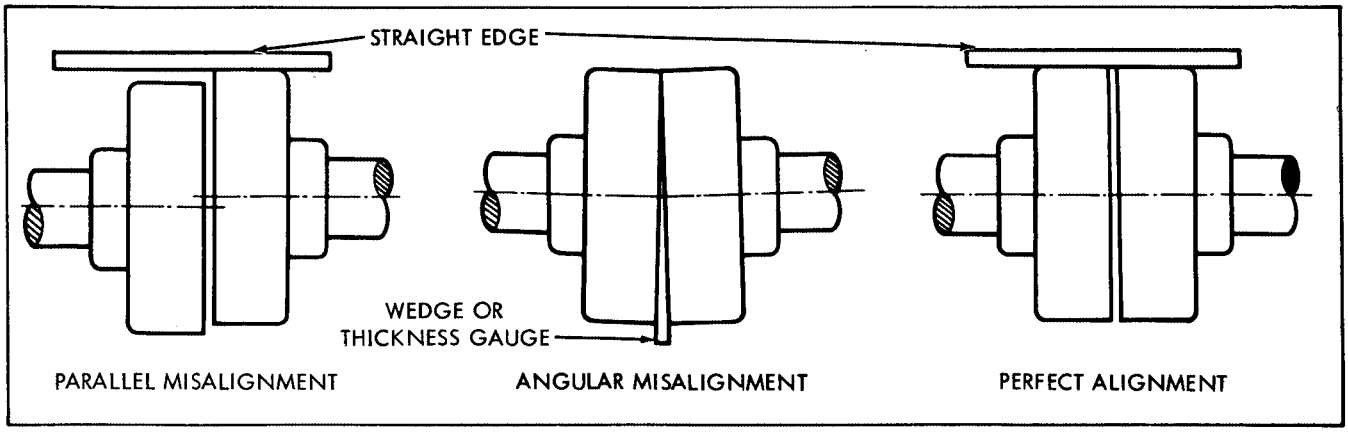



FIGURE 6. FLEXIBLE COUPLING ALIGNMENT

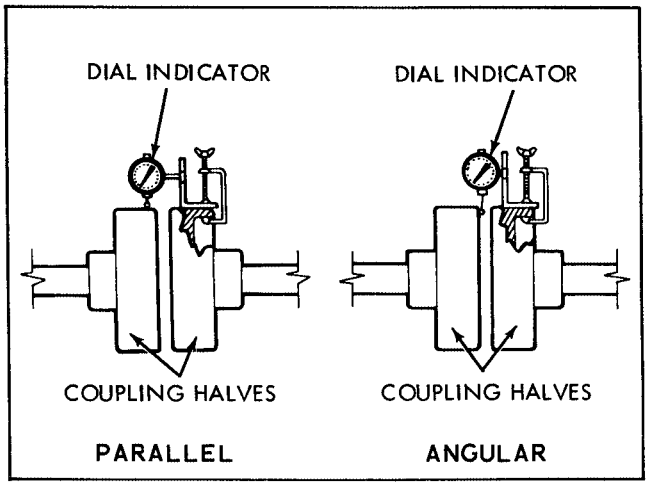



FIGURE 7. CHECKING ALIGNMENT WITH DIAL INDICATOR

coupling halves. Insert shims under the driver feet until the same reading is obtained at all four check points. The pump and driver will then be in angular alignment.

To check angular alignment with a dial indicator, clamp the dial indicator to the pump coupling half so that ball on the indicator just rests on the face of the motor coupling half. A chalk mark should be made at the point where the ball contacts the coupling half. Both the pump shaft and the motor shaft should be rotated an equal amount so that the reading is taken at all check points with the ball on the chalk mark. Insert shims as required.

To check parallel alignment, a straight edge should be held against the edges of the coupling halves at any four places 90° apart around the coupling. The straight edge should be parallel to the pump and driver shafts at all times. Insert shims until the straight edge lies flat against both coupling halves at all four check points. The pump and driver will then be in proper parallel alignment.

To check parallel alignment with the dial indicator, the ball should rest on periphery of the motor coupling half. A chalk mark should be made at the point of contact, and the shafts rotated equally so that the reading is taken with the ball on the chalk mark at all check points. Insert shims as required.

NOTE

Any adjustment to correct one direction of alignment may affect the other direction. Therefore, it is necessary to recheck both angular and parallel alignment after each adjustment.

When the unit is properly aligned, the foundation bolts should be tightened, but not too firmly. Waste material should be stuffed into the sleeves around the foundation bolts, to prevent grout from filling the sleeves during grouting.

GROUTING THE INSTALLATION. Grouting the base plate prevents lateral movement of the base plate, and improves the vibration absorbing characteristics of the foundation by increasing its mass. A wooden dam should be constructed around the base plate to contain the grout while it is being poured. The dam can be built tight against the base plate, or slightly removed from it as desired.

The entire base plate should be completely filled with grout. A non-shrinkable type grout, such as manufactured by EMBCO is recommended. The grout should be puddled frequently to remove any air bubbles from the grout.

The leveling shims can be grouted in place, or they can be removed after the grout has set usually from 48 to 72 hours after pouring.

After the grout has set, alignment of the unit should be checked and the foundation bolts firmly tightened down.

PIPING. Your pump unit is now ready to be piped. The piping practices you follow will directly affect the efficiency and power consumption of your pump.

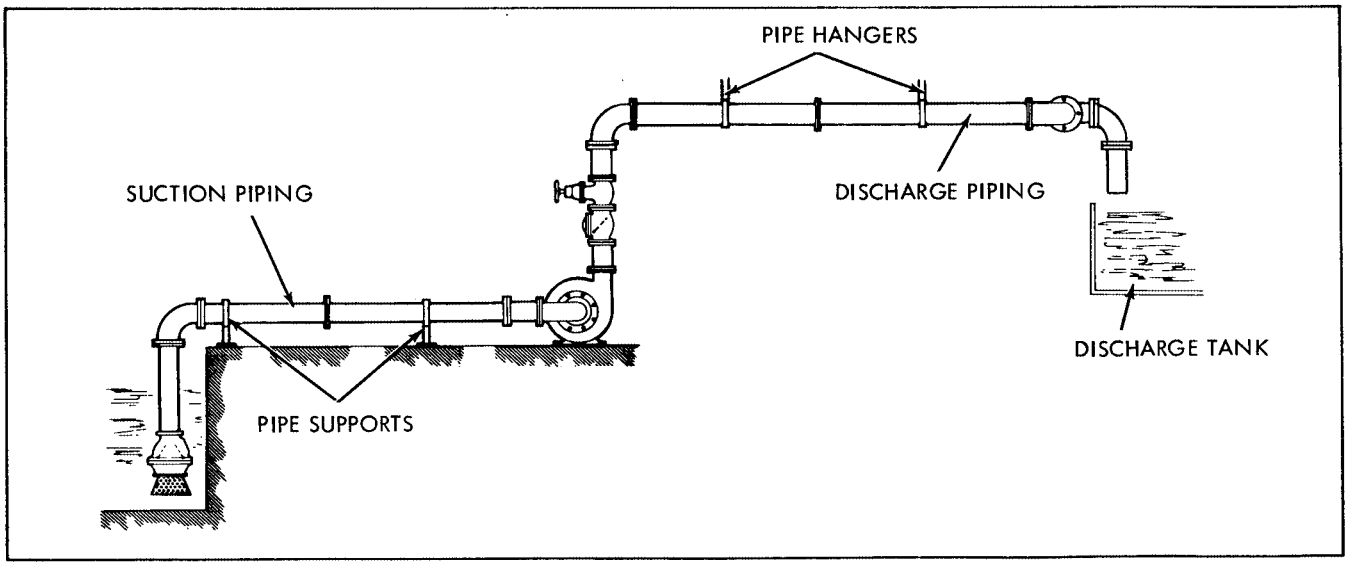



FIGURE 8. SUPPORTING PIPING

Pay particular attention to the seemingly insignificant details involved in piping your pump for they make the difference between a good and bad installation.

SUPPORTING THE PIPE. Both the suction and the discharge piping should be independently supported near the pump. Liberal use of pipe hangers and support blocks will prevent excessive strain on the pump casing and on the pipe joints.

SUCTION PIPING. The suction piping should be short, but no less than ten pipe diameters in length, and direct with as few elbows and fittings as possible, to keep head loss from friction at a minimum. However, the suction pipe should provide a minimum uninterrupted length, equal to ten pipe diameters, to the pump suction flange. A horizontal suction line should have a gradual rise to the pump, and pass under any interfering piping.

PIPE. The suction pipe diameter should be at least the same diameter as the suction nozzle on the pump, and preferably larger. Use of a smaller diameter pipe will result in loss of head due to friction. All joints must be tight to maintain prime on the pump.

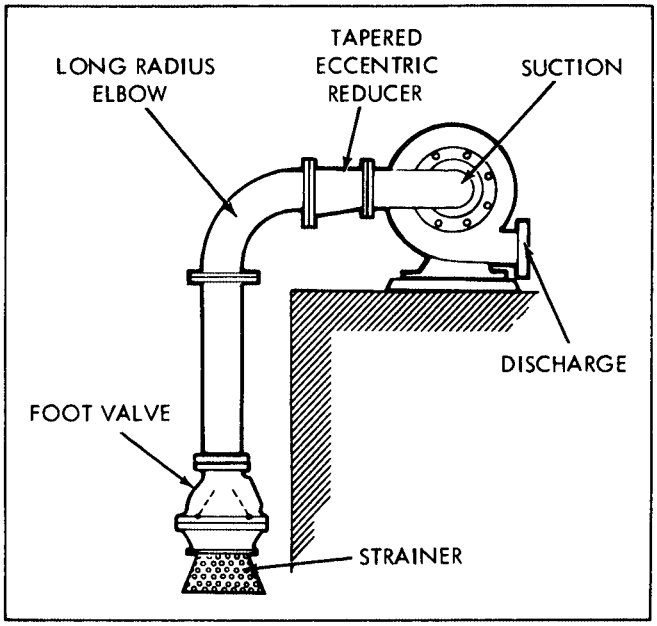



FIGURE 9. RECOMMENDED SUCTION LIFT PIPING - SHORT AND DIRECT

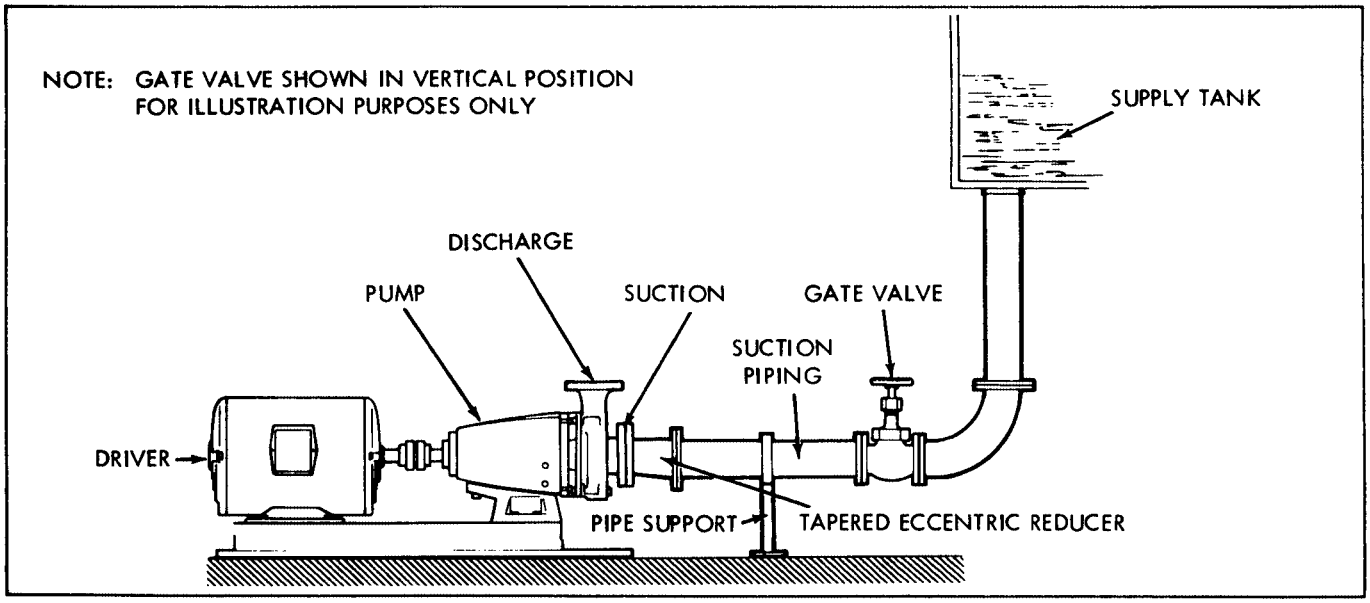



FIGURE 10. RECOMMENDED FLOODED SUCTION PIPING - SHORT AND DIRECT

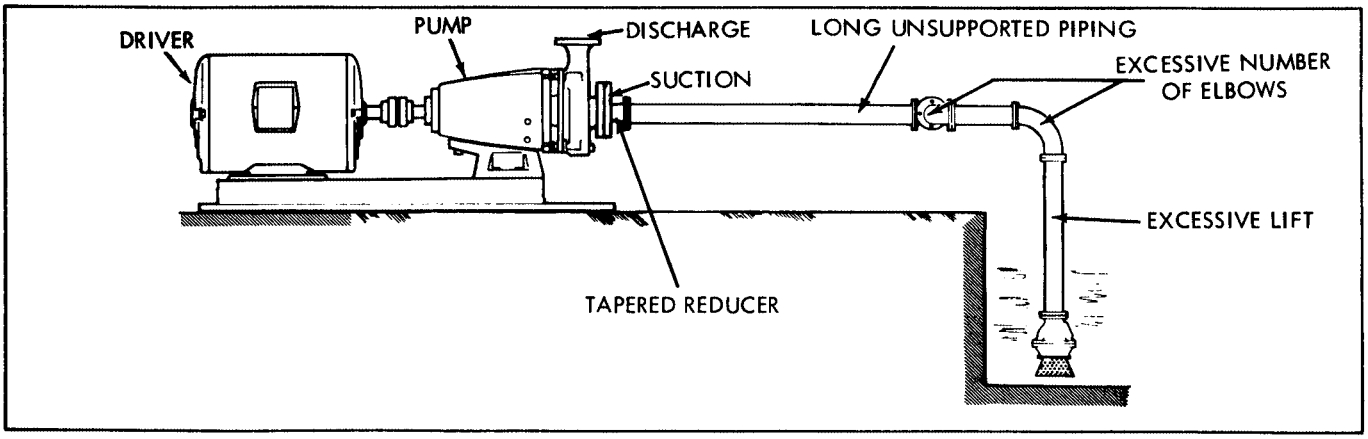



FIGURE 11. UNSATISFACTORY SUCTION LIFT PIPING - LONG AND INDIRECT WITH NO SUPPORT

FRAME MOUNTED INSTALLATION

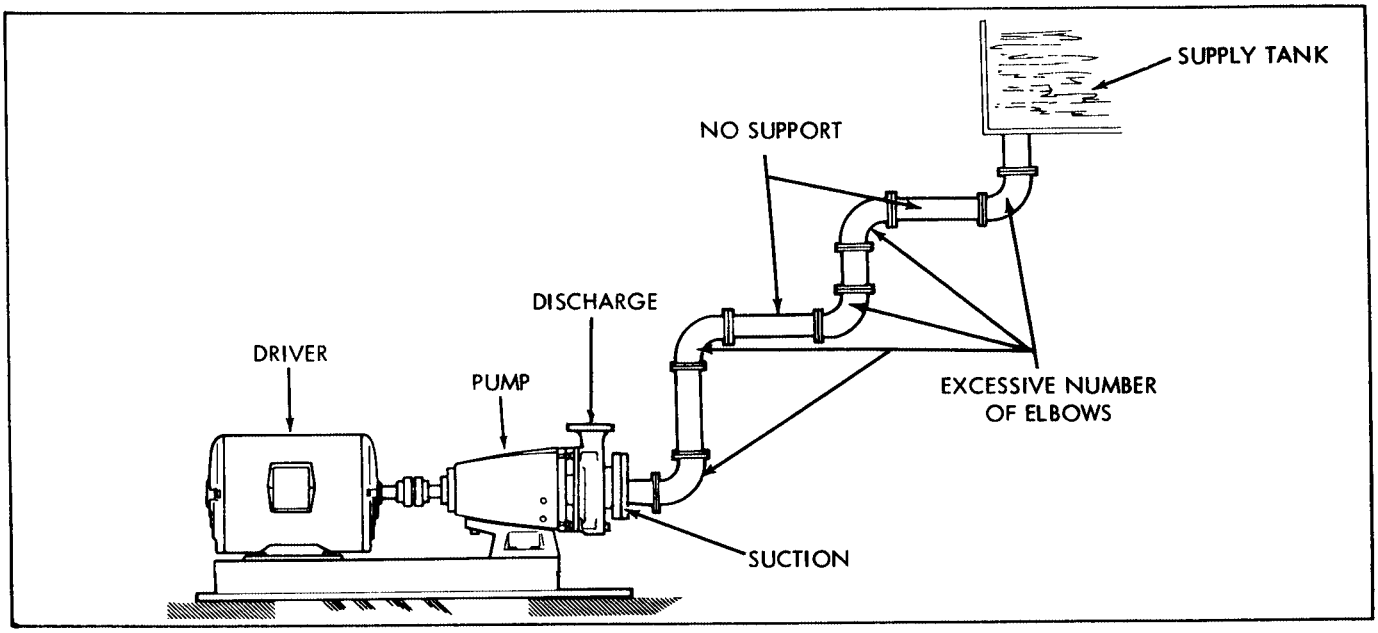



FIGURE 12. UNSATISFACTORY FLOODED SUCTION PIPING - LONG AND INDIRECT WITH NO SUPPORT

ELBOWS. Long radius elbows should be used in place of standard elbows wherever possible, because of their superior flow characteristics. For instance, head loss in a standard four inch elbow is equivalent to the head loss in a piece of pipe 11 feet long, while the head loss in a long radius elbow is approximately half as much. Elbows should not be used at the suction nozzle, but if it is unavoidable, they should be installed in a vertical position. Elbows installed in any position at the suction nozzle have a tendency to distribute the liquid unevenly in the impeller chamber, causing a reduction in capacity, and creating an undesirable thrust condition.

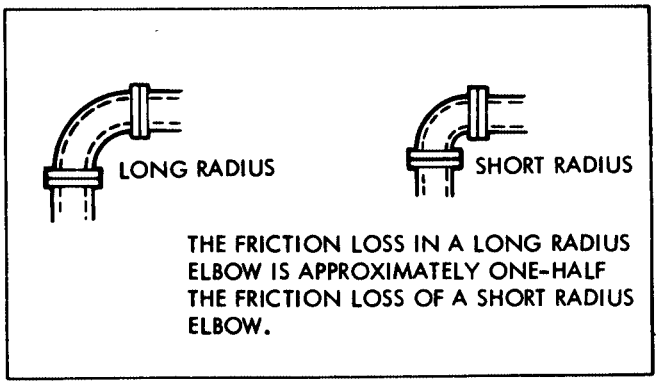



FIGURE 13. LONG VERSUS SHORT RADIUS ELBOWS

REDUCERS. Eccentric reducers should be installed directly at the suction nozzle, with the taper at the bottom to prevent air pockets from forming. Straight taper reducers should never be used in a horizontal suction line because of the air pocket that is formed at the leg of the reducer and the pipe.

DISCHARGE PIPING. Discharge piping should also be short and direct as possible, with few elbows and fittings, to reduce head loss from friction.

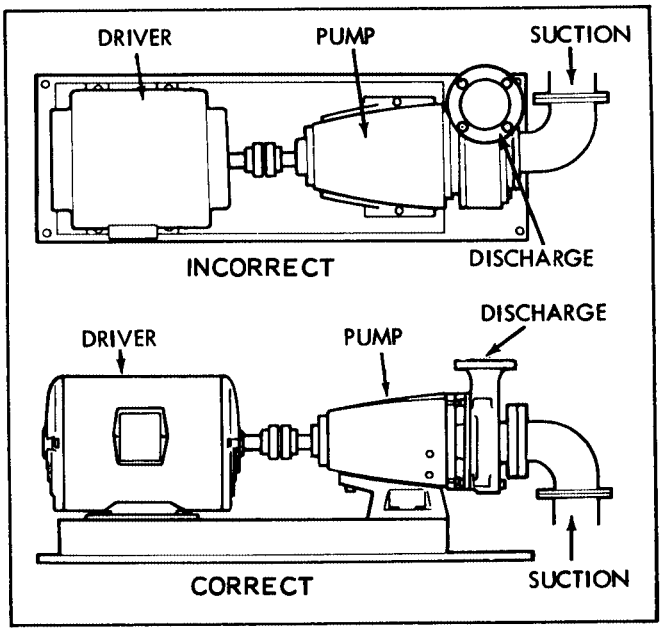



FIGURE 14. ELBOW INSTALLATION IN SUCTION NOZZLE

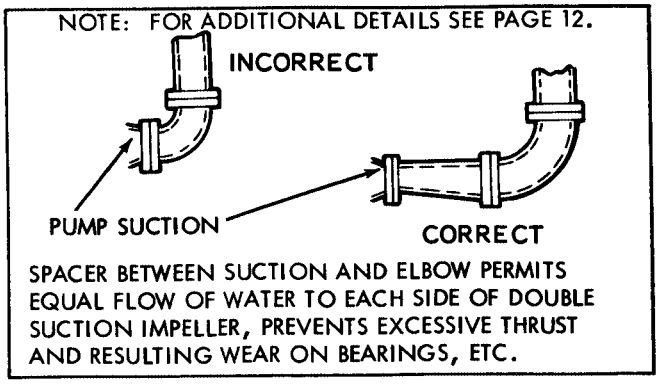



FIGURE 15. REDUCER BETWEEN ELBOW AND PUMP SUCTION NOZZLE

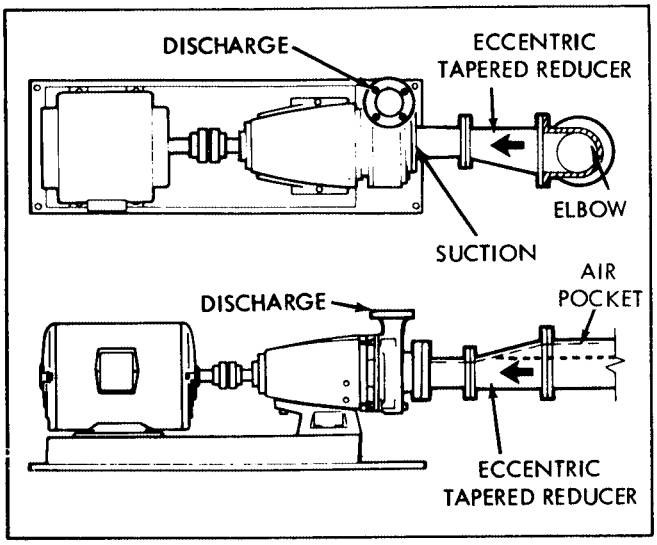



FIGURE 16. UNSATISFACTORY INSTALLATION OF TAPERED REDUCER

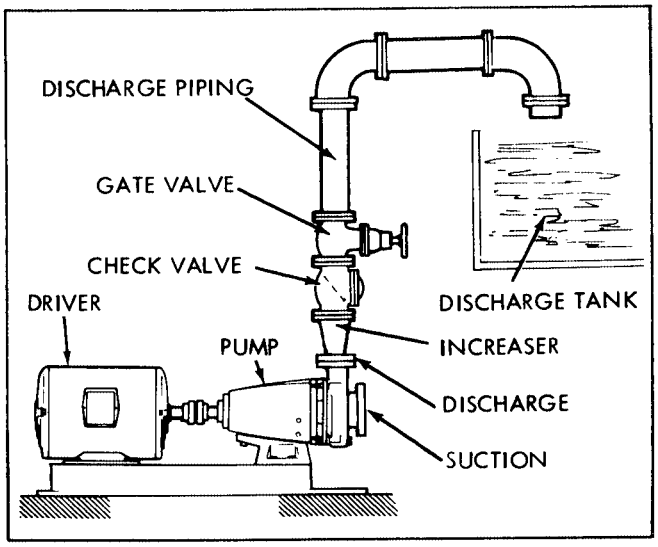



FIGURE 17. RECOMMENDED DISCHARGE PIPING - SHORT AND DIRECT

**PIPE.** The discharge pipe diameter should be the same as, or larger than, the discharge nozzle diameter. The size of discharge pipe to be used is dependent upon its application.

The recommended pipe diameter can be obtained from your nearest Aurora Pump Sales Office.

**ELBOWS.** Long radius elbows should be used in the discharge piping as well as in the suction piping to prevent excessive head loss due to friction. Whenever possible, elbows should not be installed directly at the discharge nozzle as the turbulence created by the elbow will affect pressure gauge readings.

**REDUCERS AND INCREASERS.** An increaser should be installed at the discharge nozzle if larger diameter

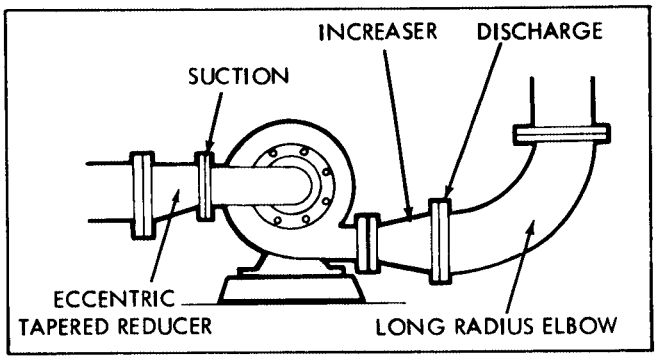



FIGURE 19. REDUCER AND INCREASER INSTALLATION

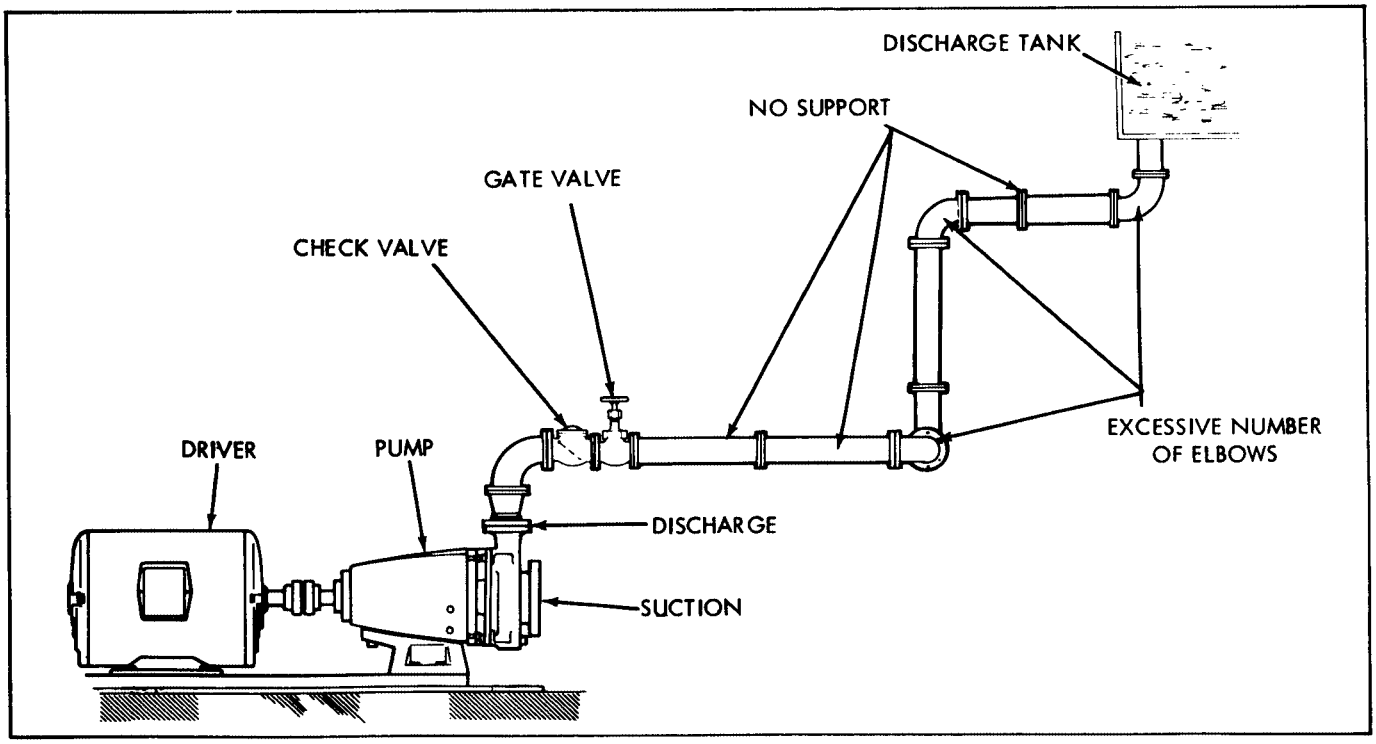



FIGURE 18. UNSATISFACTORY DISCHARGE PIPING - LONG WITH EXCESSIVE ELBOWS AND JOINTS AND NO SUPPORT

discharge piping is used. Straight taper increasers and/or reducers are satisfactory in discharge applications.

EXPANSION JOINTS. Expansion joints are used primarily to prevent the transmission of piping strain, caused by thermal expansion and contraction, piping misalignment, pressure changes, or other causes, to the pump casing. They are also used to suppress any noise that may be transmitted through the piping.

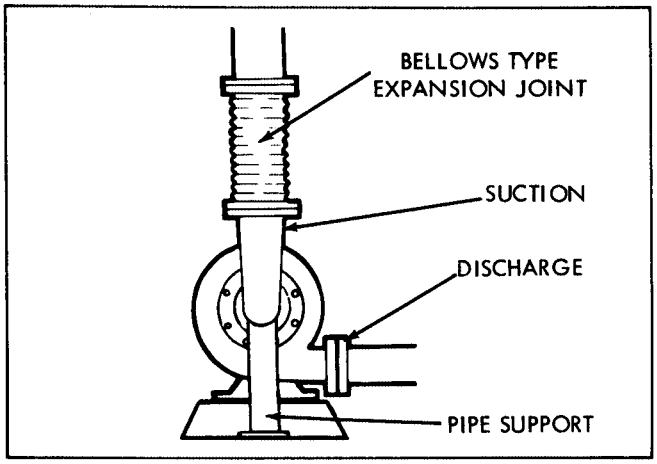



FIGURE 20. EXPANSION JOINT IN SUCTION LINE

It is recommended that the flexible metal type of expansion joint be used, because rubber expansion joints, while costing less, have a tendency to deteriorate, making frequent replacement necessary.

If an expansion joint must be used, an anchor or restraining device should be installed between the joint and the pump to prevent objectional forces from being transmitted to the pump. If an anchor is not installed at this point, a force equal to the area of the joint times the pressure in the pipe is developed and transmitted to the pump. This force may exceed the allowable flange loading, and could result in damage to the pump or piping.

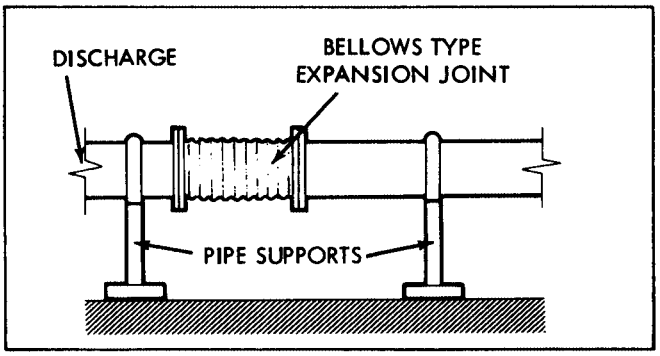



FIGURE 21. EXPANSION JOINT IN DISCHARGE PIPING

PIPE ALIGNMENT. Proper piping alignment is essential before connection is made. Piping alignment should never be achieved by force, this could produce strain on the piping and the pump casing. Proper supports should be installed for the piping to keep its weight off the pump casing.

When flange bolts are used, line up the piping first, then loosely install flange bolts. Check the piping alignment, and tighten the flange bolts until all bolts are tightened securely.

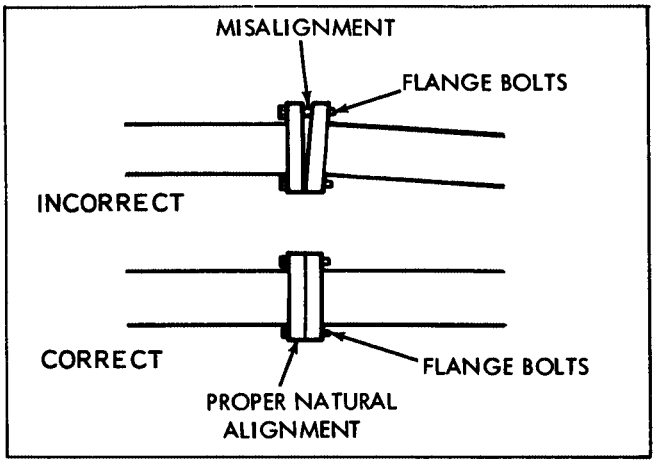



FIGURE 22. PIPE ALIGNMENT

AIR IN PIPING. One of the most common conditions affecting pump efficiency is the formation of air pockets in the suction line. The air pockets are a result of high points and improper installation of elbows, reducers, and valves in the suction piping.

For suction lift applications, lantern rings are required to prevent air from leaking into the pump through the stuffing box, or at the joints.

The pump packings or seal depend on the liquid being pumped for lubrication. Excessive air can prevent proper lubrication with resultant damage to them.

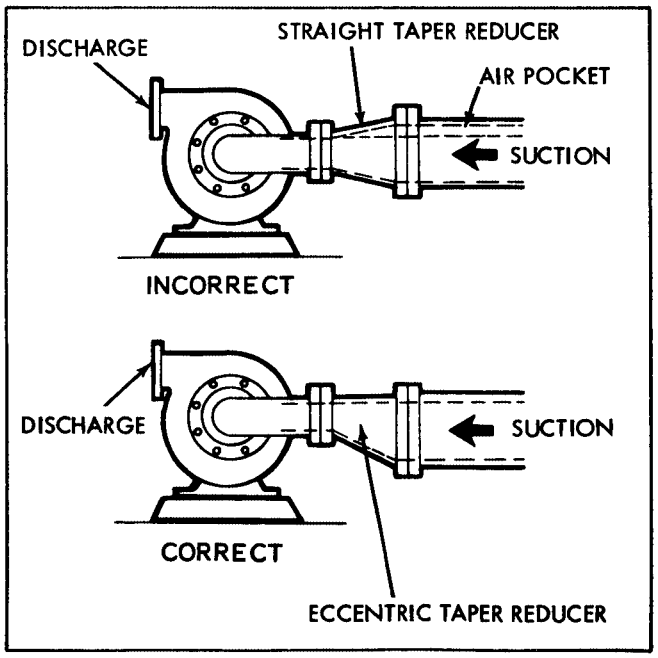



FIGURE 23. AIR POCKETS IN REDUCER

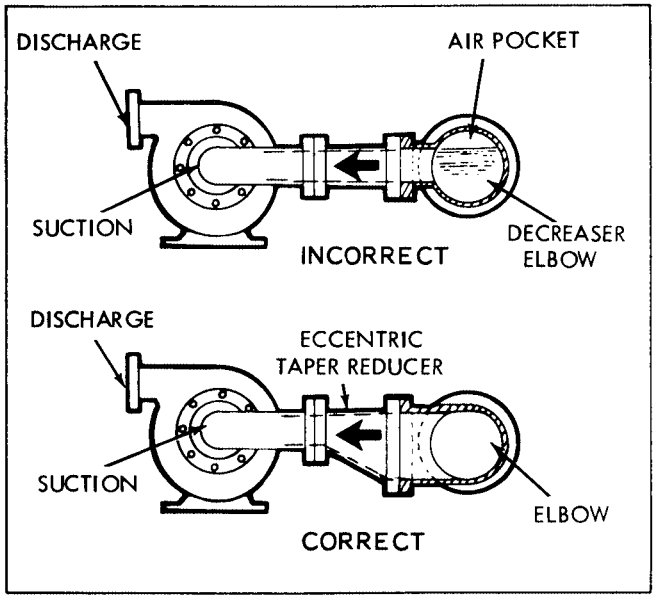



FIGURE 24. AIR POCKET IN ELBOW

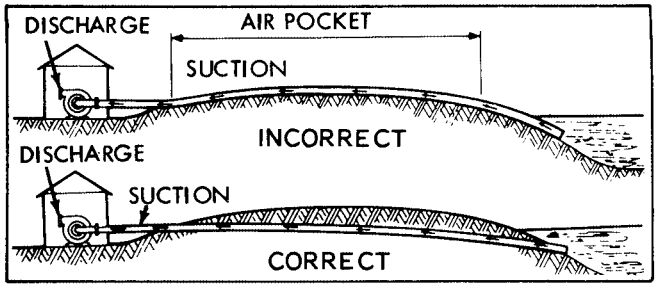



FIGURE 25. AIR POCKET IN HORIZONTAL SUCTION PIPING

In suction lift applications the suction pipe in the liquid well must be sufficiently submerged to prevent exposure of the end of the pipe when the well is at its minimum level and to prevent vortexing action (whirlpool effect) of the liquid at the suction pipe, which will draw air into the pipe. Also, care should be taken to keep the suction pipe located away from the well inlet since the incoming liquid may be carrying air bubbles. Another cause of air in the liquid is dropping of the liquid from too high a point into the well.

VALVES. Valves are an important part of your installation, for they facilitate priming of the pump, and control the volume of the pumped liquid.

SUCTION LIFT. In suction lift applications where the suction lift is low a foot valve can be installed, to maintain the prime on the pump. A foot valve is essentially a check valve, allowing flow in one direction only toward the pump. When the pump is shut down, the pressure of the liquid returning to the well, causes the valve to close, retaining the liquid in the suction line.

A slow closing check valve should be installed when the static discharge head is high. A foot valve should not be used under these conditions, as failure of the driver would allow the water to rush back rapidly thus causing a heavy water hammer.

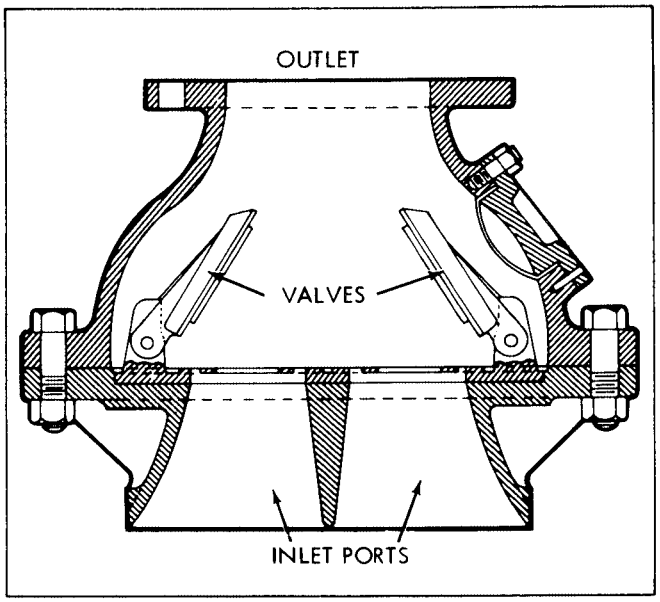



FIGURE 26. FOOT VALVE

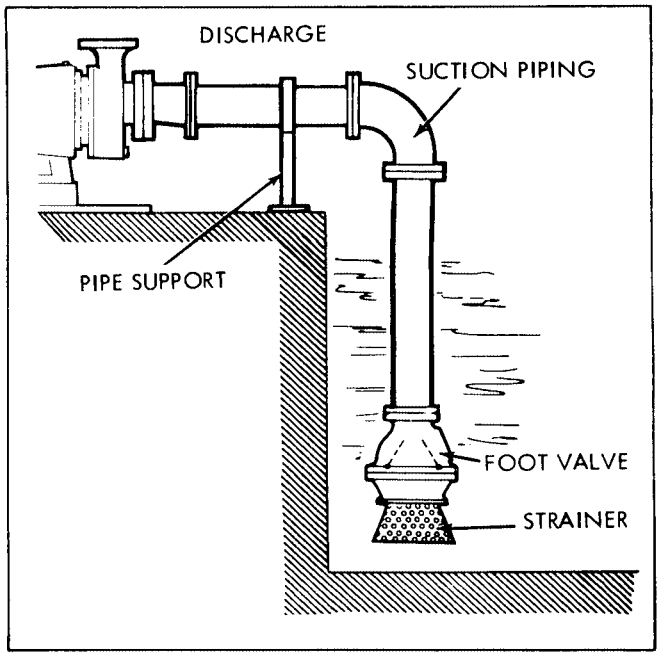



FIGURE 27. FOOT VALVE INSTALLED WITH SCREEN

Foot valves, when used, should be of the flat type rather than multiple spring type. The valve should have a large inlet area, because the friction loss in a foot valve is high. Install check and foot valves as indicated by arrow to ensure proper installation.

FLOODED SUCTION. When the liquid source is above the pump centerline, a flooded suction condition exists, and a gate valve is required to shut off the liquid supply for pump inspection and maintenance. The gate valve should be installed with the stem in a horizontal or downward position to prevent formation of an air pocket in the valve.

DISCHARGE VALVES. Tne discharge piping should include a check valve and a gate valve. The check

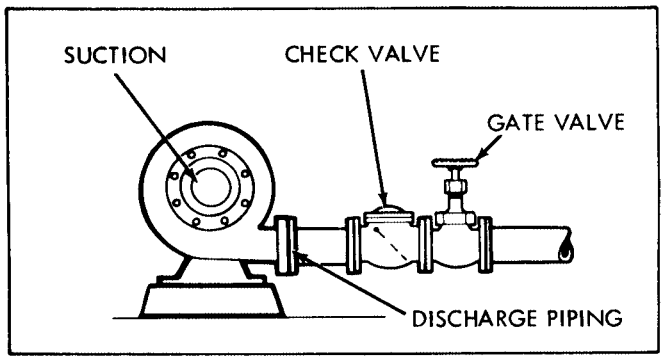



FIGURE 28. GATE VALVE AND CHECK VALVE

valve should be located between the gate valve and the pump. If an increaser is used in the discharge piping, the increaser should be installed between the pump nozzle and the check valve. The check valve protects against a reverse flow of the liquid if the driver fails.

The gate valve is used in the priming operation, as a throttling valve to control pump volume, and to shut down the pump for inspection and maintenance.

AIR VENT VALVE. Vent valves are installed at the high points in the pump casing to allow air or vapor to escape. These valves are used to release trapped air from the pump casing during priming and when pump becomes air bound.

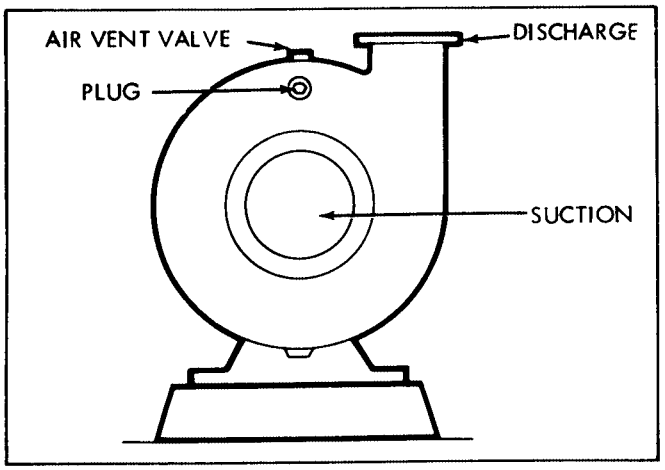



FIGURE 29. AIR VENT VALVE OR PLUG

STRAINERS AND SCREENS. It is important to screen the suction piping to remove foreign matter that can clog the pump and impair its capacity, or stop it completely. Small particles such as sand, dirt, scale from inside pipe and other extraneous materials can get into the close clearance parts of the pump and cause considerable damage to the parts.

Strainers should be selected so as to have a total area of holes equal to at least four times the suction pipe area.

In applications where sticks, twigs, leaves and other large debris are present, a larger outside screen should be placed around the suction inlet to prevent choking of the strainer. This screen should have sufficient openings so that flow velocity does not exceed two feet per second.

PRIMING THE PUMP. Your pump will not operate satisfactorily until it is primed. All air must be expelled from the suction piping and pump casing, and replaced by the liquid to be pumped. There are several methods of priming pumps. The one you select will depend on your specific requirements.

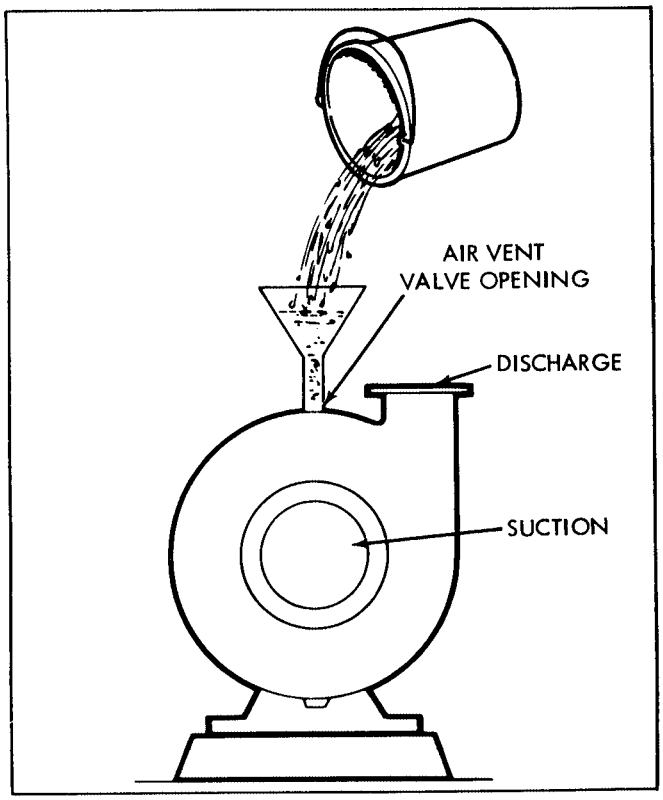



FIGURE 30. PRIMING BY HAND

FLOODED SUCTION PRIMING. This method of priming a pump is relatively simple. The liquid source is located above the pump, and all that is necessary to prime the pump is to open the air vent valve or plug in the pump casing, and to crack the gate valve in the suction line. The suction line and pump should be filled slowly until a steady stream of liquid is observed flowing from the air vent. After your pump is operating, it is recommended that the air vent valve or plug be opened again to insure that all air has been expelled from the pump casing.

FOOT VALVE PRIMING. A foot valve can be used for priming on suction lift applications. The foot valve located at the bottom end or foot of the suction piping, functions as a check valve which allows flow in one direction only, toward the pump.

Initial priming is accomplished by completely filling the suction piping and pump casing with the liquid to be pumped. This can be done by removing the air vent valve or plug at the top of the pump casing and inserting a pipe nipple in the orifice, with an appropriate increaser to accommodate a hose connection.

A priming line can also be inserted in the discharge piping between the check valve and the pump or the priming can be done with a bucket and funnel. The important thing is to completely fill the suction pipe and pump casing with liquid.

When the pump is started, the vacuum created by pumping the priming fluid, combined with atmospheric pressure in the liquid well, forces liquid into the suction piping, thus opening the foot valve and keeping it open until the pump is shut down. When the pump is shut down, the liquid being pumped reverses its flow, causing the foot valve to close, trapping the liquid in the suction piping and pump casing, thus maintaining a prime on the pump.

VACUUM PRIMING. Vacuum priming consists of removing air from the pump casing and suction piping and drawing liquid into them by means of a vacuum creating device. The types of vacuum equipment range from a simple hand pump to complex central priming systems. Your specific priming requirements will govern what type of vacuum primer to use.

AIR EJECTOR. One type of vacuum primer is the air ejector. If liquid under pressure or steam is available, an ejector can be used. The ejector is connected to the air vent orifice. A stream of the ejecting medium is passed through the ejector creating a vacuum in the ejector, and drawing air from the pump casing and suction piping. When liquid flows steadily from the ejector discharge pipe, the pump is primed.

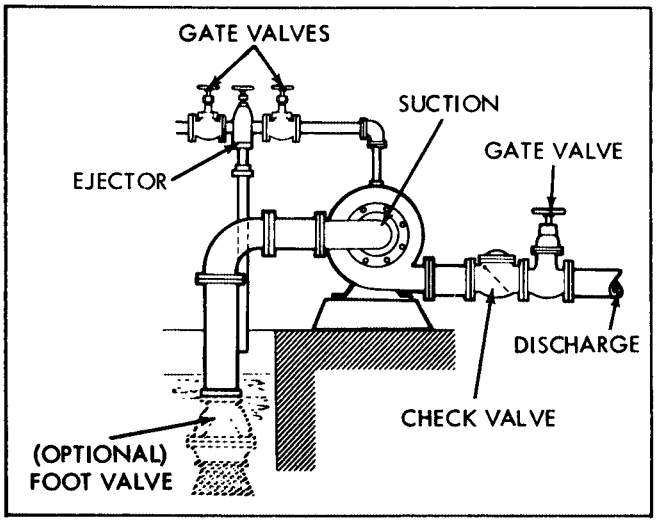



FIGURE 31. PRIMING BY EJECTOR

VACUUM PUMPS. Rotary or reciprocating pumps are frequently used as vacuum pumps. They fall into two categories, wet-vacuum and dry-vacuum. The principle of operation is essentially the same, however, the dry-vacuum pump cannot accommodate a liquid and air mixture while the wet-vacuum pump can accommodate liquid, air or a combination of both.

Vacuum pumps can be installed as part of a central priming system servicing many pumps, as an automatic priming system, or as a manually controlled independently driven pump.

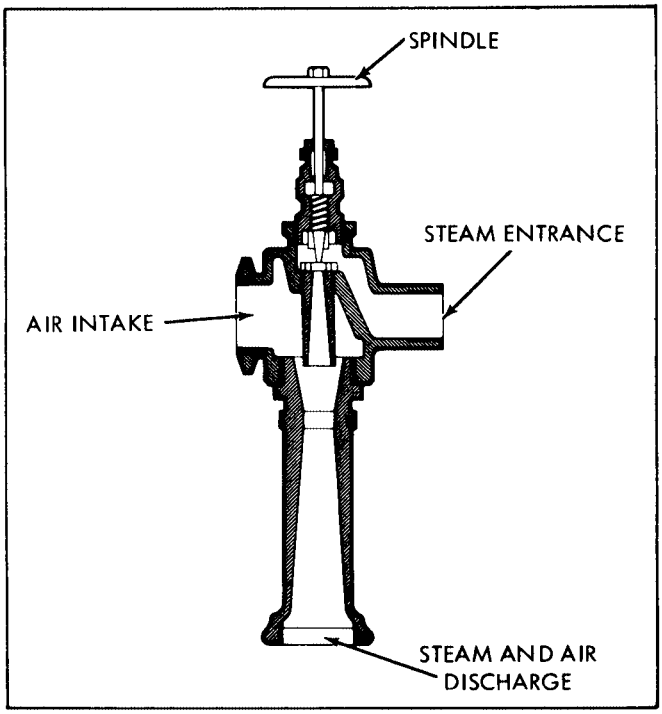



FIGURE 32. EJECTOR CUTAWAY

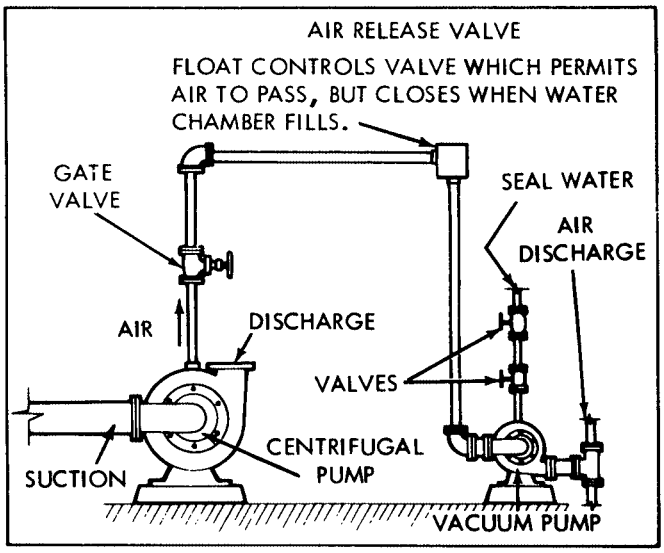



FIGURE 33. PRIMING BY VACUUM PUMP

The suction piping of the vacuum pump is connected to the air vent orifice on the pump to be primed. The vacuum produced by the vacuum pump removes air from the centrifugal pump suction piping and casing, and draws liquid from the liquid well into the centrifugal pump. Dry-vacuum pumps must be installed so that no liquid is taken into the air pump. Installation of a water trap, or use of a vacuum tank are recommended for dry vacuum pumps.

INDUCTOR PRIMING. On suction lift applications it may be desirable to prime your pump with a priming inductor. This type of primer is comprised of a liquid nozzle and an inductor at the foot end of the

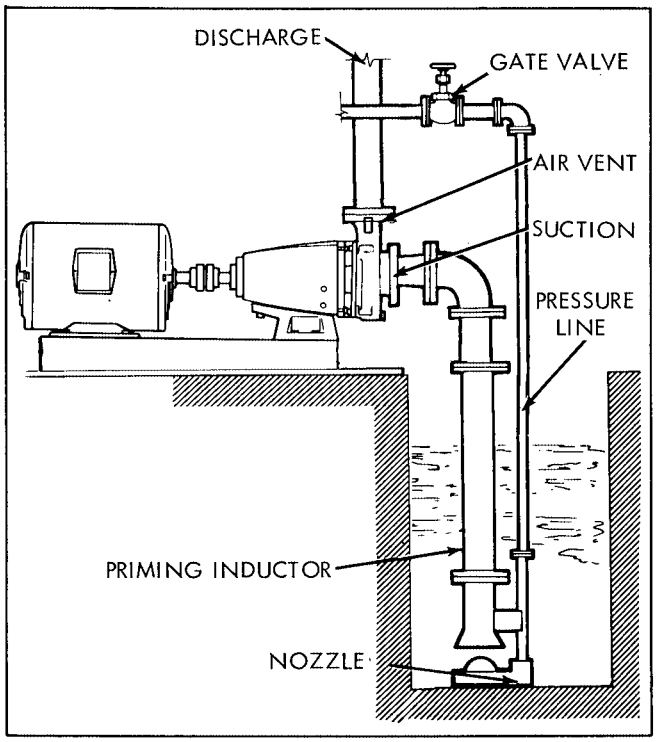



FIGURE 34. PRIMING BY INDUCTOR

suction piping. The nozzle and inductor are connected to a high pressure liquid supply such as a city water service.

The pump is primed by opening the valve in the pressure line, which allows the liquid to flow through the nozzle into the inductor. The velocity of the high pressure liquid drives the liquid into the suction piping and up to the pump, priming it.

ELECTRICAL WIRING. Normally, your pump will be supplied with an attached drive motor. The motor should be wired in accordance with the wiring diagram found on the motor name plate. Be sure the voltage, frequency, and phase of your power supply corresponds with the name plate data. It is advisable to provide a separate switch and overload protection for your pump motor to protect against power failure in some other area. Conversely, if the pump motor develops electrical problems, it will be isolated from other equipment.

PRESTARTING INSTRUCTION. The coupling halves should be connected. Prior to connection however, the drive motor should be started to make sure the direction of roatation is the same as the direction indicated by the arrow on the pump casing.

**WARNING:** On all 350 series pumps and the 364A with a 15" impeller on a #21 power frame, reverse rotation will destroy the pump.

After you are sure the motor is rotating clockwise you can couple the motor to the pump. Again, after coupling but BEFORE starting it is important to check coupling and shaft alignment. Use a standard dial indicator to align the motor shaft and pump shaft to within .003"-.005".

The suction and discharge piping should now be connected to the pump, and the pump primed.

**CAUTION**

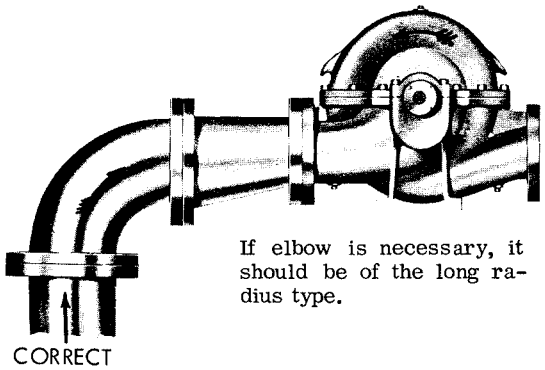
Do not operate the pump without liquid. Pump seals or packing depend on the liquid being pumped for lubrication.

Open or close the various valves as required by your specific application. Start the pump and bring it up to operating temperature. After the temperature has stabilized, the pump should be shut down and the alignment rechecked. It will be necessary to check the alignment with the coupling halves both connected and disconnected.

Remember, any alignment adjustment made in one direction may affect the other direction so extreme care should be taken when final adjustment is made.

Make sure all pump, motor and base plate mounting bolts are firmly tightened down.

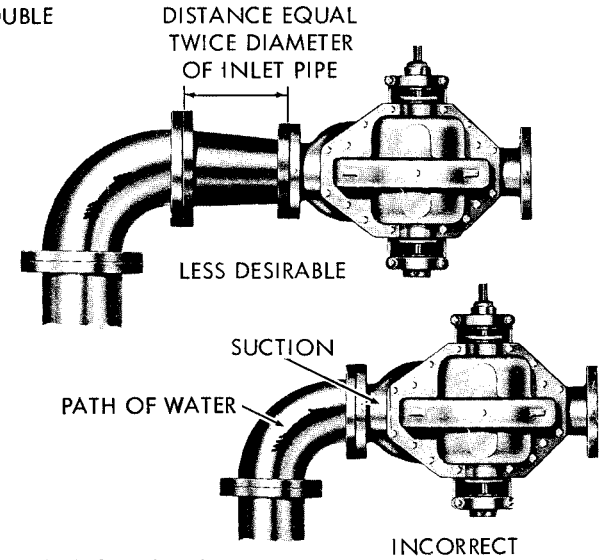
SPECIAL SUCTION PIPING SPECIFICATIONS FOR HORIZONTAL DOUBLE SUCTION PUMPS FOR ADDITIONAL DETAILS SEE PAGE 6



If elbow is necessary, it should be of the long radius type.

CORRECT

Discharge piping and suction piping should be supported close to the pump flange to prevent vibration and strain on pump casing.




The suction pipe on horizontal double suction pumps, should not be installed so that there is an elbow close to the suction nozzle unless the elbow is mounted vertically. There is always an uneven flow of liquid through an elbow and when the elbow is installed at any angle other than vertical more water will enter one side of the impeller than enters the other side. This causes a reduction in capacity and efficiency and creates an axial thrust load which may over heat and possibly cause rapid wear of the thrust bearing.

SECTION **6** ITEM **320**
DATED **JULY 1998**
SUPERSEDES SECTION **6** ITEM **320**
DATED JUNE 1985

# INSTRUCTION AND REPAIR MANUAL

## MODELS 321, 323 AND 324A

**6**

NOTE

This repair manual is applicable to pump Models 321, 323 and 324A. All photos illustrate Model 324A.

**ATTENTION: SAFETY WARNINGS:**

Read and understand all warnings before installation or servicing pump.

**OPERATIONAL LIMITS**: *

| | |
|---|---|
| Maximum Operating Pressure: | 175 psi at Temperatures to 150°F (65.6°C) |
| Maximum Operating Temperature: | 225°F (107°C) |

* See ANSI B16.4 for pressure-temperature ratings of class 125 threaded fittings.

**ELECTRICAL SAFETY:**

**Warning:** Electrical Shock Hazard

All electrical connections are to be made by a qualified electrician in accordance with all codes and ordinances. Failure to follow these instructions could result in serious personal injury, death or property damage.

**Warning:** Electrical Overload Hazard

Insure all motors have properly sized overload protection. Failure to follow these instructions could result in serious personal injury, death or property damage.

**Warning:** Sudden Start-Up Hazard

Disconnect and lockout power source before servicing. Failure to follow these instructions could result in serious personal injury, death or property damage.

**HIGH TEMPERATURE SAFETY:**

**Warning:** Hot Surface Hazard

If pumping hot water, insure guards or proper insulation is installed to protect against skin contact to hot piping or pump components. Failure to follow these instructions could result in serious personal injury, death or property damage.

**Warning:** Spraying Water Hazard

When servicing pump replace all gaskets and seals. Do not re-use old gaskets or seals. Failure to follow these instructions could result in serious personal injury, death or property damage.

**HIGH PRESSURE SAFETY:**

**Warning:** High Pressure Hazard

The pump is rated at a maximum of 175 psi at 150°F. Do not exceed this pressure. Install properly sized pressure relief valves in system. Failure to follow these instructions could result in serious personal injury, death or property damage.

**Warning:** Expansion Hazard

Water expands when heated. Install properly sized thermal expansion tanks and relief valves. Failure to follow these instructions could result in serious personal injury, death or property damage.

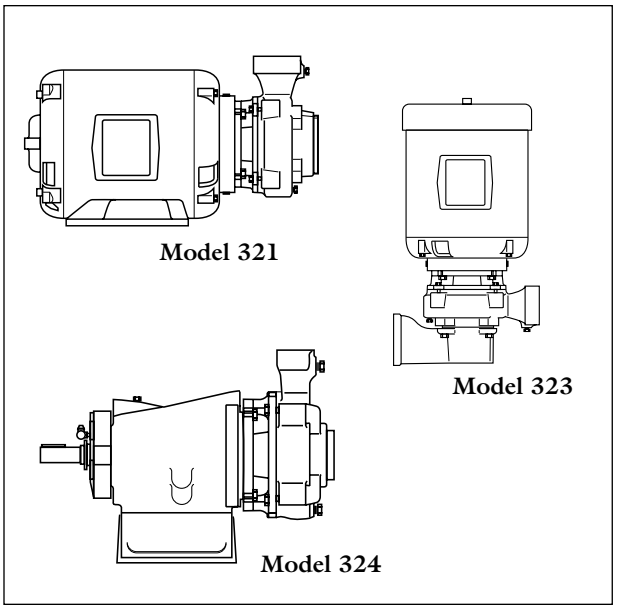
SERVICE

Your Aurora pump requires no maintenance other than periodic inspection, occasional cleaning and lubrication of bearings (Model 324A only). The intent of inspection is to prevent breakdown, thus obtaining optimum service life. The liquid end of the pump is lubricated by the fluid being pumped and therefore does not require periodic lubrication. The motor, however may require lubrication, in which case the motor manufacturer's recommendation should be followed.

LUBRICATION OF IMPELLER SHAFT BEARINGS

The Model 324A pumps are available with three options for lubricating the shaft bearings. They are:

1. Regreasable (standard)
2. Oil Lubrication
3. Sealed Bearings, Permanent Lubrication.




A. Assembled Units.

Regreasable bearings will require periodic lubrication which can be accomplished by using the zerk or lubrication fittings in the cartridge cap and power frame. Lubricate the bearings at regular intervals using a grease of high quality. Polyurea base grease is recommended as bearing lubricant for pumps operating in both wet and dry locations. Mixing of different brands of grease should be avoided due to possible chemical reactions between the brands which could damage the bearings. Accordingly, avoid grease of a vegetable or animal base which can develop acids, as well as grease containing rosin, graphite, talc and other impurities. Under no circumstance should grease be reused.

Over lubrication should be avoided as it may result in overheating and possible bearing failure. Under normal application, adequate lubrication is assured if the amount of grease is maintained at 1/3 to 1/2 the capacity of the bearing and adjacent space surrounding it. Approximately 1/2 ounce of grease is required to maintain this level.

In dry locations, each bearing will need lubrication at least after every 4,000 hours of running time or every 6 to 12 months, whichever is more frequent. In wet locations, the bearings should be lubricated at least after every 2,000 hours of running time or every 4 to 6 months, whichever is more frequent. A unit is considered to be installed in a wet location if the pump and motor are exposed to dripping water, to the weather, or to heavy condensation such as is found in unheated and poorly ventilated underground locations.

Oil lubricated bearings are optional on all Model 324A pumps. A fixed oil level is maintained within the power frame by an oiler which allows visual indications of reserve oil.

At initial installation and before starting a unit that has been shut down for repairs or for any extended length of time, run enough 10W-30 weight motor oil through the oiler to maintain a constant oil level to insure that the bearing will never be without an oil supply. Oil will have to be added at intervals to maintain a constant level in the oiler. This interval can only be determined by experience.

Under working conditions, oil will breakdown and need to be replaced at regular intervals. The length of these intervals will depend on many factors. Under normal operation, in clean and dry locations, the oil should be changed about once a year. However, when the pump is exposed to dirt contamination, high temperatures (200°F. or above) or a wet location, the oil may have to be changed every 2 or 3 months.

REPAIRS

Before starting any work, insure the electrical power is locked out, the system pressure has been lowered to 0 psi and temperature of the unit is at a safe level.

The pump may be disassembled using the illustrations and text provided. Although complete disassembly is covered, it will seldom be necessary to completely disassemble your Aurora pump.

The illustrations accompanying the disassembly instructions show the pump at various stages of disassembly. The illustrations are intended to aid in the correct identification of the parts mentioned in the text.

Inspect removed parts at disassembly to determine if they can be reused. Ball bearings that turn roughly or show wear should be replaced. Cracked castings should never be reused. Scored or worn pump shafts should be replaced. Gaskets should be replaced at reassembly simply as a matter of economy. They are much less expensive to replace routinely than to replace singly as the need arises.

**⚠ Warning:** Sudden Start-Up Hazard

Disconnect and lockout power source before servicing. Failure to follow these instructions could result in serious personal injury, death or property damage.

**⚠ Warning:** Hot Surface Hazard

If pumping hot water, insure guards or proper insulation is installed to protect against skin contact to hot piping or pump components. Failure to follow these instructions could result in serious personal injury, death or property damage.

**⚠ Warning:** High Pressure Hazard

The pump is rated at a maximum of 175 psi at 150°F. Do not exceed this pressure. Install properly sized pressure relief valves in system. Failure to follow these instructions could result in serious personal injury, death or property damage.

**⚠ Warning:** Spraying Water Hazard

When servicing pump replace all gaskets and seals. Do not re-use old gaskets or seals. Failure to follow these instructions could result in serious personal injury, death or property damage.

DISASSEMBLY

Refer to Figure 2 for Model 321, Figure 3 for Model 323 and Figure 4 for Model 324A at the back of this manual and the following text and disassemble only what is needed to make repairs or accomplish inspection.

NOTE
Model 324A

If repair operations are required only on the pump and not the power frame, the flexible couplings need not be disconnected.

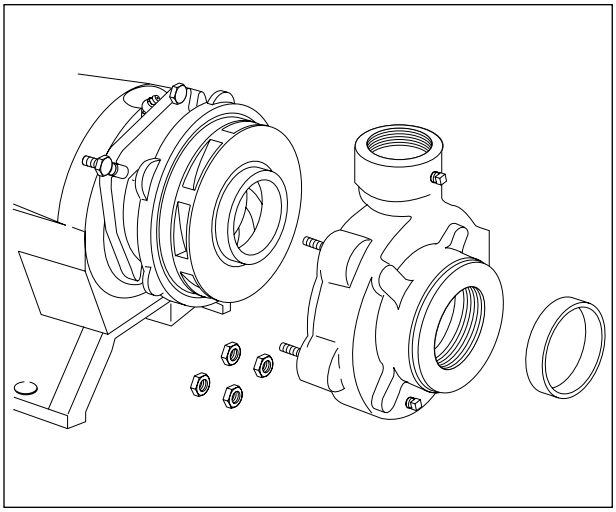
1. Unscrew pipe plugs (3) from casing (4). On Model 323 pumps disconnect relief line from suction base. Remove capscrews (46) and remove pump from suction base (45). Discard gasket (47).

2. Remove four nuts (1) or capscrews (2) and separate pump casing (4) from pump bracket (18).

3. To replace wear ring (5), chuck entire casing (4) onto engine lathe. Turn down ring thickness until approximately 1/32" remains. This remaining ring section can be removed by cutting with a sharp tool. Do not remove wear ring unless necessary.

4. Remove screw (7), washer (8), and remove impeller (9) from shaft with key (10).

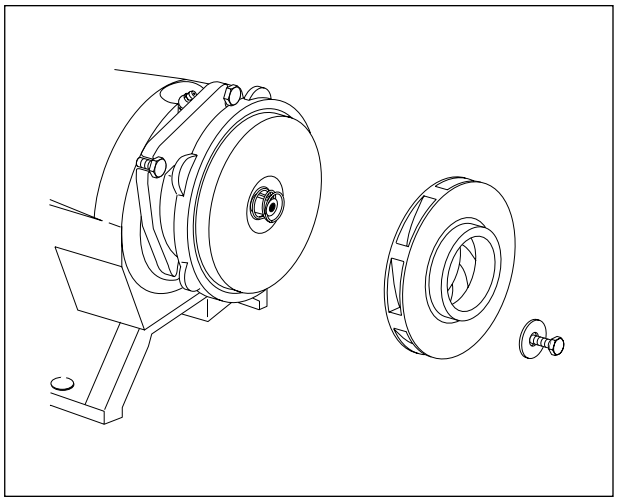
NOTE
A puller may be used to remove the impeller, or it may be pried loose. Care should be taken that the impeller is not damaged during removal.



B. Casing and Wear Ring Removed.

**CAUTION**

The mechanical seal (see Figure 1) is a precision product and must be treated as such. During removal, great care must be taken to avoid dropping any part of the seal. Take particular care not to scratch the lapped faces on the washer or the sealing seat. If any wear of the seal faces is noted, it is recommended to replace with a new seal during reassembly.



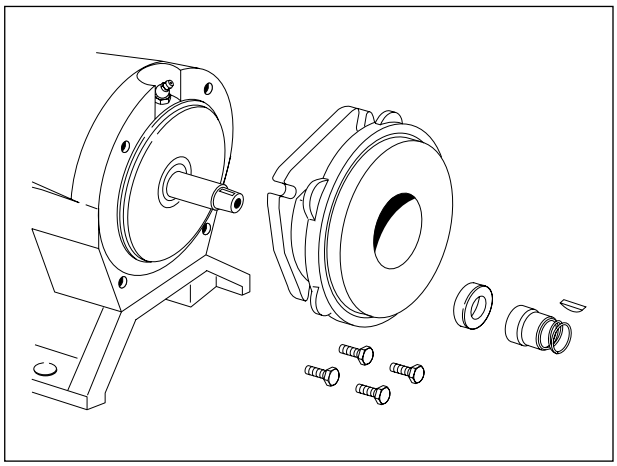
C. Impeller Removed.

5. Carefully remove mechanical seal (11).

6. Remove gasket (12) from bracket (18). Unscrew pipe plug (13) from bracket (18). On Model 323 pumps remove connector (48), tubing (49), connector (50), coupling (51) and nipple (52) from bracket (18).

7. Remove nameplate (15) and screws (14) only if replacement is necessary.

8. Remove screws (16) with washers (17) and separate seal bracket (18) from power frame (37) or motor depending on pump model. Remove slinger (19) from shaft. Carefully push the seal seat and cup out of the seal bracket.

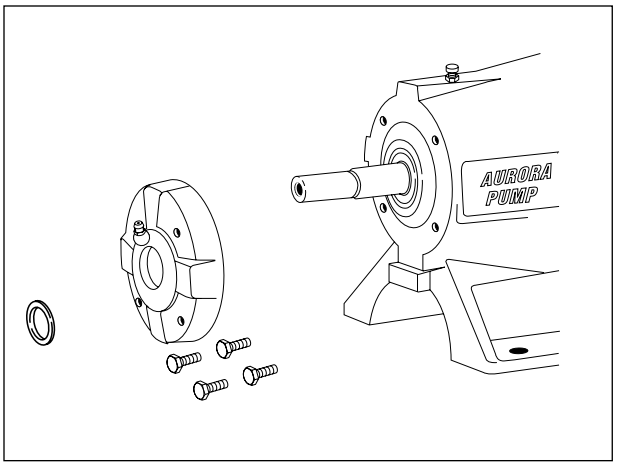


D. Mechanical Seal and Bracket Removed.

NOTE
Complete disassembly of the power frame for Model 324A pumps is covered, however disassemble only what is needed to make repairs. It is advisable not to disassemble the support (21) as correct alignment may be lost.

9. Remove coupling half, key (22) and slinger (27) from shaft to avoid losing them.

10. Unscrew lubrication fitting (23, 25, 26, 36, 38, 39, 41) as required by the particular power frame and drain.

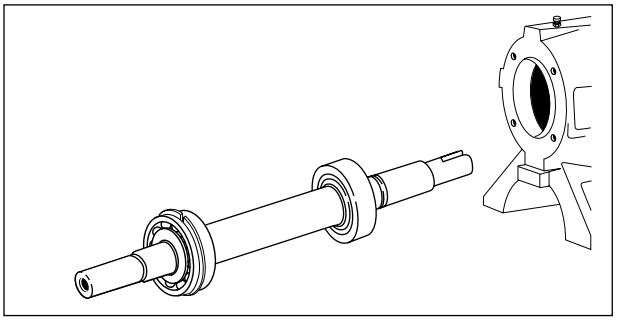



E. Slinger and Bearing Cap Removed

11. Remove capscrew (28) and disassemble bearing cap (29) with seal (31) and "O" ring (30) (oil lube only) from power frame.

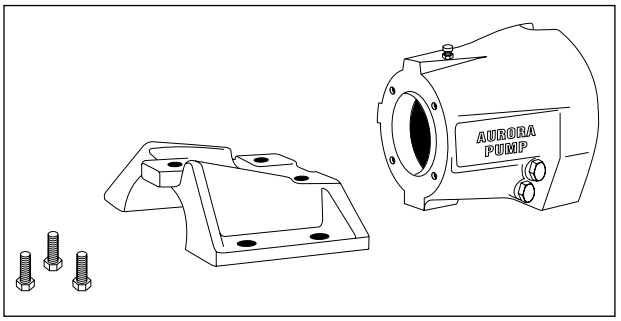
12. Remove shaft (35) with bearings (33 and 34) from power frame assembly. Remove snap ring (32) and bearing (33) if replacement is necessary.

13. Clean and inspect bearing (34) and check its operation. Remove bearing (34) from shaft (35) only if repair demands it.



F. Shaft Assembly Removed.

14. Remove screws (24) with washers (20) and separate power frame assembly from support (21).




G. Support Removed.

REASSEMBLY

Clean and inspect all parts thoroughly prior to assembly. Replace "O" ring, oil seals and gaskets. Check that all mating surfaces are free of nicks and burrs. Inspect the impeller hub and wearing ring carefully for signs of excessive wear. Reassembly operations cover the entire pump and power frame. Use for reference, those steps which apply to your particular repair program. If the pump and power frame assembly were completely removed from the baseplate, consult the installation section of this manual. Refer to figures 2, 3 or 4 and proceed to reassemble the pump as follows:

1. Assemble power frame to support (21) and secure with washers (20) and screws (24).

2. Press bearings (33 and 34) on shaft (35).

3. Install retaining ring (32) on shaft (35). Install shaft assembly in power frame so that retaining ring on bearing (33) touches power frame (37).

4. Install "O" ring (30) (oil lube only) into bearing cap (29) and attach to power frame. Secure with screws (28). Press oil seals (31) into bearing cap (29) and frame (37).

5. Install slinger (27) and key (22) on shaft.

6. Reassemble lubrication fittings and accessories as applicable to the power frame.

7. Lubricate the power frame bearings as instructed on page 1.

8. On Models 321 and 323 replace slinger (19) on motor shaft. Position pump bracket (18) on power frame or motor depending on pump model and secure with washers (17) and screws (16). Tighten screws evenly.

9. If nameplate (15) was removed, install and attach screws (14).

10. Install plug (13) to the seal bracket. Position gasket (12) on seal bracket. For Model 323 pumps, install the nipple (52), coupling (51). Attach connector (50), tubing (49), and connector (48) the seal bracket.

11. Thoroughly inspect the seal cavity in seal bracket checking for burrs or nicks which could damage flexible cup of mechanical seal. Apply a film of liquid dishwashing detergent (do not use oil or grease) to the flexible cup a seal seat. Insert seat in cup and install in seal bracket (18).

NOTE

If it is not possible to insert seat with fingers, place cardboard protecting ring, furnished with seal, over lapped face of seat and press into place with a piece of tubing having end cut square. Tubing should be slightly larger than the diameter of the shaft. Remove cardboard ring after seat is firm seated.

12. Apply a film of liquid dishwashing detergent to the washer and bellows of the seal, and slide the remaining parts onto the shaft, making sure the washer is seated against the seal seat. Check the proper sequence of assembly as indicated in Figure 1.

13. Install key (10) on shaft and assemble impeller (9). Be sure spring of mechanical seal is properly positioned back side of impeller. Secure impeller with washer (8) and screw (7).

14. Assemble studs (6) if used, into pump casing.

15. Install the wearing ring (5) into the casing (4). The wearing ring must be pressed into the pump casing. Do not attempt to hammer it into position. An arbor press is ideal, place a block of wood over the ring and press it into the casing bore.

16. Install pipe plugs (3) in pump casing. Position pump casing against bracket and secure with screws (2) or nuts (1) as required. On Model 324A pumps replace lubrication fittings (23, 25, 26, 36, 38, 39, 41) as required.

17. For Model 323 pumps, position new gasket (47) and suction base (45) and secure to pump casing with screws (46). Connect the relief line to the base and tighten fittings.

STARTING PUMP AFTER REASSEMBLY

Do not start pump until all air and vapor has been bled an make sure there is liquid in the pump to provide the necessary lubrication. It is possible that the mechanical seal may drip during the first few minutes of operation.

**⚠ Warning:** Hot Surface Hazard

If pumping hot water insure guards or proper insulation is installed to protect against skin contact to hot piping or pump components. Failure to follow these instructions could result in serious personal injury, death or property damage.

**⚠ Warning:** Spraying Water Hazard

When servicing pump replace all gaskets and seals. Do not re-use old gaskets or seals. Failure to follow these instructions could result in serious personal injury, death or property damage.

**⚠ Warning:** Electrical Shock Hazard

All electrical connections are to be made by a qualified electrician in accordance with all codes and ordinances. Failure to follow these instructions could result in serious personal injury, death or property damage.

**⚠ Warning:** Electrical Overload Hazard

Insure all motors have properly sized overload protection. Failure to follow these instructions could result in serious personal injury, death or property damage.

**⚠ Warning:** Sudden Start-Up Hazard

Disconnect and lockout power source before servicing. Failure to follow these instructions could result in serious personal injury, death or property damage.

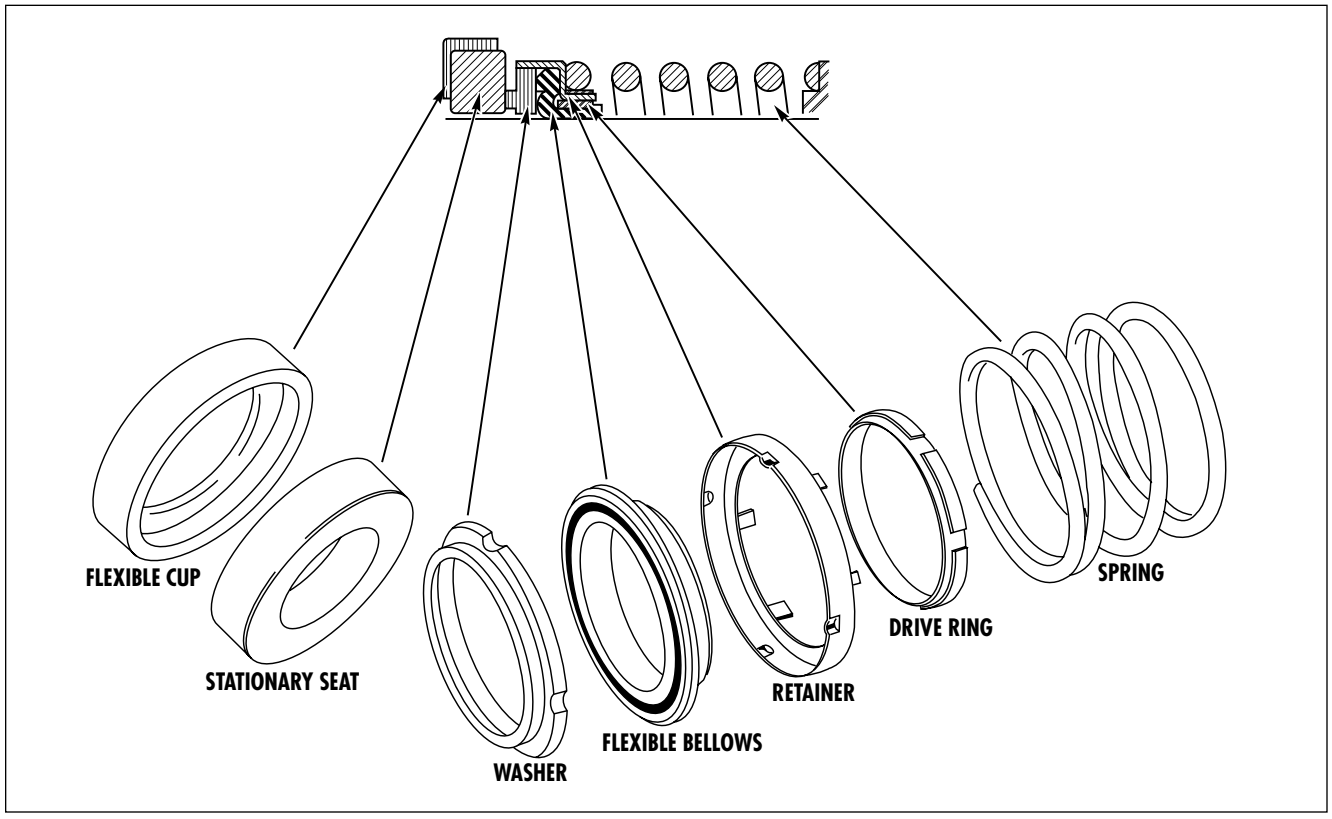



Figure 1. Mechanical Seal

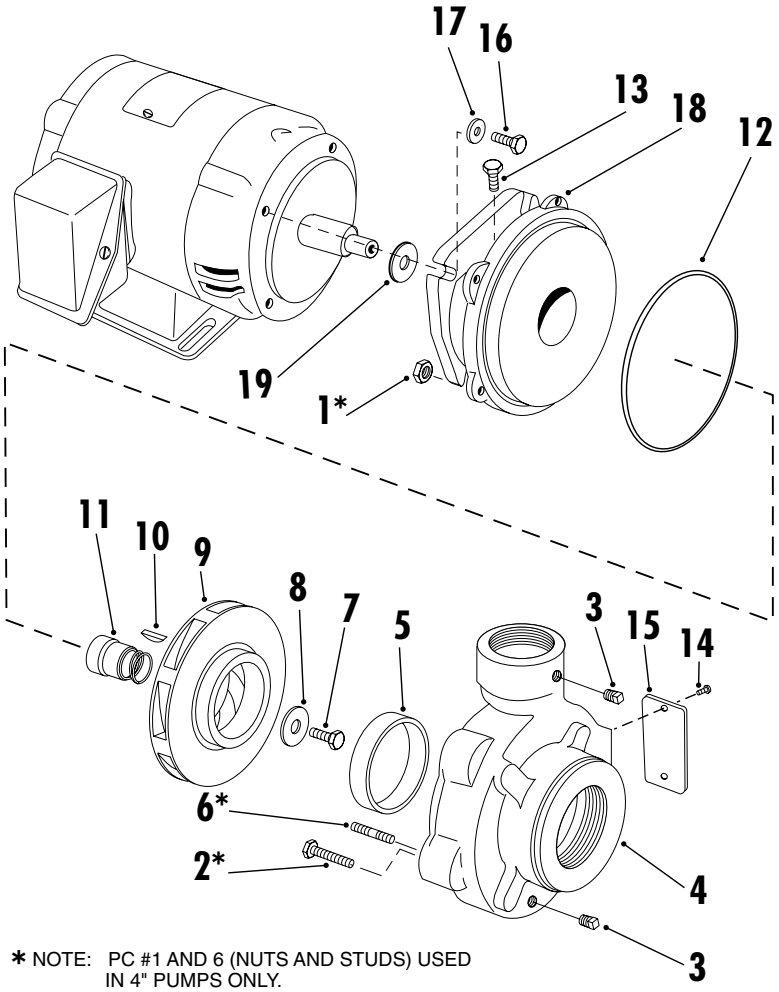



Figure 2. Model 321 Exploded View

MODEL 321 LIST OF PARTS

1. Nut
2. Capscrew
3. Pipe Plug
4. Casing
5. Wearing Ring
6. Stud
7. Capscrew
8. Washer
9. Impeller
10. Key
11. Seal
12. Gasket
13. Pipe Plug
14. Screw
15. Nameplate
16. Capscrew
17. Washer
18. Bracket
19. Slinger

**NOTE**

**WHEN ORDERING SPARE PARTS ALWAYS INCLUDE THE PUMP TYPE, SIZE, SERIAL NUMBER, AND THE PIECE NUMBER FROM THE EXPLODED VIEW IN THIS MANUAL.**

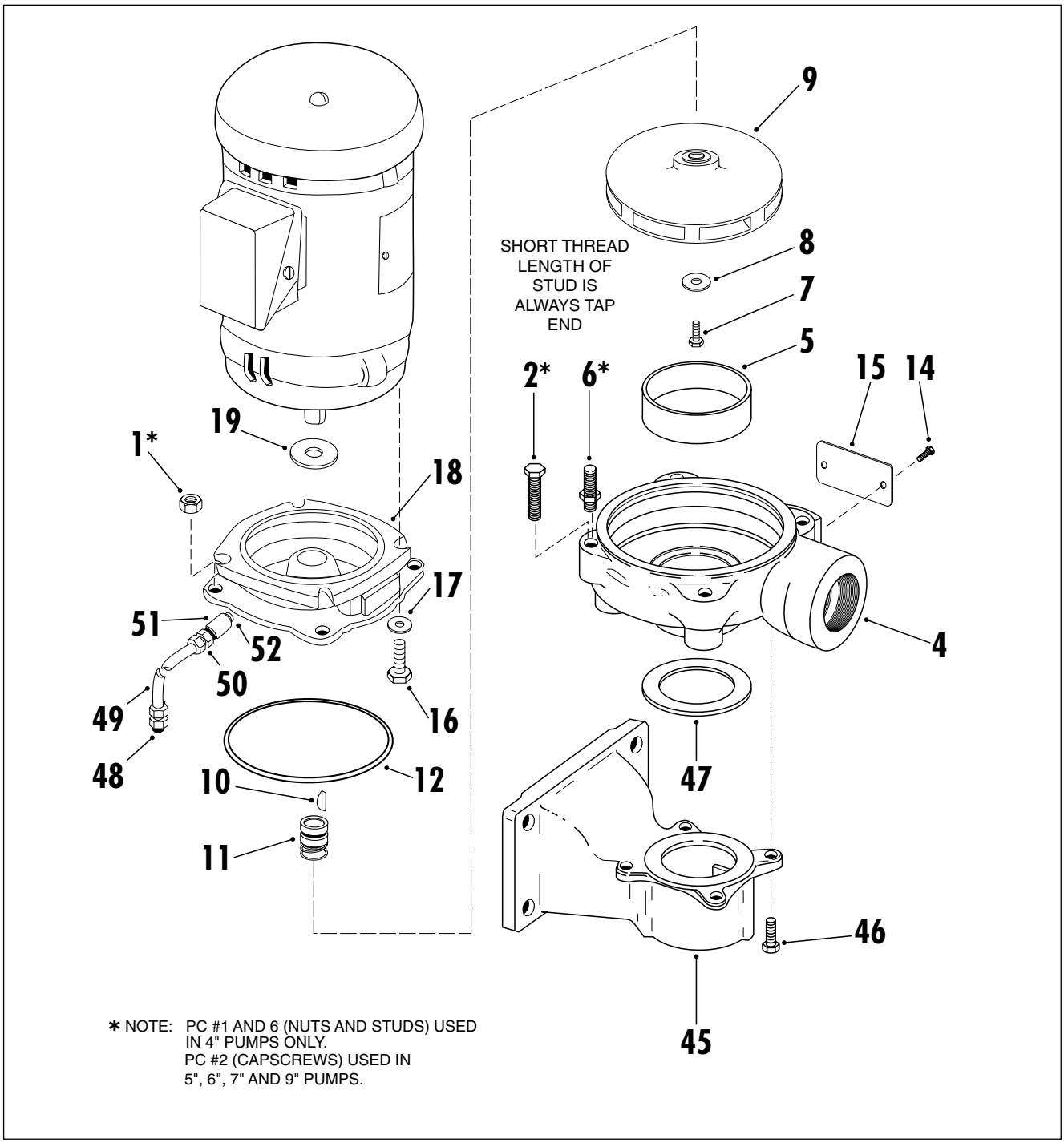



Figure 3. Model 323 Exploded View

MODEL 323 LIST OF PARTS

1. Nut
2. Capscrew
4. Casing
5. Wearing Ring
6. Stud
7. Capscrew
8. Washer
9. Impeller
10. Key
11. Seal
12. Gasket
14. Screw
15. Nameplate
16. Capscrew
17. Washer
18. Bracket
19. Slinger
45. Base
46. Capscrew
47. Gasket
48. Connector
49. Tubing
50. Connector
51. Coupling
52. Nipple

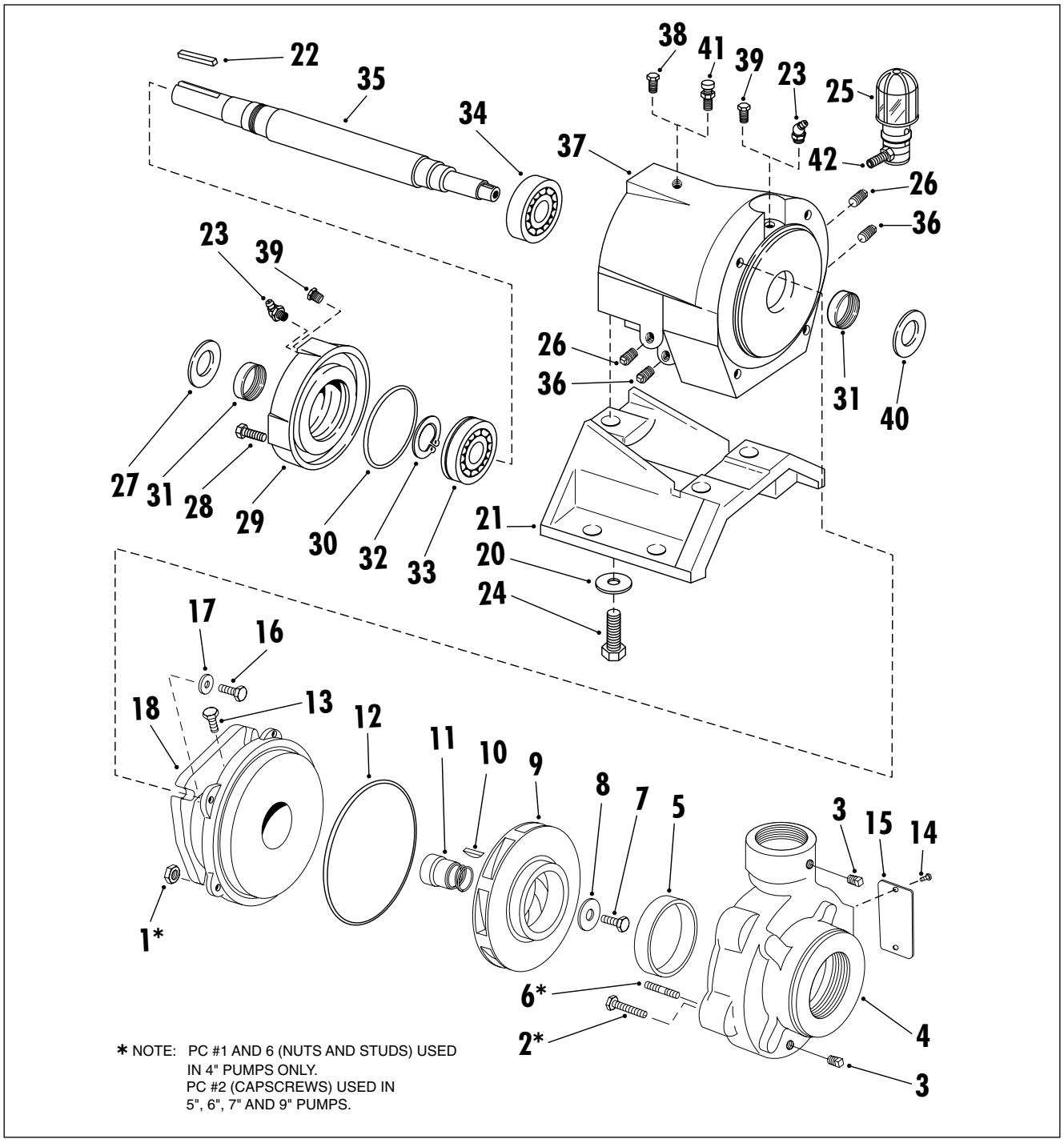


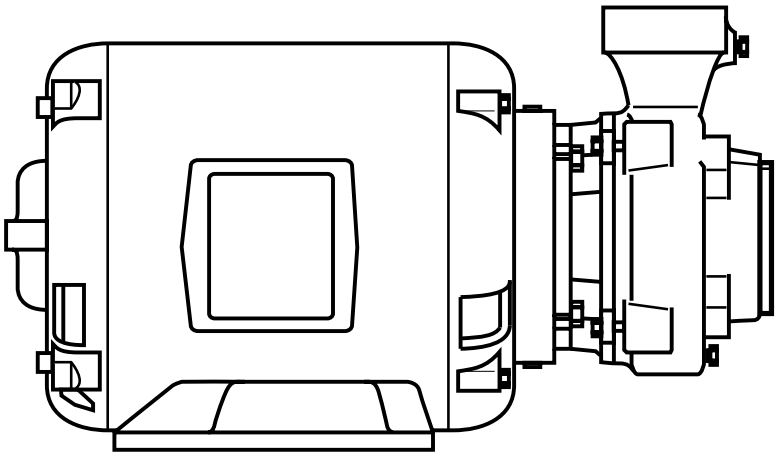

Figure 4. Model 324A Exploded View

MODEL 324A LIST OF PARTS

1. Nut
2. Capscrew
3. Pipe Plug
4. Casing
5. Wearing Ring
6. Stud
7. Capscrew
8. Washer
9. Impeller
10. Key
11. Seal
12. Gasket
13. Pipe Plug
14. Drivescrew
15. Nameplate
16. Capscrew
17. Washer
18. Seal Bracket
20. Washer
21. Support
22. Key
23. Grease Fitting
24. Capscrew
25. Oiler Assembly
26. Pipe Plug
27. Slinger
28. Capscrew
29. Bearing Cap
30. “O” Ring
31. Seal
32. Retaining Ring
33. Bearing
34. Bearing
35. Shaft
36. Pipe Plug
37. Frame
38. Pipe Plug
39. Pipe Plug
40. Slinger
41. Breather
42. Nipple

SUPERSEDES 320P PAGE 1
DATED JUNE 1998

# 320A SERIES
# REPAIR PARTS INDEX



READ AND UNDERSTAND THE PUMP AND MOTOR INSTRUCTIONS BEFORE ATTEMPTING TO INSTALL, DISASSEMBLE OR REPAIR THE PUMP

AURORA®
PENTAIR PUMP GROUP

# 320 SERIES
# MODELS 321 - 323- 324A

## TABLE OF CONTENTS

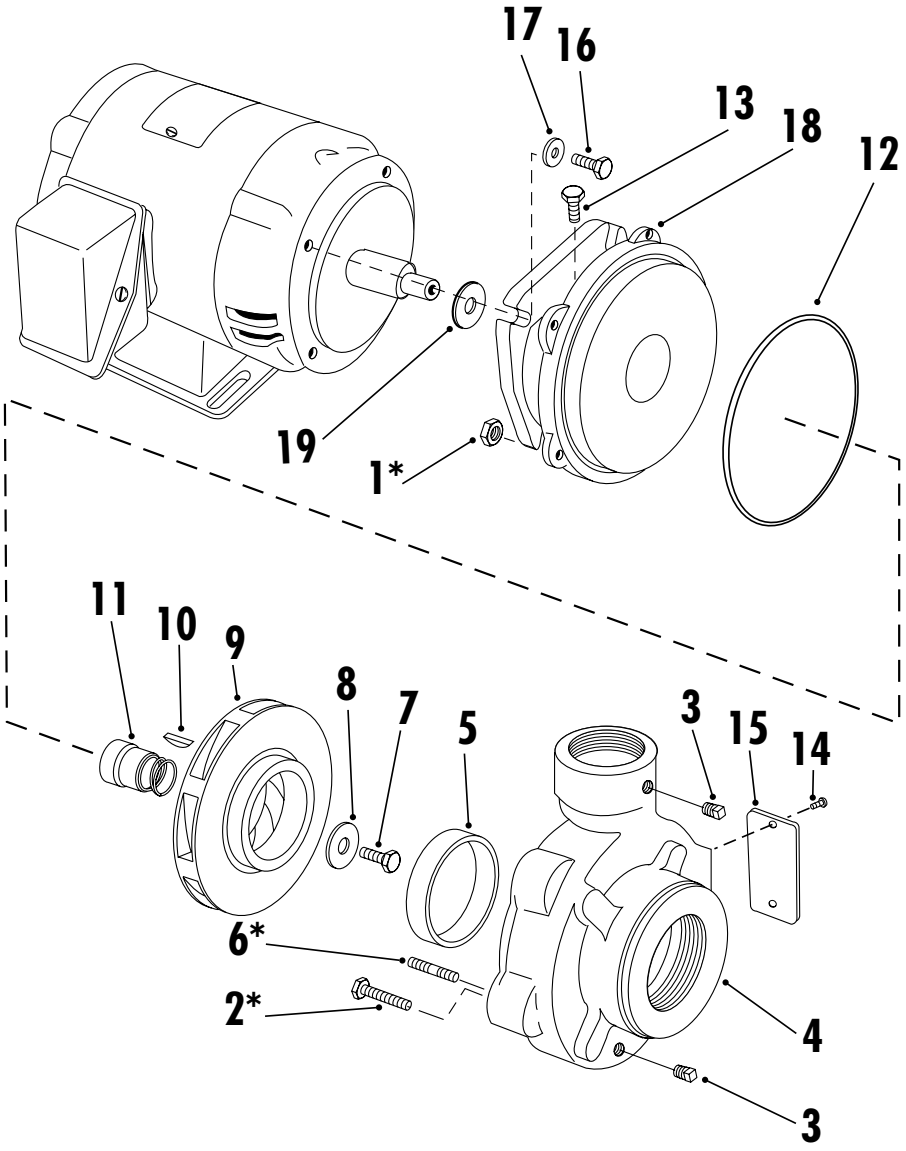

| PUMP MODEL | DESCRIPTION | PAGE |
|---|---|---|
| 321 | EXPLODED VIEW AND PIECE NUMBERS | 3 |
| 323 | EXPLODED VIEW AND PIECE NUMBERS | 4 |
| 324A | EXPLODED VIEW AND PIECE NUMBERS | 5 |
| 321 | PARTS LIST | 6 & 7 |
| 323 | PARTS LIST | 6 & 7 |
| 324A | PARTS LIST | 6 & 7 |


**Notes:**

1) Model 323 Pumps are not available in all bronze (A.B.) or stainless steel (S.S.) construction.

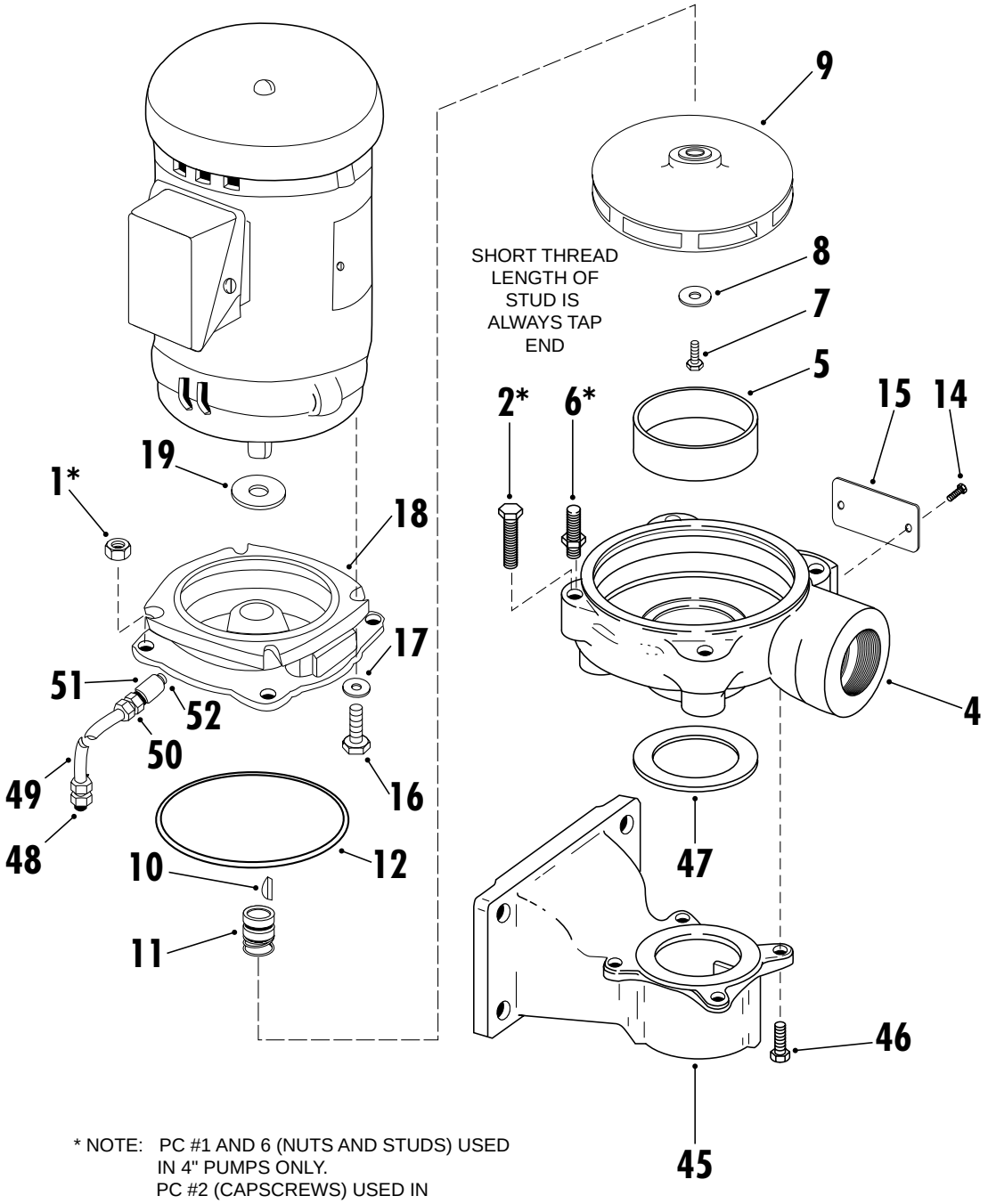
2) Pump sizes 1-1/2 x 2 x 4, 3/4 x 1 x 6A, 3/4 x 1 x 7A, 3/4 x 1 x 7B and 1-1/4 x 1-1/2 x 9 not available in all iron construction.

# MODEL 321
# PIECE NUMBERS



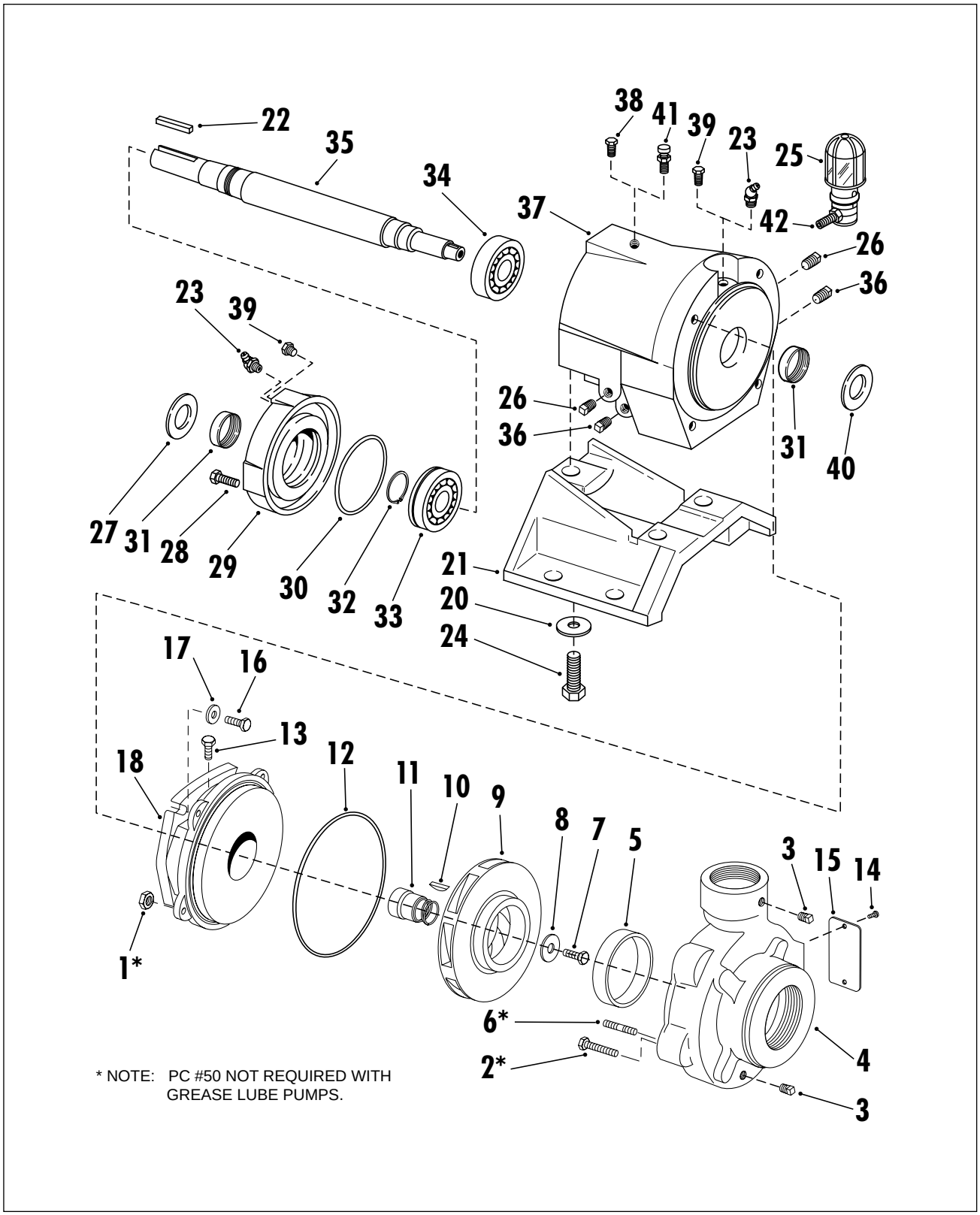
# 320 SERIES

## MODEL 323
## PIECE NUMBERS




* NOTE: PC #1 AND 6 (NUTS AND STUDS) USED IN 4" PUMPS ONLY.
PC #2 (CAPSCREWS) USED IN 5", 6", 7" AND 9" PUMPS.

# MODEL 324A
# PIECE NUMBERS




* NOTE: PC #50 NOT REQUIRED WITH GREASE LUBE PUMPS.

# 320 SERIES
# MODELS 321 - 323- 324A
# 4"- 5"- 6"- 7"- 9"

## PARTS LIST

| PC. NO. | DESCRIPTION | QTY | PART NO. | MATERIAL B.F. | A.B. | A.I. | S.S. |
|---|---|---|---|---|---|---|---|
| 1 | NUT - 4" | 4 | 544-0109 | 080 | 190 | 080 | 104 |
| 2 | CAPSCREW - 5, 6" | 4 | 168-0380 | 082 | 190 | 082 | 104 |
| | CAPSCREW - 7, 9" | 4 | 168-0488 | 082 | 190 | 082 | 104 |
| 3 | PLUG | 2 | 600-0002 | 087 | 190 | 087 | 104 |
| 4 | CASING MODEL 321 & 324A PUMPS | | | | | | |
| | 1 x 1-1/4 x 4 | 1 | 180-1520 | 010 | 208 | 010 | |
| | 1-1/2 x 2 x 4 | 1 | 180-1527 | 010 | 208 | N/A | |
| | 2 x 2-1/2 x 4 | 1 | 180-1530 | 010 | 208 | 010 | |
| | 1 x 1-1/4 x 5 | 1 | 180-1521 | 010 | 208 | 010 | 104 |
| | 1-1/4 x 1-1/2 x 5 | 1 | 180-1523 | 010 | 208 | 010 | 104 |
| | 2 x 2-1/2 x 5 | 1 | 180-1531 | 010 | 208 | 010 | 104 |
| | 3/4 x 1 x 6A | 1 | 180-2297 | 010 | 208 | N/A | |
| | 1 x 1-1/4 x 6 | 1 | 180-1522 | 010 | 208 | 010 | |
| | 2 x 2-1/2 x 6 | 1 | 180-1532 | 010 | 208 | 010 | 104 |
| | 3 x 3 x 6 | 1 | 180-1534 | 010 | 208 | 010 | 104 |
| | 3/4 x 1 x 7A & 7B | 1 | 180-1519 | 010 | 208 | N/A | |
| | 1-1/4 x 1-1/2 x 7A (3500) | 1 | 180-1524 | 010 | 208 | 010 | 104 |
| | 1-1/4 x 1-1/2 x 7B (1750) | 1 | 180-1525 | 010 | 208 | 010 | |
| | 1-1/2 x 2 x 7 | 1 | 180-1528 | 010 | 208 | 010 | |
| | 2 x 2-1/2 x 7 | 1 | 180-1533 | 010 | 208 | 010 | 104 |
| | 1-1/4 x 1-1/2 x 9 | 1 | 180-1526 | 010 | 208 | N/A | |
| 4 | CASING MODEL 323 PUMPS | | | | | | |
| | 1 x 1-1/4 x 4 | 1 | 180-1541 | 010 | | 010 | |
| | 1-1/2 x 2 x 4 | 1 | 180-1548 | 010 | | N/A | |
| | 2 x 2-1/2 x 4 | 1 | 180-1551 | 010 | | 010 | |
| | 1 x 1-1/4 x 5 | 1 | 180-1542 | 010 | | 010 | |
| | 1-1/4 x 1-1/2 x 5 | 1 | 180-1544 | 010 | | 010 | |
| | 2 x 2-1/2 x 5 | 1 | 180-1552 | 010 | | 010 | |
| | 3/4 x 1 x 6A | 1 | 180-2298 | 010 | | N/A | |
| | 1-1/4 x 1 x 6 | 1 | 180-1543 | 010 | | 010 | |
| | 2 x 2-1/2 x 6 | 1 | 180-1553 | 010 | | 010 | |
| | 3 x 3 x 6 | 1 | 180-1555 | 010 | | 010 | |
| | 3/4 x 1 x 7A & 7B | 1 | 180-1540 | 010 | | N/A | |
| | 1-1/4 x 1-1/2 x 7A (3500) | 1 | 180-1545 | 010 | | 010 | |
| | 1-1/4 x 1-1/2 x 7B (1750) | 1 | 180-1546 | 010 | | 010 | |
| | 1-1/2 x 2 x 7 | 1 | 180-1549 | 010 | | 010 | |
| | 2 x 2-1/2 x 7 | 1 | 180-1554 | 010 | | 010 | |
| | 1-1/4 x 1-1/2 x 9 | 1 | 180-1547 | 010 | | N/A | |

| PC. NO. | DESCRIPTION | QTY | PART NO. | MATERIAL B.F. | A.B. | A.I. | S.S. |
|---|---|---|---|---|---|---|---|
| 5 | RING MODEL 321, 323, 324A PUMPS | | | | | | |
| | 1 x 1-1/4 x 4 | 1 | 676-1547 | 208 | 208 | 010 | |
| | 1-1/2 x 2 x 4 | 1 | 676-1549 | 208 | 208 | N/A | |
| | 2 x 2-1/2 x 4 | 1 | 676-1549 | 208 | 208 | 010 | |
| | 1 x 1-1/4 x 5 | 1 | 676-1548 | 208 | 208 | 010 | 104 |
| | 1-1/4 x 1-1/2 x 5 | 1 | 676-1548 | 208 | 208 | 010 | 104 |
| | 2 x 2-1/2 x 5 | 1 | 676-1549 | 208 | 208 | 010 | 104 |
| | 3/4 x 1 x 6A | 1 | 676-1464 | 208 | 208 | N/A | |
| | 1 x 1-1/4 x 6 | 1 | 676-1548 | 208 | 208 | 010 | |
| | 2 x 2-1/2 x 6 | 1 | 676-1549 | 208 | 208 | 010 | 104 |
| | 3 x 3 x 6 | 1 | 676-1550 | 208 | 208 | 010 | 104 |
| | 3/4 x 1 x 7A & 7B | 1 | 676-1464 | 208 | 208 | N/A | |
| | 1-1/4 x 1-1/2 x 7 | 1 | 676-1548 | 208 | 208 | 010 | 104 |
| | 1-1/2 x 2 x 7 | 1 | 676-1549 | 208 | 208 | 010 | |
| | 2 x 2-1/2 x 7 | 1 | 676-1549 | 208 | 208 | 010 | 104 |
| | 1-1/4 x 1-1/2 x 9 | 1 | 676-1548 | 208 | 208 | N/A | |
| 6 | STUD - 4" | 4 | 808-0105 | 082 | 190 | 082 | |
| 7 | CAPSCREW, IMP. | 1 | 168-0255 | 104 | 104 | 104 | 104 |
| 8 | WASHER | 1 | 908-0599 | 104 | 104 | 104 | 104 |
| 9 | IMPELLER MODEL 321, 323, 324A PUMPS | | | | | | |
| | 1 x 1-1/4 x 4 | 1 | 443-1787 | 225 | 225 | 010 | |
| | 1-1/2 x 2 x 4 | 1 | 443-1794 | 225 | 225 | N/A | |
| | 2 x 2-1/2 x 4 | 1 | 443-1797 | 225 | 225 | 010 | |
| | 1 x 1-1/4 x 5 | 1 | 443-1788 | 225 | 225 | 010 | 104 |
| | 1-1/4 x 1-1/2 x 5 | 1 | 443-1790 | 225 | 225 | 010 | 104 |
| | 2 x 2-1/2 x 5 | 1 | 443-1798 | 225 | 225 | 010 | 104 |
| | 3/4 x 1 x 6A | 1 | 443-1708 | 225 | 225 | N/A | |
| | 1 x 1-1/4 x 6 | 1 | 443-1789 | 225 | 225 | 010 | |
| | 2 x 2-1/2 x 6 | 1 | 443-1799 | 225 | 225 | 010 | 104 |
| | 3 x 3 x 6 | 1 | 443-1801 | 225 | 225 | 010 | 104 |
| | 3/4 x 1 x 7A (3500) | 1 | 443-1785 | 225 | 225 | N/A | |
| | 3/4 x 1 x 7B (1750) | 1 | 443-1786 | 225 | 225 | N/A | |
| | 1-1/4 x 1-1/2 x 7A (3500) | 1 | 443-1791 | 225 | 225 | 010 | 104 |
| | 1-1/4 x 1-1/2 x 7B (1750) | 1 | 443-1792 | 225 | 225 | 010 | |
| | 1-1/2 x 2 x 7 | 1 | 443-1795 | 225 | 225 | 010 | |
| | 2 x 2-1/2 x 7 | 1 | 443-1800 | 225 | 225 | 010 | 104 |
| | 1-1/4 x 1-1/2 x 9 | 1 | 443-1793 | 225 | 225 | N/A | |

# 320 SERIES
# MODELS 321 - 323- 324A
# 4"- 5"- 6"- 7"- 9"

## PARTS LIST

| PC. NO. | DESCRIPTION | QTY | PART NO. | MATERIAL B.F. | A.B. | A.I. | S.S. |
|---|---|---|---|---|---|---|---|
| 10 | KEY | 1 | 472-0105 | 100 | 100 | 100 | 104 |
| 11 | SEAL | 1 | 712-1004 | 749 | 764 | 749 | 764 |
| 12 | GASKET - 4" | 1 | 364-0429 | 457 | 457 | 457 | |
| | 5" | 1 | 364-0437 | 457 | 457 | 457 | 457 |
| | 6" | 1 | 364-0446 | 457 | 457 | 457 | 457 |
| | 7" | 1 | 364-0452 | 457 | 457 | 457 | 457 |
| | 9" | 1 | 364-0460 | 457 | 457 | N/A | |
| 13 | PIPE PLUG 321, 324A | 1 | 600-0001 | 087 | 190 | 087 | 104 |
| 14 | DRIVE SCREW | 2 | 708-0013 | 365 | 365 | 365 | 365 |
| 15 | NAMEPLATE | 1 | 532-0045 | 114 | 114 | 114 | 114 |
| 16 | CAPSCREW | 4 | 168-0380 | 082 | 082 | 082 | 082 |
| 17 | WASHER | 4 | 908-0112 | 080 | 080 | 080 | 080 |
| 18 | BRACKET - 4" | 1 | 116-0244 | 010 | 208 | 010 | |
| | 5" | 1 | 116-0234 | 010 | 208 | 010 | 104 |
| | 6" | 1 | 116-0235 | 010 | 208 | 010 | 104 |
| | 7" | 1 | 116-0233 | 010 | 208 | 010 | 104 |
| | 9" | 1 | 116-0241 | 010 | 208 | N/A | |
| 19 | SLINGER 321, 323 | 1 | 764-1002 | 478 | 478 | 478 | 478 |
| | THE FOLLOWING PARTS ARE USED FOR MODEL 324A PUMPS ONLY | | | | | | |
| 20 | WASHER | 3 | 908-0114 | 360 | 360 | 360 | |
| 21 | SUPPORT | 1 | 820-0190 | 010 | 010 | 010 | |
| 22 | KEY | 1 | 472-0206 | 087 | 087 | 087 | |
| 23 | GREASE FITTING | 2 | 508-0005 | 651 | 651 | 651 | |
| 24 | CAPSCREW | 3 | 168-0488 | 082 | 082 | 082 | |
| 25 | OILER | 1 | 552-0029 | 652 | 652 | 652 | |
| 26 | PIPE PLUG | 2 | 600-0002 | 087 | 087 | 087 | |
| 27 | SLINGER | 1 | 764-1015 | 478 | 478 | 478 | |
| 28 | CAPSCREW | 4 | 168-0388 | 082 | 082 | 082 | |
| 29 | CAP | 1 | 164-0470 | 010 | 010 | 010 | |
| 30 | GASKET (OIL LUBE) | 1 | 364-0423 | 457 | 457 | 457 | |
| 31 | GREASE SEAL | 2 | 712-0231 | 653 | 653 | 653 | |
| | OIL SEAL | 2 | 712-0016 | 653 | 653 | 653 | |
| 32 | RETAINER RING | 1 | 676-0929 | 088 | 088 | 088 | |
| 33 | O.B. BEARING | | | | | | |
| | STANDARD OPEN | 1 | 068-2206 | 647 | 647 | 647 | |
| | SEALED PERM LUBE | 1 | 068-2219 | 647 | 647 | 647 | |
| 34 | I.B. BEARING | | | | | | |
| | STANDARD OPEN | 1 | 068-1907 | 647 | 647 | 647 | |
| | SEALED PERM LUBE | 1 | 068-0114 | 647 | 647 | 647 | |
| 35 | SHAFT | 1 | 728-0124 | 107 | 104 | 107 | |
| 36 | PLUG | 2 | 600-0002 | 087 | 087 | 087 | |
| 37 | FRAME OIL LUBE | 1 | 356-0231 | 010 | 010 | 010 | |
| | GREASE LUBE | 1 | 356-0201 | 010 | 010 | 010 | |

| PC. NO. | DESCRIPTION | QTY | PART NO. | MATERIAL B.F. | A.B. | A.I. | S.S. |
|---|---|---|---|---|---|---|---|
| 38 | PIPE PLUG | 1 | 600-0002 | 087 | 190 | 087 | |
| 39 | PIPE PLUG | 2 | 600-0001 | 087 | 190 | 078 | |
| 40 | SLINGER | 1 | 764-1002 | 478 | 478 | 478 | |
| 41 | BREATHER | 1 | 864-0051 | 656 | 656 | 656 | |
| 42 | NIPPLE | 1 | 600-1204 | 387 | 387 | 387 | |
| | THE FOLLOWING PARTS ARE USED FOR MODEL 323 PUMPS ONLY | | | | | | |
| 45 | BASE | | | | | | |
| | 1 x 1-1/4 x 4 | 1 | 816-0861 | 010 | | 010 | |
| | 1-1/2 x 2 x 4 | 1 | 816-0863 | 010 | | N/A | |
| | 2 x 2-1/2 x 4 | 1 | 816-0863 | 010 | | 010 | |
| | 1 x 1-1/4 x 5 | 1 | 816-0862 | 010 | | 010 | |
| | 1-1/4 x 1-1/2 x 5 | 1 | 816-0862 | 010 | | 010 | |
| | 2 x 2-1/2 x 5 | 1 | 816-0863 | 010 | | 010 | |
| | 3/4 x 1 x 6A | 1 | 816-0862 | 010 | | N/A | |
| | 1 x 1-1/4 x 6 | 1 | 816-0862 | 010 | | 010 | |
| | 2 x 2-1/2 x 6 | 1 | 816-0863 | 010 | | 010 | |
| | 3 x 3 x 6 | 1 | 816-0917 | 010 | | 010 | |
| | 3/4 x 1 x 7 | 1 | 816-0876 | 010 | | N/A | |
| | 1-1/4 x 1-1/2 x 7 | 1 | 816-0876 | 010 | | 010 | |
| | 1-1/2 x 2 x 7 | 1 | 816-0863 | 010 | | 010 | |
| | 2 x 2-1/2 x 7 | 1 | 816-0863 | 010 | | 010 | |
| | 1-1/4 x 1-1/2 x 9 | 1 | 816-0876 | 010 | | N/A | |
| 46 | CAPSCREW | 4 | 168-0382 | 082 | | 082 | |
| 47 | GASKET | | | | | | |
| | 3/4, 1, 1-1/4 | 1 | 364-1144 | 603 | | 603 | |
| | 1-1/2, 2, 2-1/2 | 1 | 364-1145 | 603 | | 603 | |
| | 3 | 1 | 364-1149 | 603 | | 603 | |
| 48 | FITTING | 1 | 868-3358 | 190 | | 087 | |
| 49 | TUBING | 1 | 872-0124 | 175 | | 087 | |
| 50 | FITTING | 1 | 868-3358 | 190 | | 087 | |
| 51 | COUPLING | 1 | 600-0720 | 387 | | 387 | |
| 52 | NIPPLE | 1 | 600-1156 | 387 | | 387 | |

AP-320P-REPAIR

AURORA®

PENTAIR PUMP GROUP

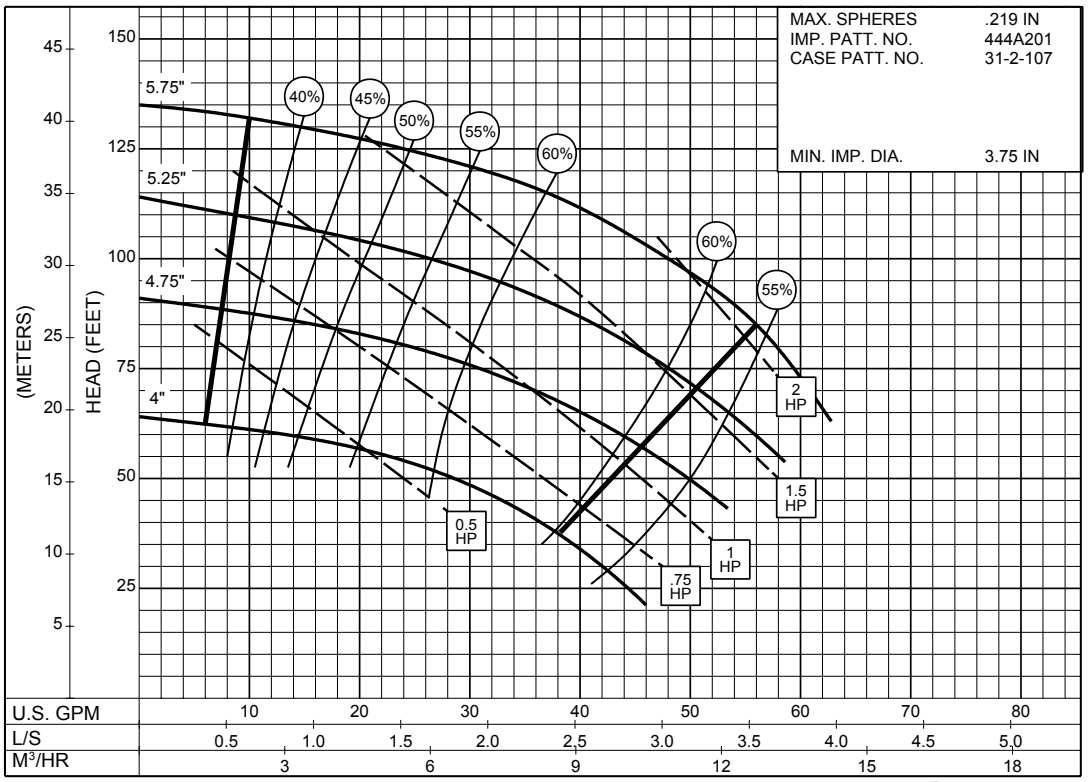
**Aurora Pumps**
800 Airport Road
North Aurora, IL 60542
phone: 630-859-7000
fax: 630-859-7060

**NOTE:**
Aurora Pump reserves the right to make revisions to its products and their specifications, and to this bulletin and related information without notice

# Performance Curves for the 320 Series

| MODEL/SIZE | R.P.M. | CATALOG PAGE | PDF PAGE |
|---|---|---|---|
| 3/4 x 1 x 6A | 3500/1750 | 401 | 2 |
| 3/4 x 1 x 7A | 3500 | 402 | 3 |
| 3/4 x 1 x 7B | 1750 | 403 | 4 |
| 1 x 1-1/4 x 4 | 3500/1750 | 404 | 5 |
| 1 x 1-1/4 x 5 | 3500/1750 | 405 | 6 |
| 1 x 1-1/4 x 6 | 3500/1750 | 406 | 7 |
| 1-1/4 x 1-1/2 x 5 | 3500/1750 | 407 | 8 |
| 1-1/4 x 1-1/2 x 7A | 3500 | 408 | 9 |
| 1-1/4 x 1-1/2 x 7B | 1750 | 409 | 10 |
| 1-1/4 x 1-1/2 x 9 | 1750 | 410 | 11 |
| 1-1/2 x 2 x 4 | 3500/1750 | 411 | 12 |
| 1-1/2 x 2 x 7 | 1750 | 412 | 13 |
| 2 x 2-1/4 x 4 | 3500/1750 | 413 | 14 |
| 2 x 2-1/2 x 5 | 3500/1750 | 414 | 15 |
| 2 x 2-1/2 x 6 | 3500/1750 | 415 | 16 |
| 2 x 2-1/2 x 7 | 1750 | 416 | 17 |
| 3 x 3 x 6 | 3500/1750 | 417 | 18 |

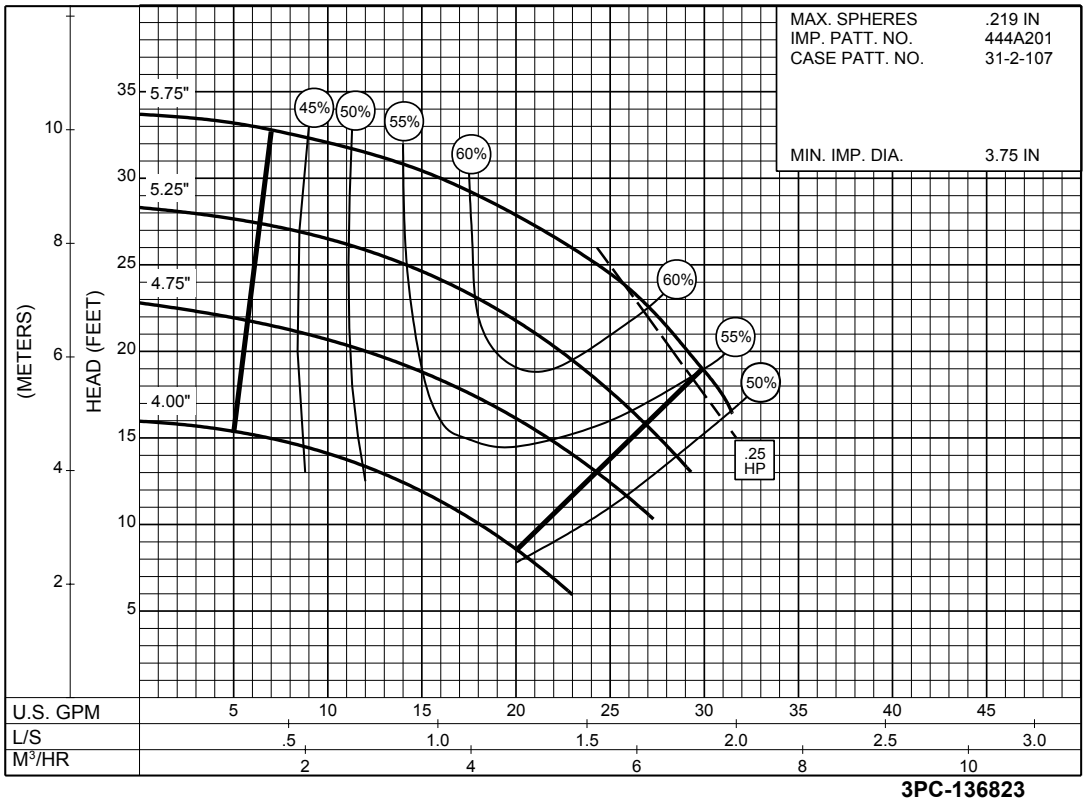
**SIZE : 3/4x1x6A** **TYPE : 320** **IMPELLER : Enclosed** **R. P. M. : 3500**




**3PC-136824**

**3500 R.P.M**

**SIZE : 3/4x1x6A** **TYPE : 320** **IMPELLER : Enclosed** **R. P. M. : 1750**




**3PC-136823**

**1750 R.P.M**

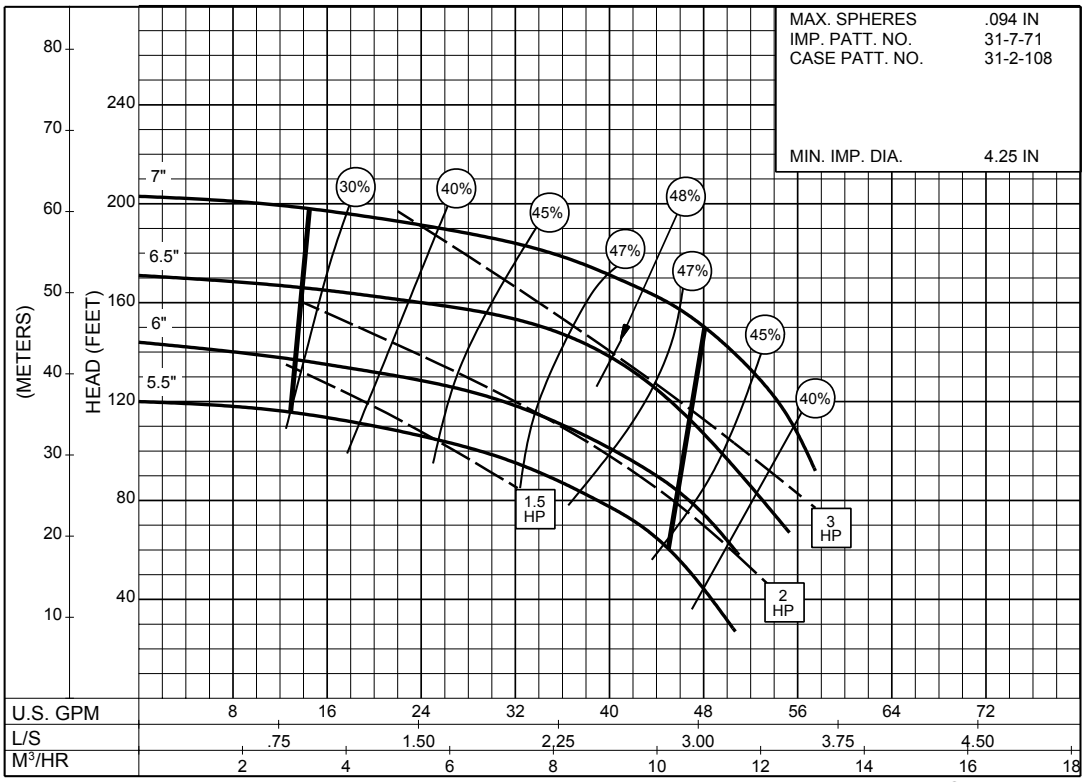
Supersedes Section 320 Page 402
Dated March 1966

# 3/4 x 1 x 7A SERIES 320

## ENCLOSED IMPELLER

**3500**
R.P.M

**SIZE : 3/4x1x7A** **TYPE : 320** **IMPELLER : Enclosed** **R. P. M. : 3500**



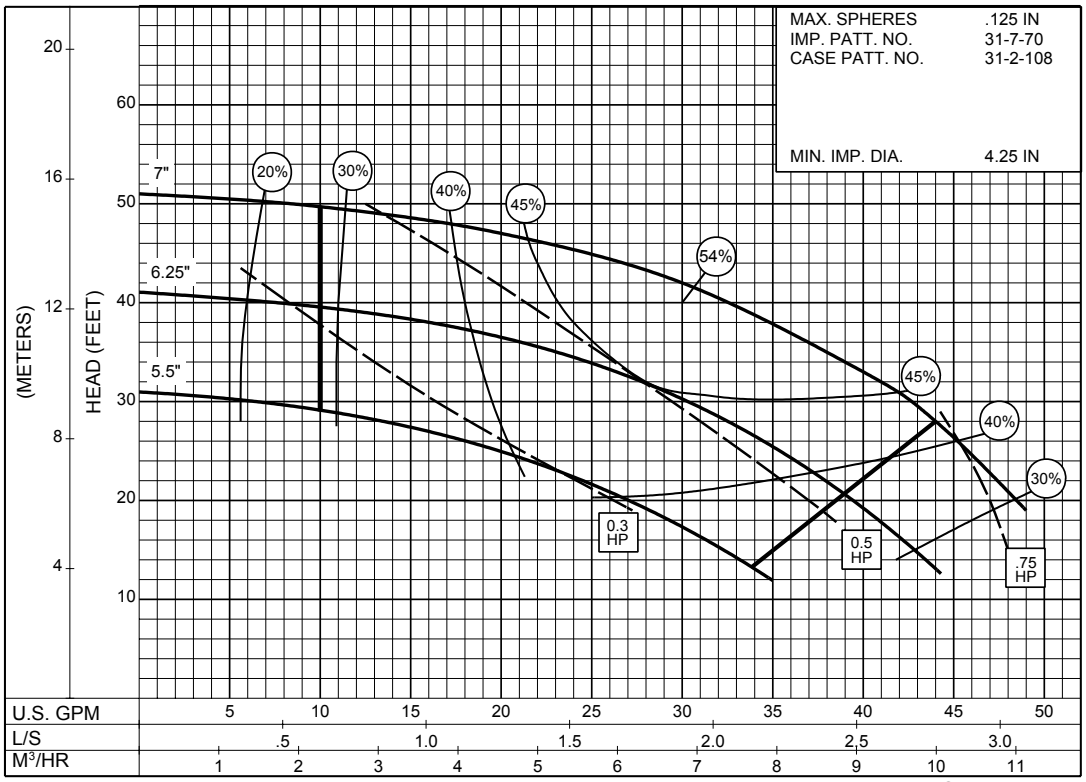

**31 PC-10929**

# 3/4 x 1 x 7B SERIES 320

ENCLOSED IMPELLER

Supersedes Section 320 Page 403
Dated March 1966

**SIZE : 3/4x1x7B** **TYPE : 320** **IMPELLER : Enclosed** **R. P. M. : 1750**




**31PC-10930**

**1750 R.P.M**

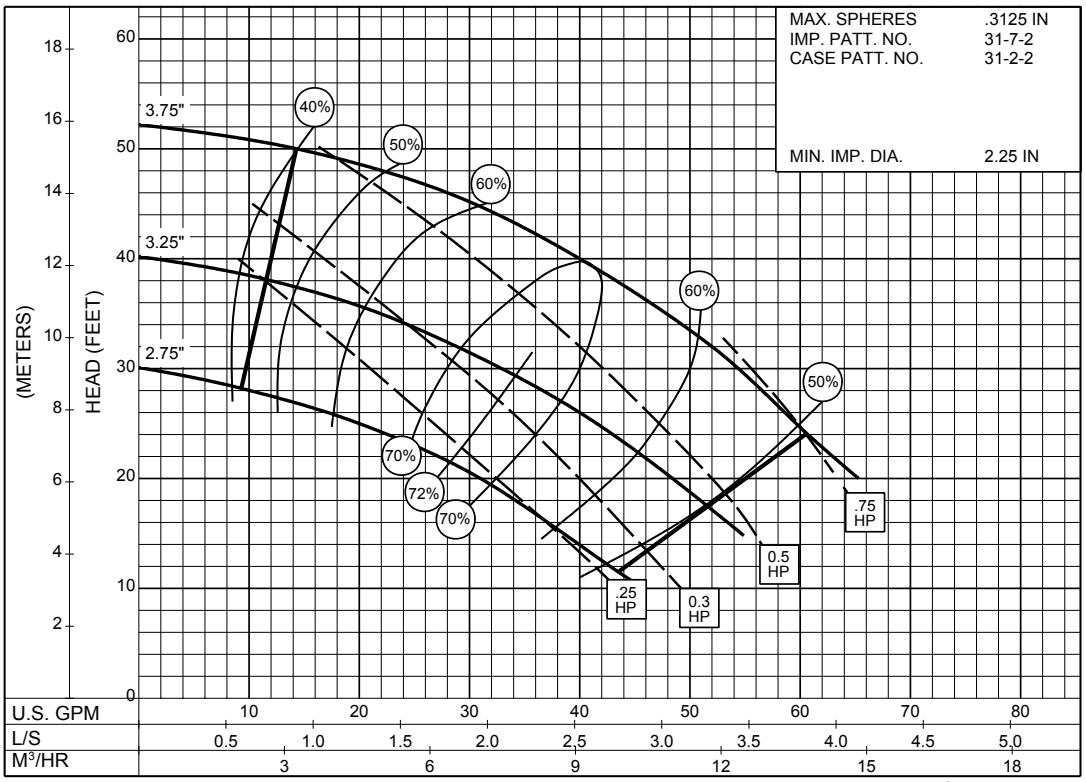
# 1 x 1-1/4 x 4 SERIES 320

ENCLOSED IMPELLER

Supersedes Section 320 Page 404
Dated March 1966

**3500 R.P.M**

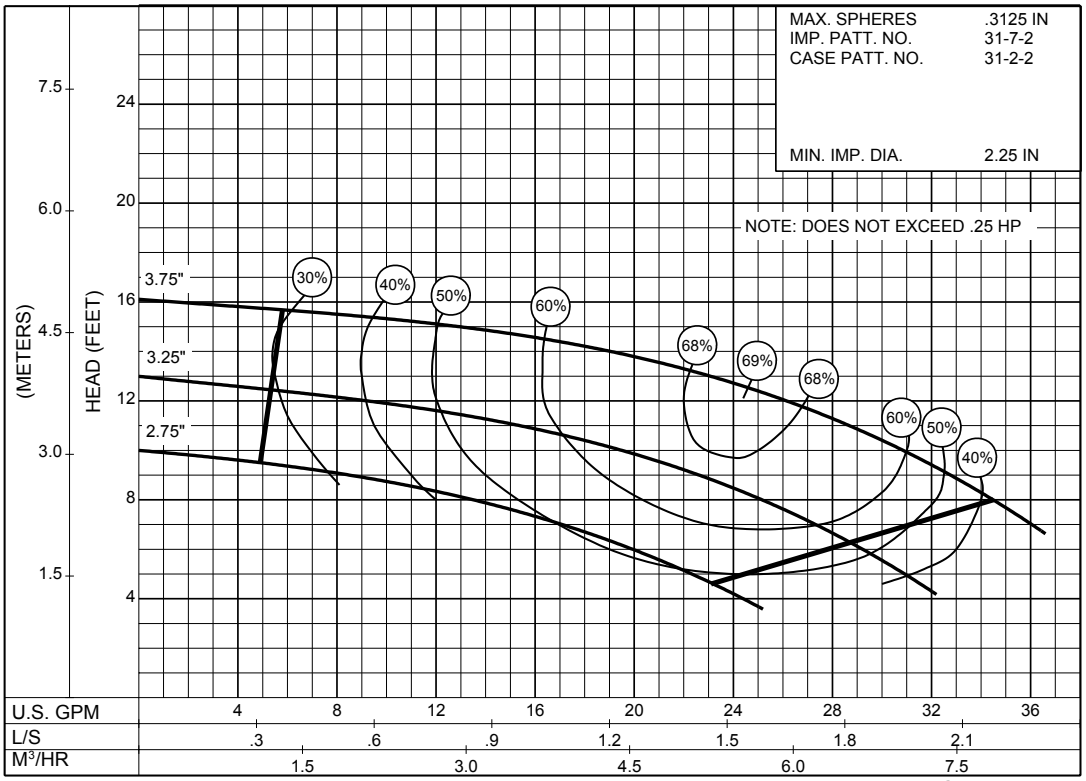
**SIZE : 1x1-1/4x4** **TYPE : 320** **IMPELLER : Enclosed** **R. P. M. : 3500**




**31PC-10909**

**1750 R.P.M**

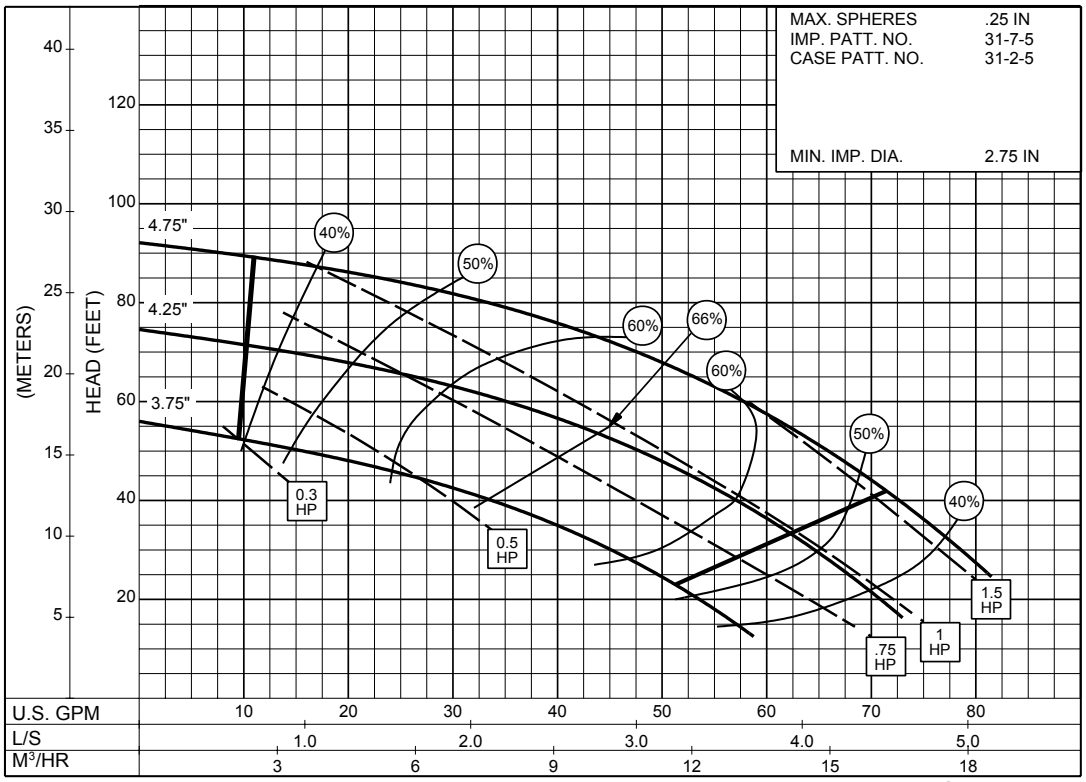
**SIZE : 1x1-1/4x4** **TYPE : 320** **IMPELLER : Enclosed** **R. P. M. : 1750**




**31PC-10910**

Supersedes Section 320 Page 405
Dated March 1966

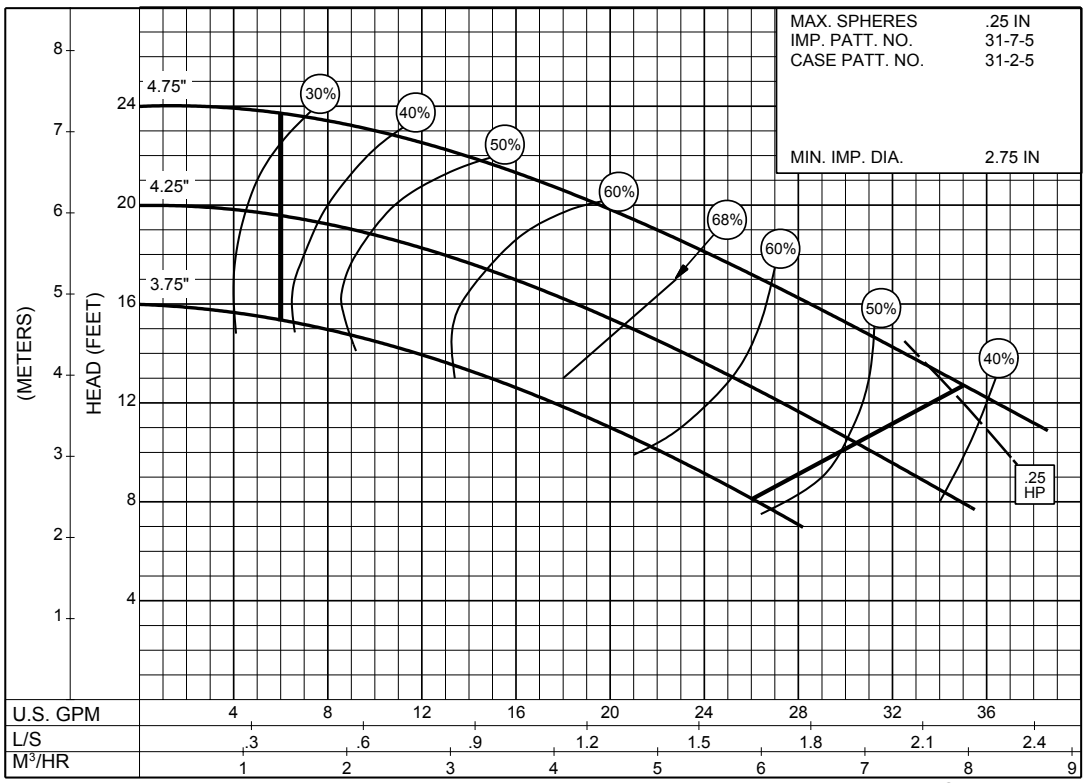

**SIZE : 1x1-1/4x5** **TYPE : 320** **IMPELLER : Enclosed** **R. P. M. : 3500**




31PC-10915

**3500 R.P.M**

**SIZE : 1x1-1/4x5** **TYPE : 320** **IMPELLER : Enclosed** **R. P. M. : 1750**




31PC-10916

**1750 R.P.M**

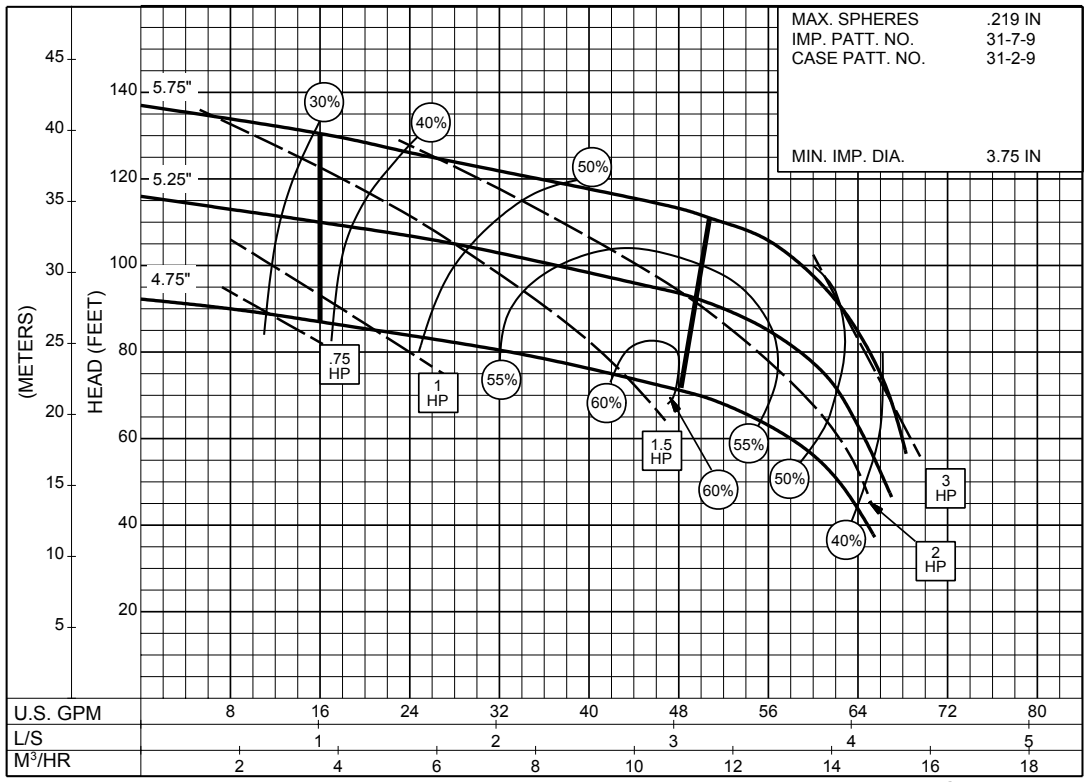
# 1 x 1-1/4 x 6 SERIES 320

ENCLOSED IMPELLER

Supersedes Section 320 Page 406
Dated March 1966

**3500 R.P.M**

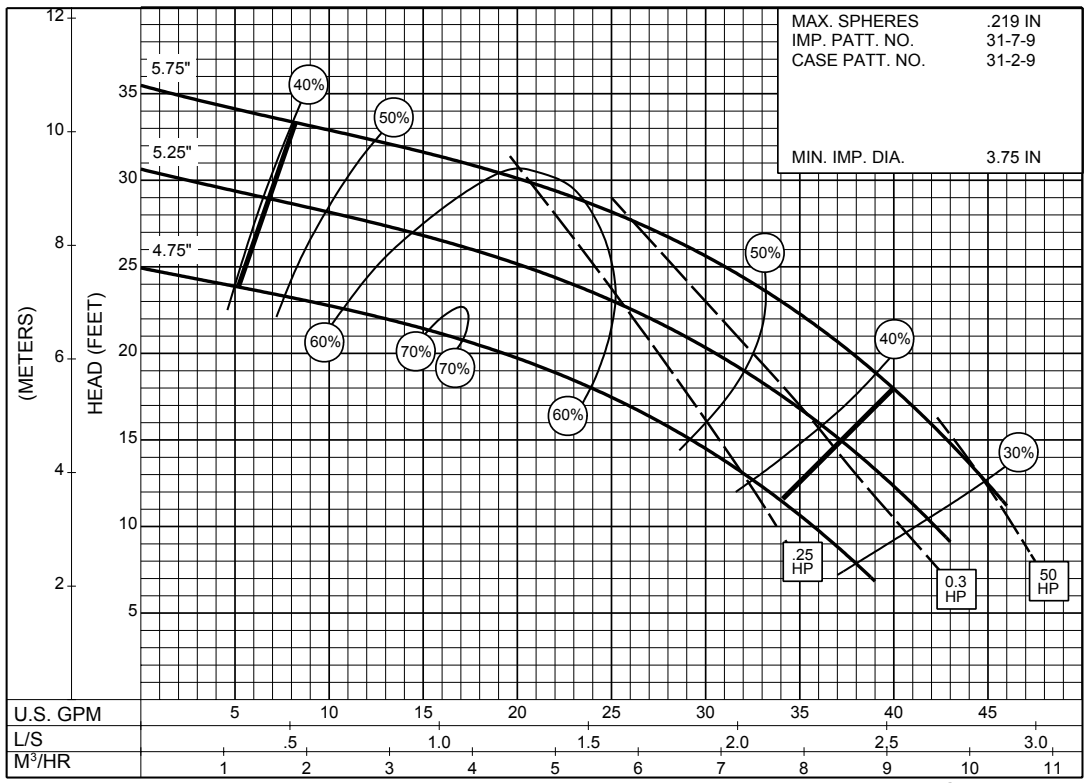
**SIZE : 1x1-1/4x6 TYPE : 320 IMPELLER : Enclosed R. P. M. : 3500**




31PC-10923

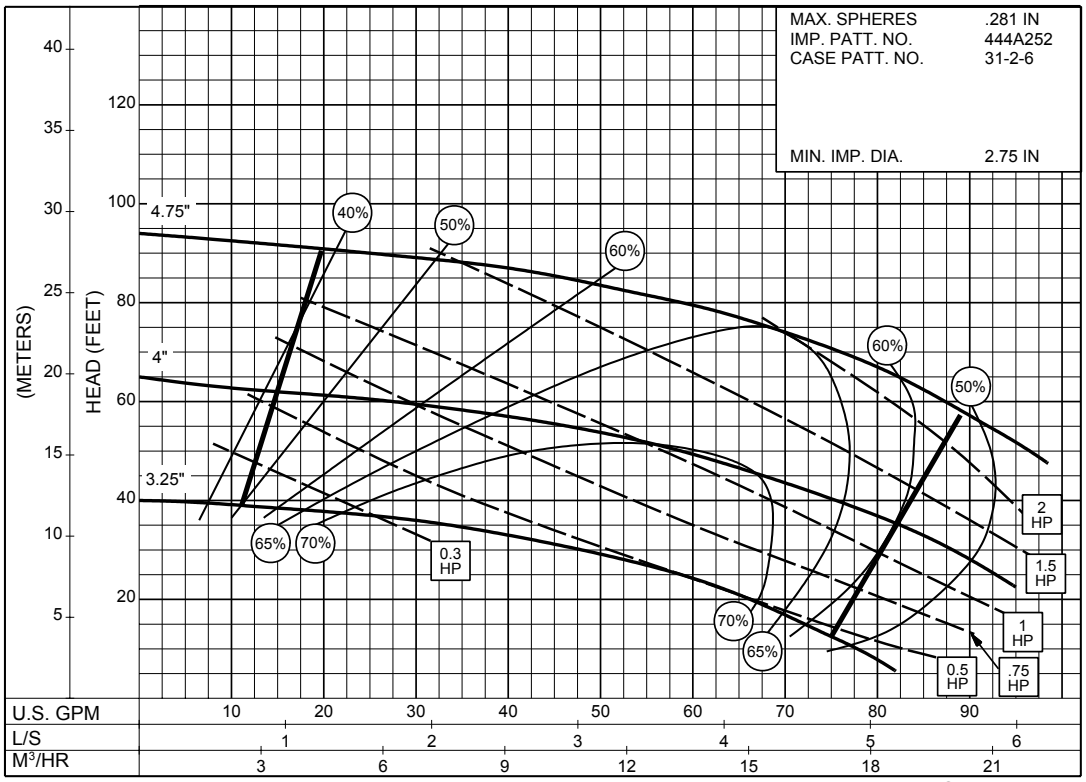
**1750 R.P.M**

**SIZE : 1x1-1/4x6 TYPE : 320 IMPELLER : Enclosed R. P. M. : 1750**




31PC-10924

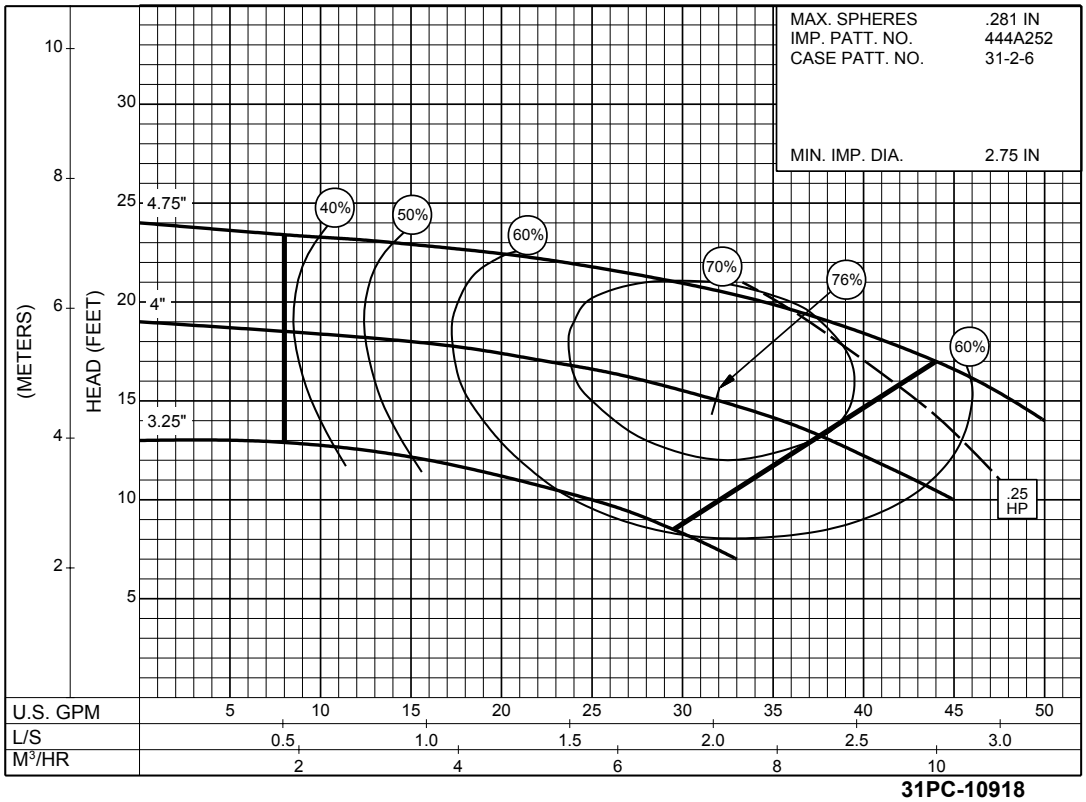
**SIZE : 1-1/4x1-1/2x5** **TYPE : 320** **IMPELLER : Enclosed** **R. P. M. : 3500**




**31PC-10917**

**3500 R.P.M**

**SIZE : 1-1/4x1-1/2x5** **TYPE : 320** **IMPELLER : Enclosed** **R. P. M. : 1750**




**31PC-10918**

**1750 R.P.M**

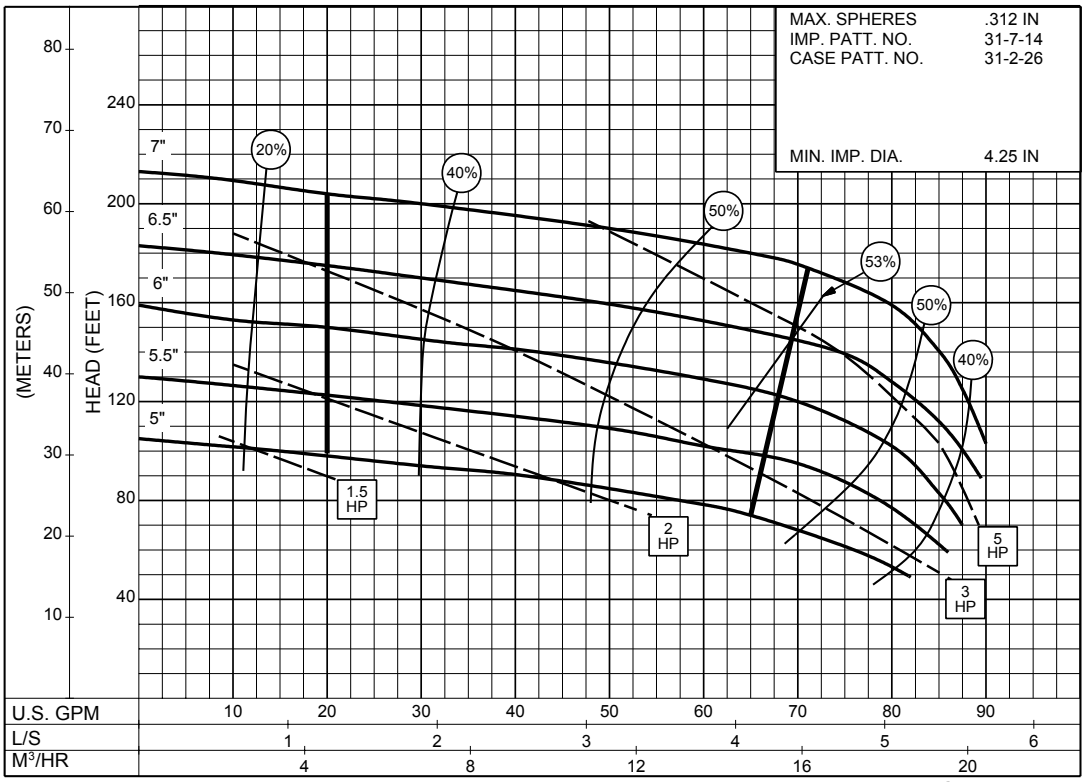
# 1-1/4 x 1-1/2 x 7A SERIES 320

## ENCLOSED IMPELLER

Supersedes Section 320 Page 408
Dated March 1966

**3500**
R.P.M

**SIZE : 1-1/4x1-1/2x7A** **TYPE : 320** **IMPELLER : Enclosed** **R. P. M. : 3500**



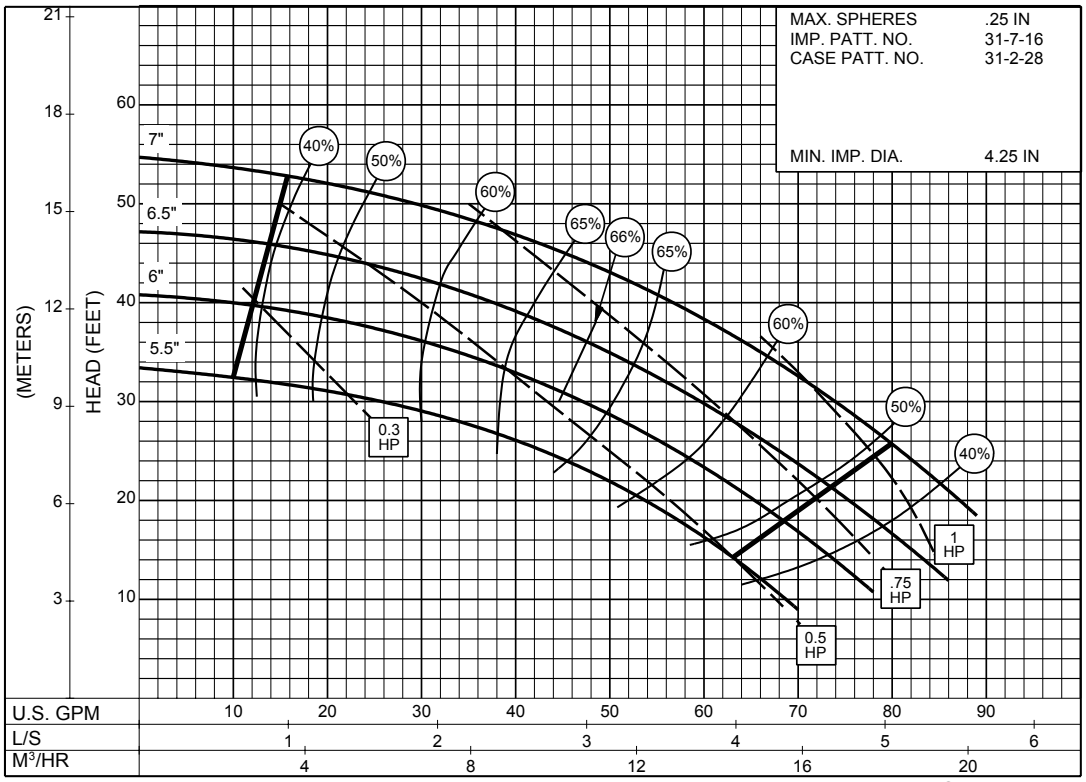

**31PC-10931**

# 1-1/4 x 1-1/2 x 7B SERIES 320

ENCLOSED IMPELLER

Supersedes Section 320 Page 409
Dated March 1966

**SIZE : 1-1/4x1-1/2x7B** **TYPE : 320** **IMPELLER : Enclosed** **R. P. M. : 1750**




**31PC-10932**

**1750 R.P.M**

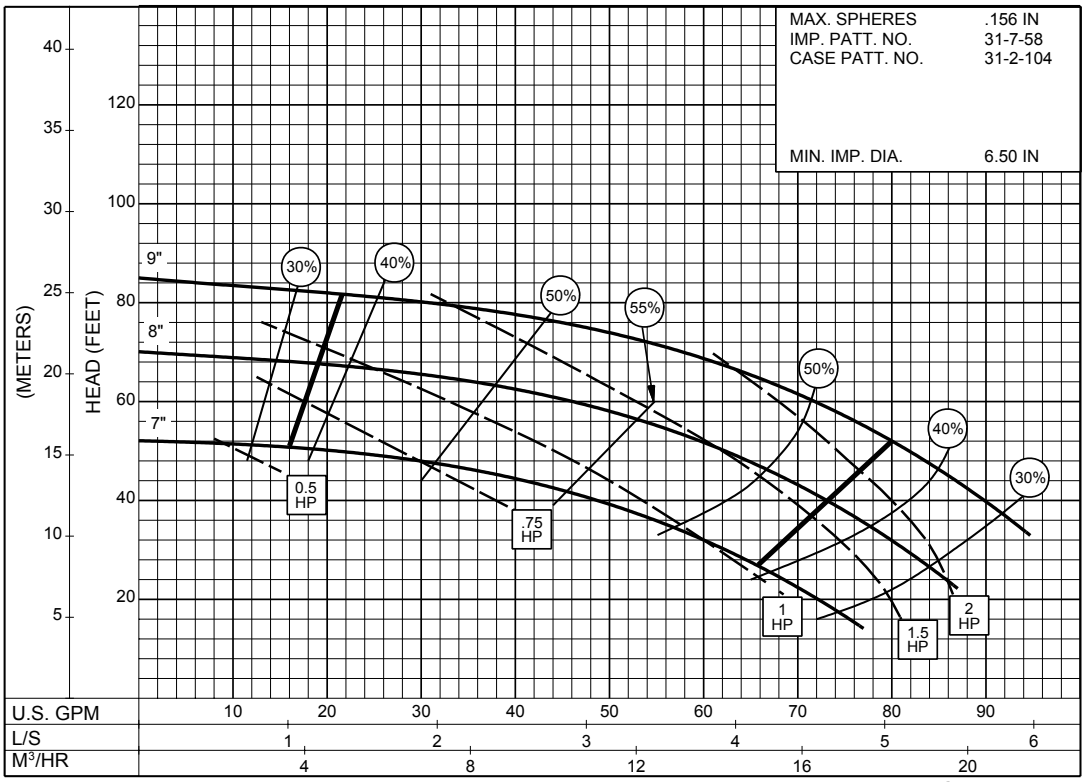
Supersedes Section 320 Page 410
Dated March 1966

# 1-1/4 x 1-1/2 x 9 SERIES 320

## ENCLOSED IMPELLER

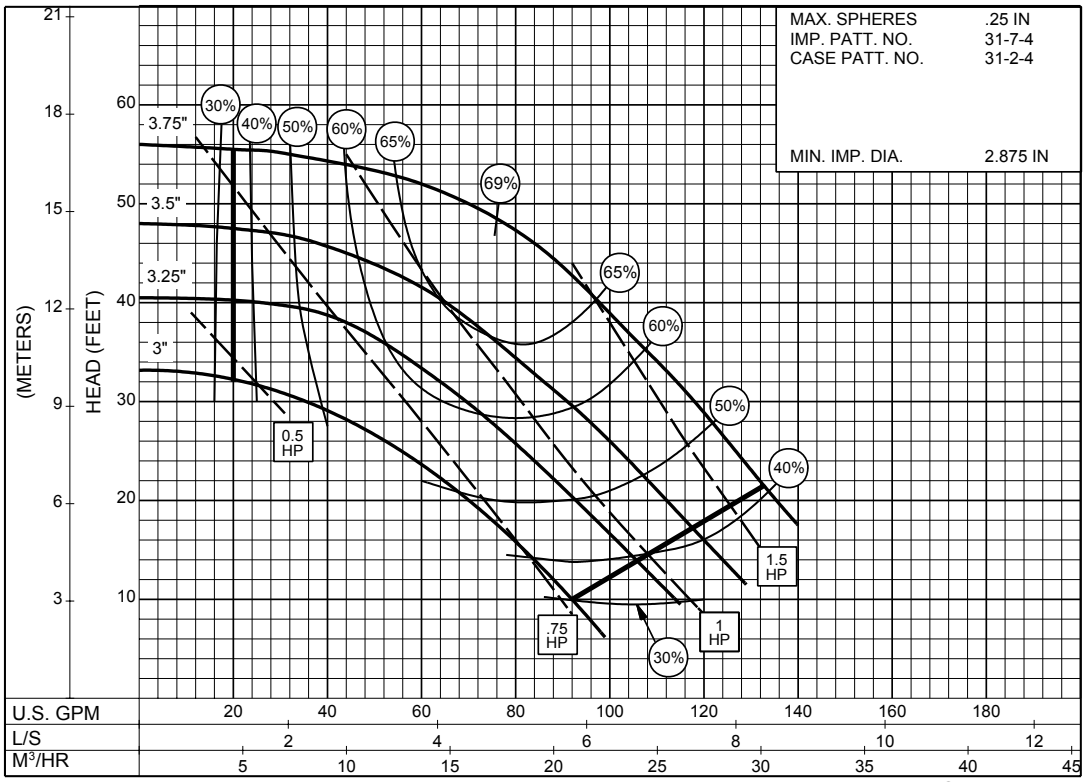
**1750**
R.P.M

**SIZE : 1-1/4x1-1/2x9** **TYPE : 320** **IMPELLER : Enclosed** **R. P. M. : 1750**




**31PC-10935**

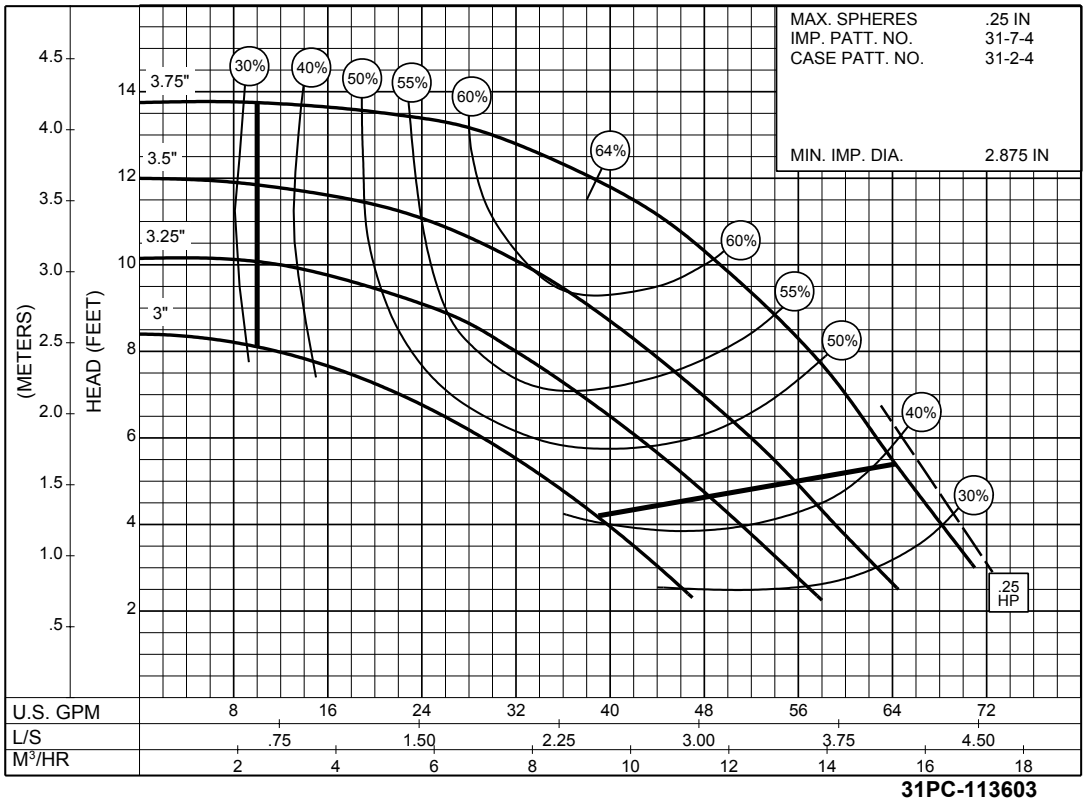
**SIZE : 1-1/2x2x4** **TYPE : 320** **IMPELLER : Enclosed** **R. P. M. : 3500**




**31PC-113602**

**3500 R.P.M**

**SIZE : 1-1/2x2x4** **TYPE : 320** **IMPELLER : Enclosed** **R. P. M. : 1750**




**31PC-113603**

**1750 R.P.M**

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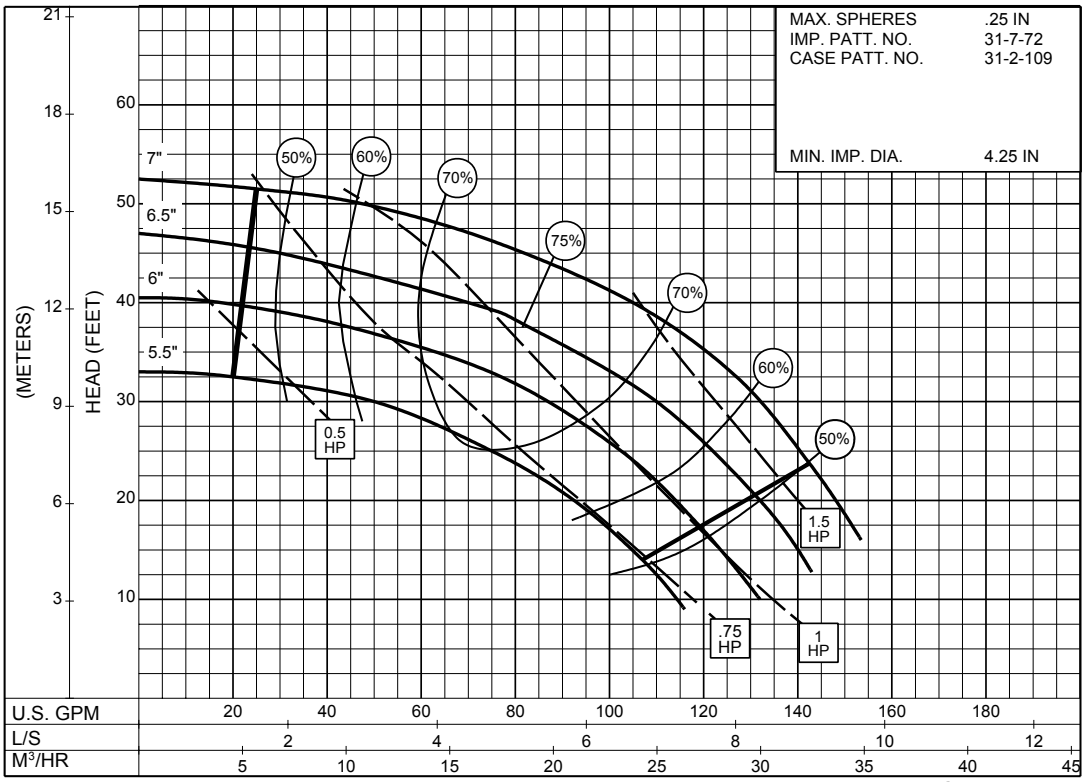
Supersedes Section 320 Page 412
Dated March 1966

# 1-1/2 x 2 x 7 SERIES 320

## ENCLOSED IMPELLER

**1750**
R.P.M

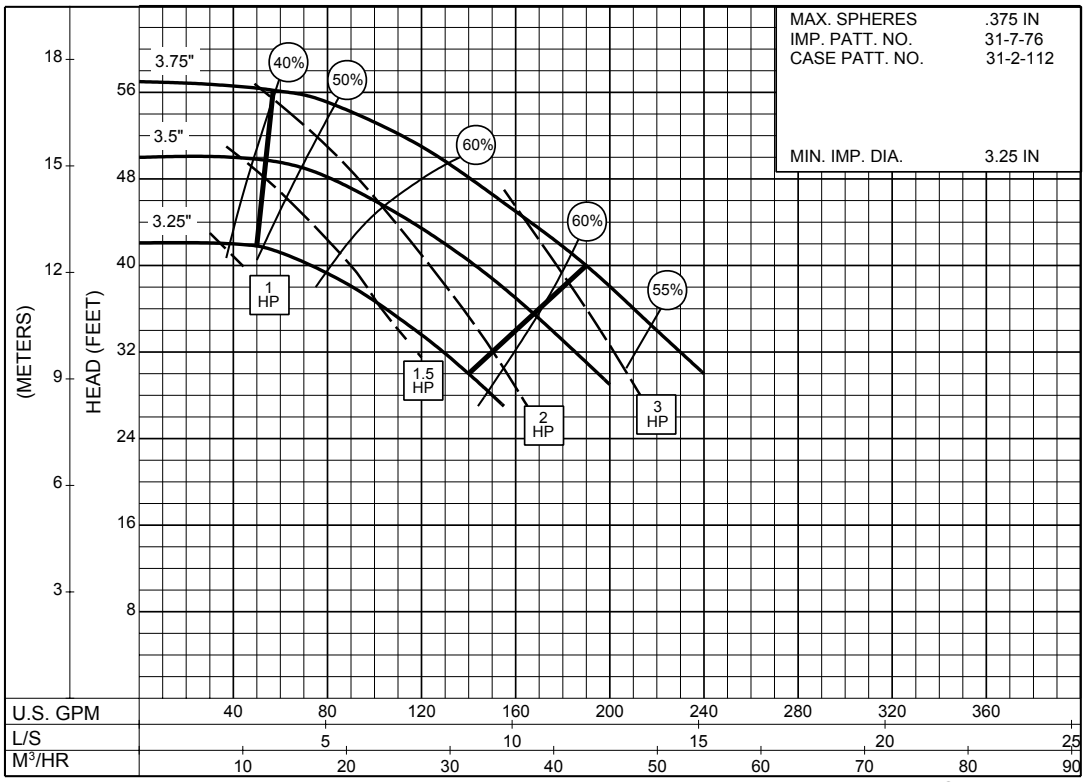
**SIZE : 1-1/2x2x7** **TYPE : 320** **IMPELLER : Enclosed** **R. P. M. : 1750**




**31PC-10933**

Supersedes Section 320 Page 413
Dated March 1966

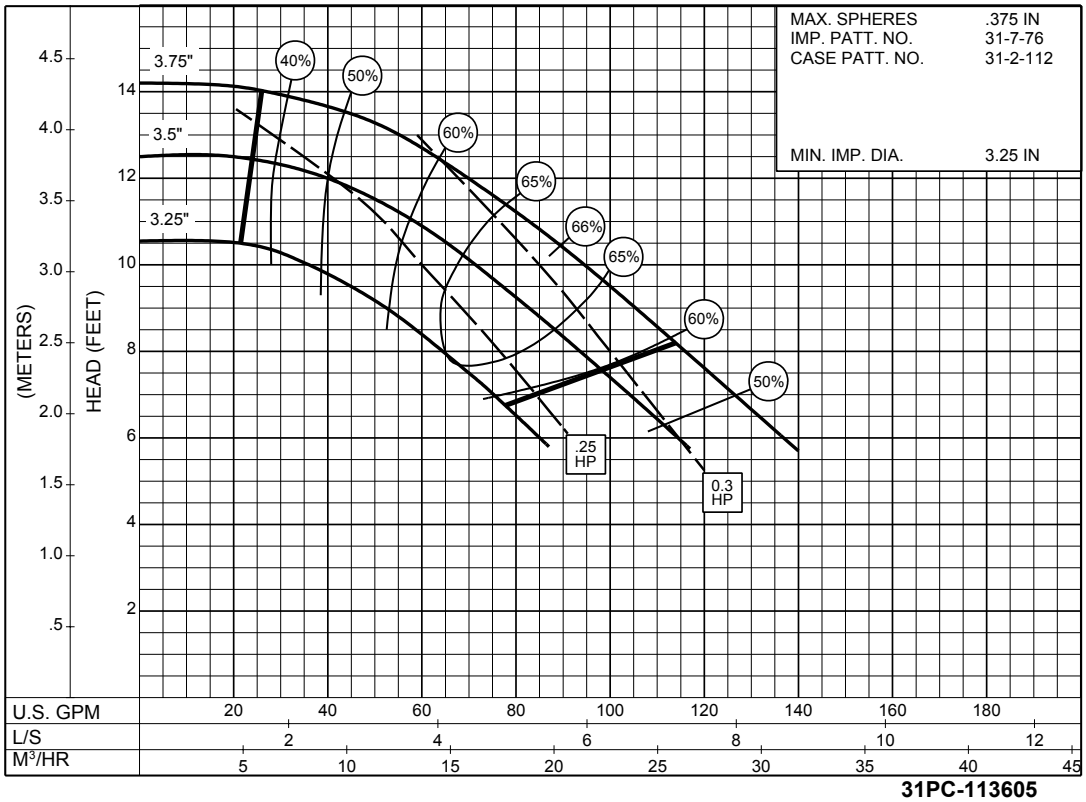

**SIZE : 2x2-1/2x4** **TYPE : 320** **IMPELLER : Enclosed** **R. P. M. : 3500**




**31PC-113604**

**3500 R.P.M**

**SIZE : 2x2-1/2x4** **TYPE : 320** **IMPELLER : Enclosed** **R. P. M. : 1750**




**31PC-113605**

**1750 R.P.M**

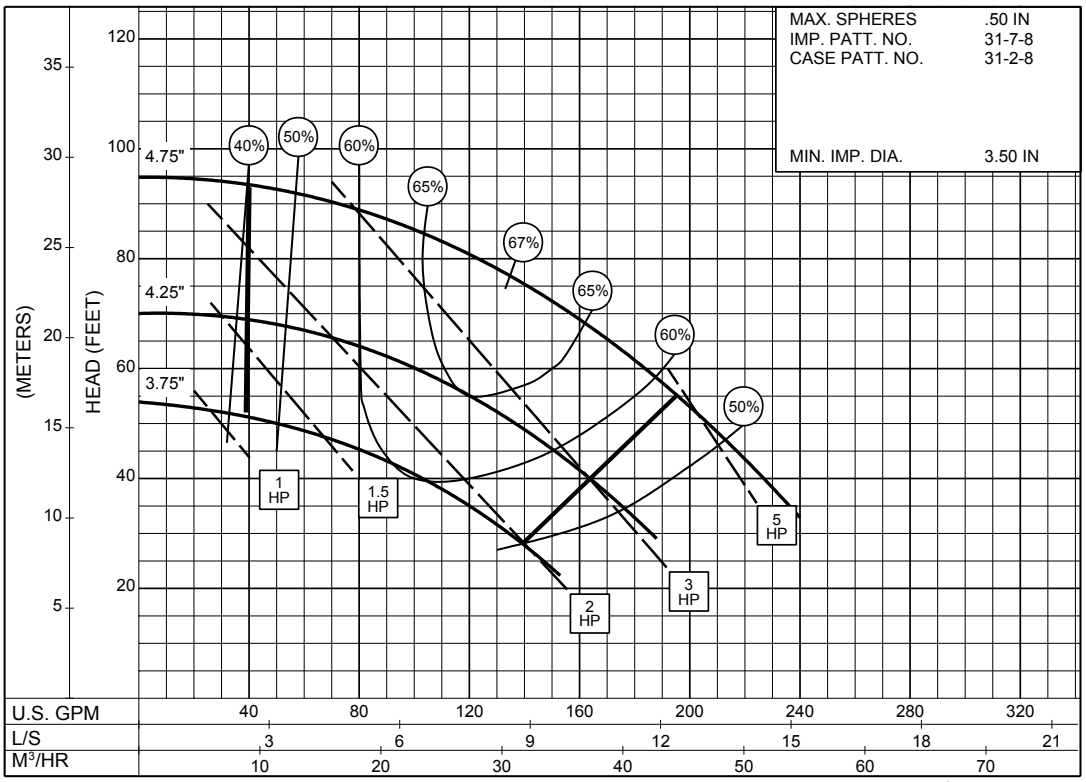
Supersedes Section 320 Page 414
Dated March 1966

# 2 x 2-1/2 x 5 SERIES 320

## ENCLOSED IMPELLER

**3500 R.P.M**

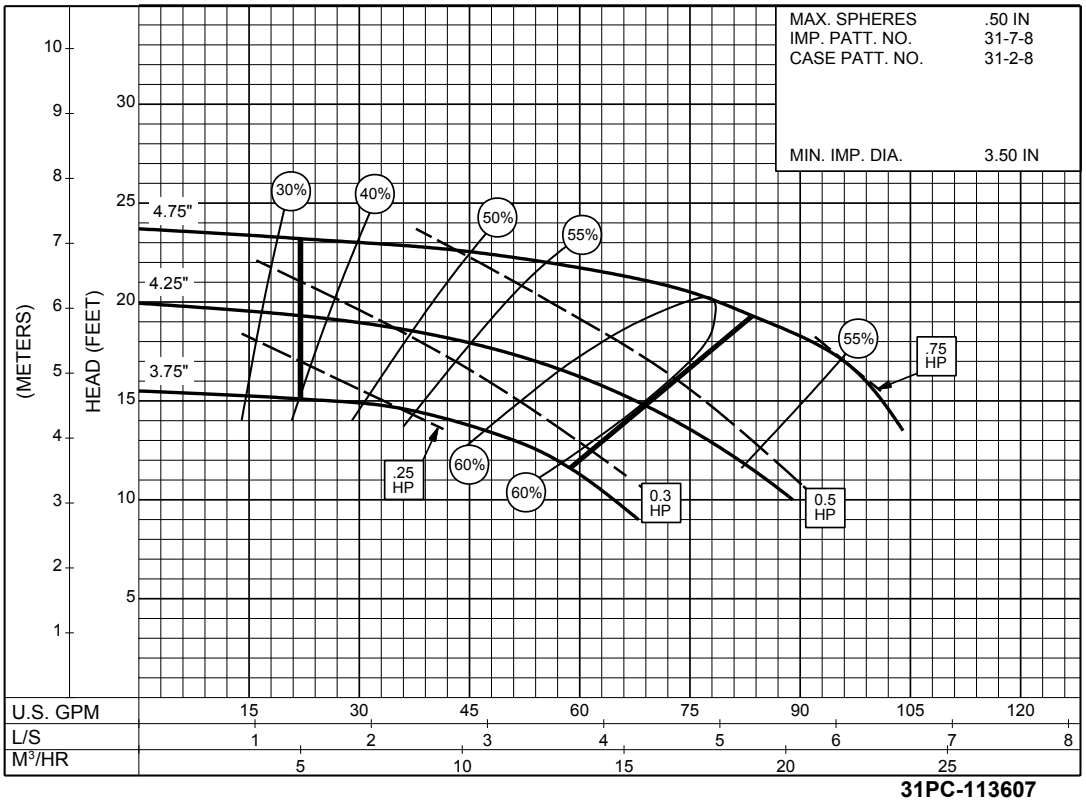
**SIZE : 2x2-1/2x5** **TYPE : 320** **IMPELLER : Enclosed** **R. P. M. : 3500**




31PC-113606

**1750 R.P.M**

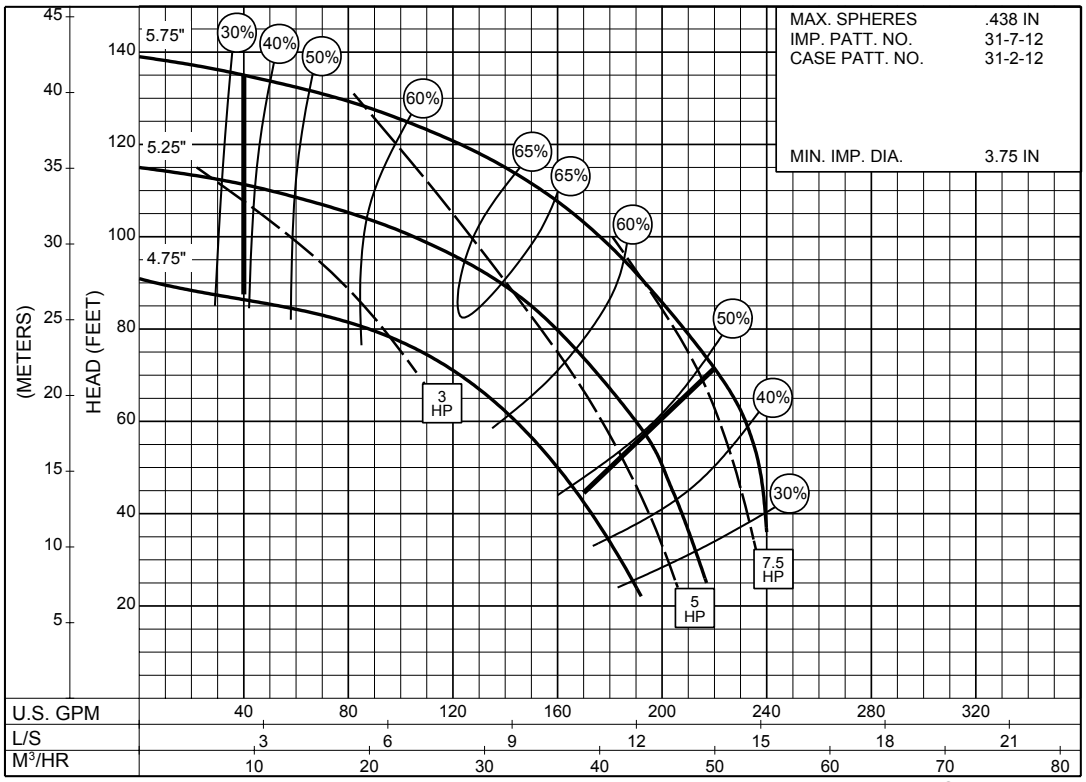
**SIZE : 2x2-1/2x5** **TYPE : 320** **IMPELLER : Enclosed** **R. P. M. : 1750**




31PC-113607

Supersedes Section 320 Page 415
Dated March 1966

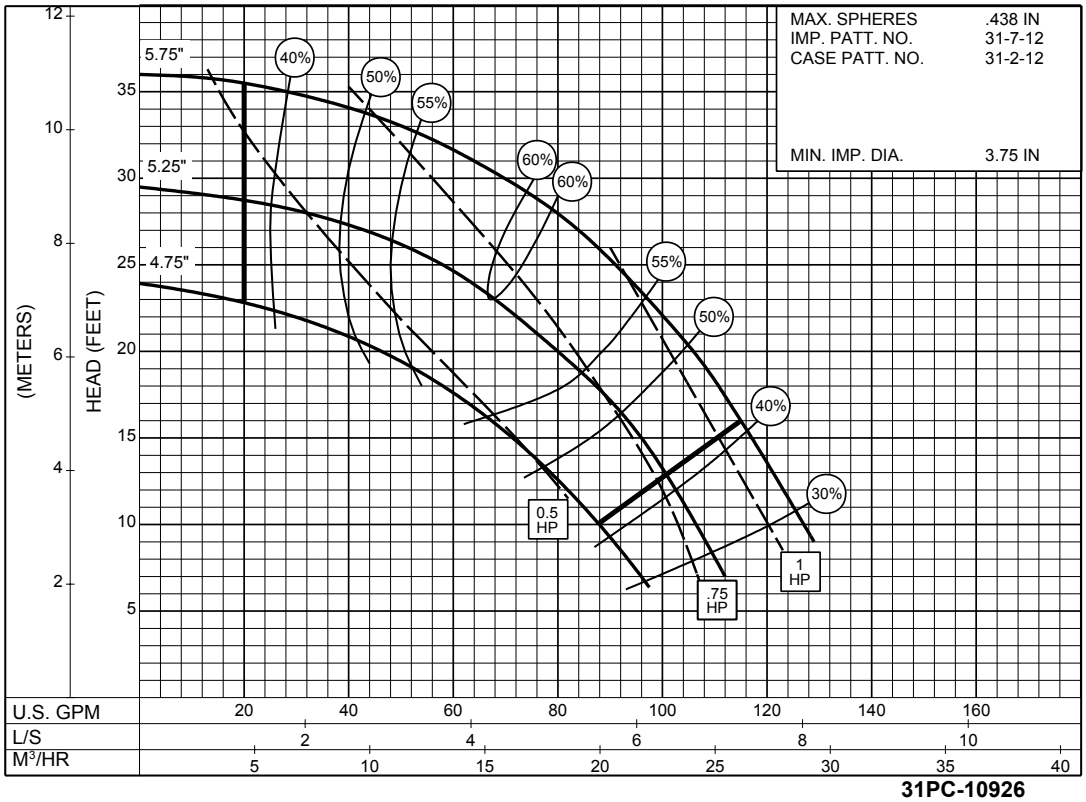

**SIZE : 2x2-1/2x6** **TYPE : 320** **IMPELLER : Enclosed** **R. P. M. : 3500**




**31PC-10925**

**3500 R.P.M**

**SIZE : 2x2-1/2x6** **TYPE : 320** **IMPELLER : Enclosed** **R. P. M. : 1750**




**31PC-10926**

**1750 R.P.M**

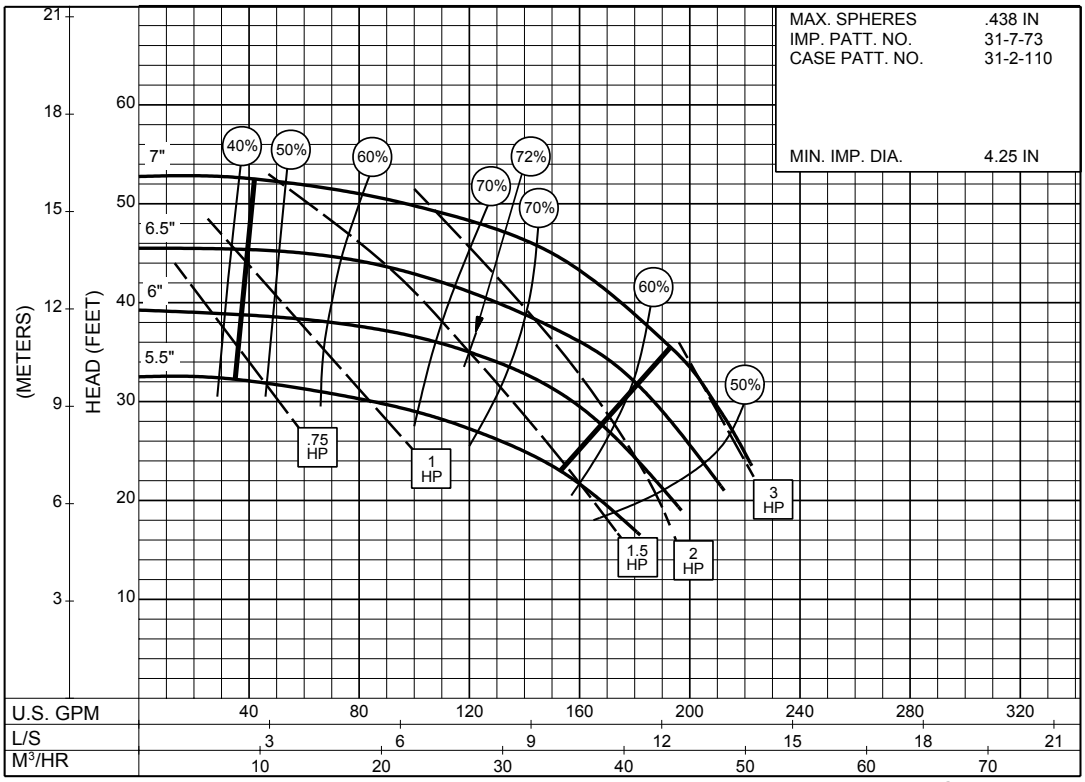
Supersedes Section 320 Page 416
Dated March 1966

# 2 x 2-1/2 x 7 SERIES 320

## ENCLOSED IMPELLER

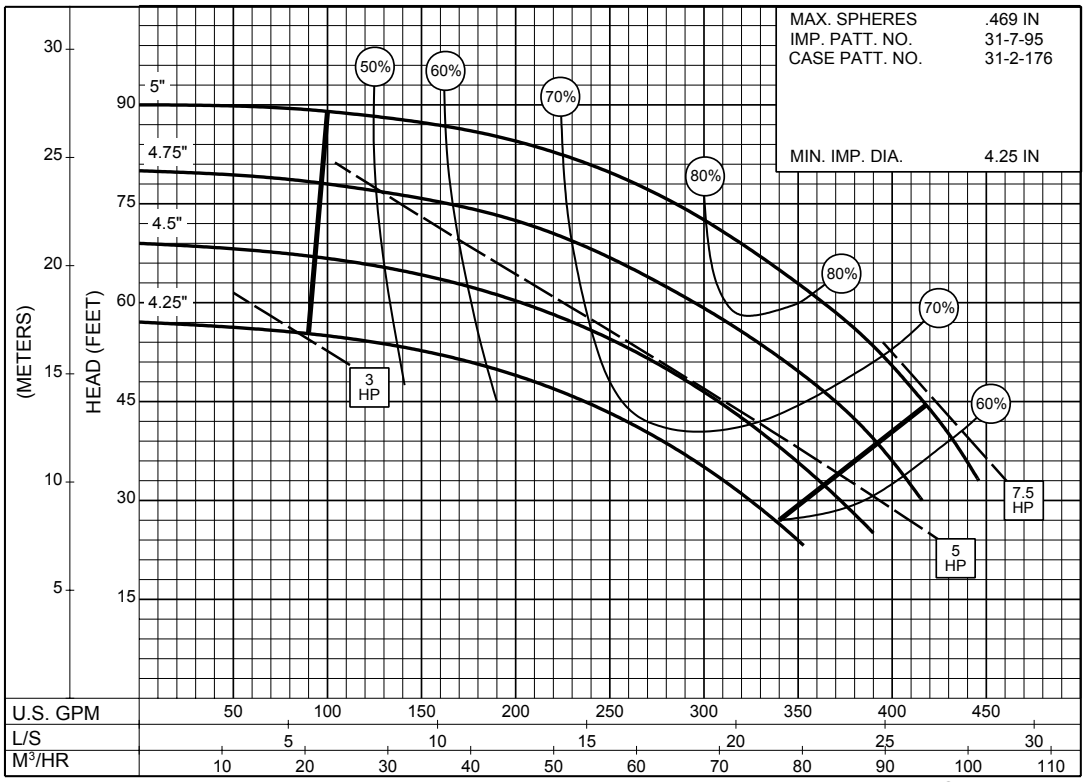
**1750**
R.P.M

**SIZE : 2x2-1/2x7** **TYPE : 320** **IMPELLER : Enclosed** **R. P. M. : 1750**




**31PC-10934**

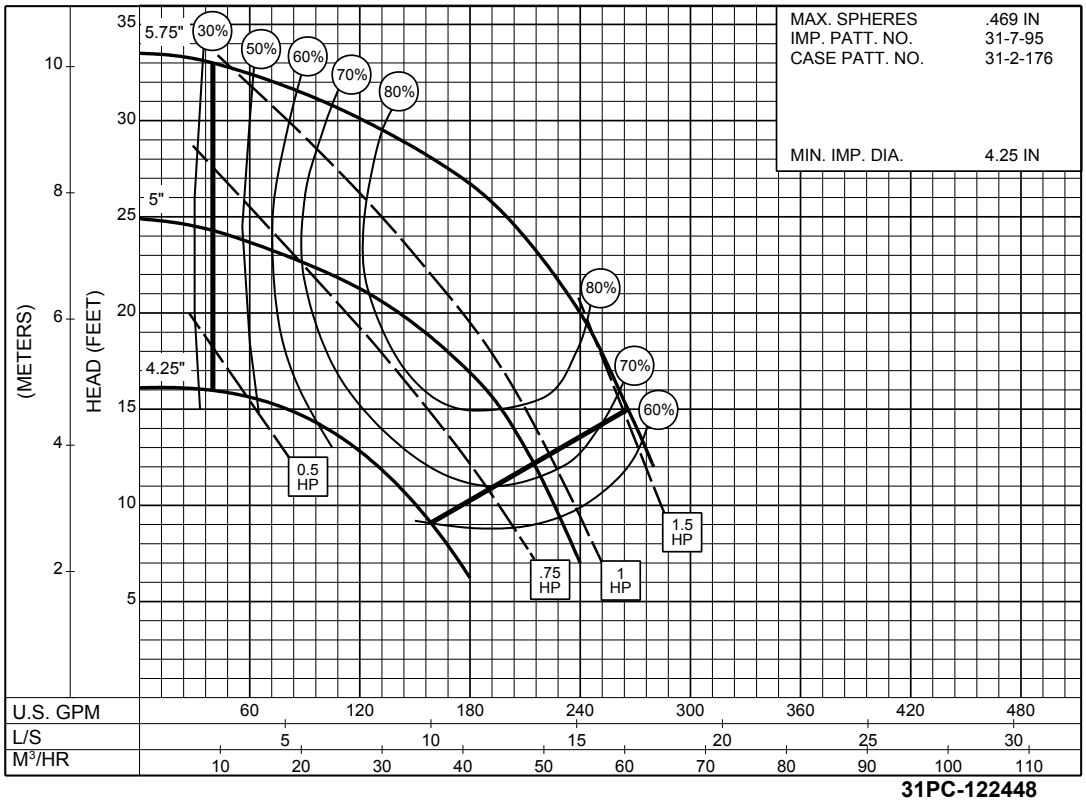
**SIZE : 3x3x6** **TYPE : 320** **IMPELLER : Enclosed** **R. P. M. : 3500**




**31PC-122447**

**3500 R.P.M**

**SIZE : 3x3x6** **TYPE : 320** **IMPELLER : Enclosed** **R. P. M. : 1750**




**31PC-122448**

**1750 R.P.M**

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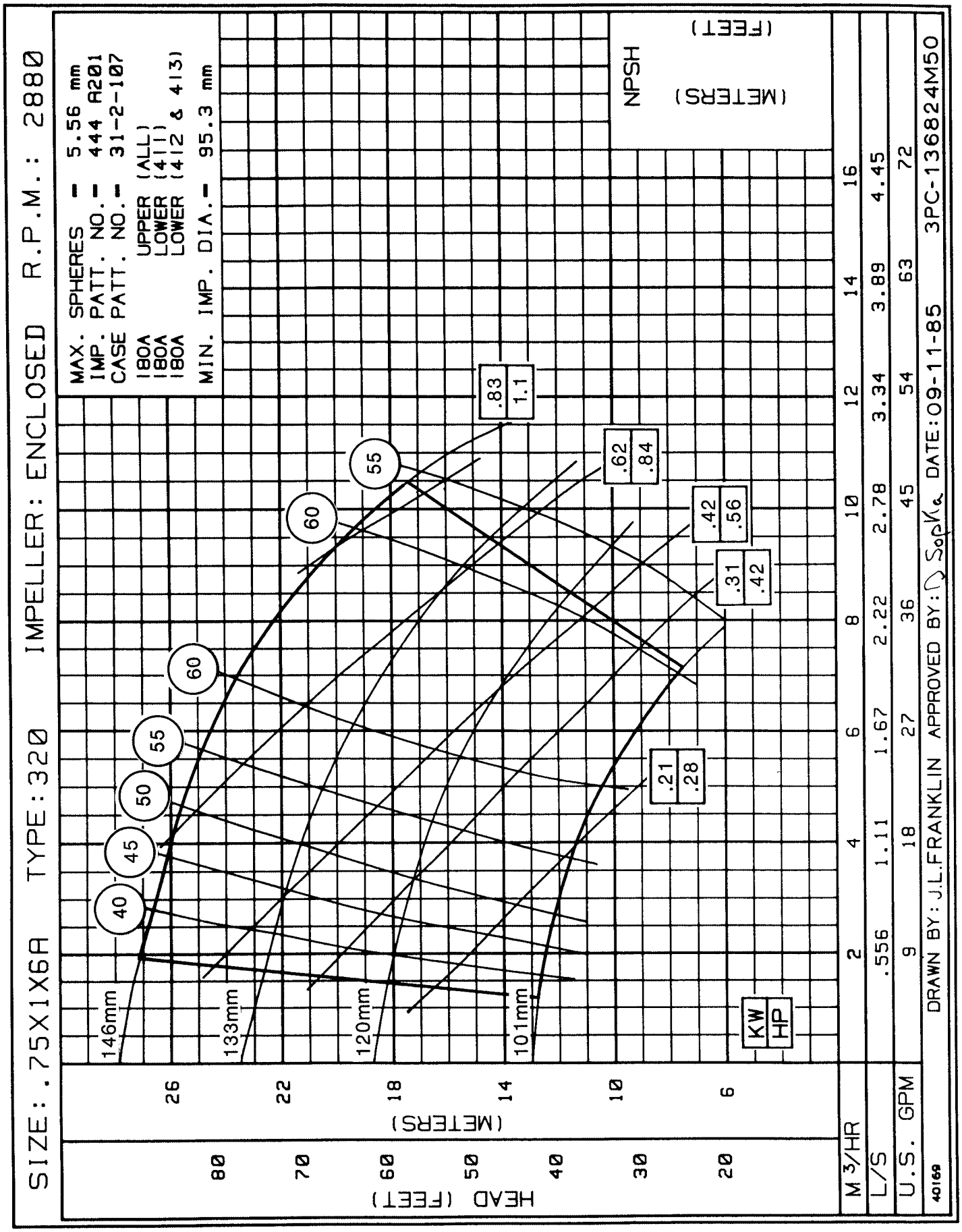
# Performance Curves for the 320 Series (50 Hz)

| MODEL/SIZE | R.P.M. | PDF PAGE |
|---|---|---|
| 3/4x1x6A | 2880 | 2 |
| 3/4x1x6A | 1440 | 3 |
| 3/4x1x7A | 2880 | 4 |
| 3/4x1x7B | 1440 | 5 |
| 1x1-1/4x4 | 2880 | 6 |
| 1x1-1/4x4 | 1440 | 7 |
| 1x1-1/4x5 | 2880 | 8 |
| 1x1-1/4x5 | 1440 | 9 |
| 1x1-1/4x6 | 2880 | 10 |
| 1x1-1/4x6 | 1440 | 11 |
| 1-1/4x1-1/2x5 | 2880 | 12 |
| 1-1/4x1-1/2x5 | 1440 | 13 |
| 1-1/4x1-1/2x7A | 2880 | 14 |
| 1-1/4x1-1/2x7B | 1440 | 15 |
| 1-1/4x1-1/2x9 | 1440 | 16 |
| 1-1/2x2x4 | 2880 | 17 |
| 1-1/2x2x4 | 1440 | 18 |
| 1-1/2x2x7 | 1440 | 19 |
| 2x2-1/2x4 | 2880 | 20 |
| 2x2-1/2x4 | 1440 | 21 |
| 2x2-1/2x5 | 2880 | 22 |
| 2x2-1/2x5 | 1440 | 23 |
| 2x2-1/2x6 | 2880 | 24 |
| 2x2-1/2x6 | 1440 | 25 |
| 2x2-1/2x7 | 1440 | 26 |
| 3x3x6 | 2880 | 27 |
| 3x3x6 | 1440 | 28 |

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# 3/4x1x6A - 2880 RPM
## ENCLOSED IMPELLER

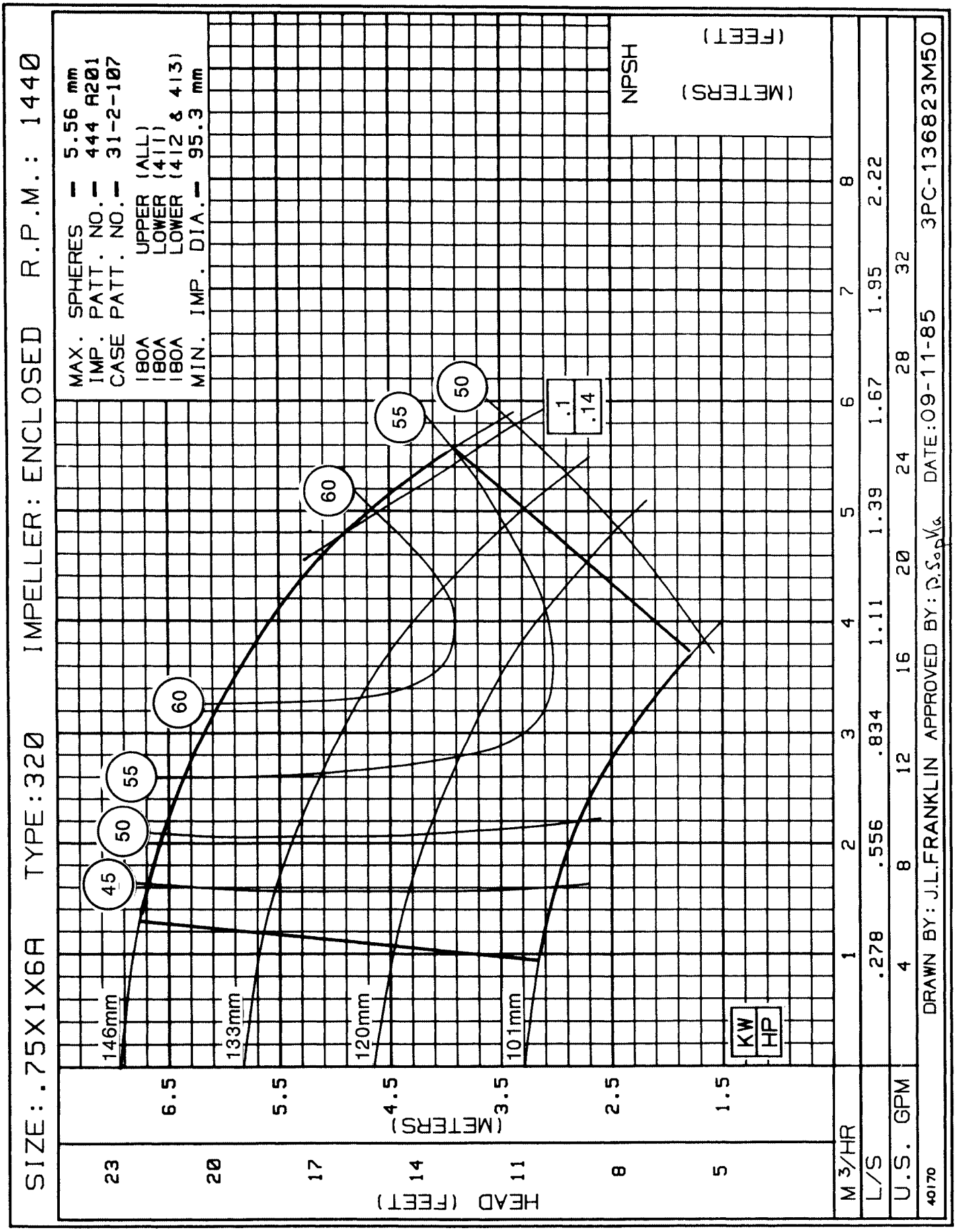
SECTION 320 (Metric 50Hz)
DATE JULY 1994
SUPERCEDES MARCH 1986



SECTION 320 (Metric 50Hz)
DATE JULY 1994
SUPERCEDES MARCH 1986

# 3/4x1x6A - 1440 RPM
## ENCLOSED IMPELLER

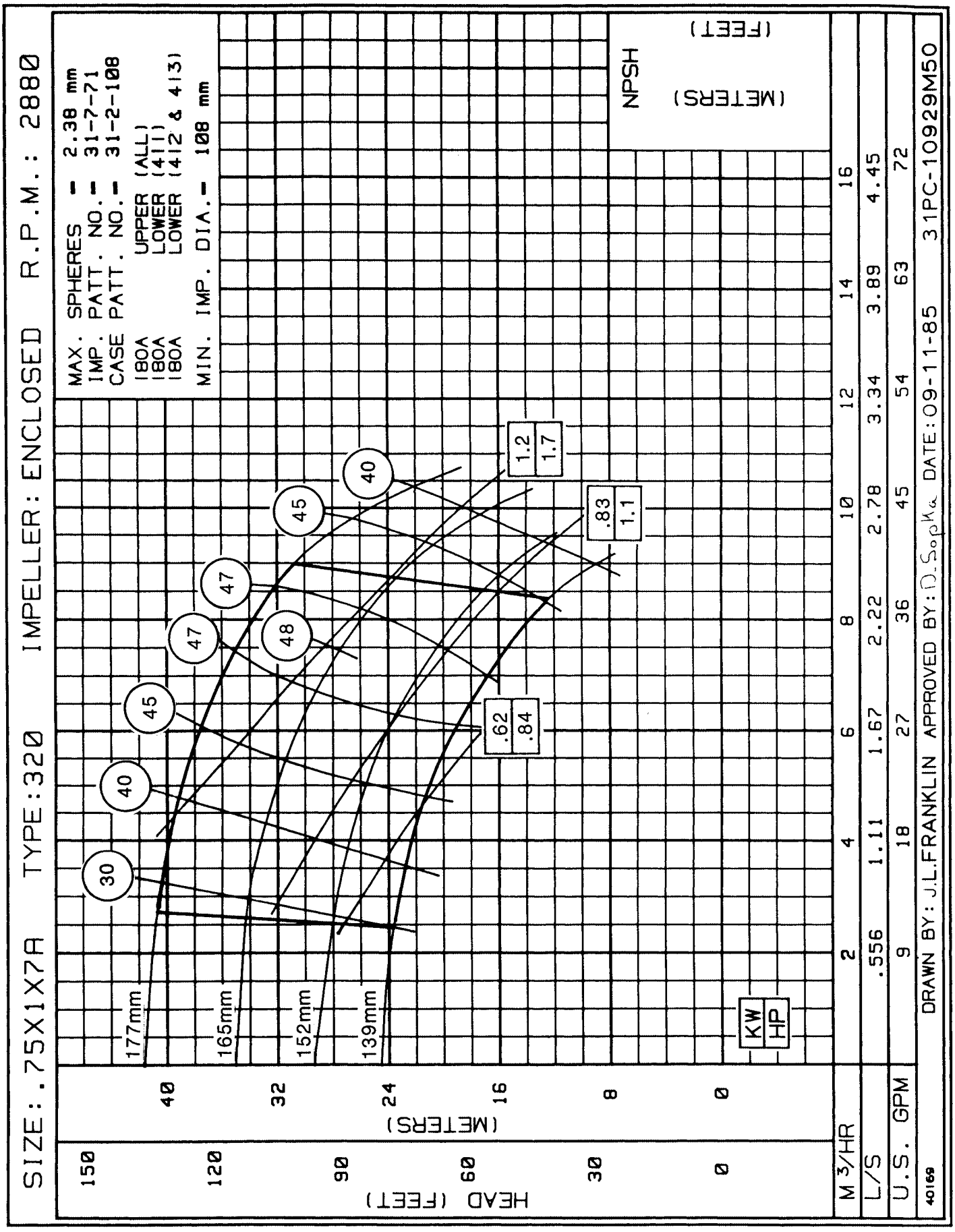
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# 3/4x1x7A - 2880 RPM
## ENCLOSED IMPELLER

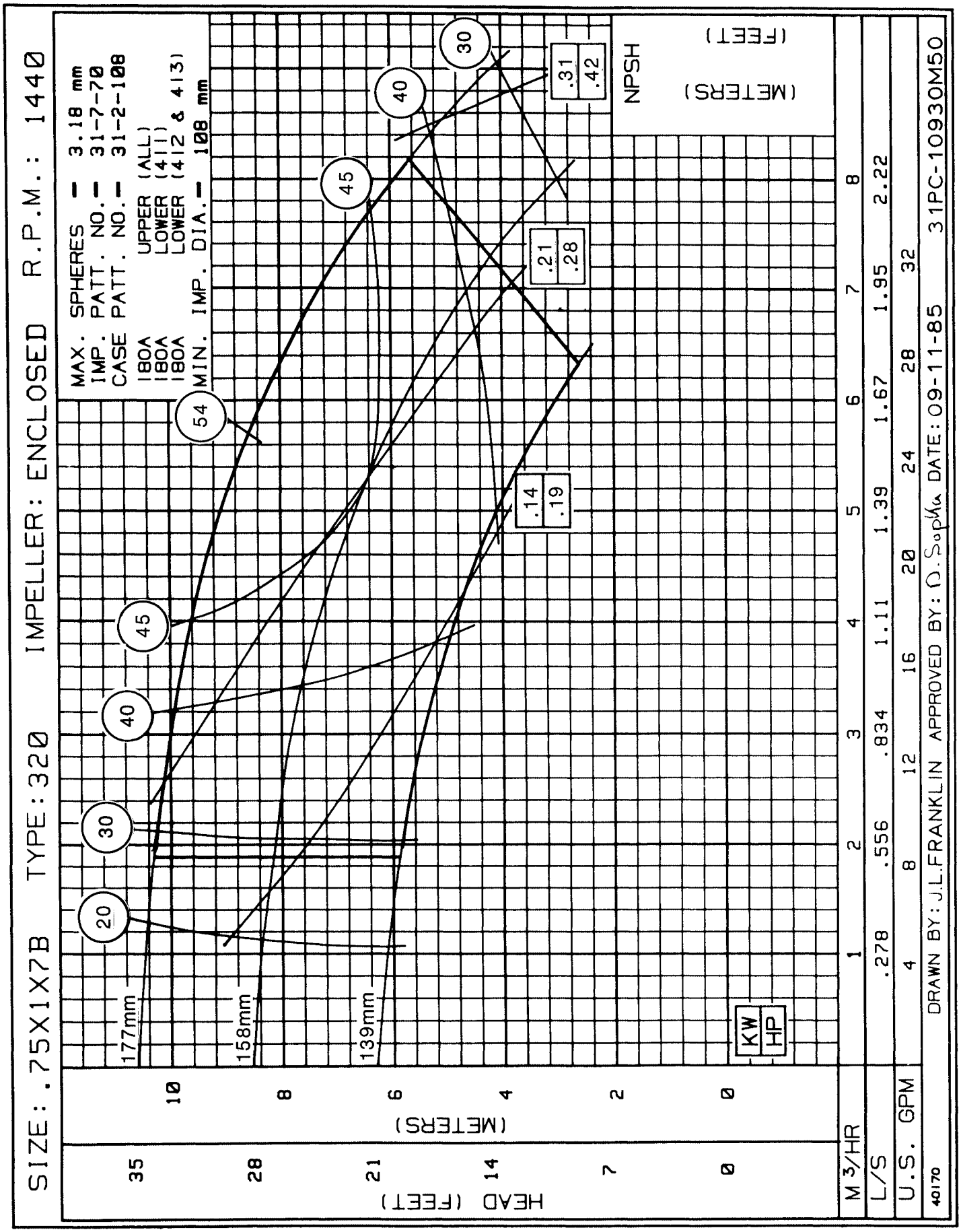
SECTION 320 (Metric 50Hz)
DATE JULY 1994
SUPERCEDES MARCH 1986



SECTION 320 (Metric 50Hz)
DATE JULY 1994
SUPERCEDES MARCH 1986

# 3/4x1x7B - 1440 RPM
## ENCLOSED IMPELLER

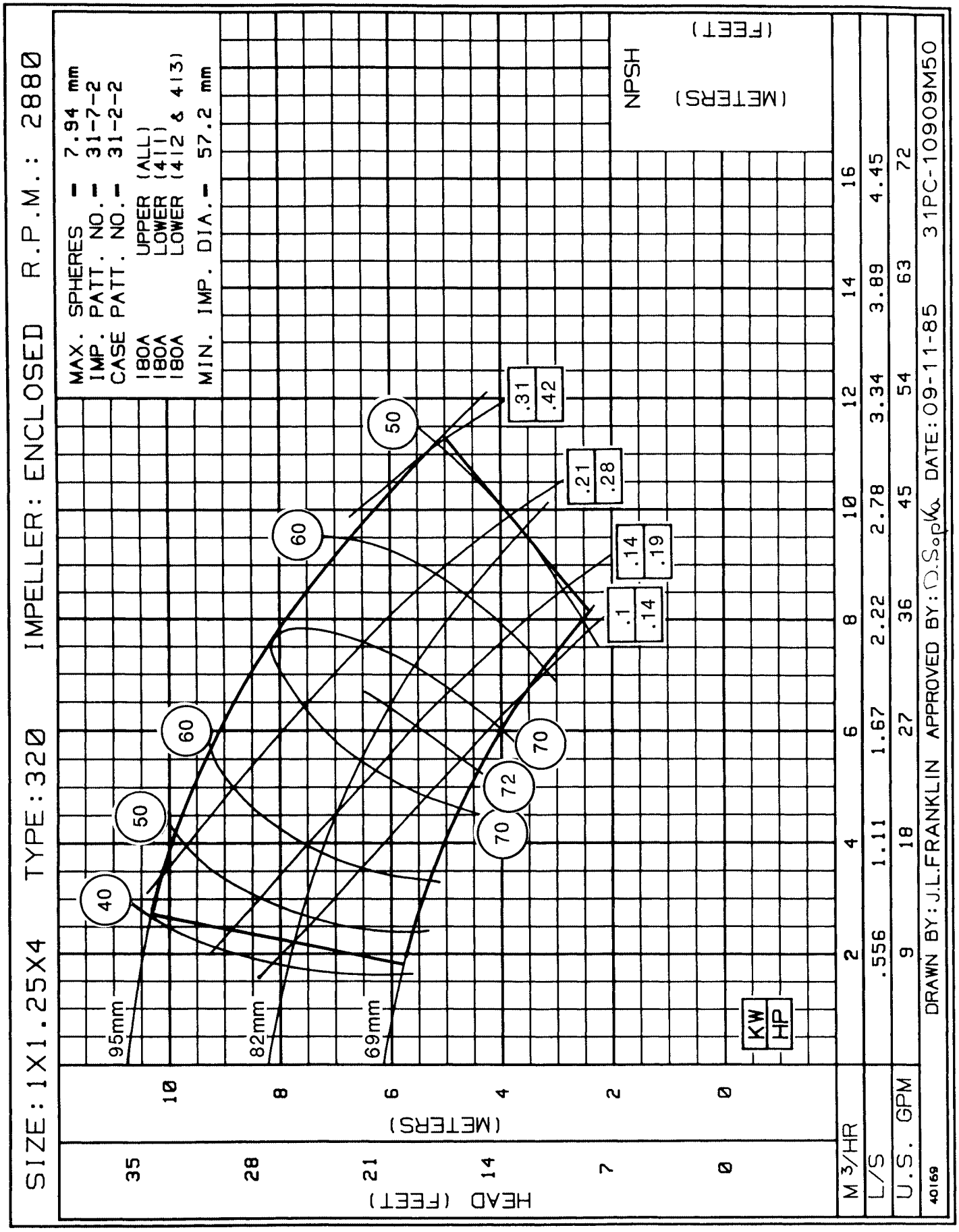
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# 1x1-1/4x4 - 2880 RPM
## ENCLOSED IMPELLER

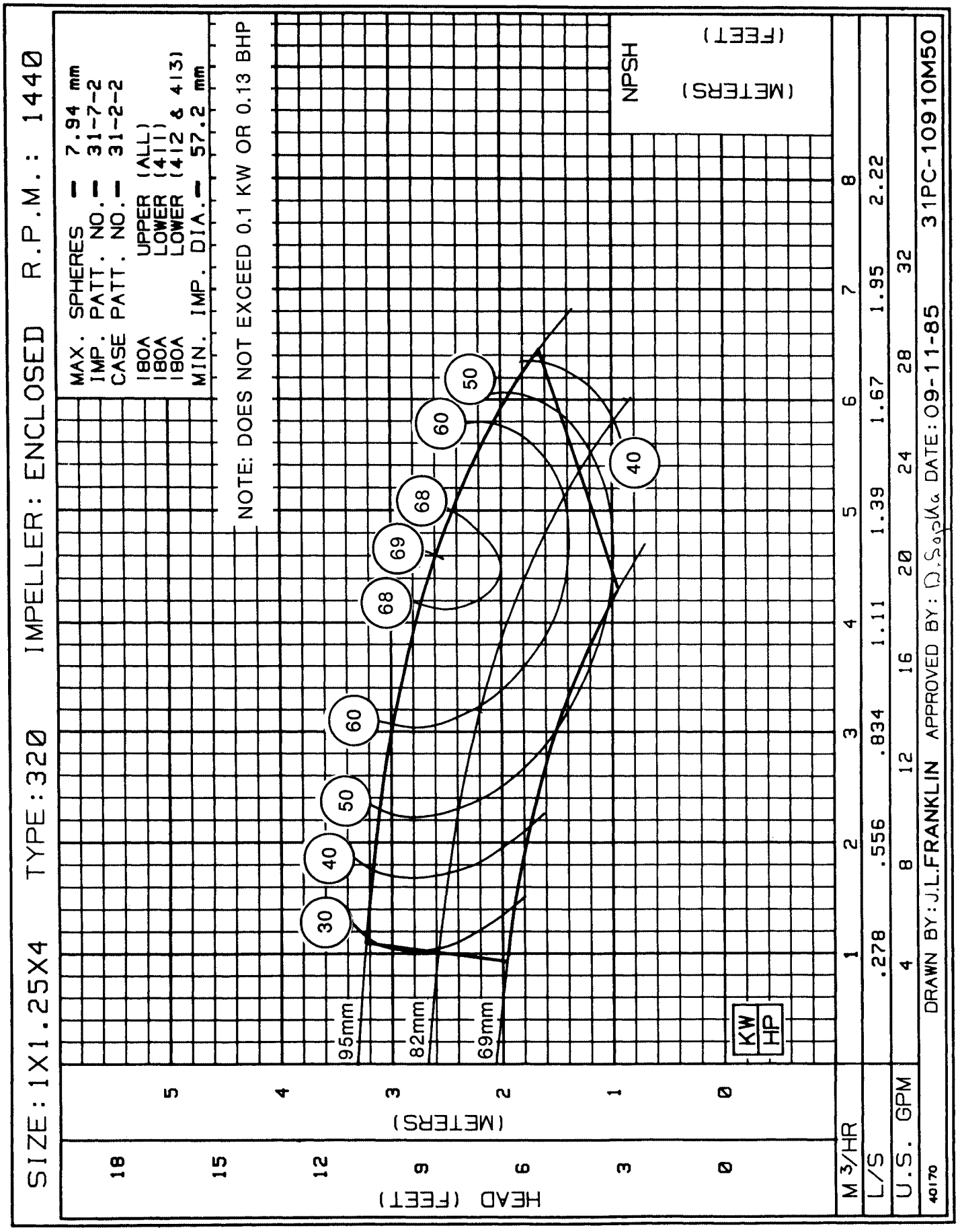
SECTION 320 (Metric 50Hz)
DATE JULY 1994
SUPERCEDES MARCH 1986



SECTION 320 (Metric 50Hz)
DATE JULY 1994
SUPERCEDES MARCH 1986

# 1x1-1/4x4 - 1440 RPM
## ENCLOSED IMPELLER

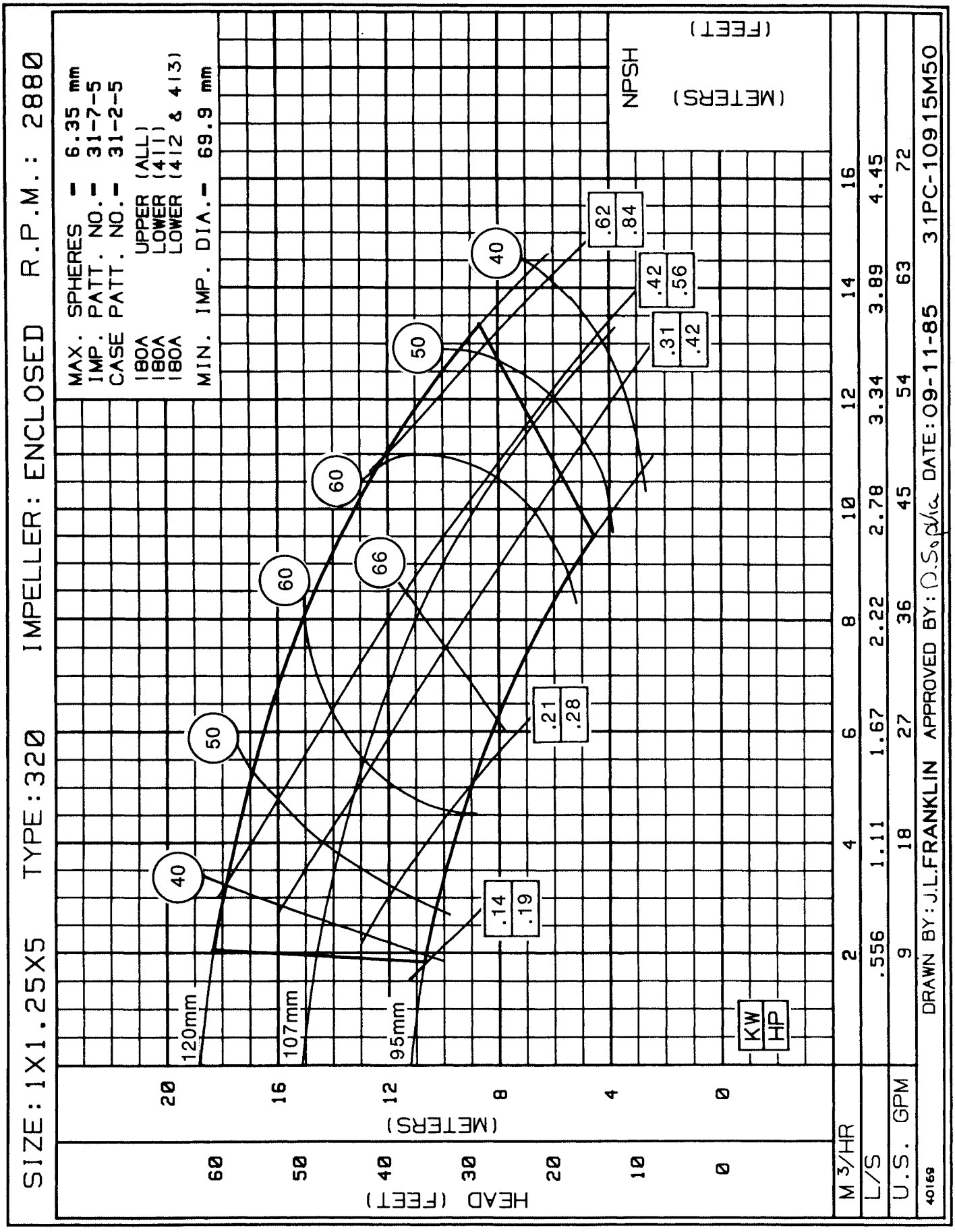
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Pentair Pump Group

# 1x1-1/4x5 - 2880 RPM
## ENCLOSED IMPELLER

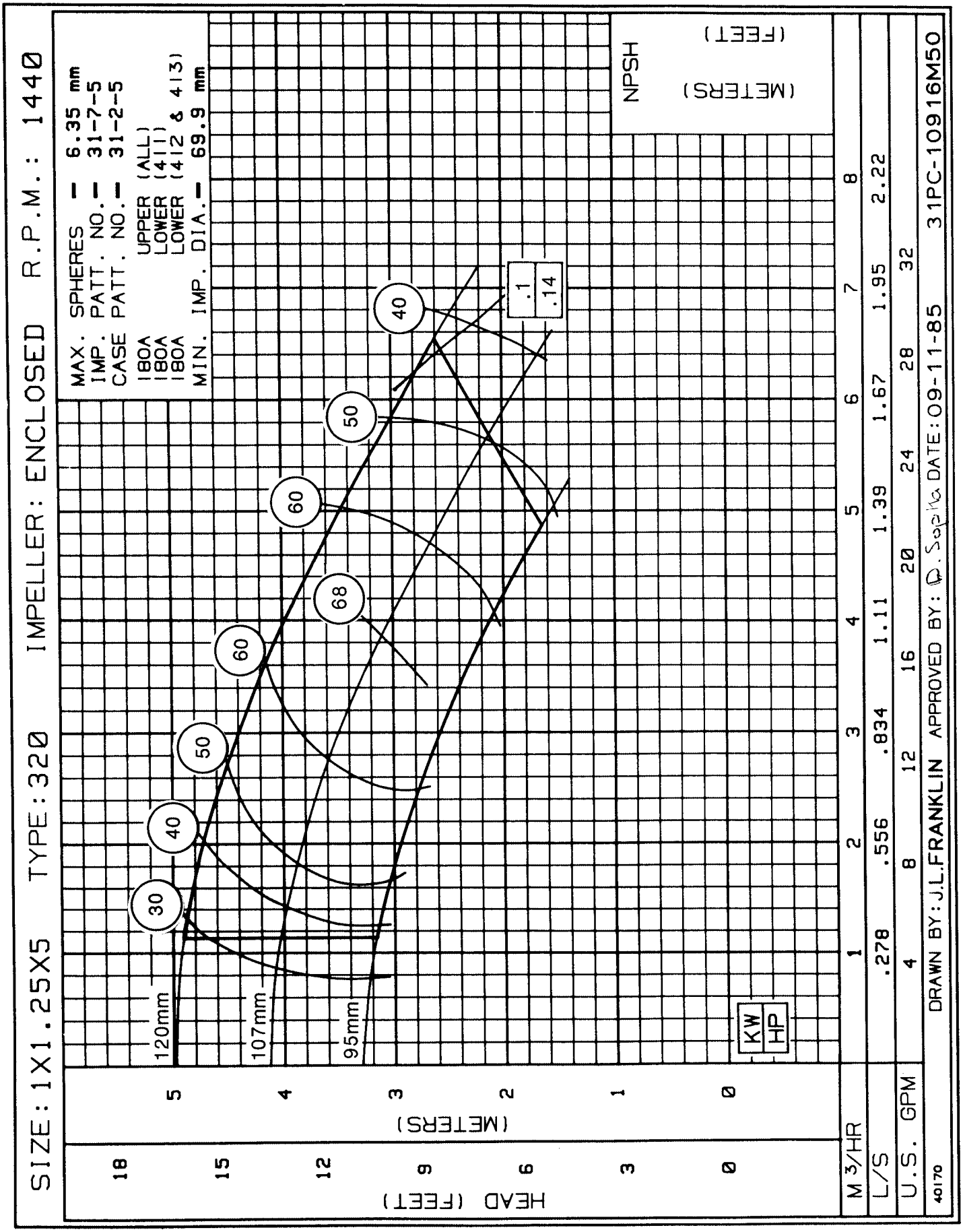
SECTION **320 (Metric 50Hz)**
DATE **JULY 1994**
SUPERCEDES MARCH 1986



SECTION 320 (Metric 50Hz)
DATE JULY 1994
SUPERCEDES MARCH 1986

# 1x1-1/4x5 - 1440 RPM
## ENCLOSED IMPELLER

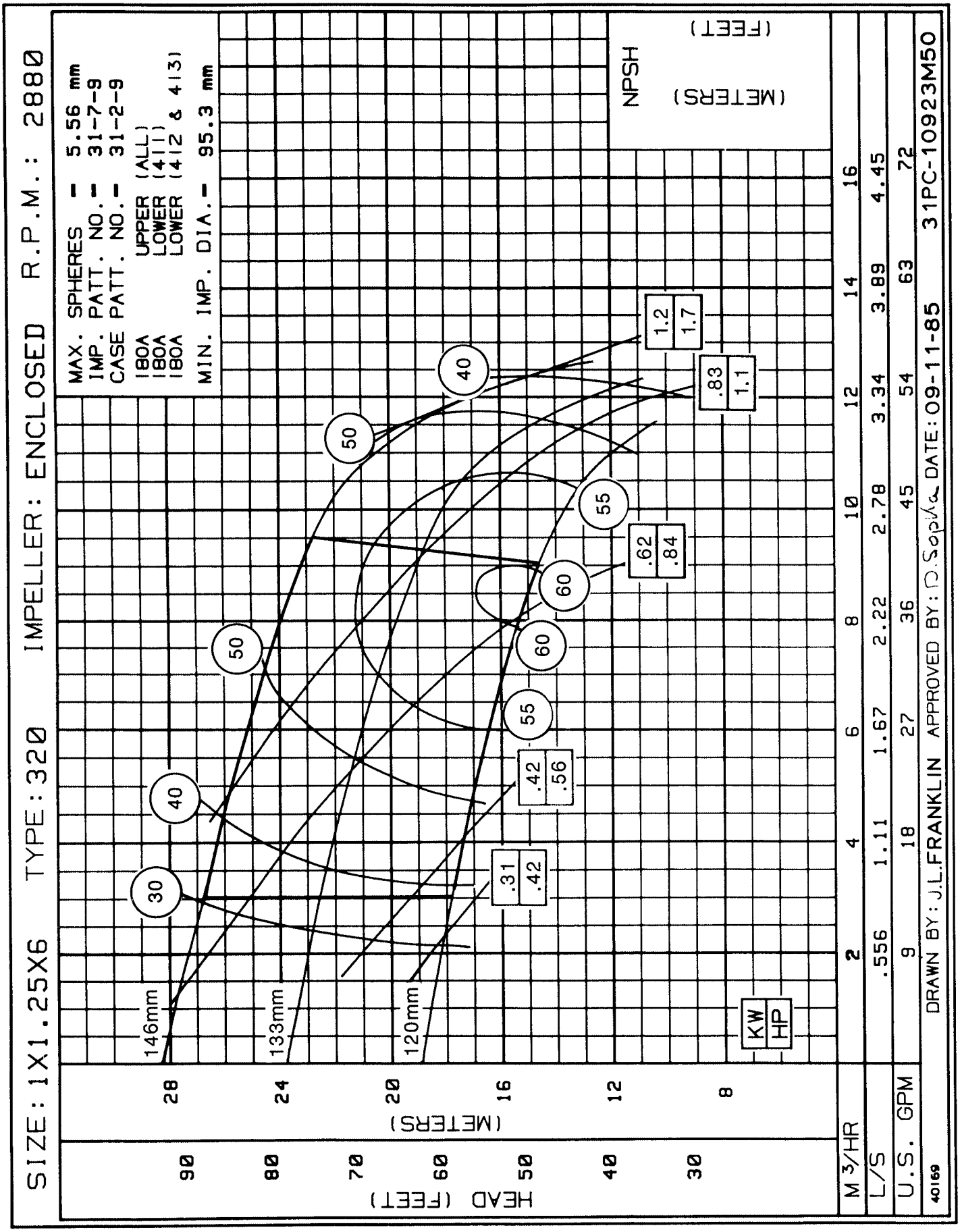
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# 1x1-1/4x6 - 2880 RPM
## ENCLOSED IMPELLER

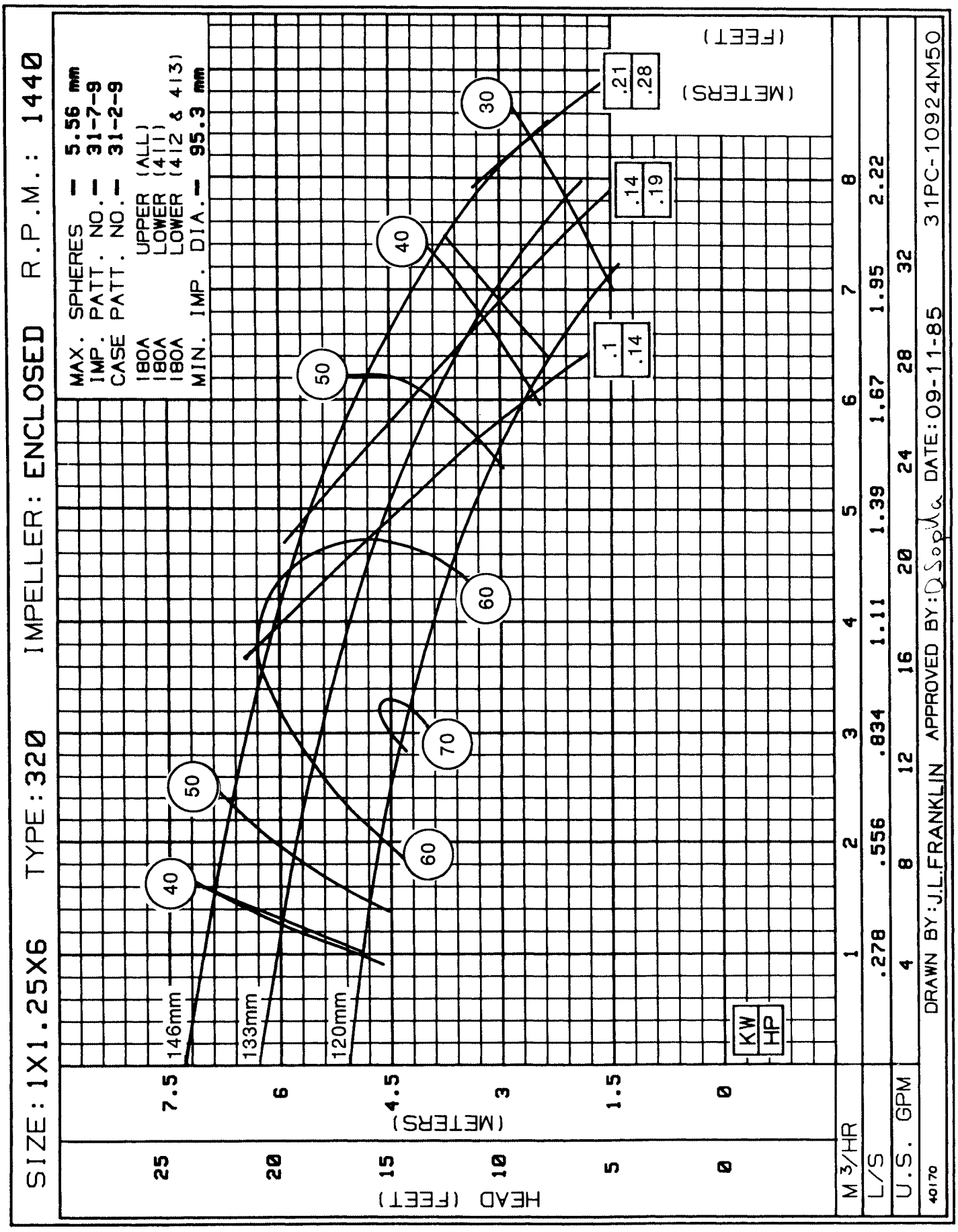
SECTION 320 (Metric 50Hz)
DATE JULY 1994
SUPERCEDES MARCH 1986



SECTION 320 (Metric 50Hz)
DATE JULY 1994
SUPERCEDES MARCH 1986

# 1x1-1/4x6 - 1440 RPM
## ENCLOSED IMPELLER

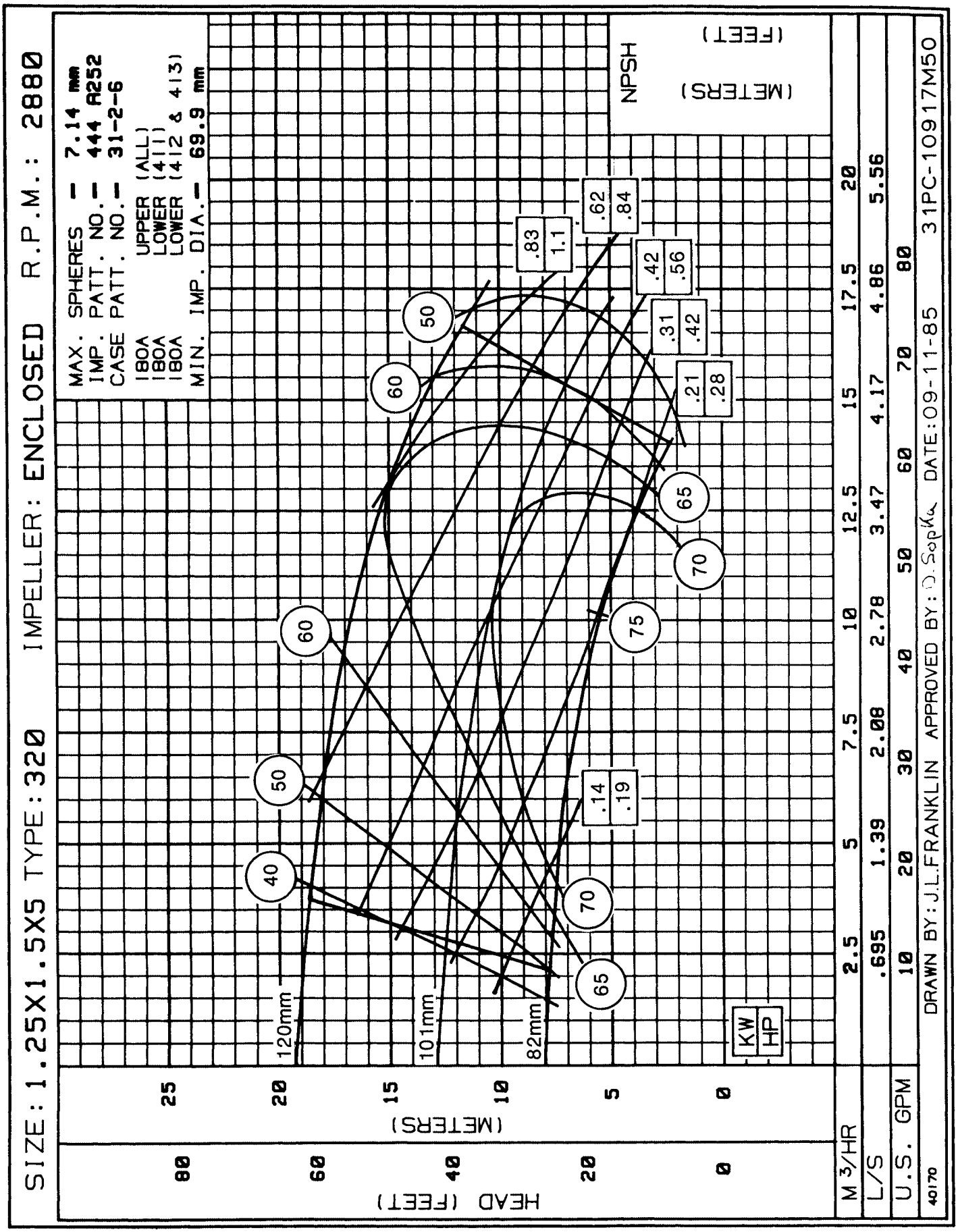
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Pentair Pump Group

# 1-1/4x1-1/2x5 - 2880 RPM
## ENCLOSED IMPELLER

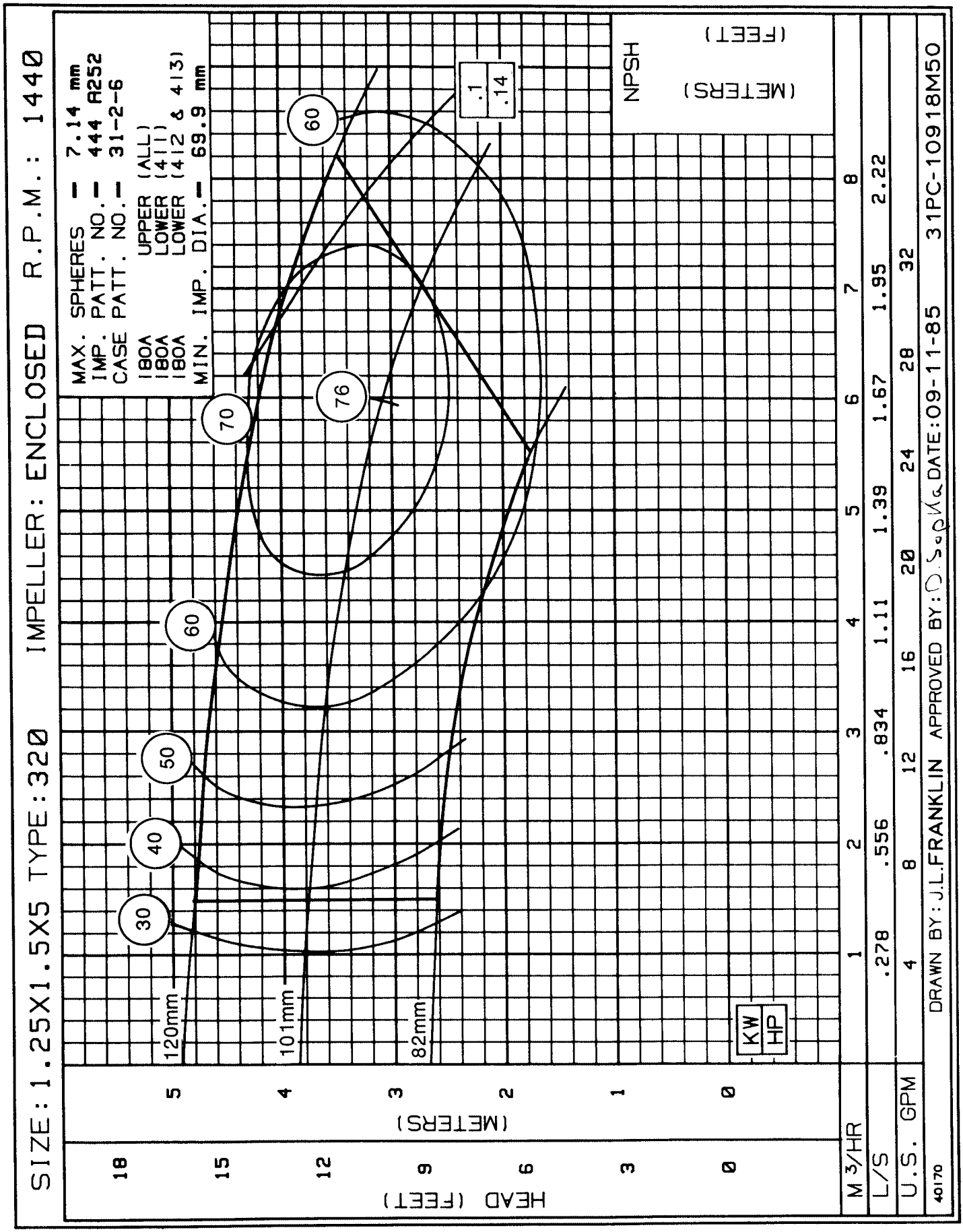
SECTION 320 (Metric 50Hz)
DATE JULY 1994
SUPERCEDES MARCH 1986



SECTION 320 (Metric 50Hz)
DATE JULY 1994
SUPERCEDES MARCH 1986

# 1-1/4x1-1/2x5 - 1440 RPM
## ENCLOSED IMPELLER

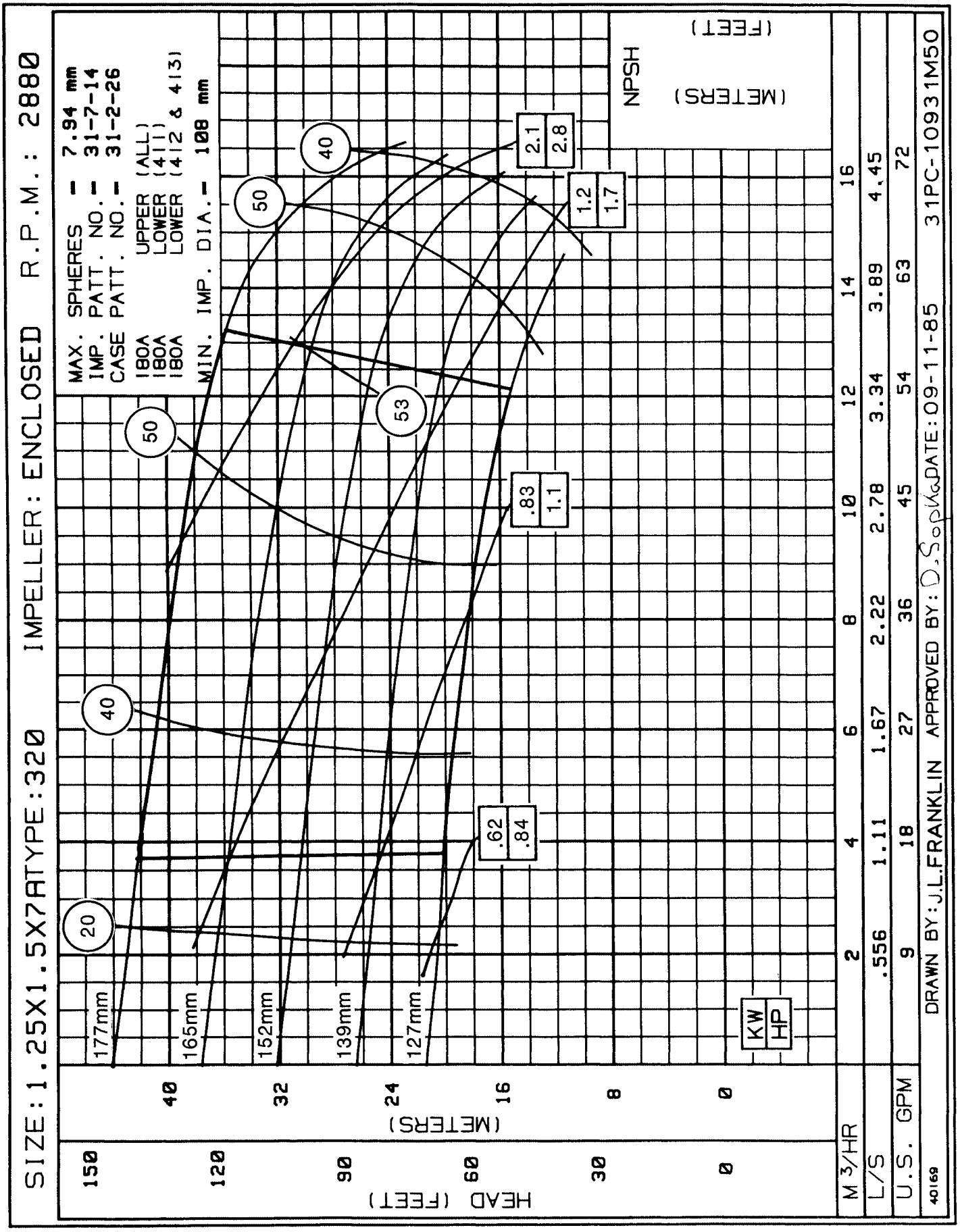
AURORA®
Pentair Pump Group



**AURORA®**
Pentair Pump Group

# 1-1/4x1-1/2x7A - 2880 RPM
## ENCLOSED IMPELLER

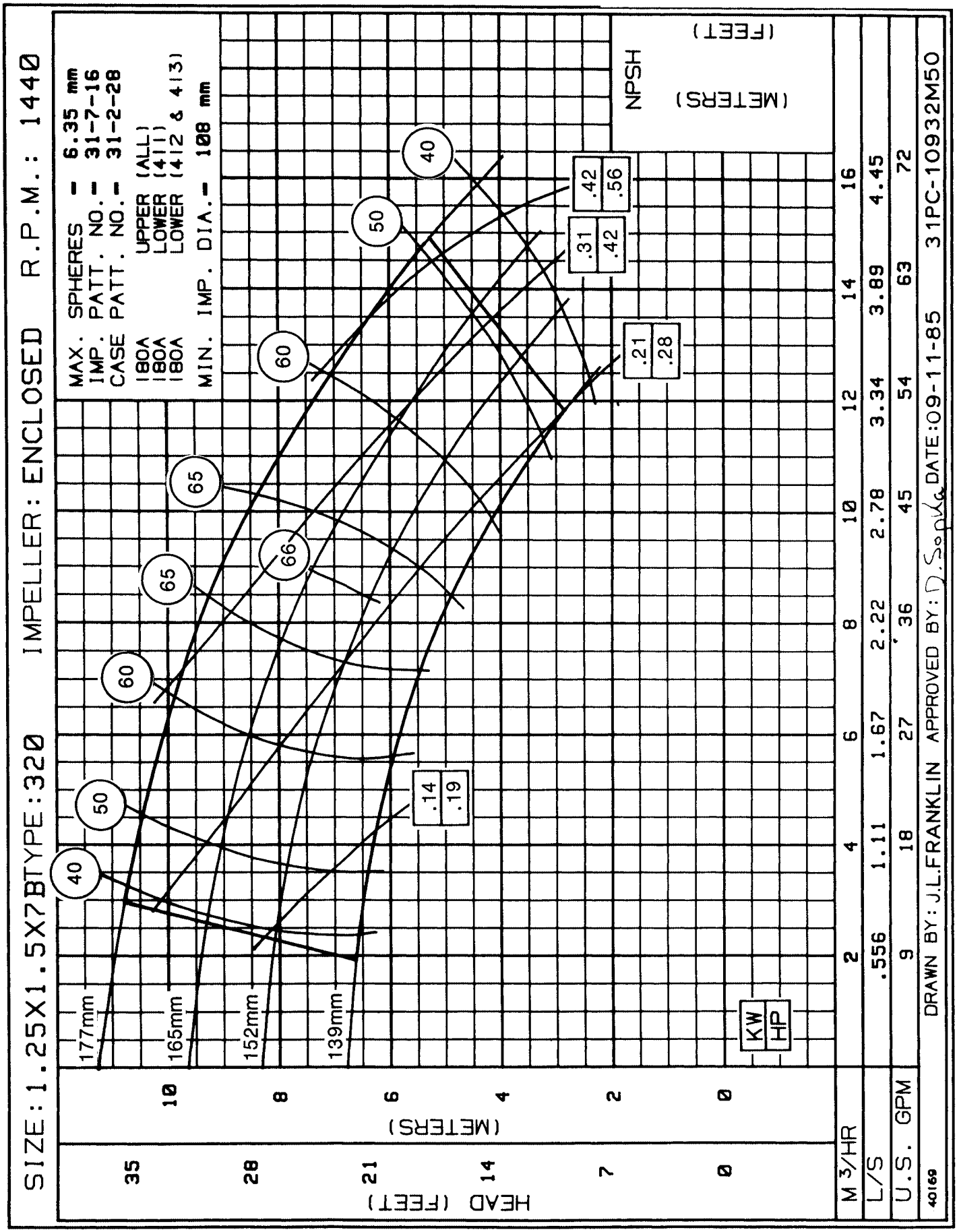
SECTION 320 (Metric 50Hz)
DATE JULY 1994
SUPERCEDES MARCH 1986



SECTION 320 (Metric 50Hz)
DATE JULY 1994
SUPERCEDES MARCH 1986

# 1-1/4x1-1/2x7B - 1440 RPM
## ENCLOSED IMPELLER

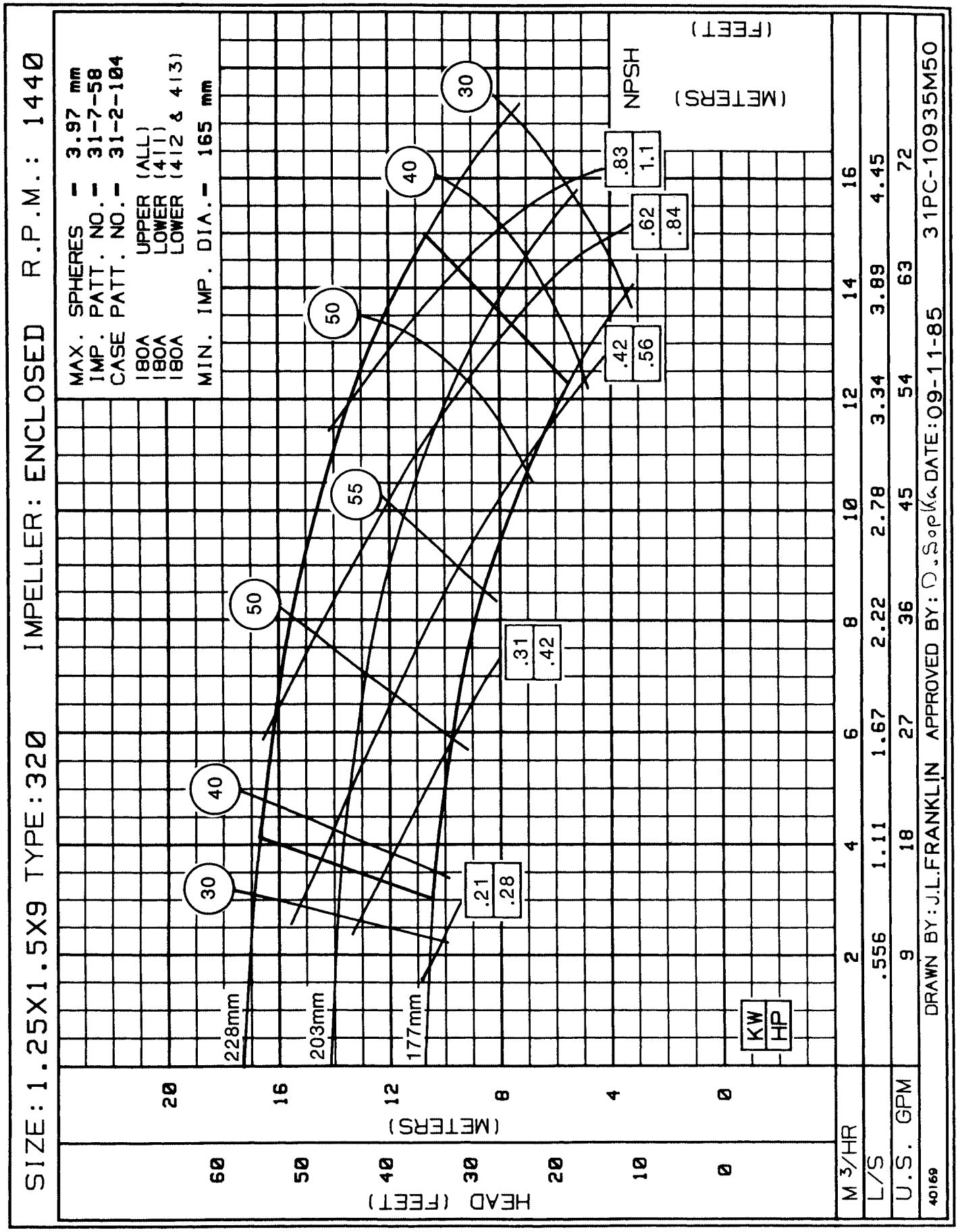
AURORA®
Pentair Pump Group



AURORA®
Pentair Pump Group

# 1-1/4x1-1/2x9 - 1440 RPM
## ENCLOSED IMPELLER

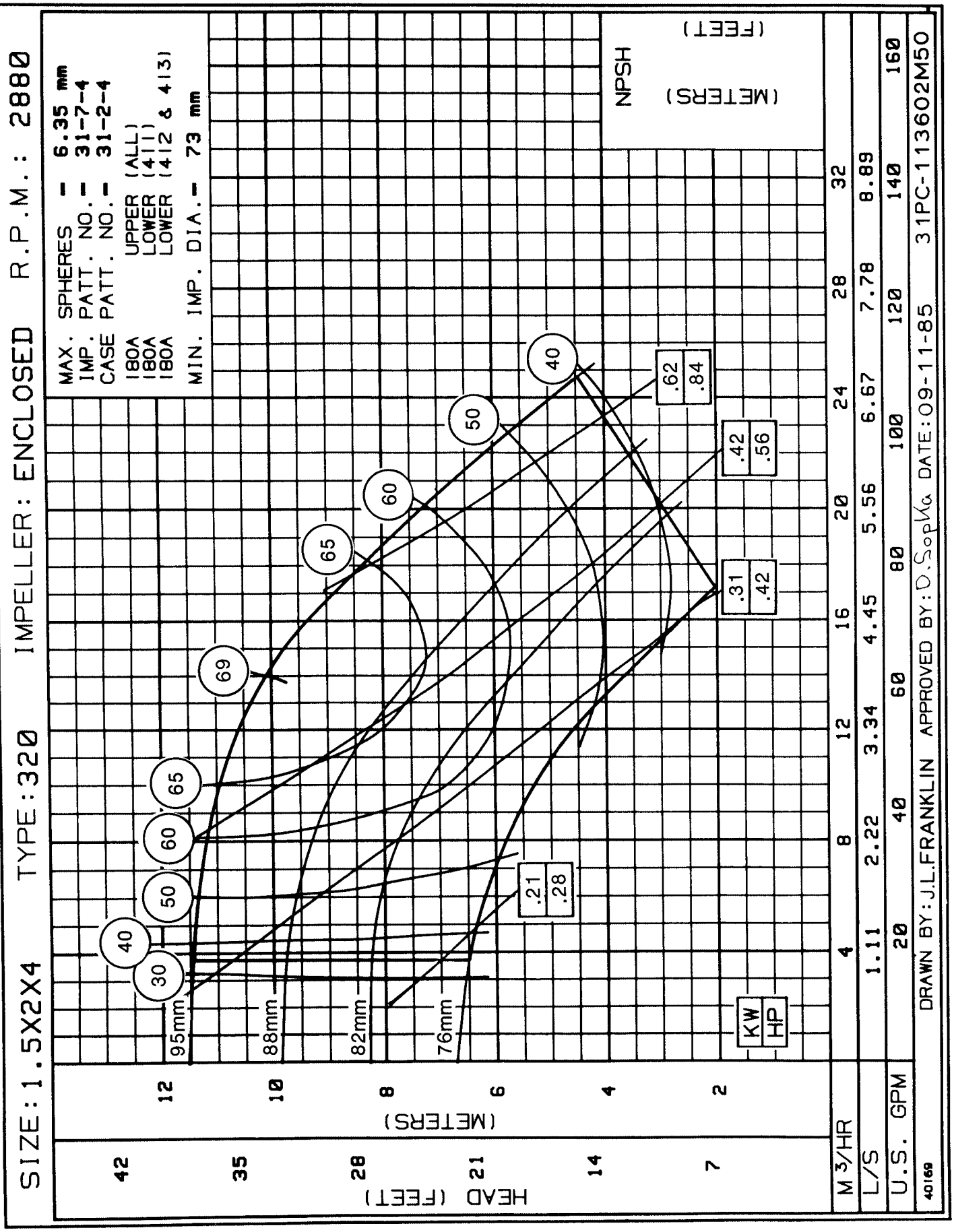
SECTION 320 (Metric 50Hz)
DATE JULY 1994
SUPERCEDES MARCH 1986



SECTION 320 (Metric 50Hz)
DATE JULY 1994
SUPERCEDES MARCH 1986

# 1-1/2x2x4 - 2880 RPM
## ENCLOSED IMPELLER

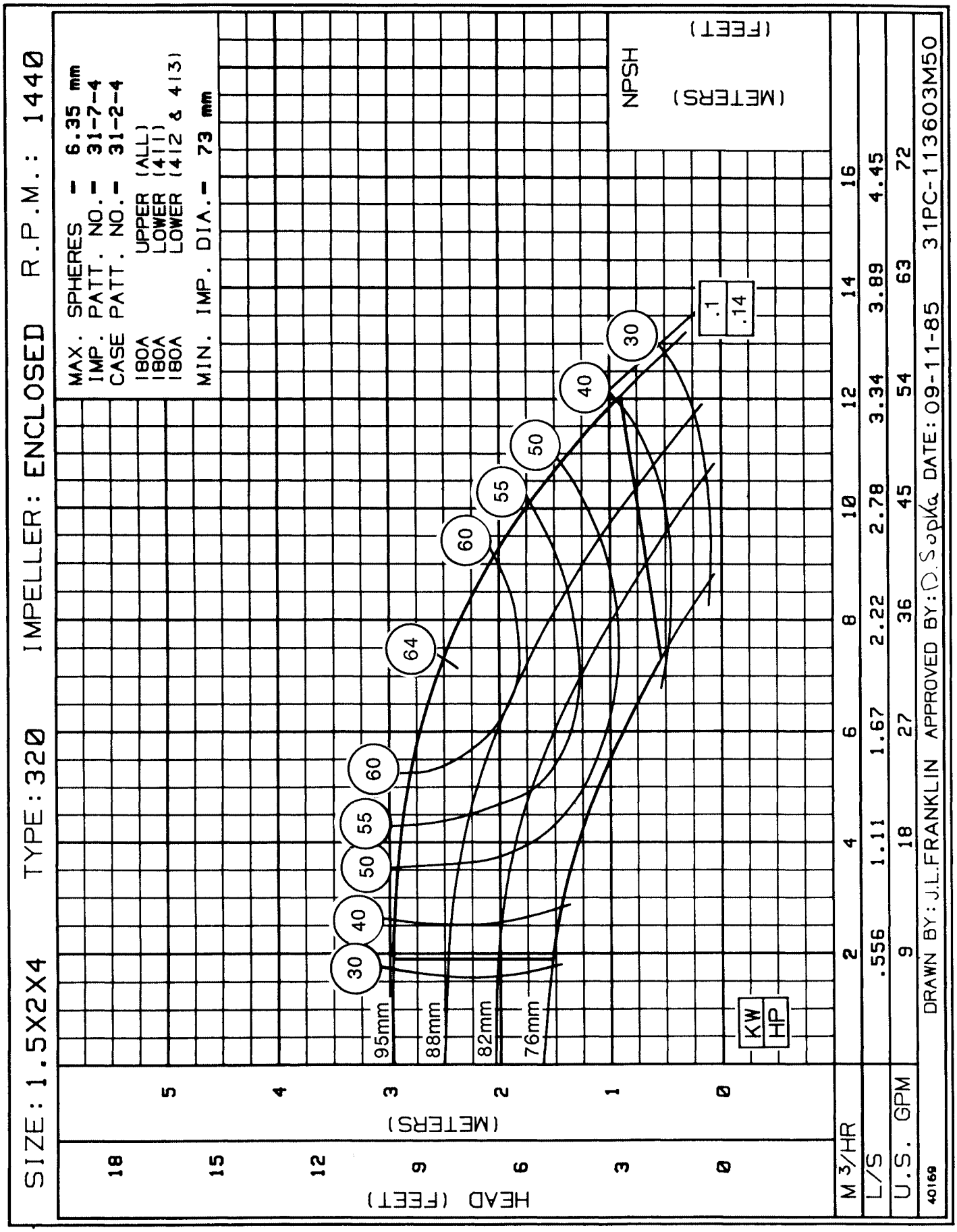
AURORA®
Pentair Pump Group



**AURORA®**
Pentair Pump Group

# 1-1/2x2x4 - 1440 RPM
## ENCLOSED IMPELLER

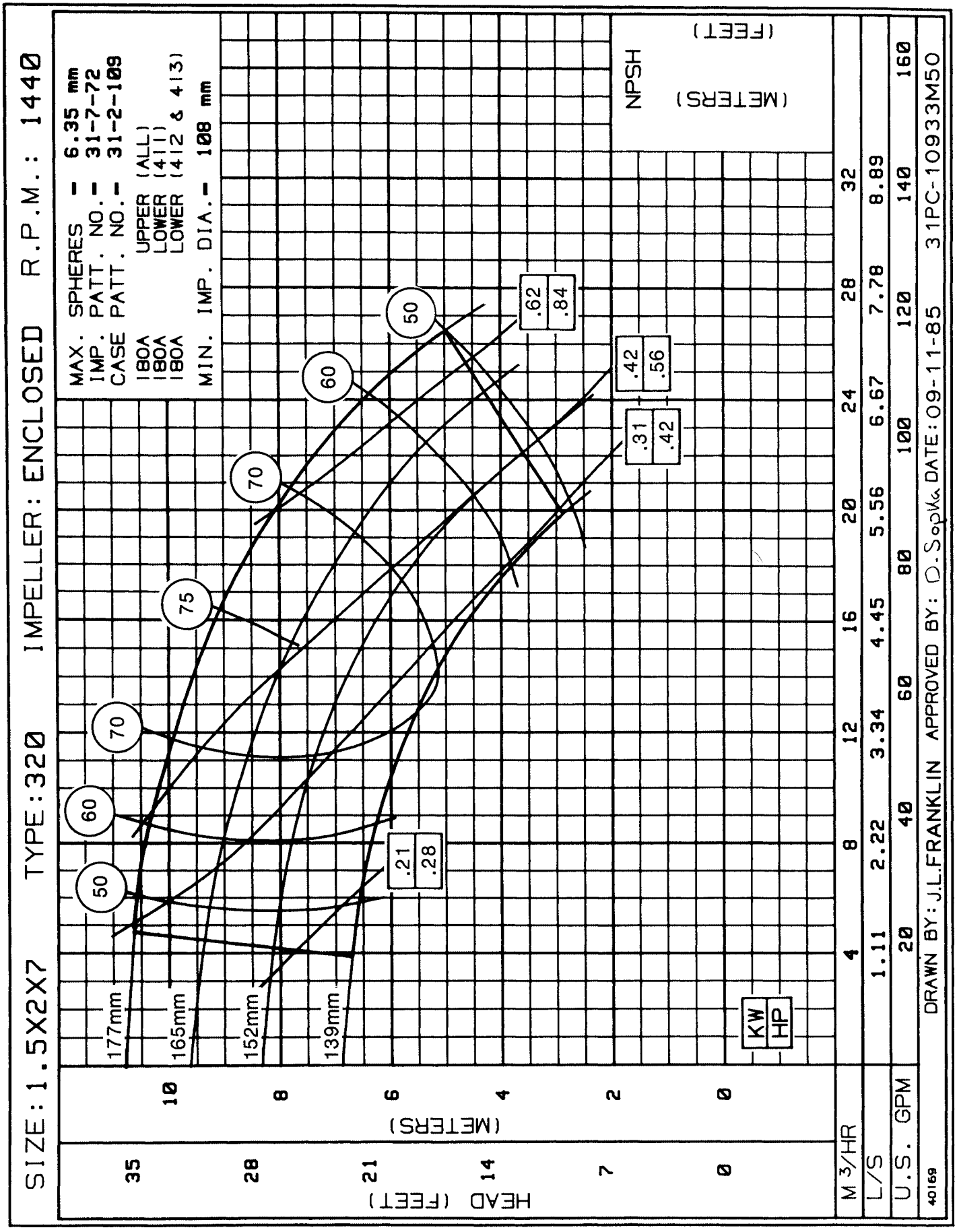
SECTION 320 (Metric 50Hz)
DATE JULY 1994
SUPERCEDES MARCH 1986



SECTION 320 (Metric 50Hz)
DATE JULY 1994
SUPERCEDES MARCH 1986

# 1-1/2x2x7 - 1440 RPM
## ENCLOSED IMPELLER

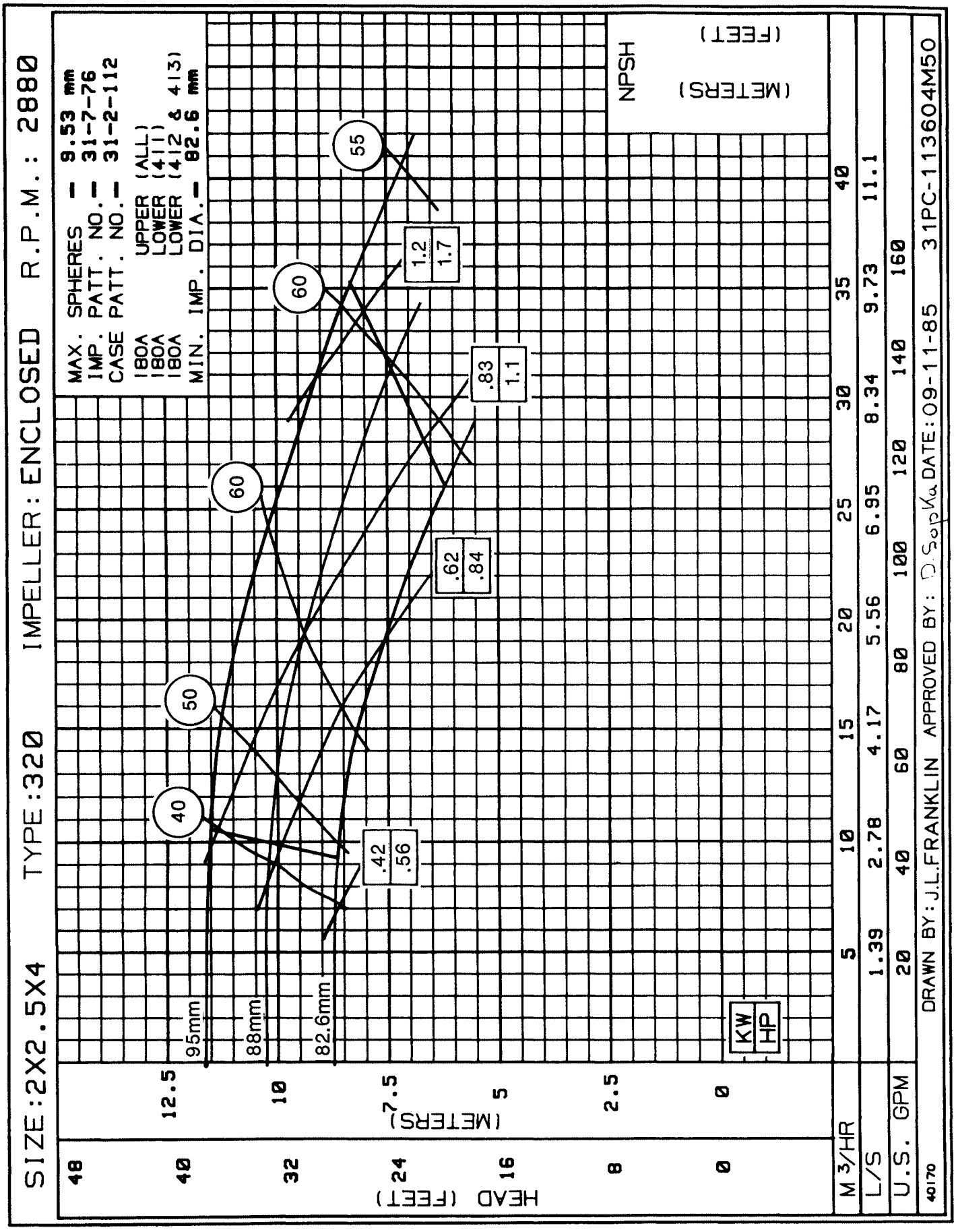
AURORA®
Pentair Pump Group



**AURORA®**
Pentair Pump Group

# 2x2-1/2x4 - 2880 RPM
## ENCLOSED IMPELLER

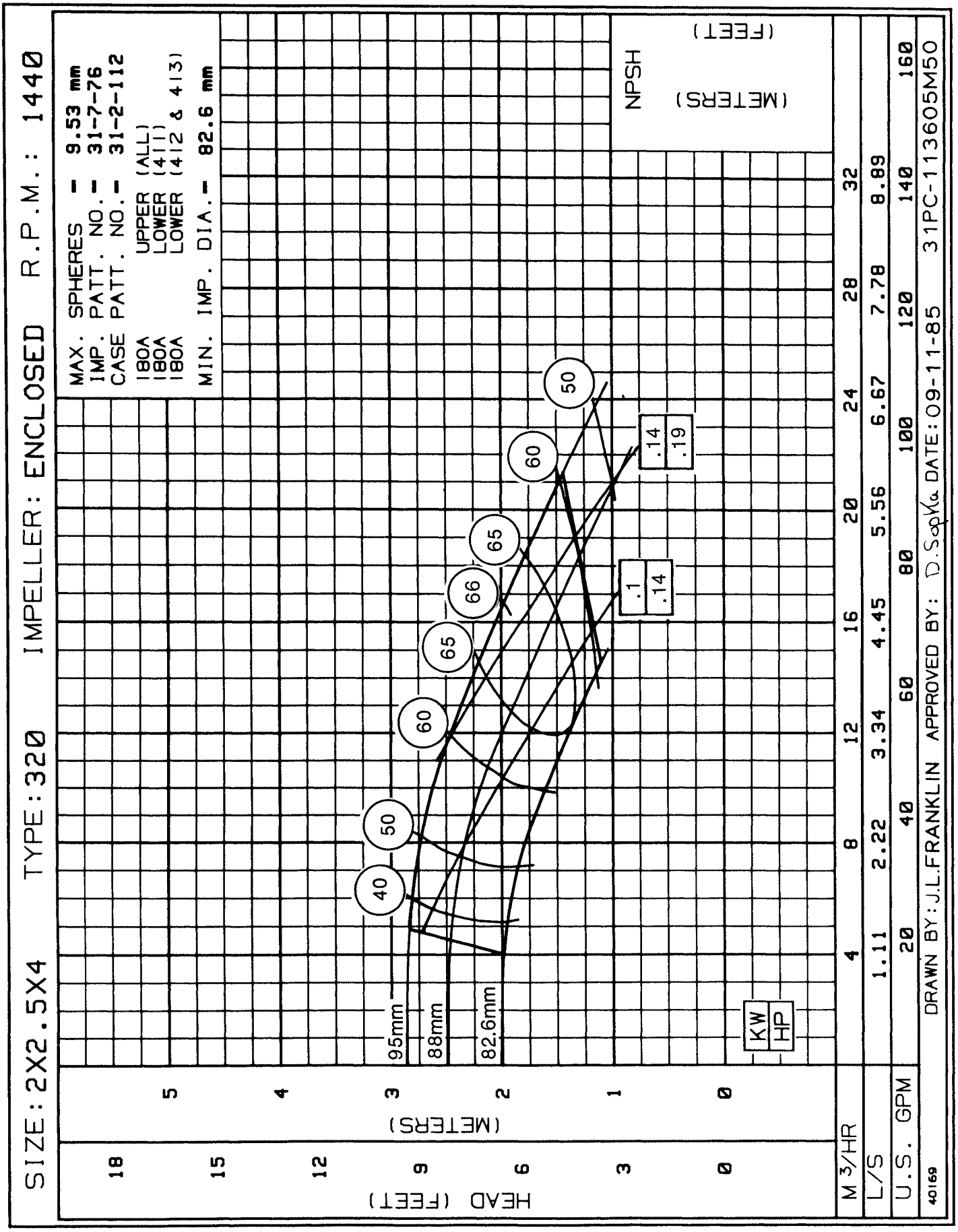
SECTION 320 (Metric 50Hz)
DATE JULY 1994
SUPERCEDES MARCH 1986



SECTION 320 (Metric 50Hz)
DATE JULY 1994
SUPERCEDES MARCH 1986

# 2x2-1/2x4 - 1440 RPM
## ENCLOSED IMPELLER

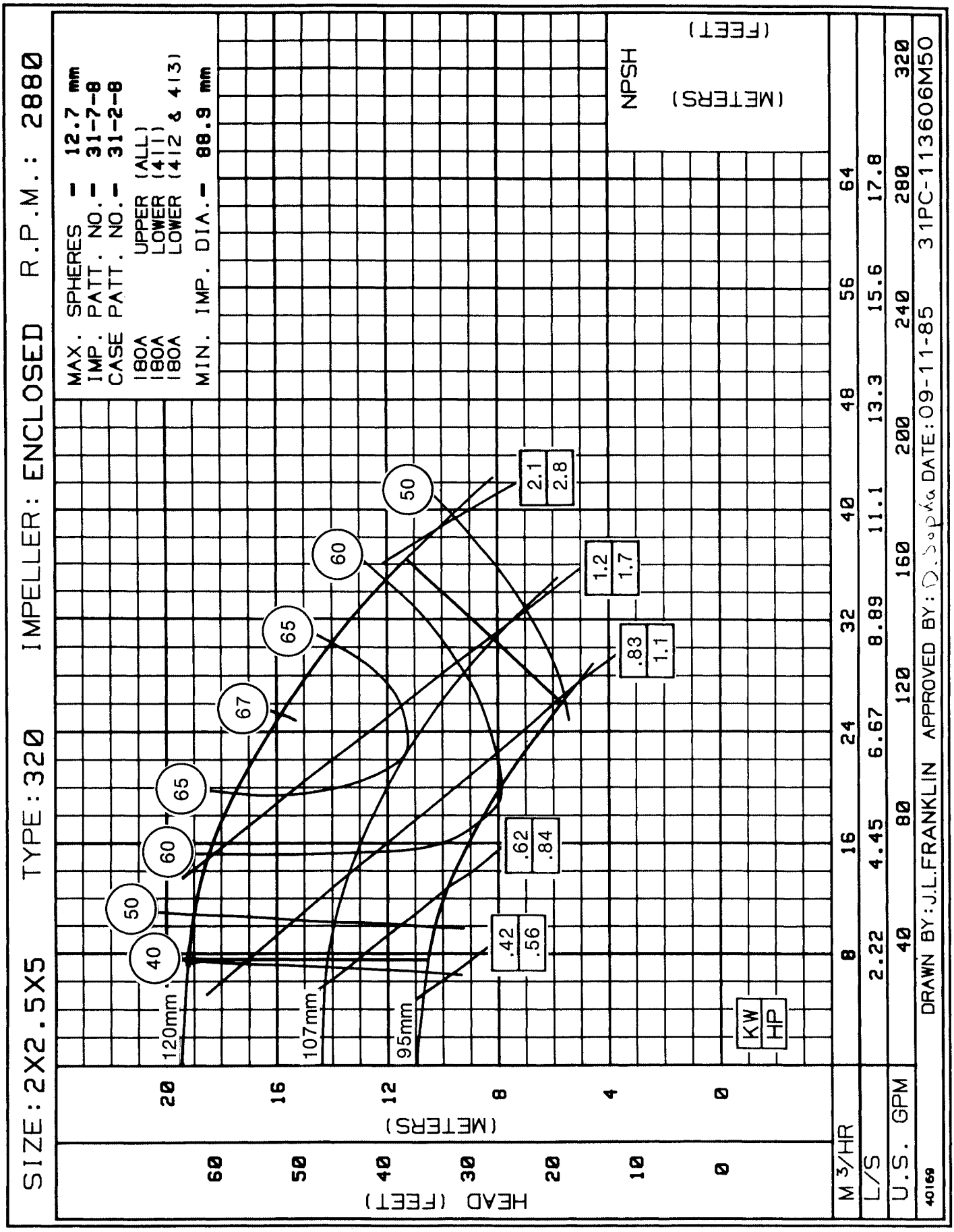
AURORA®
Pentair Pump Group



**AURORA®**
Pentair Pump Group

# 2x2-1/2x5 - 2880 RPM
## ENCLOSED IMPELLER

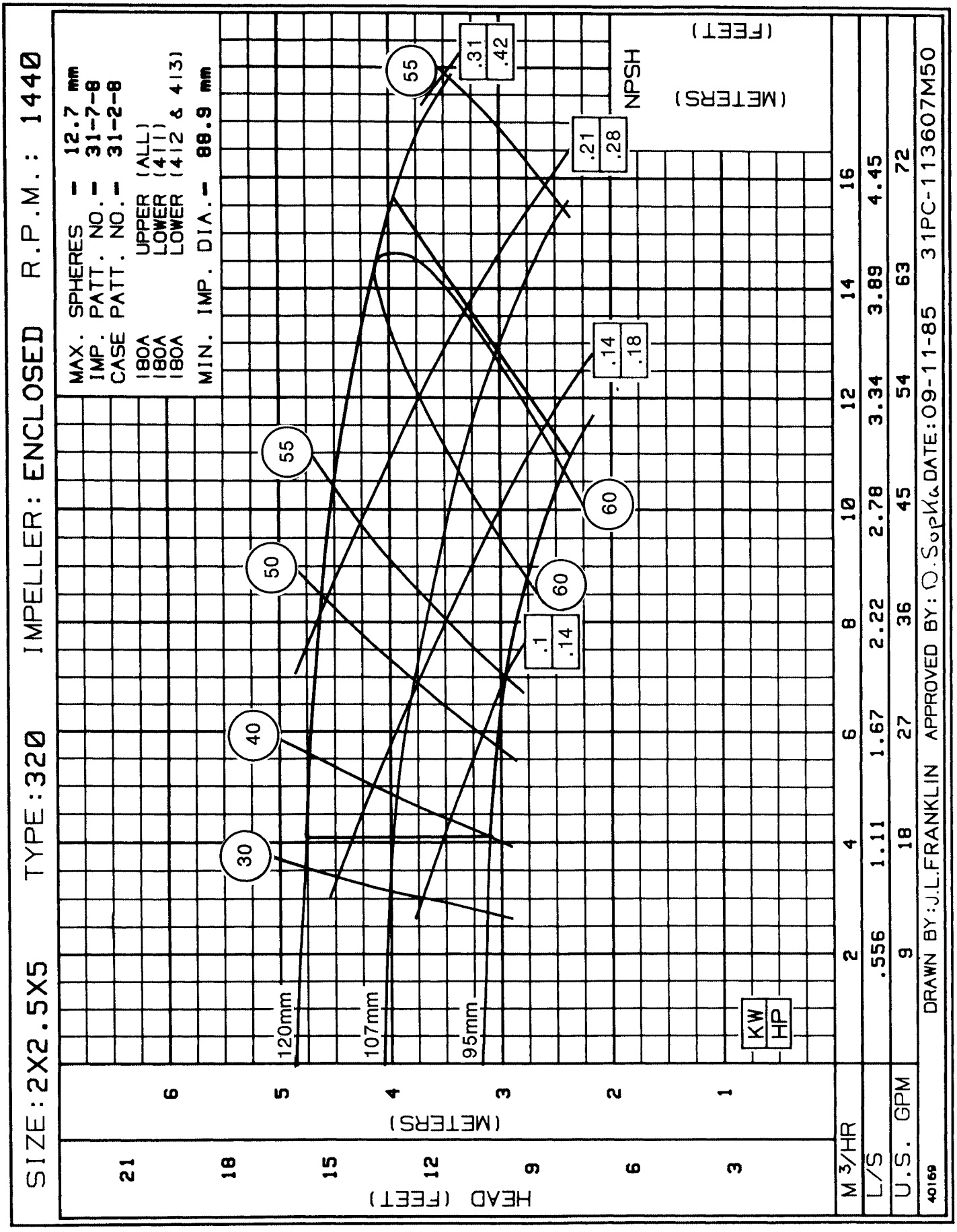
SECTION 320 (Metric 50Hz)
DATE JULY 1994
SUPERCEDES MARCH 1986



SECTION 320 (Metric 50Hz)
DATE JULY 1994
SUPERCEDES MARCH 1986

# 2x2-1/2x5 - 1440 RPM
## ENCLOSED IMPELLER

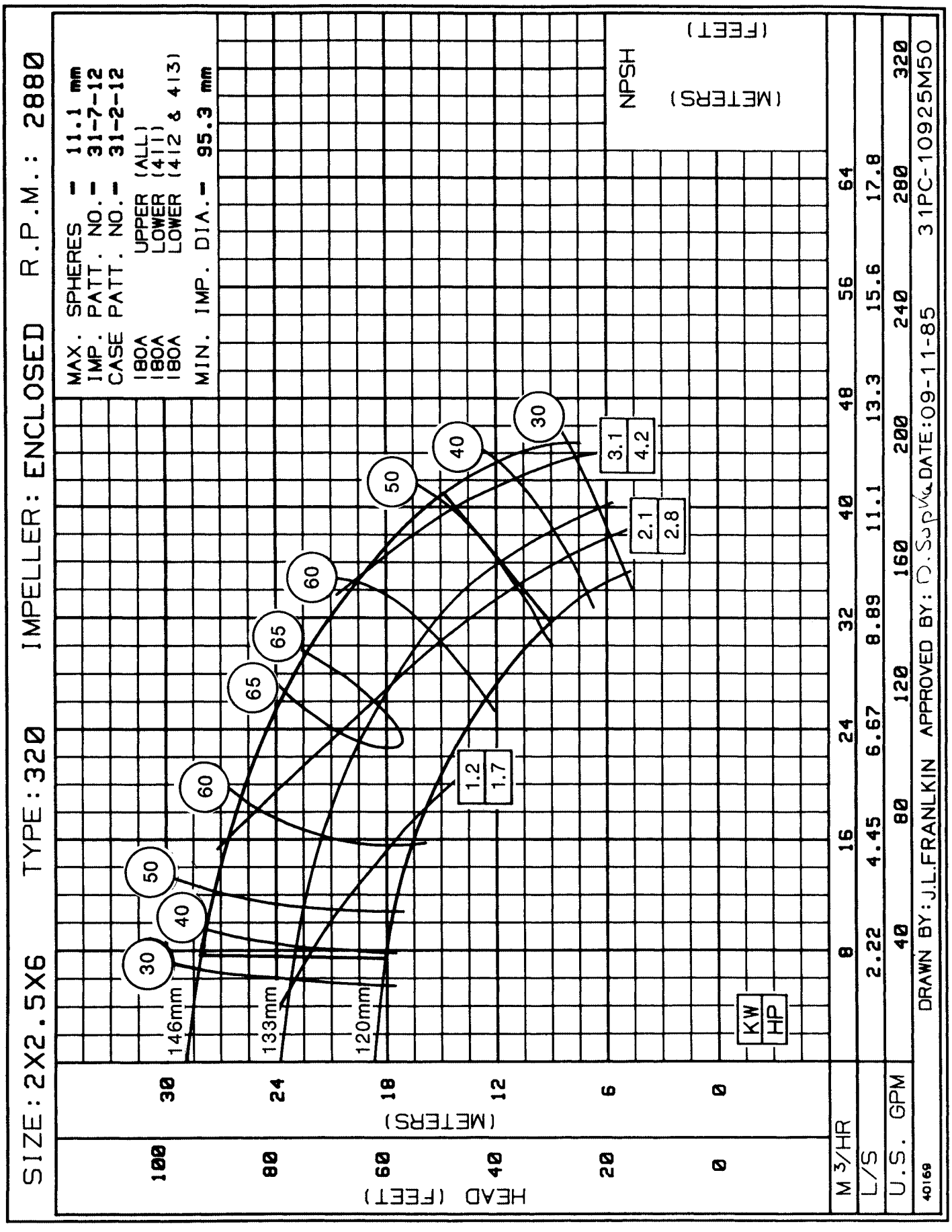
AURORA®
Pentair Pump Group



**AURORA®**
Pentair Pump Group

# 2x2-1/2x6 - 2880 RPM
## ENCLOSED IMPELLER

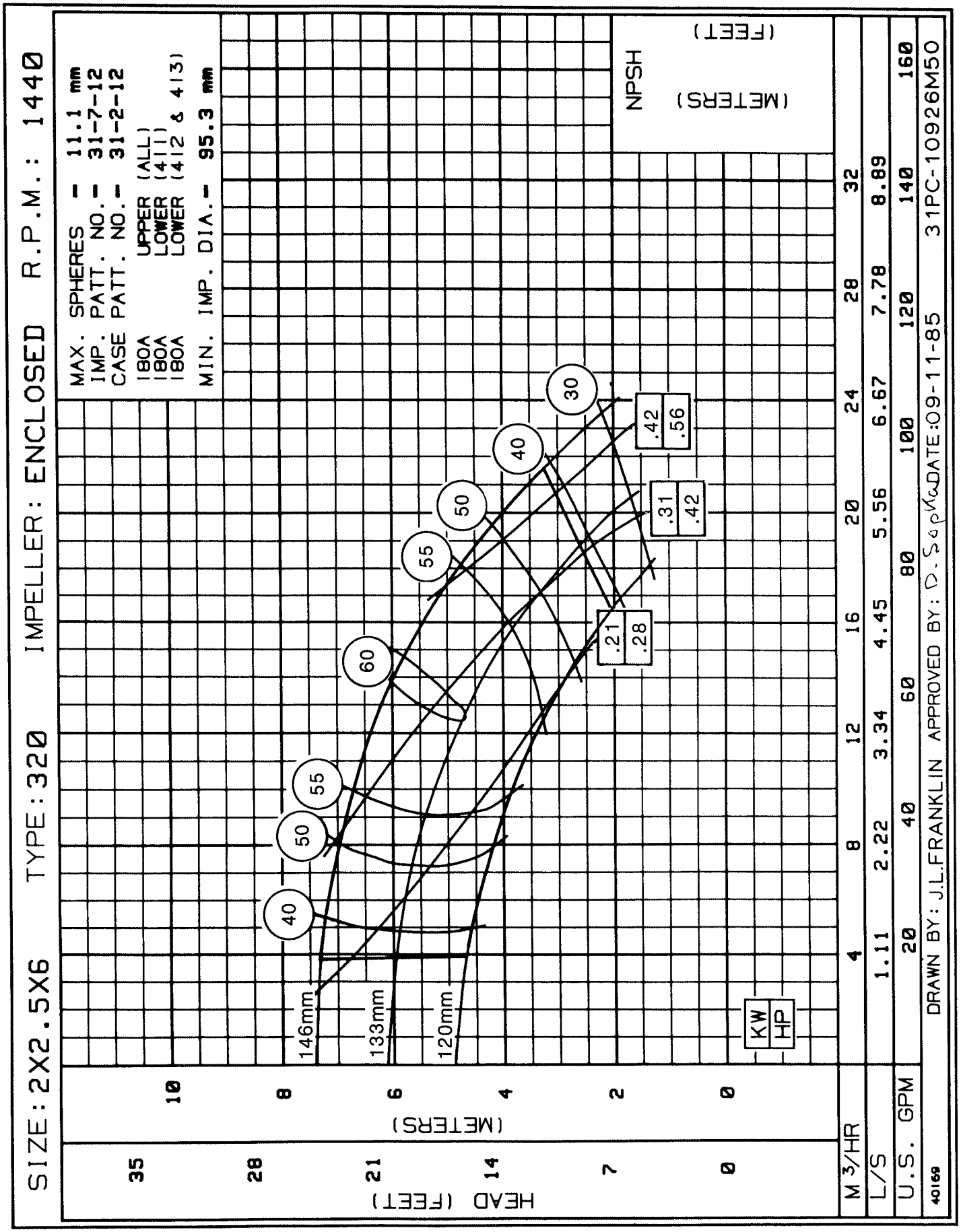
SECTION 320 (Metric 50Hz)
DATE JULY 1994
SUPERCEDES MARCH 1986



SECTION 320 (Metric 50Hz)
DATE JULY 1994
SUPERCEDES MARCH 1986

# 2x2-1/2x6 - 1440 RPM
## ENCLOSED IMPELLER

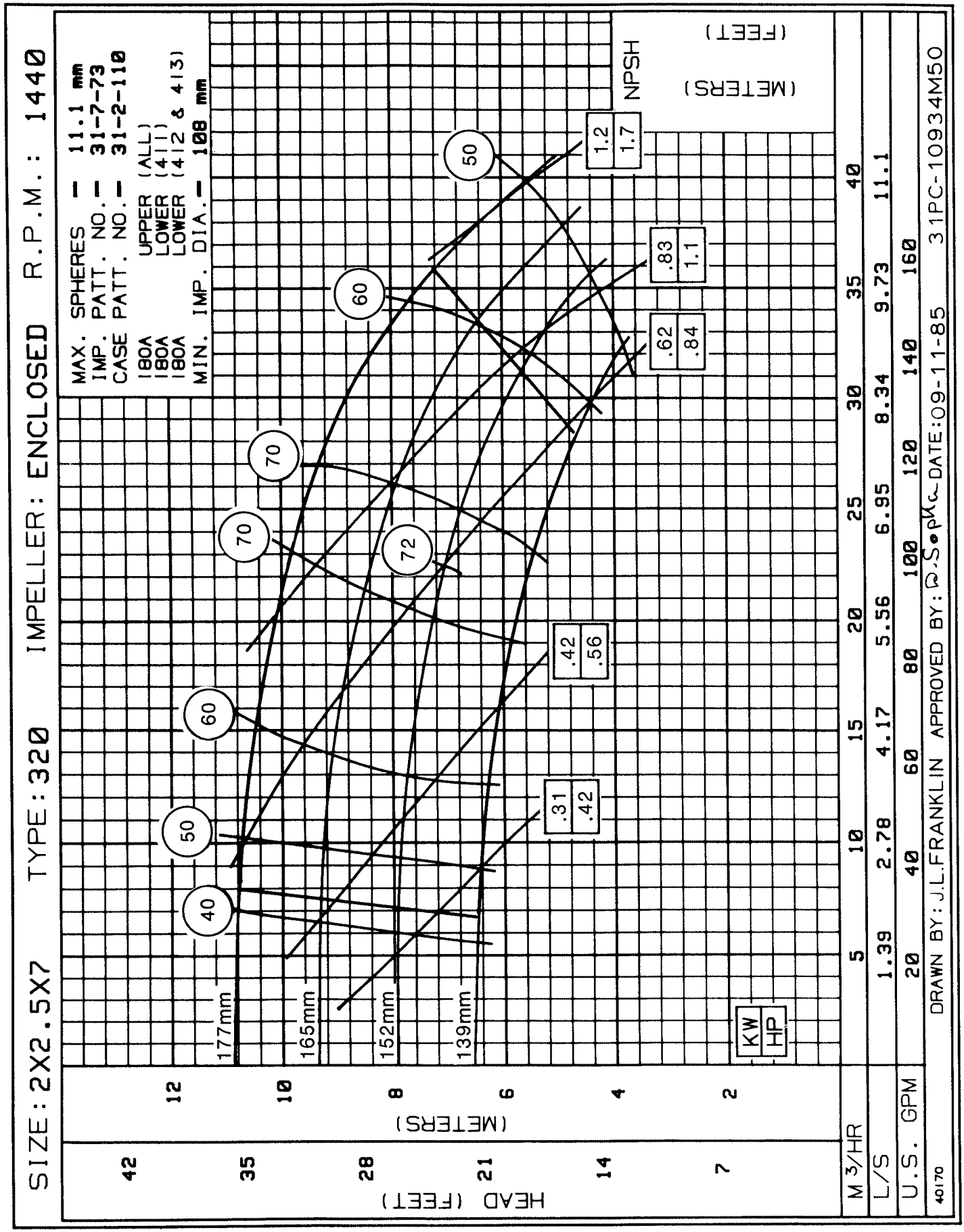
AURORA®
Pentair Pump Group



**AURORA®**
Pentair Pump Group

# 2x2-1/2x7 - 1440 RPM
## ENCLOSED IMPELLER

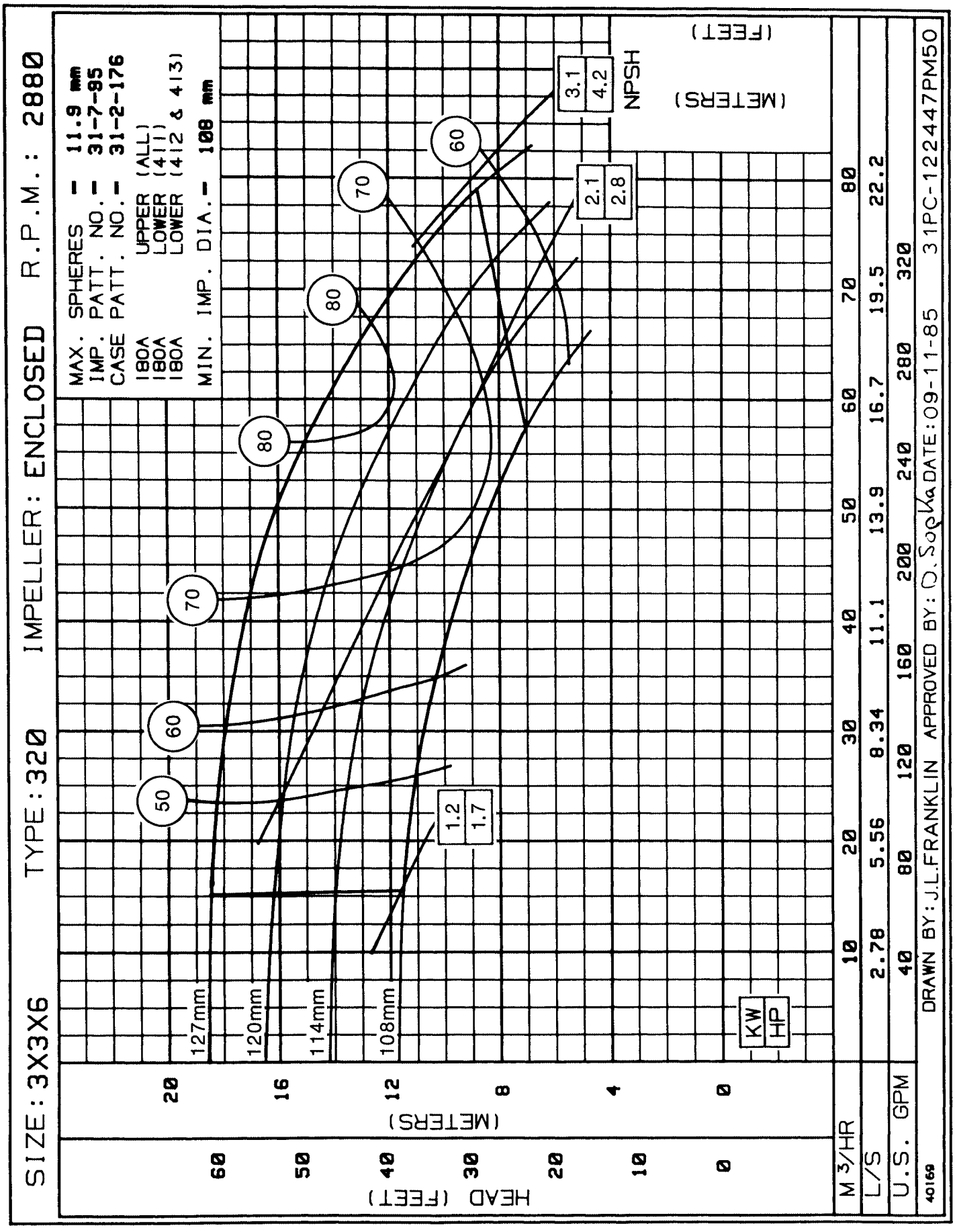
SECTION 320 (Metric 50Hz)
DATE JULY 1994
SUPERCEDES MARCH 1986



SECTION 320 (Metric 50Hz)
DATE JULY 1994
SUPERCEDES MARCH 1986

# 3x3x6 - 2880 RPM
## ENCLOSED IMPELLER

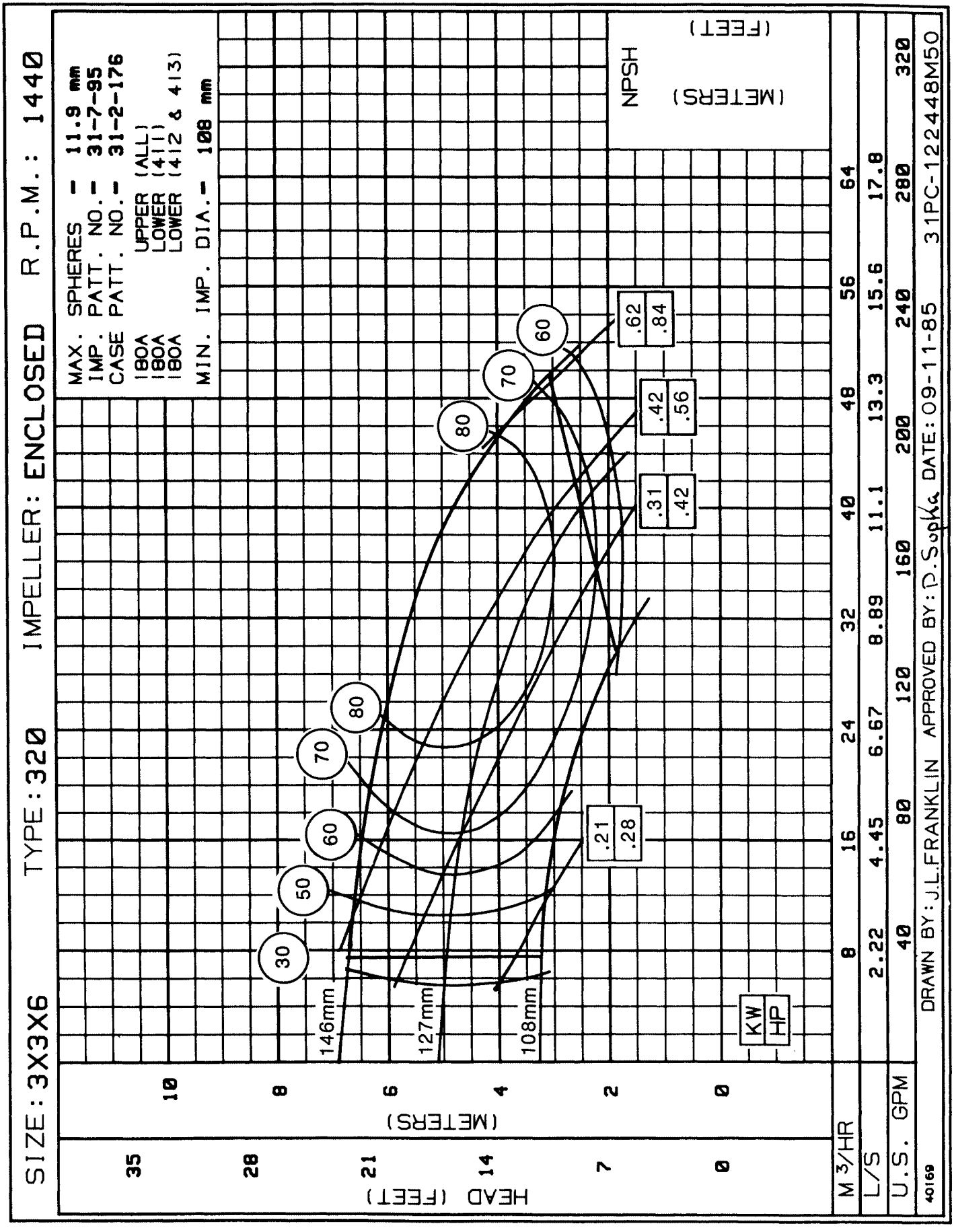
AURORA®
Pentair Pump Group



**AURORA®**
Pentair Pump Group

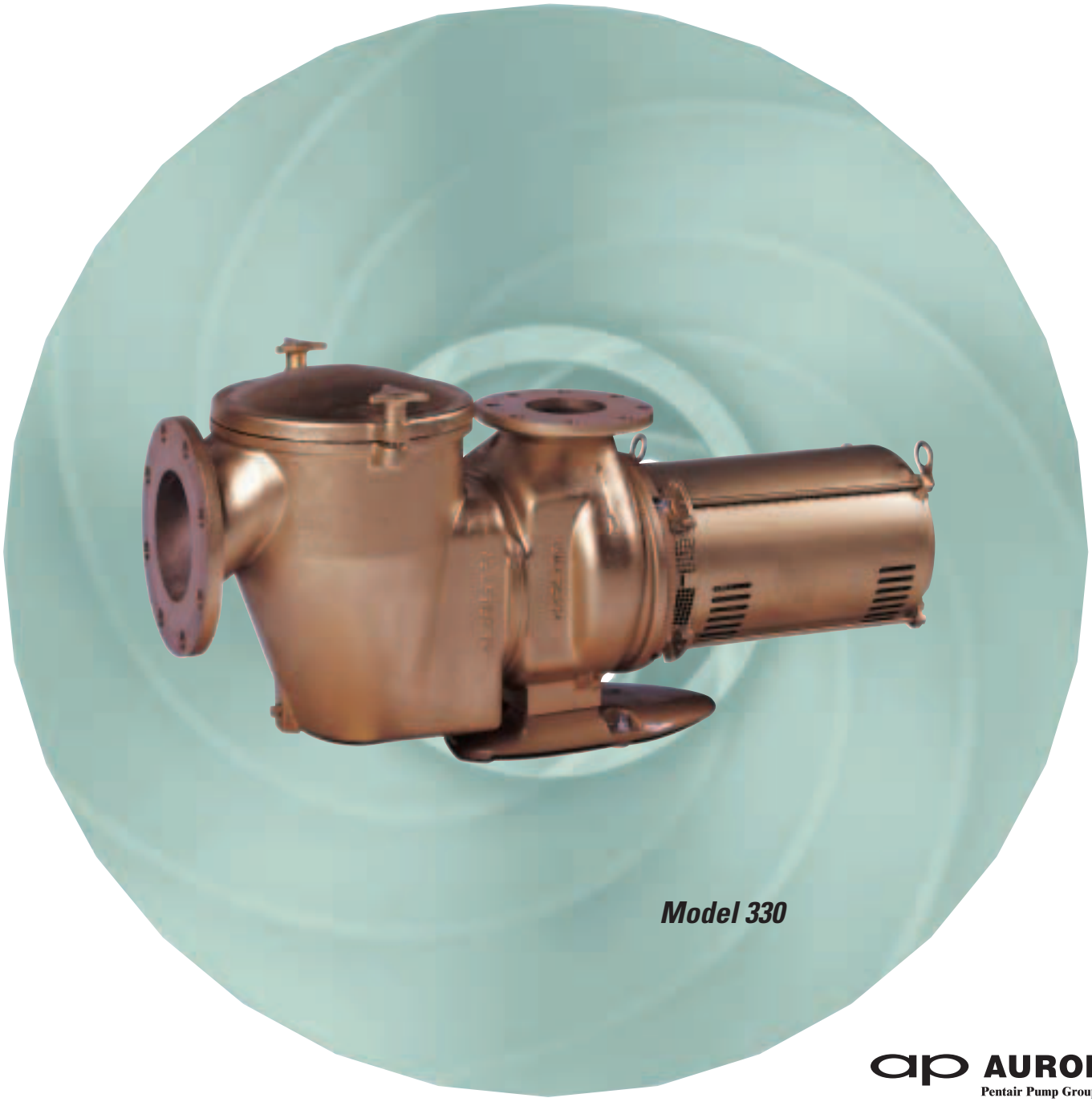
# 3x3x6 - 1440 RPM
## ENCLOSED IMPELLER

SECTION 320 (Metric 50Hz)
DATE JULY 1994
SUPERCEDES MARCH 1986



# 330 Series
# Gold Vane High Flow Pump

- Capacities to 700 G.P.M. (158 $M^3$/HR)
- Heads to 140 Feet (42 Meters)
- Temperatures to 200°F (93°C)



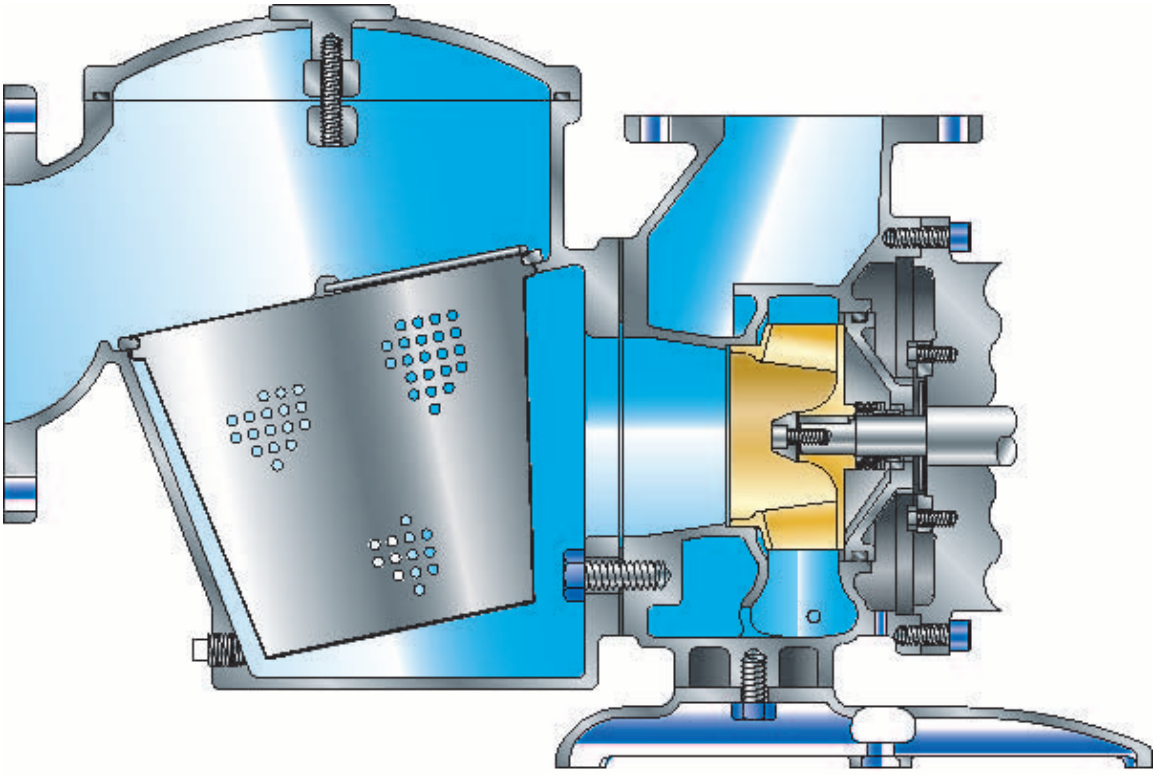
Model 330

AURORA®
Pentair Pump Group

# Aurora 330 Pump

## Gold Vane High Flow Pump

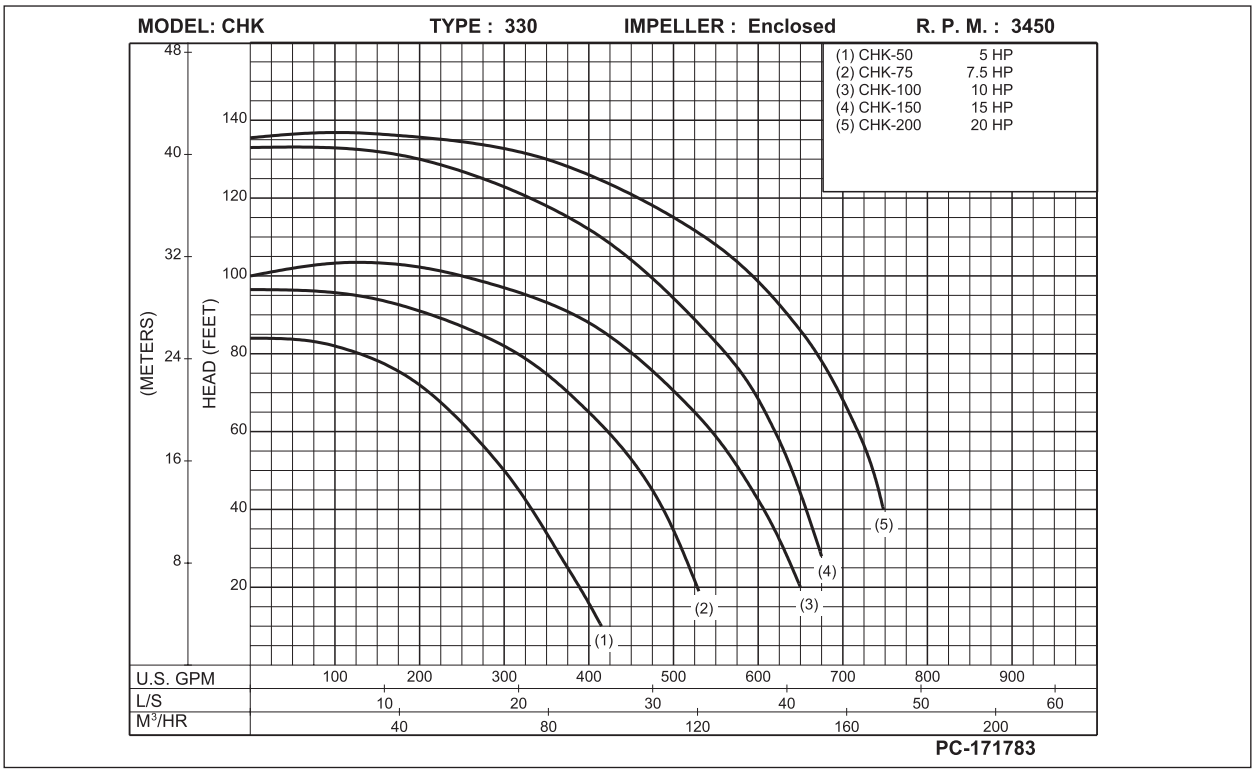
Aurora's 300 Series heavy duty commercial pump is specifically designed for commercial, public or other large swimming pools, fountains or water where high flow rates and continuous operation are desired. With proven dependability, the Gold Vane pump has set the standard for medium and high-head performance.



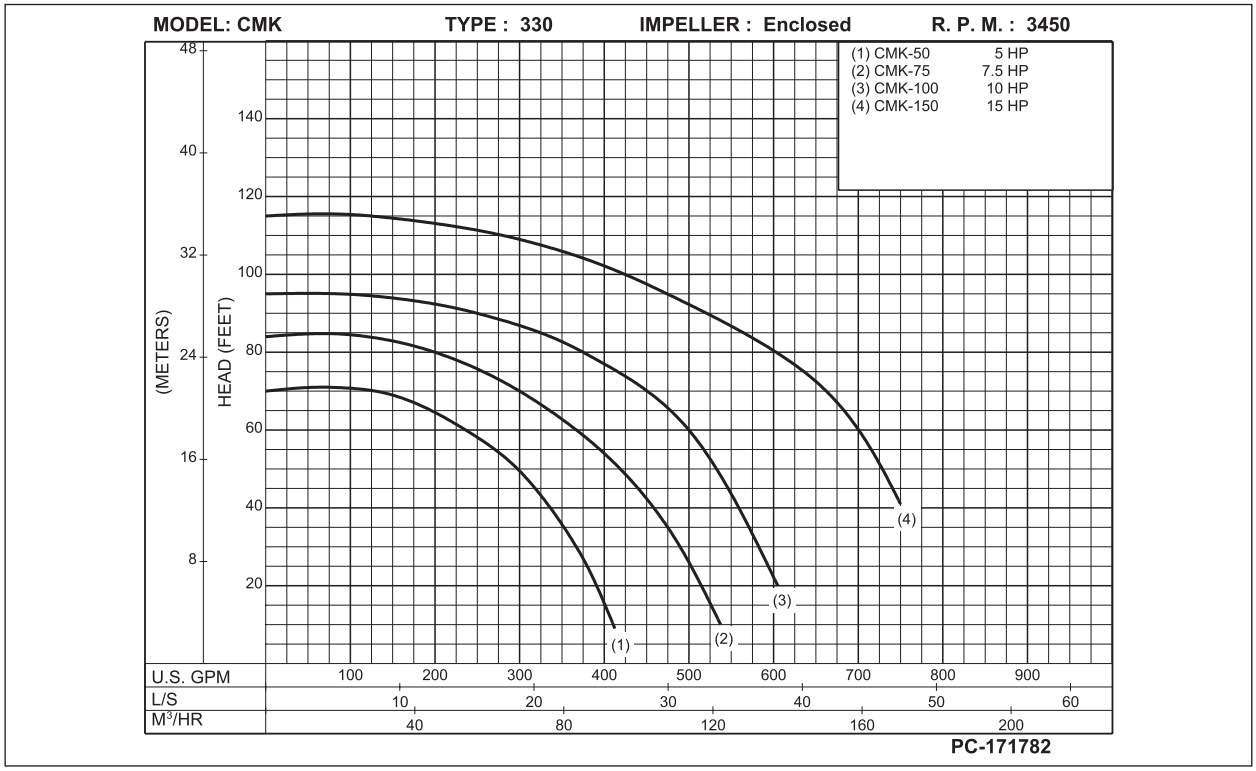
1 DURABLE BRASS CONSTRUCTION.
2 HIGH PERFORMANCE MOTOR for maximum flow.
3 ALL BRONZE CONSTRUCTION for strength and durability.
4 6" SUCTION (with strainer pot) or 5" suction (without strainer pot) and 4" discharge for maximum capabilities.
5 CLOSED IMPELLER for longer motor bearing life.
6 HEAVY-GAUGE STAINLESS STEEL STRAINER BASKET with an open area 14 times the area of the suction port.
7 HEAT-RESISTANT SEAL capable of operation up to 220°F.
8 AVAILABLE in three phase 50 & 60 cycle models and single phase 60 cycle models.
9 ONE YEAR LIMITED WARRANTY.

# 330 Curves

## 3450 RPM

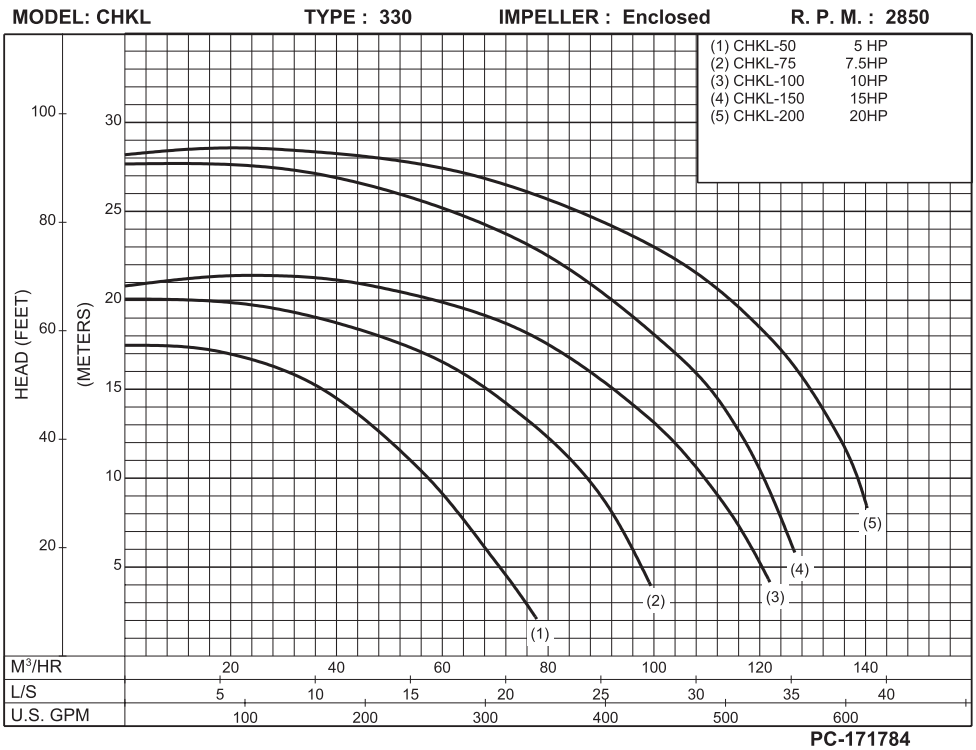



## 3450 RPM

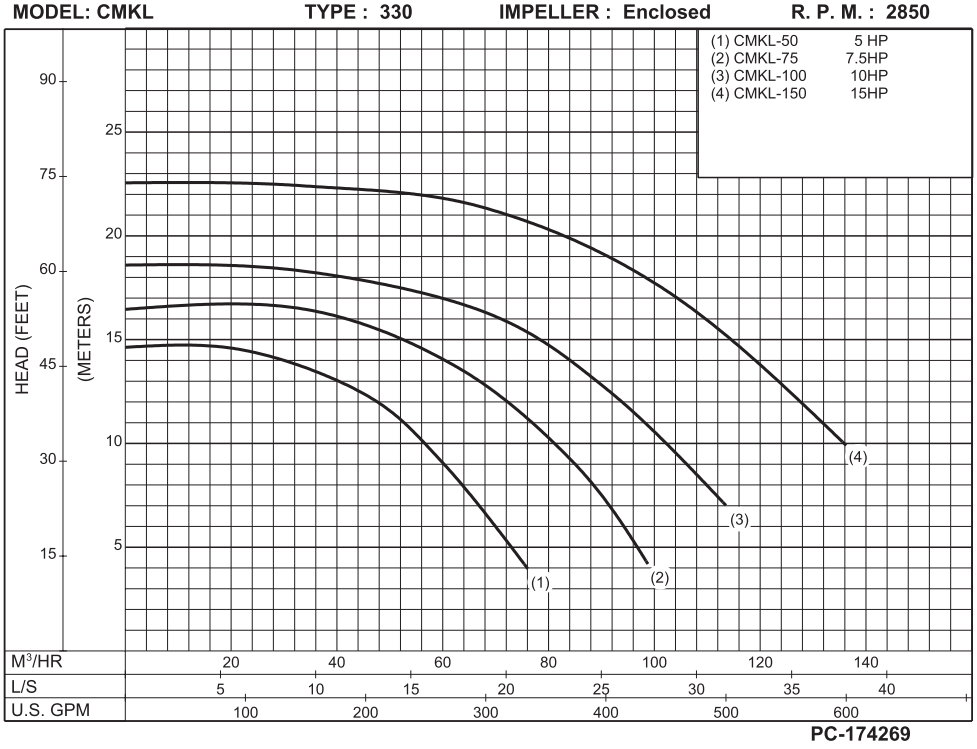


# 330 Curves

## 2850 RPM




## 2850 RPM



# 330 Product Offering

### 1 PHASE 200-208 VOLT WITH HAIR/LINT POT

| Aurora No. | Model | Head | HP | Wt. lbs (kg) |
|---|---|---|---|---|
| A347939 | CH-50 | High | 5 | 352 (160) |
| A347938 | CM-50 | Medium | 5 | 352 (160) |
| A348005 | CH-75 | High | 7.5 | 362 (164) |
| A348001 | CM-75 | Medium | 7.5 | 362 (164) |

### 1 PHASE 230 VOLT WITH HAIR/LINT POT

| Aurora No. | Model | Head | HP | Wt. lbs (kg) |
|---|---|---|---|---|
| A011656 | CH-50 | High | 5 | 352 (160) |
| A011651 | CM-50 | Medium | 5 | 352 (160) |
| A347916 | CH-75 | High | 7.5 | 362 (164) |
| A347917 | CM-75 | Medium | 7.5 | 362 (164) |

### 3 PHASE 200-208 VOLT WITH HAIR/LINT POT

| Aurora No. | Model | Head | HP | Wt. lbs (kg) |
|---|---|---|---|---|
| A347941 | CHK-50 | High | 5 | 336 (152) |
| A347940 | CMK-50 | Medium | 5 | 336 (152) |
| A347943 | CHK-75 | High | 7.5 | 346 (157) |
| A347942 | CMK-75 | Medium | 7.5 | 346 (157) |
| A347945 | CHK-100 | High | 10 | 376 (171) |
| A347944 | CMK-100 | Medium | 10 | 374 (170) |
| A347947 | CHK-150 | High | 15 | 398 (181) |
| A347946 | CMK-150 | Medium | 15 | 396 (180) |
| A347948 | CHK-200 | High | 20 | 474 (215) |

### 3 PHASE 380-415 VOLT WITH HAIR/LINT POT

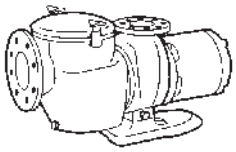
| Aurora No. | Model | Head | HP | Wt. lbs (kg) |
|---|---|---|---|---|
| A014880 | CHKL-50 | High | 5 | 336 (152) |
| A014900 | CMKL-50 | Medium | 5 | 336 (152) |
| A014881 | CHKL-75 | High | 7.5 | 346 (157) |
| A014901 | CMKL-75 | Medium | 7.5 | 346 (157) |
| A014882 | CHKL-100 | High | 10 | 374 (170) |
| A014902 | CMKL-100 | Medium | 10 | 376 (171) |
| A014883* | CHKL-150 | High | 15 | 396 (180) |
| A014903* | CMKL-150 | Medium | 15 | 398 (181) |
| A014884* | CHKL-200 | High | 20 | 474 (215) |

### 3 PHASE 220-440 VOLT WITH HAIR/LINT POT

| Aurora No. | Model | Head | HP | Wt. lbs (kg) |
|---|---|---|---|---|
| A011657 | CHK-50 | High | 5 | 336 (152) |
| A011652 | CMK-50 | Medium | 5 | 336 (152) |
| A011658 | CHK-75 | High | 7.5 | 346 (157) |
| A011653 | CMK-75 | Medium | 7.5 | 346 (157) |
| A011659 | CHK-100 | High | 10 | 376 (171) |
| A011654 | CMK-100 | Medium | 10 | 374 (170) |
| A011660 | CHK-150 | High | 15 | 398 (181) |
| A011655 | CMK-150 | Medium | 15 | 396 (180) |
| A011661 | CHK-200 | High | 20 | 474 (215) |

### 3 PHASE 575 VOLT WITH HAIR/LINT POT

| Aurora No. | Model | Head | HP | Wt. lbs (kg) |
|---|---|---|---|---|
| A347931*♦ | CMK-50 | Medium | 5 | 336 (152) |
| A347937 | CHK-75 | High | 7.5 | 346 (157) |
| A347936 | CMK-75 | Medium | 7.5 | 346 (157) |
| A347932*♦ | CMK-100 | Medium | 10 | 374 (170) |
| A347933 | CHK-150 | High | 15 | 398 (181) |
| A347934 | CMK-150 | Medium | 15 | 396 (180) |
| A347935 | CHK-200 | High | 20 | 474 (215) |



### 1 PHASE 200-208 VOLT WITHOUT HAIR/LINT POT

| Aurora No. | Model | Head | HP | Wt. lbs (kg) |
|---|---|---|---|---|
| A347950 | CH-50 | High | 5 | 302 (137) |
| A347949 | CM-50 | Medium | 5 | 302 (137) |
| A347961 | CH-75 | High | 7.5 | 312 (142) |
| A347960 | CM-75 | Medium | 7.5 | 310 (141) |

### 1 PHASE 230 VOLT WITHOUT HAIR/LINT POT

| Aurora No. | Model | Head | HP | Wt. lbs (kg) |
|---|---|---|---|---|
| A011605 | CH-50 | High | 5 | 302 (137) |
| A011600 | CM-50 | Medium | 5 | 302 (137) |
| A348006♦ | CH-75 | High | 7.5 | 312 (142) |
| A348007♦ | CM-75 | Medium | 7.5 | 310 (141) |

### 3 PHASE 200-208 VOLT WITHOUT HAIR/LINT POT

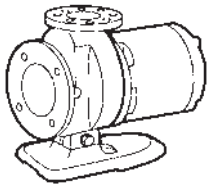
| Aurora No. | Model | Head | HP | Wt. lbs (kg) |
|---|---|---|---|---|
| A347952 | CHK-50 | High | 5 | 286 (130) |
| A347951 | CMK-50 | Medium | 5 | 286 (130) |
| A347954 | CHK-75 | High | 7.5 | 299 (136) |
| A347953 | CMK-75 | Medium | 7.5 | 296 (136) |
| A347956 | CHK-100 | High | 10 | 326 (148) |
| A347955 | CMK-100 | Medium | 10 | 324 (147) |
| A347958 | CHK-150 | High | 15 | 348 (158) |
| A347957 | CMK-150 | Medium | 15 | 346 (157) |
| A347959 | CHK-200 | High | 20 | 424 (192) |

### 3 PHASE 380-415 VOLT WITH HAIR/LINT POT

| Aurora No. | Model | Head | HP | Wt. lbs (kg) |
|---|---|---|---|---|
| A015880♦ | CHKL-50 | High | 5 | 286 (130) |
| A016900♦ | CMKL-50 | Medium | 5 | 286 (130) |
| A015881♦ | CHKL-75 | High | 7.5 | 296 (136) |
| A016901♦ | CMKL-75 | Medium | 7.5 | 299 (136) |
| A015882♦ | CHKL-100 | High | 10 | 324 (147) |
| A016902♦ | CMKL-100 | Medium | 10 | 326 (148) |
| A015883*♦ | CHKL-150 | High | 15 | 346 (157) |
| A016903*♦ | CMKL-150 | Medium | 15 | 348 (158) |
| A015884*♦ | CHKL-200 | High | 20 | 424 (192) |

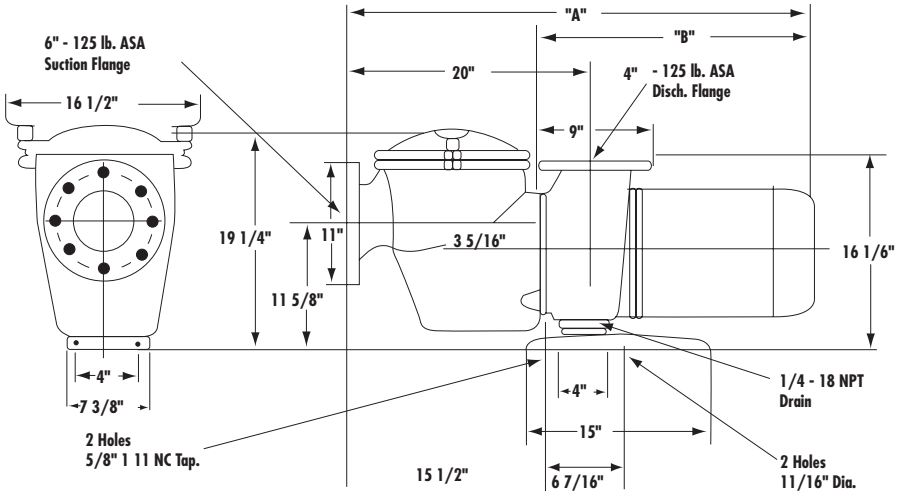
### 3 PHASE 220-440 VOLT WITHOUT HAIR/LINT POT

| Aurora No. | Model | Head | HP | Wt. lbs (kg) |
|---|---|---|---|---|
| A011606 | CHK-50 | High | 5 | 286 (130) |
| A011601 | CMK-50 | Medium | 5 | 286 (130) |
| A011607 | CHK-75 | High | 7.5 | 299 (136) |
| A011602 | CMK-75 | Medium | 7.5 | 296 (136) |
| A011608 | CHK-100 | High | 10 | 326 (148) |
| A011603 | CMK-100 | Medium | 10 | 324 (147) |
| A011609 | CHK-150 | High | 15 | 348 (158) |
| A011604 | CMK-150 | Medium | 15 | 346 (157) |
| A011610 | CHK-200 | High | 20 | 424 (192) |



* SUITABLE FOR WYE-DELTA START
♦ PUMP NOT NSF APPROVED

# 330 Dimensions




| Pump Dimensions | | | |
|---|---|---|---|
| Three-Phase Amps @ 220/440 & 380/415 | | | |
| HP | AMPS | | |
| | | A | B |
| 5 | 14 | 36 (914) | 19-1/2 (495) |
| 7.5 | 20 | 36 (914) | 20-1/2 (520) |
| 10 | 26 | 39 (991) | 22-1/2 (571) |
| 15 | 38 | 39 (991) | 22 (558) |
| 20 | 46 | 40 (1016) | 23-1/2 (596) |
| Single-Phase Amps @230V | | | |
| 5 | 26 | 36 (914) | 20-1/2 (520) |
| 7.5 | 37 | 37 (940) | 20-1/2 (520) |
| Single-Phase Amps @200V | | | |
| 5 | 29 | 36 (914) | 20-1/2 (520) |
| 7.5 | 39.6 | 37 (940) | 20-1/2 (520) |

NOTES:
1. Dimensions and weights are approximate.
2. All dimensions are in inches (mm) and may vary ± 1/4 (6).

# Engineering Specifications

### Engineering Specifications

The contractor shall furnish (and install in location as shown on the plan) an Aurora Type 330, all bronze contruction centrifugal pump. Each pump shall have a capacity of … GPM at … ft. total head and specific gravity. The pump is to be furnished with an enamel coated cast iron foot, a mechanical seal with all metal parts to be stainless steel, O-Rings made of "Buna-N" Elastomer, ceramic seat, and carbon washer.

### Materials of Construction

| | |
|---|---|
| Volute Casing | Bronze CA 84400 |
| Impeller | Bronze CA 83600 |
| Strainer Pot | Bronze CA 84400 |
| Cover | Bronze CA 83450 |
| Strainer | Stainless Steel |
| Pump Shaft | Stainless Steel |
| Mechanical Seal | 300 Stainless Steel metal parts, Buna-N elostomers, Ceramic Seat and Carbon Washer |
| O-Rings | "Buna-N" Elastomer |
| Gasket | Cellulose w/Nitrile |
| Pump Foot | Enamel Coated Cast Iron CL 30 |

**NOTE:** Aurora Pump reserves the right to make revisions to its products and their specifications, and to this bulletin and related information, without notice.

— Your Authorized Local Distributor —


**MARKETING & SALES:**
800 AIRPORT ROAD • NORTH AURORA, ILLINOIS U.S.A. • 60542
PHONE: (630) 859-7000 U.S.A./CANADA FAX: (630) 859-7060
WORLDWIDE FAX: (630) 859-1226
**WEB:** www.aurorapump.com
**EMAIL:** aurora_info@pentairpump.com

**AURORA MFG. PLANT:**
800 AIRPORT ROAD • NORTH AURORA, ILLINOIS U.S.A. • 60542

*SALES OFFICES IN ALL MAJOR CITIES AND COUNTRIES*
Refer to "Pumps" in yellow pages of your phone directory for your local Distributor.


AURORA® Pentair Pump Group

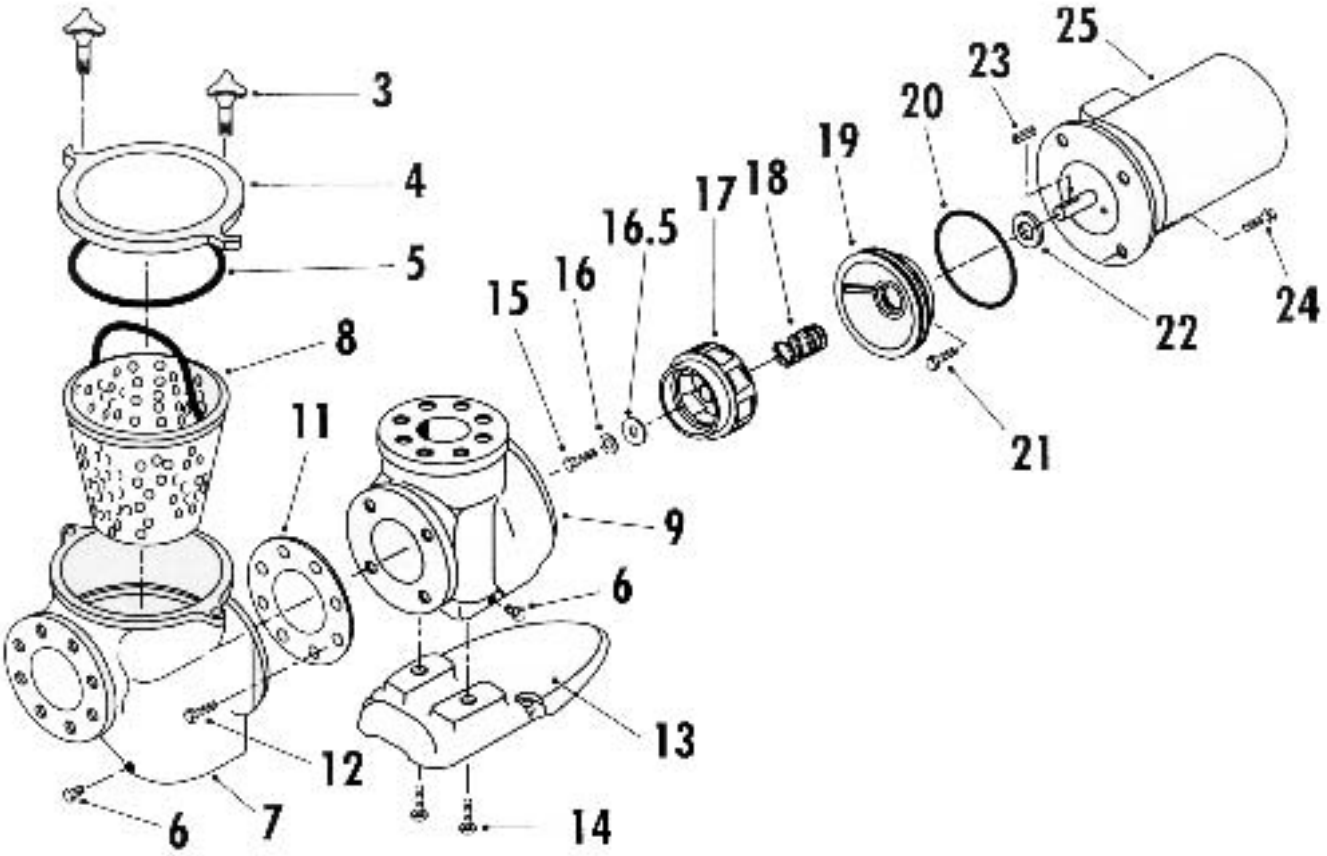
AP-330 / Rev A. (01.03)

# 330 SERIES
# REPAIR PARTS INDEX

READ AND UNDERSTAND THE PUMP AND MOTOR INSTRUCTIONS BEFORE ATTEMPTING TO INSTALL, DISASSEMBLE OR REPAIR THE PUMP

AURORA®
Pentair Pump Group

# MODEL 330
# PIECE NUMBERS



# PARTS LIST

| PIECE NO. | DESCRIPTION | QTY | PART NO. |
|---|---|---|---|
| 3 | HAND NUT ASSEMBLY - BRASS | 2 | 544-75280-618 |
| 4 | COVER, C-16 BRASS | 1 | 260-75275-199 |
| 5 | O-RING C-18 | 1 | 364-0525-457 |
| 6 | PIPE PLUG, 1/4" BRASS | 2 | 600-0002-190 |
| 7 | STRAINER POT, BRASS C-22 | 1 | 796-75271-199 |
| 8 | BASKET, C-29 SS 11" | 1 | 704-72795-100 |
| 9 | VOLUTE C-2 BRASS | 1 | 180-75273-199 |
| 11 | GASKET FLANGE | 1 | 364-70943-603 |
| 12 | SCREW, 3/4-10 X 1.75 HH BRASS P-12 | 4 | 168-0634-104 |
| 13 | FOOT C-4 CAST IRON-COATED | 1 | 820-75287-632 |
| 14 | SCREW, 5/8-11 X 1 STL HD | 2 | 168-0558-359 |
| 15 | IMPELLER LOCK SCREW, C-35 | 1 | 168-0115-104 |
| 16 | IMPELLER WASHER, C-71 | 1 | 908-71048-100 |
| 16.5 | IMPELLER WASHER GASKET | 1 | 364-2034-603 |
| 17 | IMP CH50/CHK-50/CHKL-50 5HP (1-3PH) HIGH HEAD | 1 | 444-73828-208 |
| | IMP CM-50/CMK-50/CMKL-50 5HP (1-3PH) MEDIUM HEAD | 1 | 444-70228-208 |
| | IMP CHK-75/CHKL-75 7.5HP (3PH) HIGH HEAD | 1 | 444-73829-208 |
| | IMP CMK-75/CMKL-75 7.5HP (3PH) MEDIUM HEAD | 1 | 444-70227-208 |
| | IMP CM-75 7.5HP (1PH) HIGH HEAD | 1 | 444-73829-208 |
| | IMP CM-75 7.5HP (1PH) MEDIUM HEAD | 1 | 444-70227-208 |
| | IMP CHK-100/CHKL-100 10HP (3PH) HIGH HEAD | 1 | 444-73830-208 |
| | IMP CMK-100/CMKL-100 10HP (3PH) MEDIUM HEAD | 1 | 444-70226-208 |
| | IMP CHK-150/CHKL-150 15 HP (3PH) HIGH HEAD | 1 | 444-73831-208 |
| | IMP CMK-150/CMKL-150 15HP (3PH) MEDIUM HEAD | 1 | 444-70225-208 |
| | IMP CHK-200/CMKL-200 20HP (3PH) HIGH HEAD | 1 | 444-73832-208 |
| 18 | SEAL C-7 | 1 | 712-71725-753 |
| 19 | FLANGE, C-52 BRASS | 1 | 116-70906-199 |
| 20 | O-RING (FLANGE) C-70` | 1 | 364-0508-457 |
| 21 | SCREW, 3/8-16 X 3/4 CS HH | 2 | 168-0378-104 |
| 22 | WATER SLINGER C-115 | 1 | 764-1043-478 |

| PIECE NO. | DESCRIPTION | QTY | PART NO. |
|---|---|---|---|
| 23 | IMPELLER KEY 3/16" SQ | 1 | 472-0201-104 |
| 24 | SCREW 1/2-13 X 1.25 STD. HH | 4 | 168-0490-359 |
| 25 | MOTOR 5HP 1/60/230 | 1 | 525-71366-999 |
| | MOTOR 5HP 3/60/220-440 | 1 | 525-71364-999 |
| | MOTOR 7.5HP 1/60/230 | 1 | 525-357204-999 |
| | MOTOR 7.5HP 3/60/220-440 | 1 | 525-71365-999 |
| | MOTOR 10HP 3/60/220-440 | 1 | 525-71363-999 |
| | MOTOR 15HP 3/60/220-440 | 1 | 525-71361-999 |
| | MOTOR 20HP 3/60/220-440 | 1 | 525-71362-999 |
| | MOTOR 5HP 3/50/380-415 | 1 | 525-72737-999 |
| | MOTOR 7.5HP 3/50/380-415 | 1 | 525-72739-999 |
| | MOTOR 10HP 3/50/380-415 | 1 | 525-72740-999 |
| | MOTOR 15HP 3/50/380-415 | 1 | 525-72742-999* |
| | MOTOR 20HP 3/50/380-415 | 1 | 525-72744-999* |
| 15 THR 25 | MOTOR SUB ASSEMBLY CM-50 | 1 | A073260 |
| | MOTOR SUB ASSEMBLY CH-50 | 1 | A073264 |
| | MOTOR SUB ASSEMBLY CMK-50 | 1 | A073262 |
| | MOTOR SUB ASSEMBLY CHK-50 | 1 | A073265 |
| | MOTOR SUB ASSEMBLY CM-75 | 1 | A357905 |
| | MOTOR SUB ASSEMBLY CH-75 | 1 | A357910 |
| | MOTOR SUB ASSEMBLY CMK-75 | 1 | A073263 |
| | MOTOR SUB ASSEMBLY CHK-75 | 1 | A073266 |
| | MOTOR SUB ASSEMBLY CMK-100 | 1 | A073680 |
| | MOTOR SUB ASSEMBLY CHK-100 | 1 | A073267 |
| | MOTOR SUB ASSEMBLY CMK-150 | 1 | A073261 |
| | MOTOR SUB ASSEMBLY CHK-150 | 1 | A073268 |
| | MOTOR SUB ASSEMBLY CHK-200 | 1 | A073269 |
| | MOTOR SUB ASSEMBLY CMKL-50 | 1 | A014700 |
| | MOTOR SUB ASSEMBLY CHKL-50 | 1 | A014801 |
| | MOTOR SUB ASSEMBLY CMKL-75 | 1 | A014701 |
| | MOTOR SUB ASSEMBLY CHKL-75 | 1 | A014802 |
| | MOTOR SUB ASSEMBLY CMKL-100 | 1 | A014702 |
| | MOTOR SUB ASSEMBLY CHKL-100 | 1 | A014803 |
| | MOTOR SUB ASSEMBLY CMKL-150 | 1 | A014703* |
| | MOTOR SUB ASSEMBLY CHKL-150 | 1 | A014804* |
| | MOTOR SUB ASSEMBLY CHKL-200 | 1 | A014805* |

* SUITABLE FOR WYE-DELTA START

# INSTRUCTION AND REPAIR MANUAL

## MODEL 330

**6**

**ATTENTION: SAFETY WARNINGS:**

Read and understand all warnings before installation or servicing pump.

**OPERATIONAL LIMITS**:

| | |
|---|---|
| Maximum Operating Pressure: | 175 psi at Temperatures to 150°F (65.5°C) |
| Maximum Operating Temperature: | 200°F (93°C) |

**ELECTRICAL SAFETY:**

**Warning:** Electrical Shock Hazard

All electrical connections are to be made by a qualified electrician in accordance with all codes and ordinances. Failure to follow these instructions could result in serious personal injury, death or property damage.

**Warning:** Electrical Overload Hazard

Insure all motors have properly sized overload protection. Failure to follow these instructions could result in serious personal injury, death or property damage.

**Warning:** Sudden Start-Up Hazard

Disconnect and lockout power source before servicing. Failure to follow these instructions could result in serious personal injury, death or property damage.

**HIGH TEMPERATURE SAFETY:**

**Warning:** Hot Surface Hazard

If pumping hot water, insure guards or proper insulation is installed to protect against skin contact to hot piping or pump components. Failure to follow these instructions could result in serious personal injury, death or property damage.

**Warning:** Spraying Water Hazard

When servicing pump replace all gaskets and seals. Do not re-use old gaskets or seals. Failure to follow these instructions could result in serious personal injury, death or property damage.

**HIGH PRESSURE SAFETY:**

**Warning:** High Pressure Hazard

The pump is rated at a maximum of 175 psi at 150°F. Do not exceed this pressure. Install properly sized pressure relief valves in system. Failure to follow these instructions could result in serious personal injury, death or property damage.

**Warning:** Expansion Hazard

Water expands when heated. Install properly sized thermal expansion tanks and relief valves. Failure to follow these instructions could result in serious personal injury, death or property damage.

SERVICE

Your Aurora pump requires no maintenance other than periodic inspection, and occasional cleaning and lubrication of bearings. The intent of inspection is to prevent breakdown, thus obtaining optimum service life. The liquid end of the pump is lubricated by the fluid being pumped and therefore does not require periodic lubrication. The motor, however may require lubrication, in which case, the motor manufacturer's recommendation should be followed.

REPAIRS

Before starting any work, insure the electrial power is locked out, the system pressure has been lowered to 0 psi and temperature of the unit is at a safe level.

**Warning:** Sudden Start-Up Hazard

Disconnect and lockout power source before servicing. Failure to follow these instructions could result in serious personal injury, death or property damage.

**Warning:** Spraying Water Hazard

When servicing pump replace all gaskets and seals. Do not re-use old gaskets or seals. Failure to follow these instructions could result in serious personal injury, death or property damage.

Inspect removed parts at disassembly to determine if they can be reused. Cracked castings should never be reused. Scored or worn pump shafts should be replaced. Gaskets should be replaced at reassembly simply as a matter of economy. They are much less expensive to replace routinely than to replace individually as the need arises. While motors and motor controls are often returned to the manufacturer for repairs it is usually more practical and economical to repair the pump at the job site or the pump repair shop.

Cleaning of most parts can be accomplished with the use of clean rags.

**⚠ Warning:** Use of Solvents

We do not recommend the use of solvents or petroleum cleaners for cleaning the parts because of the fire danger. Failure to follow these instructions could result in serious personal injury, death or property damage.

DISASSEMBLY OF THE PUMP. READ AND UNDERSTAND ALL SAFETY WARNINGS AT THE BEGINNING OF THE MANUAL BEFORE BEGINNING INSTALLATION OR ANY REPAIR WORK. Disassemble only what is needed to make repairs or accomplish inspection.

PROCEDURE FOR REMOVING AND INSTALLING PUMP MOTOR.

**CAUTION**

DO NOT OPERATE THIS UNIT DRY

TO REMOVE MOTOR

1. Support motor on both sides. Remove four hex head cap screws (24) that hold motor to volute (9).

2. Carefully and slowly pull motor (25) until seal flange (19) and impeller (17) are completely out of the volute (9). Avoid resting entire unit on seal flange or impeller.

3. Remove Allen head lock screw (15) and washer (16) from center of impeller (17). Pull impeller from shaft. Do no lose square key (23).

4. Remove seal spring member (18) from shaft. Avoid cutting rubber parts or scratching carbon face.

5. Remove two hex head cap screws (21) from seal flange (19). Hold seal flange so that it doesn't drop on motor shaft while removing screws. Remove seal flange.

6. Remove ceramic seal face member (18) from center of seal flange (19) and o-ring (20) from groove. Check for nicks and cuts. Replace as necessary.

7. Finally, remove water slinger (22) if replacing with new one or servicing motor.

TO INSTALL MOTOR

1. Slip water slinger (22) on motor shaft past shoulder.

2. Press ceramic seal face member (18) into center cavity of seal flange (19) with the smooth ceramic facing out. Clean and grease o-ring (20) and place in seal flange groove.

**CAUTION**

NOTE: MAKE SURE THAT CERAMIC FACE IS FREE FROM OIL OR GREASE.

3. Install seal flange on motor register and secure in place with two cap screws (21).

4. Press seal spring member (18) on motor shaft with carbon face towards ceramic seal member. Avoid cutting rubber parts on shaft.

5. Line up keyways and push impeller (17) on motor shaft up to shoulder. Insert square key (23) in place.

6. Secure impeller with washer (16), impeller gasket (16.5) and Allen head lock screw (15).

7. Position and carefully install assembled motor unit to the volute (9) and secure motor using cap screws (24).

**CAUTION**

MOTOR MUST BE WIRED AS INDICATED ON MOTOR JUNCTION BOX COVER AND NAME PLATE.

Remove motor shaft and cap. Momentarily, start and stop motor-while impeller is still turning, check end shaft rotation. Rotation must be in the direction indicated by the arrow on the outside of the volute (9). Fill strainer pot with water, install baseket, and secure cover. Pump is ready for operation. Press in motor shaft end cap.

STARTING PUMP AFTER REASSEMBLY. Do not start pump until all air and vapor has been bled and there is liquid in the pump to provide the necessary lubrication. It is possible that the mechanical seal may drip during first few minutes of operation.

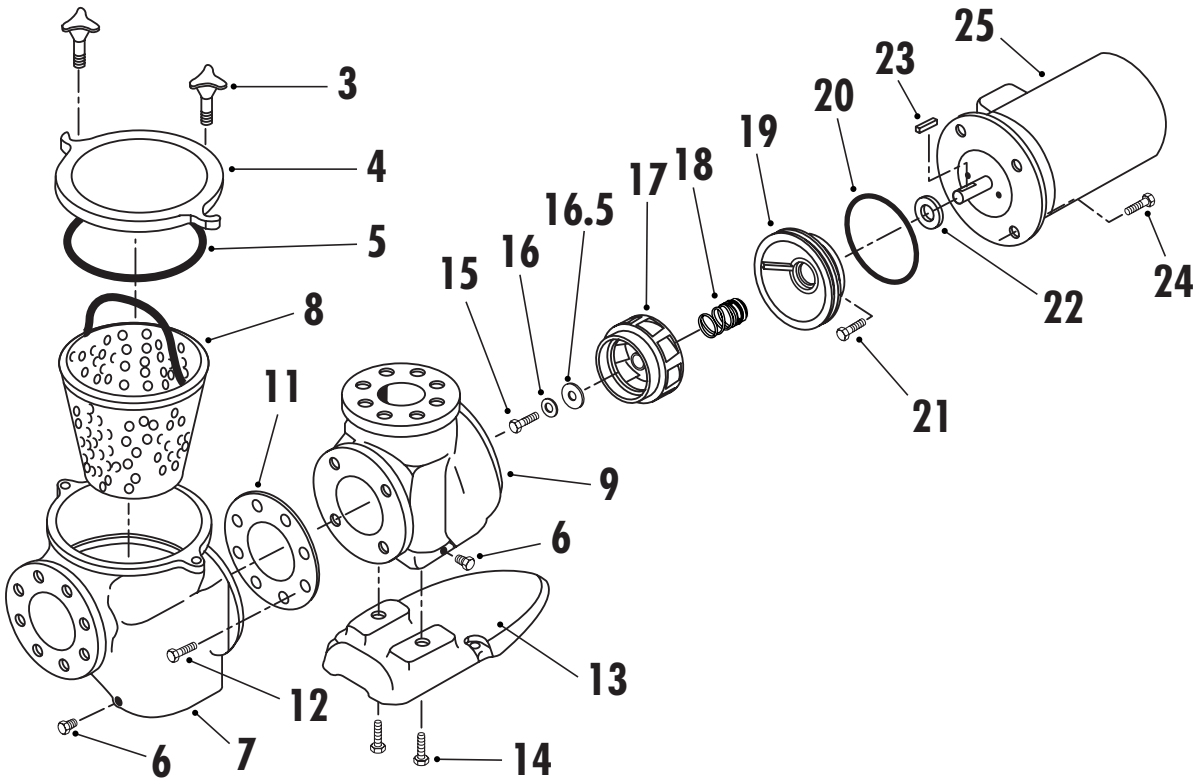



Figure 1. Pump Exploded View

A LIST OF PARTS
MODEL 330 Gold Vane Pump
(See Figure 1)

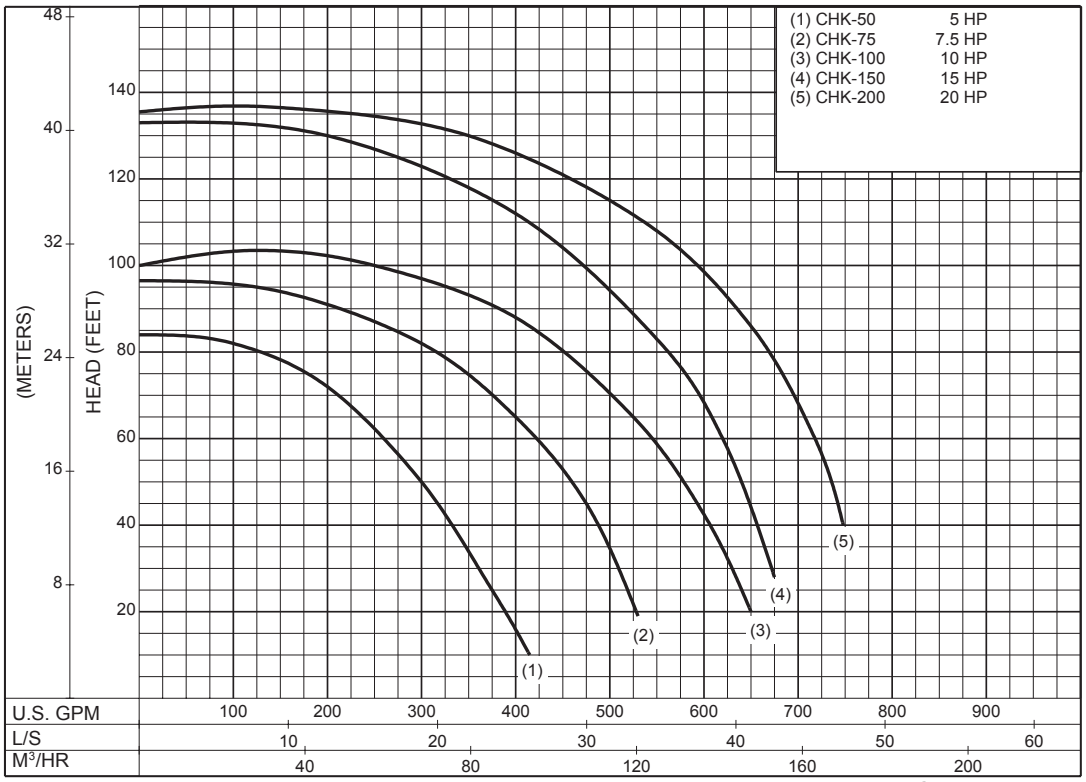
| | | | |
|---|---|---|---|
| 3. | Hand Nut | | |
| 4. | Cover | 16. | Impeller Washer |
| 5. | O-ring | 16.5 | Impeller Gasket |
| 6. | Pipe Plug | 17. | Impeller |
| 7. | Strainer Pot | 18. | Mechanical Seal |
| 8. | Basket | 19. | Flange |
| 9. | Volute | 20. | O-ring |
| 11. | Gasket | 21. | Capscrew |
| 12. | Screw | 22. | Water Slinger |
| 13. | Foot | 23. | Impeller Key |
| 14. | Screw | 24. | Capscrew |
| 15. | Lock Screw | 25. | Motor |

# Performance Curves for the 330 Series

| MODEL/SIZE | R.P.M. | CATALOG PAGE | PDF PAGE |
|---|---|---|---|
| CHK/CMK | 3450 | 401 | 2 |
| CHKL/CMKL | 2850 | 402 | 3 |

AURORA®
Pentair Pump Group

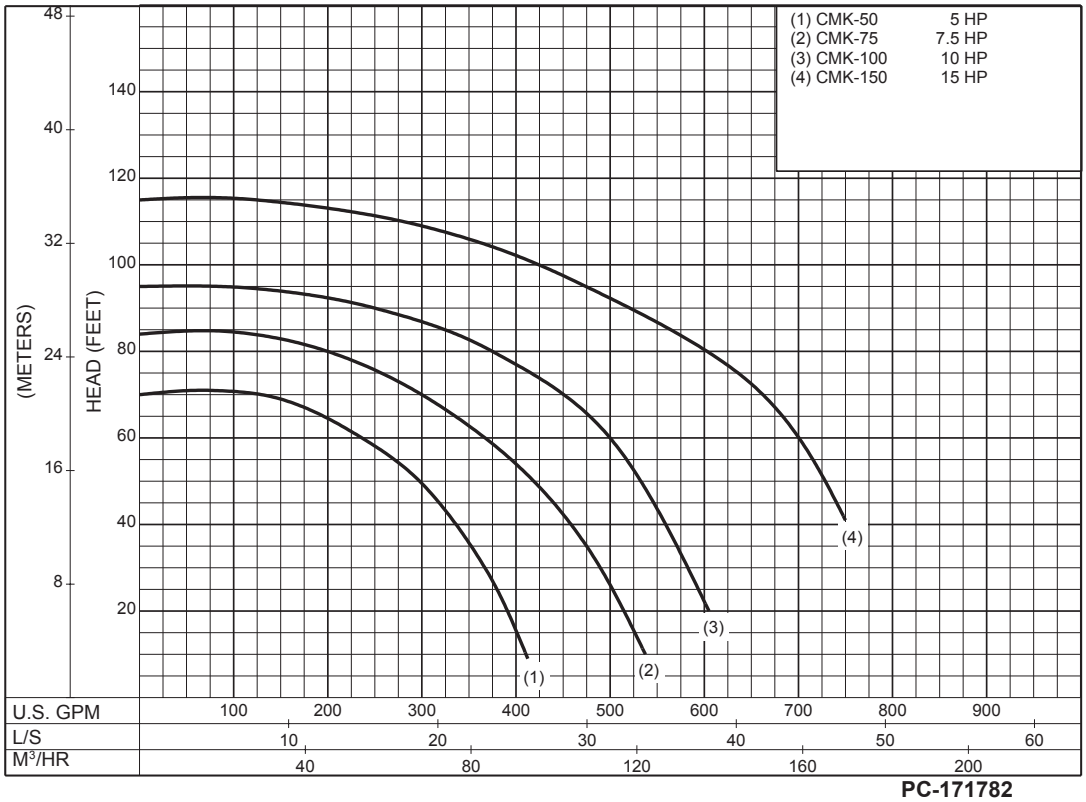
**MODEL: CHK** **TYPE : 330** **IMPELLER : Enclosed** **R. P. M. : 3450**




PC-171783

**3450 R.P.M**

**MODEL: CMK** **TYPE : 330** **IMPELLER : Enclosed** **R. P. M. : 3450**



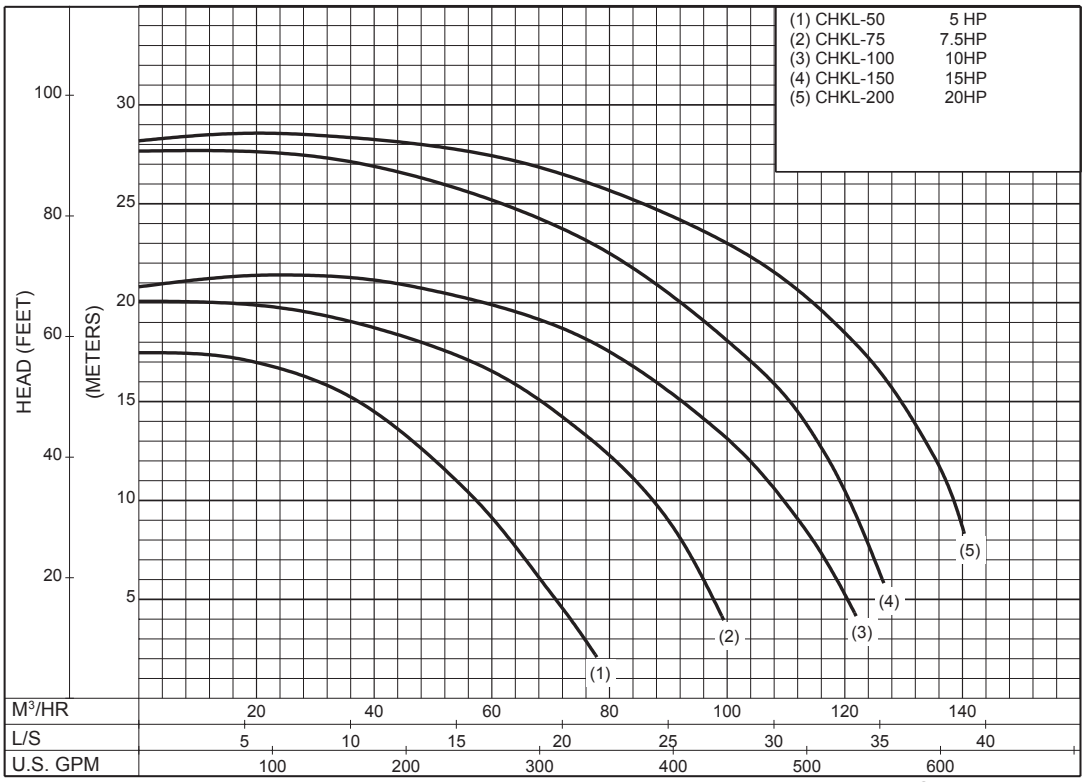

PC-171782

**3450 R.P.M**

# SERIES 330
## ENCLOSED IMPELLER

**2850 R.P.M**

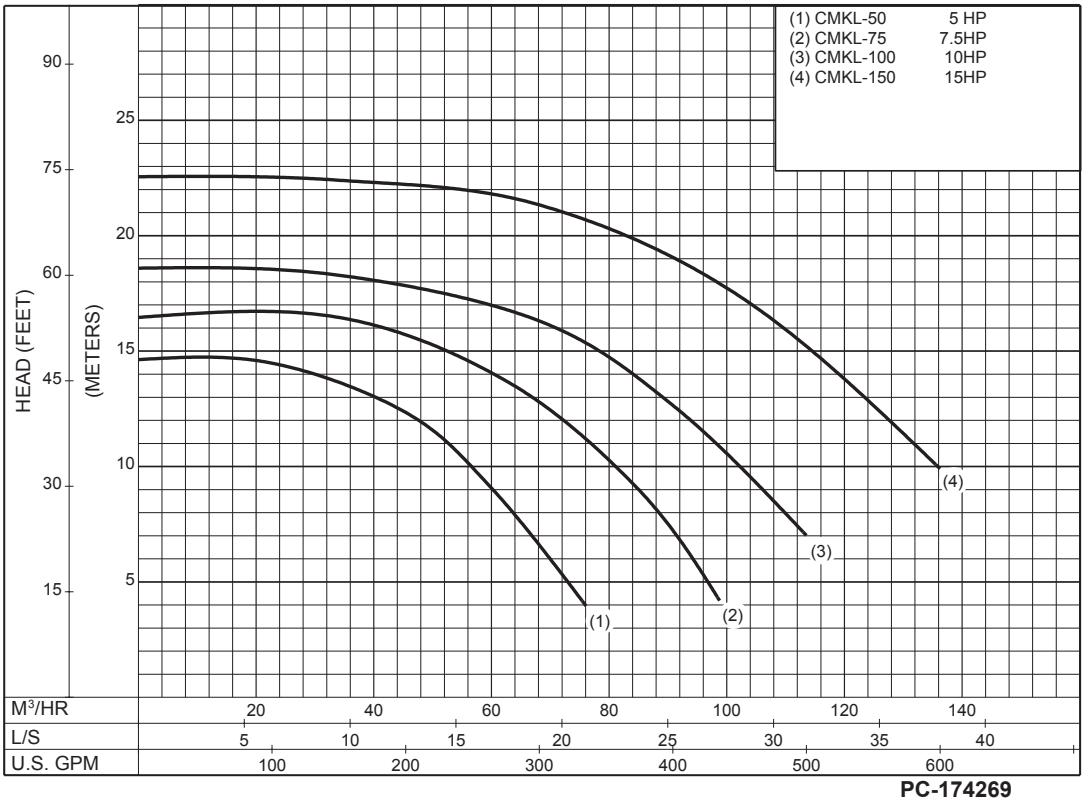
**MODEL: CHKL** **TYPE : 330** **IMPELLER : Enclosed** **R. P. M. : 2850**




**PC-171784**

**2850 R.P.M**

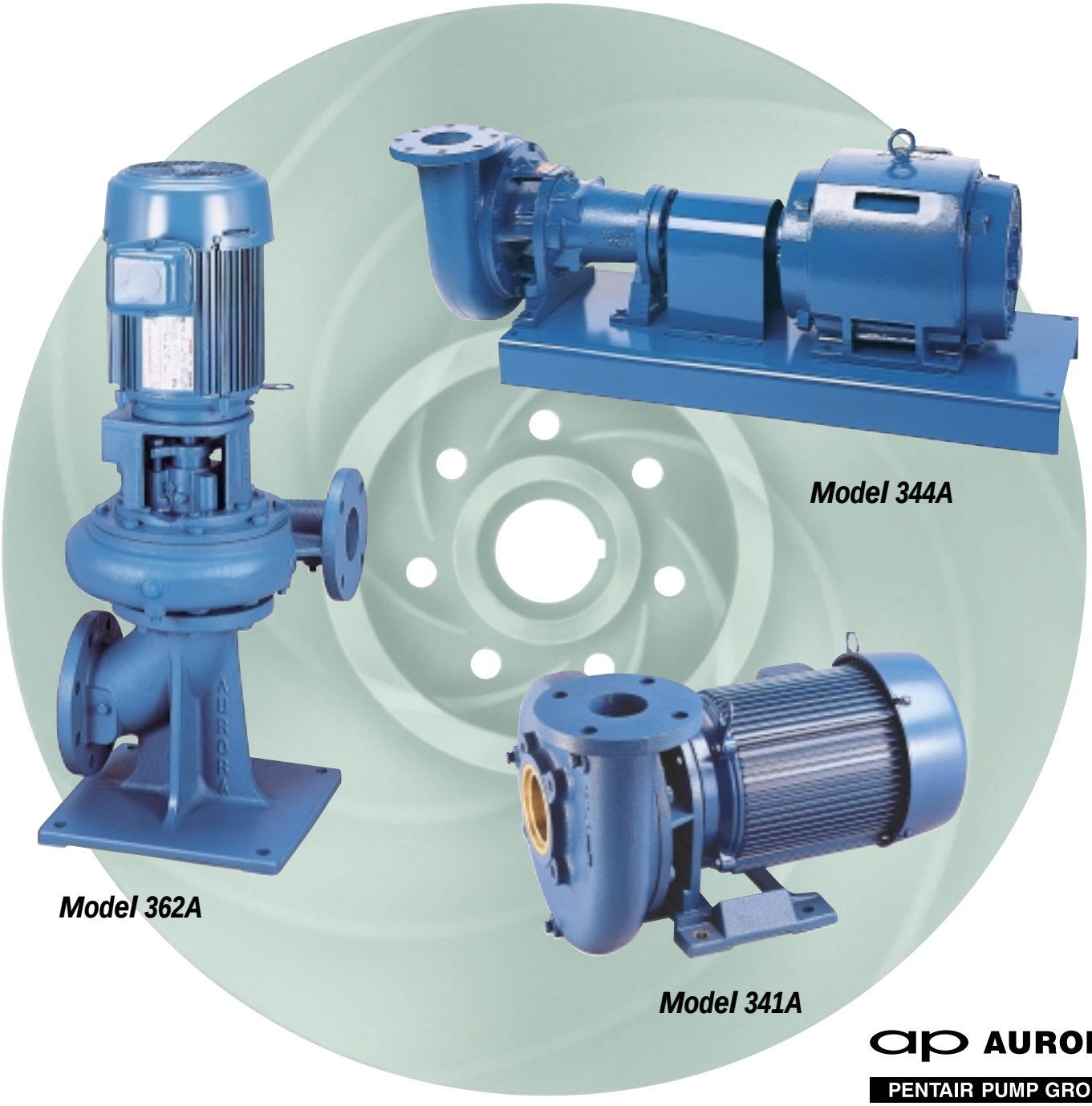
**MODEL: CMKL** **TYPE : 330** **IMPELLER : Enclosed** **R. P. M. : 2850**




**PC-174269**

# 340A/360A Series
# Single Stage End Suction Pumps

- *Capacities to 4500 G.P.M. (850 $M^3$/HR)*
- *Heads to 370 Feet (78 Meters)*
- *Temperatures to 300°F (149°C)*




*Model 344A*

*Model 362A*

*Model 341A*

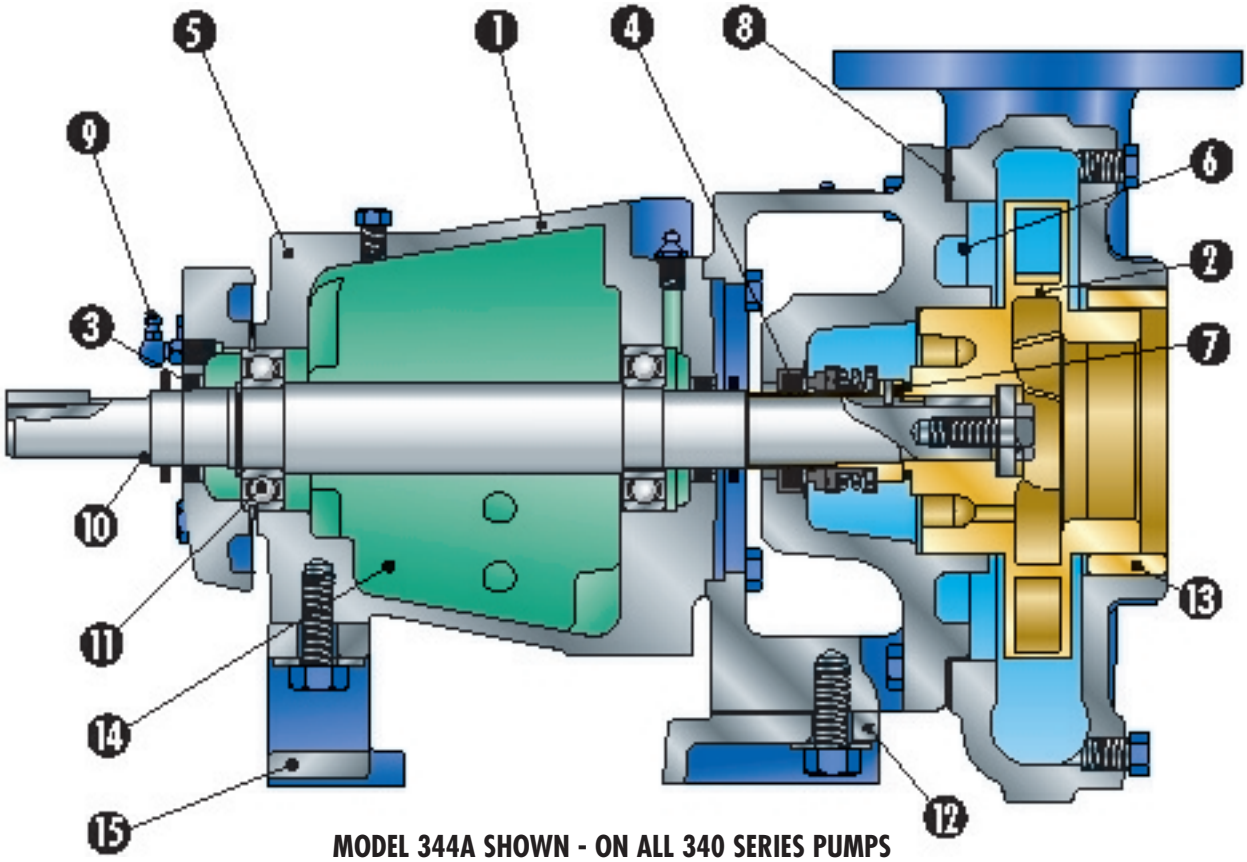
AURORA®

PENTAIR PUMP GROUP

# Aurora 340A/360A Pumps

## Setting New Standards of Efficiency

Liquid handling requirements are much more involved than they were five years ago. The variety of liquids being handled has increased along with temperatures and pressures. Today's installations demand quiet, smooth running pumps with long life. Aurora Pump's 80 years of experience with design, sales and manufacturing of centrifugal pumps has lead to the 340A/360A Series. These modern pumps with a clean, straightforward design were developed with maximum interchangeability in mind. Aurora's highly reliable 340A/360A pumps offer an economical solution to your liquid handling problems.




**MODEL 344A SHOWN - ON ALL 340 SERIES PUMPS**
**MECHANICAL SEALS ARE STANDARD**

### Standard – 340A and 360A

Discharge position No. 1
Regreaseable bearings (Model 344A, 364A)
Standard JM motor (Model 341A, 342A)
Standard JP motor (Model 361A, 362A)
Coupling guard (Model 344A, 364A)

### Standard – 360A Only

Interchangeable stuffing box
Graphite impregnated acrylic packing

### Optional – 340A and 360A

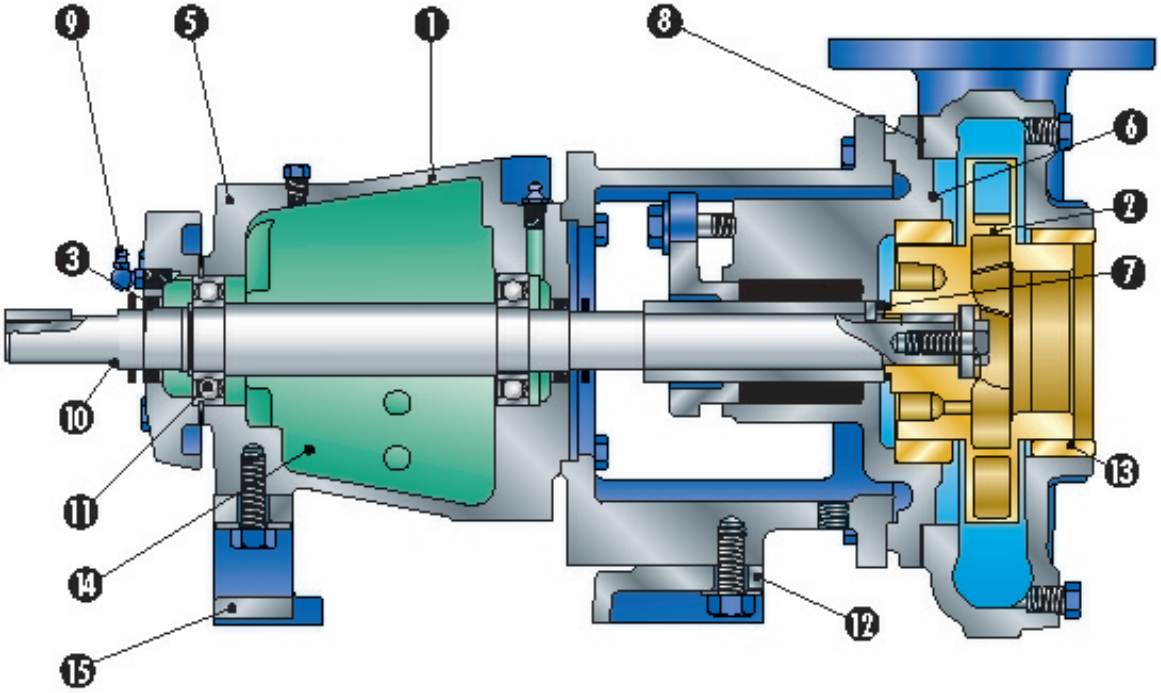
Standard 340A and 360A series pumps are designed to meet the requirements of most applications. However, to meet special services, a number of optional features have been made available. For services not handled by the features listed, refer to the factory.

All iron construction
316 stainless steel sleeve
Stainless steel shaft
Impeller wearing rings
Oil lubricated ball bearings (Model 344A, 364A)
Sealed permanently lubricated ball bearings (power frames No. 1, 2 and 3)
Alternate discharge positions No. 2, 3 and 4 (see pages 12 and 13)
Fabricated stainless steel drip-rim bases (Model 344A, 364A)
Formed steel bases (Model 344A, 364A)
High temperature mechanical seal
Variety of alternative constructions

### Optional – 360A Only

All bronze construction
Hardened shaft sleeve (for packing)
Various mechanical seal types
Water jacketed stuffing box
Semi-open impellers (Model 364A)
Double row thrust bearings (Model 364A)
Packing with lantern ring

## Features




**MODEL 364A SHOWN - ON ALL 360 SERIES PUMPS PACKING IS STANDARD, MECHANICAL SEALS ARE OPTIONAL**

1 COMPUTER MACHINED major components with 360A degree registered fits to assure concentricity of all pump parts.

2 PRECISION CAST, DYNAMICALLY BALANCED, ENCLOSED IMPELLER is keyed to the shaft extension and secured by a capscrew and washer. Gaskets are used to prevent leakage to shaft end.

3 OIL SEALS and non-sparking Neoprene rotating slingers protect both bearings during pump operation and pump washdown.

4 MECHANICAL SEAL has hot water carbon against Ni-Resist face for optimum hot water performance. Long life is also assured with 303 stainless steel metal parts and "Buna-N" elastomer.

5 POWER FRAME provides heavy duty maximum interchangeability for flexible coupled applications.

6 HYDROSTATIC TEST of pumps at factory guarantees casting and seal integrity.

7 BRONZE SHAFT SLEEVE prevents shaft wear, is slip fit over the shaft, keylocked and extends the full length of seal box to eliminate corrosion of the shaft by the pumped liquid. This cancels the requirement for high cost, special stainless steel or alloy shafts.

8 BACK PULL-OUT design simplifies disassembly. The suction and discharge piping is not disturbed at disassembly.

9 LUBRICATION FITTINGS are conveniently located for quick accessibility and provides positive bearing lubrication. Oil lubrication optionally available.

10 CARBON STEEL SHAFT designed for minimum deflection, not to exceed .002" at the sealing faces at maximum load.

11 BEARINGS selected for 3 year minimum life at maximum load. Average bearing life 5 x minimum. Grease lube standard.

12 CLOSE COUPLED MOTORS in smaller frame sizes are supported off of the motor bracket for maximum rigidity.

13 CASE WEARING RING prevents wear on casing and is easily and inexpensively replaced. Impeller rings are available. Front case wearing rings are standard on all models and size pumps. Rear case wearing rings are standard only on 2" discharge and larger model 360A series pumps. Front impeller wearing rings are optional on all models and size pumps. Rear impeller wearing rings are optional only on 2" discharge and larger model 340A and 360A series pumps.

14 LARGE CAPACITY OIL RESERVOIR is provided on power frame Model 344A and 364A pumps for optional oil lube.

15 REAR SUPPORT FOOT provides support and simplifies coupling alignment. All supports are slotted to simplify back pull-out of power frame.

# Material of Construction and Design Details

**Material of Construction**

| Pump Part | Standard Fitted | Bronze Fitted | All-Iron | *All-Bronze |
|---|---|---|---|---|
| Casing | Cast Iron ASTM A48 | Cast Iron ASTM A48 | Cast Iron ASTM A48 | Bronze ASTM B62 |
| Case Wearing Ring | Bronze ASTM B62 | Bronze ASTM B62 | Cast Iron ASTM A48 | Bronze ASTM B62 |
| Impeller | Cast Iron ASTM A48 | Bronze ASTM B584 | Cast Iron ASTM A48 | Bronze ASTM B584 |
| Motor Bracket | Cast Iron ASTM A48 | Cast Iron ASTM A48 | Cast Iron ASTM A48 | Cast Iron ASTM A48 |
| Shaft | Steel AISI C1045 | Steel AISI C1045 | Steel AISI C1045 | Steel AISI C1045 |
| Sleeve | Bronze ASTM B62 | Bronze ASTM B62 | Stainless Steel AISI 316 | Bronze ASTM B62 |
| Power Frame (344A & 364A) | Cast Iron ASTM A48 | Cast Iron ASTM A48 | Cast Iron ASTM A48 | Cast Iron ASTM A48 |
| Mechanical Seal 340A Series | 303 stainless steel metal parts, "Buna-N" elastomer parts, Ni-Resist seat and carbon washer | | | 303 stainless steel metal parts, viton elastomer, ceramic seat, and carbon washer |
| 360A Series (Optional) | | | | |
| Stuffing Box | Cast Iron ASTM A48 | Cast Iron ASTM A48 | Cast Iron ASTM A48 | Bronze ASTM B62 |
| Packing (Standard) 360A Series Only | Interwoven, graphited fiber diagonally cut | | | |

* All Bronze optionally available in 361A and 364A pumps only.

**Design Details**

| Area | Description | Power Frame 1 | 2 | 3 | 21 |
|---|---|---|---|---|---|
| Pump Shaft | Rotation–from driver end | CW | CW | CW | CW |
| | Diameter at impeller | 7/8 | 1-1/4 | 1-1/4 | 1-5/8-12 |
| | Diameter at shaft sleeve | 1 | 1-3/8 | 1-3/8 | 2-1/4 |
| | Diameter between bearings | 1-3/8 | 1-15/16 | 2-3/8 | 3-1/4 |
| | Diameter at coupling end | 7/8 | 1-1/8 | 1-1/8 | 2-3/8 |
| | Coupling key–square | 3/16 | 1/4 | 1/4 | 5/8 |
| | Max. deflection at seal face | .002 | .002 | .002 | .002 |
| Ball Bearings | Bearing (inboard radial) | 206K | 308K | 310K | 313 |
| | Bearing (outboard thrust) | 206KG | 308KG | 310KG | 5313 |
| | Bearing centers | 5-11/16 | 7-11/16 | 7-11/16 | 9-5/8 |
| | Bearing type | Ball | Ball | Ball | Ball |
| | Min $B_{10}$ bearing life under maximum load | 3 years | 3 years | 3 years | 3 years |
| Sleeve | Packing size 360A series | 3/8 | 3/8 | 3/8 | 7/16 |
| | Outside diameter of sleeve 360A series | 1-1/2 | 1-7/8 | 1-7/8 | 2-1/2 |
| | Outside diameter of sleeve 340A series | 1-1/8 | 1-1/2 | 1-1/2 | N/A |

# Design Details

**340A Series**

| Sealing Method | Temperature °F | |
|---|---|---|
| | Close Coupled | Frame Mounted |
| Standard Mechanical Seal | 225 | 225 |

**360A Series**

| Sealing Method | Temperature °F | |
|---|---|---|
| | Close Coupled | Frame Mounted |
| Standard Mechanical Seal | 225 | 225 |
| W/J Mechanical Seal* | 300 | 300 |
| Standard Packing | 225 | 225 |
| W/J Packing* | 275 | 275 |
| Packing . . . Suction lift requires lantern ring.<br>* 7, 9 and 12 bore pumps only | | |
| 340A & 360A Series **Case Working Pressure** (all or any part can be suction pressure) | **175 P.S.I.** | |
| Hydrostatic Test Pressure (Maximum) | 265 P.S.I | |

**Limitations 340A & 360A Series – H.P.**

| Speed-RPM | | 3500 | 1750 | 1150 |
|---|---|---|---|---|
| Close Coupled | O.D.P. | 60 | 50 | 30 |
| | T.E. & EX. PR. | 50 | 50 | 30 |
| Power Frame | 1 | 40 | 20 | 15 |
| | 2 & 3 | 125 | 75 | 40 |
| | 21 | N/A | 250 | 150 |



End suction products such as the flexible coupled horizontal pump seen below are used in offices and high rise buildings for internal environment control. End suction pumps for HVAC installation come in a variety of configurations including close coupled, flexible coupled, horizontal or vertical mounted units.



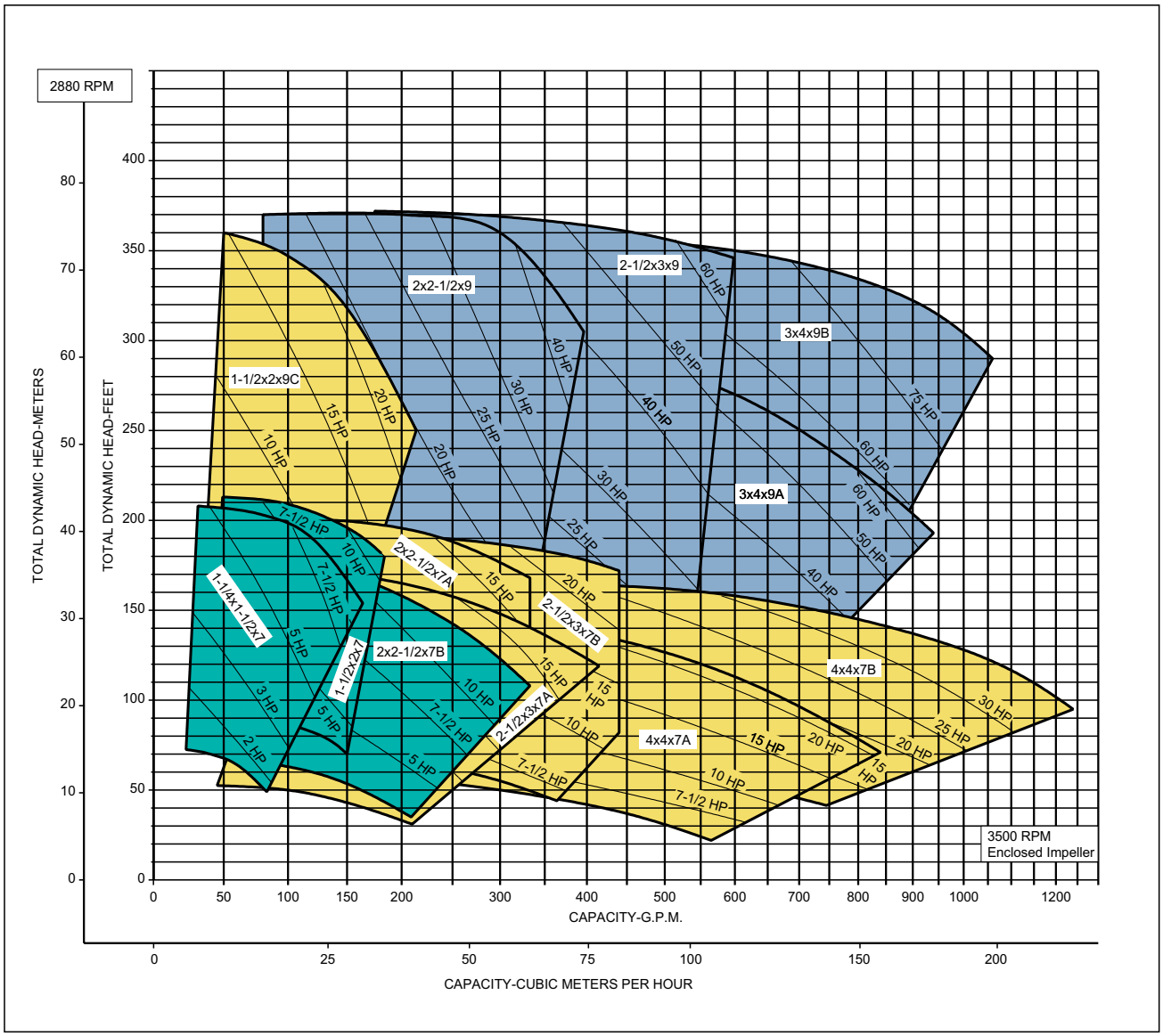
# 340 Range Charts

## 3500 RPM

INDIVIDUAL PERFORMANCE CURVES SHOULD BE CHECKED FOR FINAL SELECTION. FOR SELECTIONS NOT SHOWN ON THIS CHART PLEASE REFER TO THE FACTORY.

- POWER FRAME NO. 1
- POWER FRAME NO. 2
- POWER FRAME NO. 3

| | | | |
|---|---|---|---|
| MAXIMUM HORSEPOWER | CLOSE COUPLED | OPEN DRIP PROOF | 60 |
| | | TE & EX PR | 50 |
| | FRAME MOUNTED | | 100 |



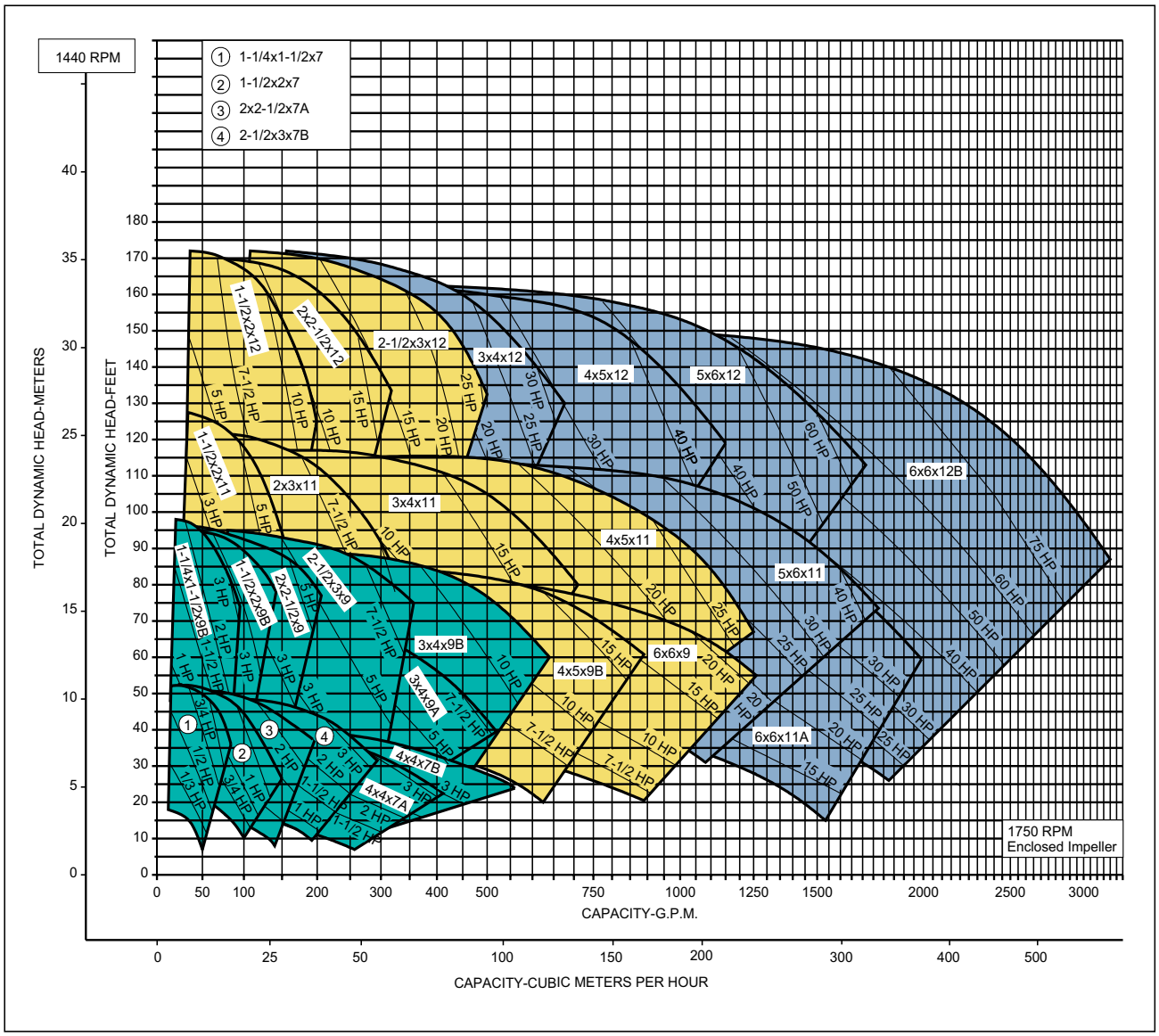
# 340 Range Charts

## 1750 RPM

INDIVIDUAL PERFORMANCE CURVES SHOULD BE CHECKED FOR FINAL SELECTION. FOR SELECTIONS NOT SHOWN ON THIS CHART PLEASE REFER TO THE FACTORY.

- POWER FRAME NO. 1
- POWER FRAME NO. 2
- POWER FRAME NO. 3

| | | | |
|---|---|---|---|
| MAXIMUM HORSEPOWER | CLOSE COUPLED | OPEN DRIP PROOF | 50 |
| | | TE & EX PR | 50 |
| | FRAME MOUNTED | | 100 |



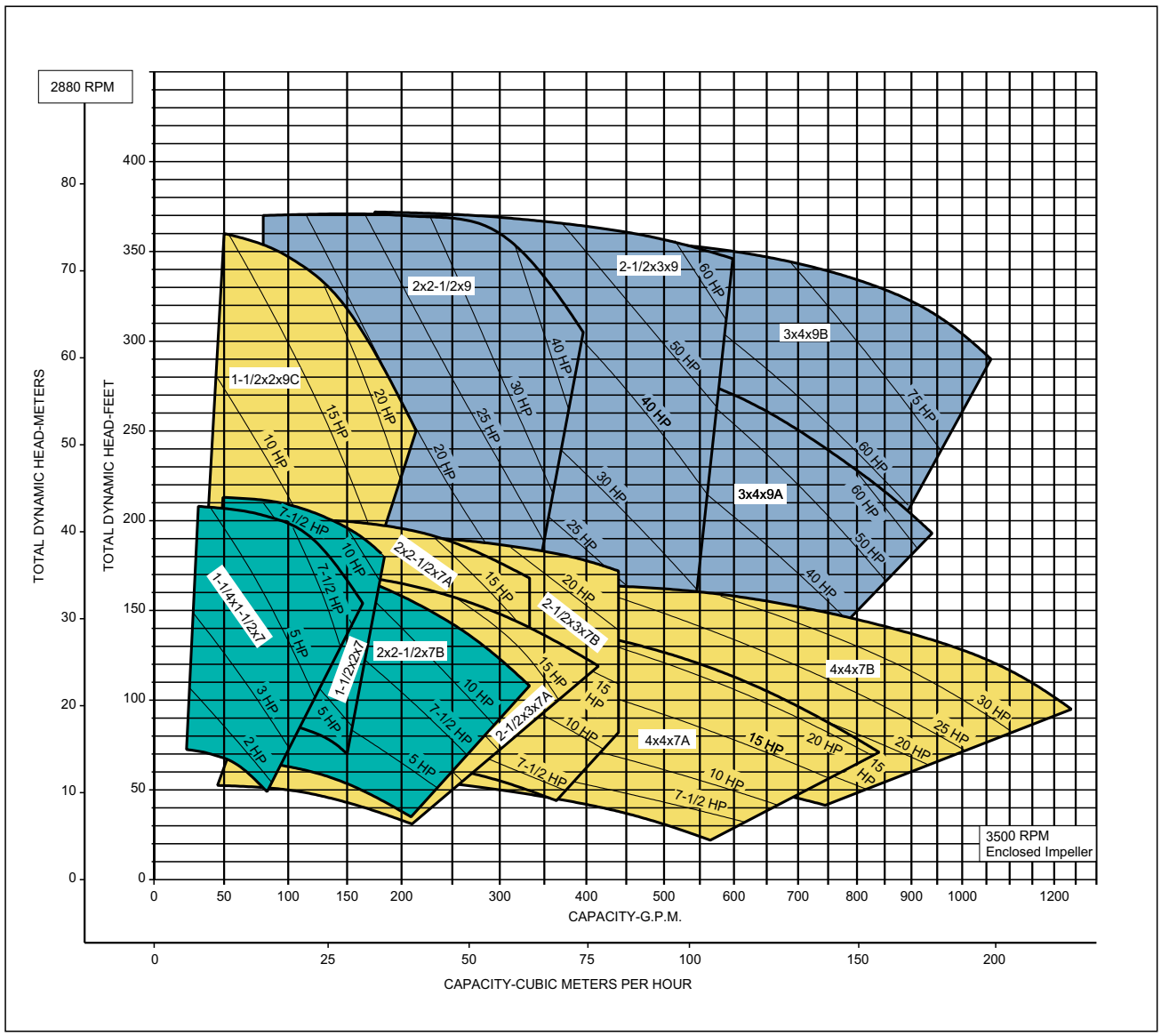
# 360 Range Charts

## 3500 RPM

INDIVIDUAL PERFORMANCE CURVES SHOULD BE CHECKED FOR FINAL SELECTION. FOR SELECTIONS NOT SHOWN ON THIS CHART PLEASE REFER TO THE FACTORY.

- POWER FRAME NO. 1
- POWER FRAME NO. 2
- POWER FRAME NO. 3

| | | | |
|---|---|---|---|
| MAXIMUM HORSEPOWER | CLOSE COUPLED | OPEN DRIP PROOF | 60 |
| | | TE & EX PR | 50 |
| | FRAME MOUNTED | | 100 |



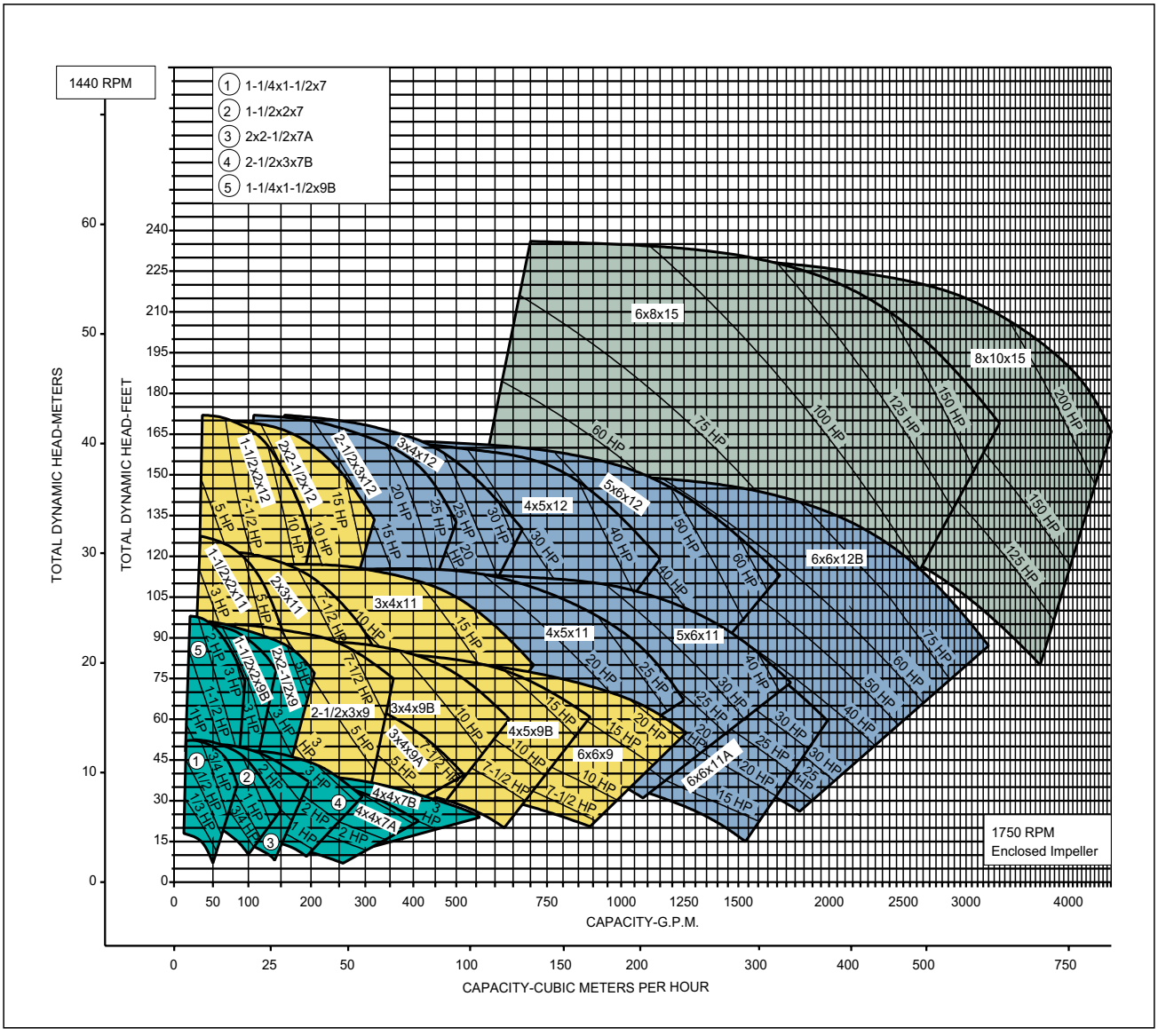
# 360 Range Charts

## 1750 RPM

INDIVIDUAL PERFORMANCE CURVES SHOULD BE CHECKED FOR FINAL SELECTION. FOR SELECTIONS NOT SHOWN ON THIS CHART PLEASE REFER TO THE FACTORY.

- POWER FRAME NO. 1
- POWER FRAME NO. 2
- POWER FRAME NO. 3
- POWER FRAME NO. 21

| | | | |
|---|---|---|---|
| MAXIMUM HORSEPOWER | CLOSE COUPLED | OPEN DRIP PROOF | 50 |
| | | TE & EX PR | 50 |
| | FRAME MOUNTED | | 250 |



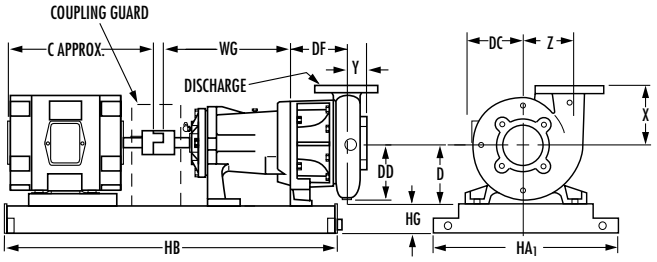
# Engineering Details

## Power Frame

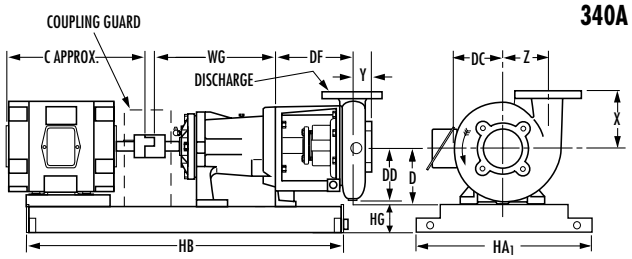
| Pump Size | Model 344A | | | Model 364A | | | | |
|---|---|---|---|---|---|---|---|---|
| | 3500 R.P.M. | 1750 R.P.M. | 1150 R.P.M. | 3500 R.P.M. | 1750 R.P.M. | | 1150 R.P.M. | |
| | | | | ENC. | ENC. | SEMI. | ENC. | SEMI. |
| 1-1/4 x 1-1/2 x 7 | 1 | 1 | * | 1 | 1 | 1 | * | * |
| 1-1/4 x 1-1/2 x 9B | * | 1 | * | * | 1 | * | * | * |
| 1-1/2 x 2 x 7 | 1 | 1 | * | 1 | 1 | 1 | * | * |
| 1-1/2 x 2 x 9A | * | 1 | * | * | 1 | 2 | * | 1 |
| 1-1/2 x 2 x 9B | * | 1 | * | * | 1 | * | * | * |
| 1-1/2 x 2 x 9C | 2 | 1 | * | 2 | 1 | * | * | * |
| 1-1/2 x 2 x 11 | 3 | 2 | 2 | * | 2 | * | 2 | * |
| 1-1/2 x 2 x 12 | * | 2 | 2 | * | 2 | 3 | 2 | 2 |
| 2 x 2-1/2 x 7A | 2 | 1 | * | 2 | 1 | 1 | * | * |
| 2 x 2-1/2 x 7B | 1 | 1 | * | 1 | 1 | * | * | * |
| 2 x 2-1/2 x 9 | 3 | 1 | * | 3 | 1 | * | * | * |
| 2 x 2-1/2 x 12 | * | 2 | 2 | * | 2 | * | 2 | * |
| 2 x 3 x 11 | * | 2 | 2 | * | 2 | * | 2 | * |
| 2-1/2 x 3 x 7A | 1 | 1 | * | 2 | 1 | 1 | * | * |
| 2-1/2 x 3 x 7B | 2 | 1 | * | 2 | 1 | * | * | * |
| 2-1/2 x 3 x 9 | 3 | 1 | * | 3 | 2 | 2 | * | 2 |
| 2-1/2 x 3 x 12 | * | 2 | 2 | * | 3 | 3 | 2 | 2 |
| 3 x 4 x 9A | 3 | 1 | * | 3 | 2 | * | * | * |
| 3 x 4 x 9B | 3 | 1 | * | 3 | 2 | * | * | * |
| 3 x 4 x 11 | * | 2 | 2 | * | 2 | * | 2 | * |
| 3 x 4 x 12 | * | 3 | 2 | * | 3 | 3 | 2 | 2 |
| 4 x 4 x 7A | 2 | 1 | * | 2 | 1 | * | * | * |
| 4 x 4 x 7B | 2 | 1 | * | 2 | 1 | 1 | * | * |
| 4 x 5 x 9A | 3 | 2 | * | 3 | 2 | * | * | * |
| 4 x 5 x 9B | * | 2 | * | * | 2 | 2 | * | 2 |
| 4 x 5 x 11 | * | 2 | 2 | * | 3 | * | 2 | * |
| 4 x 5 x 12 | * | 3 | 2 | * | 3 | 3 | 2 | 2 |
| 5 x 6 x11 | * | 3 | 2 | * | 3 | * | 2 | * |
| 5 x 6 x 12 | * | 3 | 2 | * | 3 | 3 | 3 | 2 |
| 6 x 6 x 9 | * | 2 | 2 | * | 2 | 2 | 2 | 2 |
| 6 x 6 x 11 | * | 3 | 2 | * | 3 | * | 2 | * |
| 6 x 6 x 11A | * | 3 | 2 | * | 3 | * | 2 | * |
| 6 x 6 x 12B | * | 3 | 3 | * | 3 | * | 3 | * |
| 6 x 6 x 12B | * | 3 | * | * | 3 | * | * | * |
| 6 x 8 x 15 | * | * | * | * | 21 | * | 21 | * |
| 8 x 10 x 15 | * | * | * | * | 21 | * | 21 | * |

* = Not Available
ENC.=Enclosed Impeller
SEMI.=Semi Open Impeller (Optional)

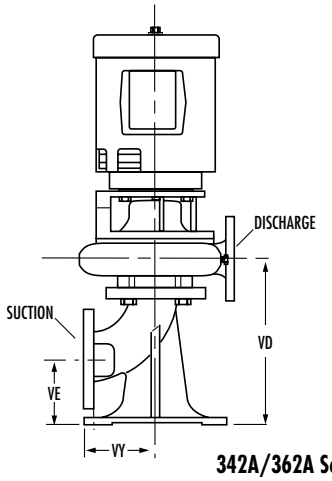
# Engineering and Dimension Details




340A Series




360A Series

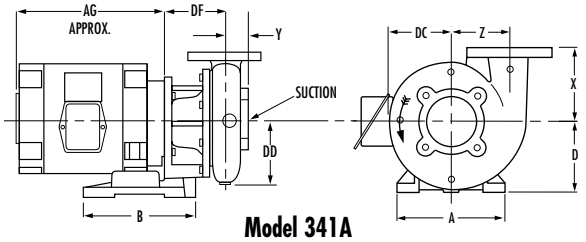



342A/362A Series

| Pumps with Threaded Connections | | | | | | | | 340A Series | | | 360A Series | | 342A/362A |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Pump Size | | | | | | | | DF | | | DF | | Vertical Pumps |
| Discharge | Suction | Case Bore | X | Y | Z | DC | DD | Frame 1 143JM-215JM | Frame 2 or 3 254JM-256JM | Frame 2 or 3 284JM-326JM | Frame 1 143JP-184JP | Frame 2, 3 or 21 213JP-325JP | VD | VE | VY |
| 1-1/4 | 1-1/2 | 7 | 5-1/4 | 2-7/16 | 4-3/16 | 4-15/16 | 5-3/16 | 4-3/4 | N/A | N/A | 7-13/16 | N/A | 9-3/8 | 3-3/4 | 4 |
| 1-1/4 | 1-1/2 | 9B | 6-3/8 | 2-9/16 | 5-3/8 | 6-3/16 | 6-3/8 | 4-11/16 | N/A | N/A | 7-3/4 | N/A | 9-3/8 | 3-3/4 | 4 |
| 1-1/2 | 2 | 7 | 5-3/8 | 2-1/2 | 4-5/16 | 5-1/8 | 5-3/8 | 4-13/16 | N/A | N/A | 7-7/8 | N/A | 10-5/16 | 4-1/8 | 4-1/2 |
| 1-1/2 | 2 | 9 | 6-3/4 | 2-5/8 | 5-1/2 | 6-5/16 | 6-9/16 | 4-3/4 | 5-3/4 | 5-3/4 | 7-13/16 | 8-5/8 | 10-5/16 | 4-1/8 | 4-1/2 |
| 1-1/2 | 2 | 11 | 9 | 2-13/16 | 6-1/8 | 7-1/16 | 7-1/4 | N/A | 5-3/4 | 5-3/4 | N/A | 8-5/8 | 10-1/2 | 4-1/8 | 4-1/2 |
| 1-1/2 | 2 | 12 | 7-3/4 | 2-3/4 | 7-1/16 | 8 | 8-1/4 | N/A | 5-7/8 | N/A | N/A | 8-3/4 | 10-7/16 | 4-1/8 | 4-1/2 |
| Pumps with Ansi Standard 125 Lb. Flanged Connections | | | | | | | | | | | | | | | |
| 2 | 2-1/2 | 7 | 5-5/8 | 1-7/8 | 4-9/16 | 5-3/8 | 5-13/16 | 4-15/16 | 5-15/16 | N/A | 8 | 8-13/16 | 11-7/16 | 4-1/2 | 5 |
| 2 | 2-1/2 | 9 | 7 | 1-7/8 | 5-11/16 | 6-1/2 | 6-7/8 | 4-7/8 | 5-7/8 | 5-7/8 | 7-15/16 | 8-3/4 | 11-7/16 | 4-1/2 | 5 |
| 2 | 2-1/2 | 12 | 8 | 1-7/8 | 7-3/16 | 8-3/16 | 8-1/2 | 5 | 6 | N/A | N/A | 8-7/8 | 11-7/16 | 4-1/2 | 5 |
| 2 | 3 | 11 | 8 | 2-3/8 | 6-1/2 | 7 | 7-3/8 | 5-1/8 | 6-1/8 | N/A | N/A | 8-5/8 | 12-7/8 | 5 | 5-1/2 |
| 2-1/2 | 3 | 7 | 5-7/8 | 2 | 4-13/16 | 5-13/16 | 6-1/4 | 5-1/16 | 6-1/16 | N/A | 8-1/8 | 8-15/16 | 12-9/16 | 5 | 5-1/2 |
| 2-1/2 | 3 | 9 | 7-1/4 | 2 | 5-15/16 | 6-3/4 | 7-1/4 | 5 | 6 | 6 | 8-1/16 | 8-7/8 | 12-9/16 | 5 | 5-1/2 |
| 2-1/2 | 3 | 12 | 8-1/4 | 2 | 7-3/8 | 8-3/8 | 8-3/4 | 5-1/8 | 6-1/8 | N/A | N/A | 9 | 12-9/16 | 5 | 5-1/2 |
| 3 | 4 | 9 | 7-1/2 | 2-1/8 | 6-1/8 | 6-7/8 | 7-7/16 | 5-1/8 | 6-1/8 | 6-1/8 | 8-3/16 | 9 | 14-11/16 | 6 | 6-1/2 |
| 3 | 4 | 11 | 9 | 2-3/4 | 7 | 7-9/16 | 8-3/16 | 5-7/16 | 6-7/16 | N/A | N/A | 9-1/8 | 15-1/4 | 6 | 6-1/2 |
| 3 | 4 | 12 | 8-1/2 | 2-1/8 | 7-9/16 | 8-7/16 | 8-15/16 | 5-1/2 | 6-1/2 | 6-1/2 | N/A | 9-1/8 | 14-11/16 | 6 | 6-1/2 |
| 4 | 4 | 7 | 6-1/2 | 2-1/2 | 5/1-2 | 6-7/16 | 7-5/16 | 5-7/16 | 6-7/16 | 6-7/16 | 8-1/2 | 9-5/16 | 14-15/16 | 6 | 6-1/2 |
| 4 | 5 | 9A | 7-1/4 | 3-1/8 | 5-3/4 | 6-11/16 | 7-3/8 | 5-1/4 | 6-1/4 | 6-1/4 | N/A | 9-1/8 | 17-3/16 | 6-1/2 | 7-1/2 |
| 4 | 5 | 9B | 7-3/4 | 2-5/8 | 6-5/8 | 8-1/16 | 8-11/16 | 5-3/8 | 6-3/8 | N/A | N/A | 9-1/4 | 16-11/16 | 6-1/2 | 7-1/2 |
| 4 | 5 | 11 | 9 | 3 | 7-1/4 | 7-15/16 | 8-11/16 | 5-5/8 | 6-5/8 | 6-5/8 | N/A | 9-1/4 | 17 | 6-1/2 | 7-1/2 |
| 4 | 5 | 12 | 8-3/4 | 2-5/8 | 7-15/16 | 8-7/8 | 9-9/16 | N/A | 6-3/4 | 6-3/4 | N/A | 9-3/8 | 16-11/16 | 6-1/2 | 7-1/2 |
| 5 | 6 | 11 | 9 | 3-1/8 | 8-1/16 | 8-11/16 | 10-1/8 | 6 | 7 | 7 | N/A | 9-5/8 | 18-1/8 | 7 | 8 |
| 5 | 6 | 12 | 9 | 2-7/8 | 8-5/16 | 9-1/4 | 10-1/8 | N/A | 7 | 7 | N/A | 9-5/8 | 17-7//8 | 7 | 8 |
| 6 | 6 | 9 | 8-1/4 | 2-3/4 | 7 | 8 | 9 | 5-1/2 | 6-1/2 | 6-1/2 | N/A | 9-3/8 | 17-13/16 | 7 | 8 |
| 6 | 6 | 11 | 9-1/4 | 3-1/8 | 8-11/16 | 9-11/16 | 10-13/16 | N/A | 7-1/4 | 7-1/4 | N/A | 9-7/8 | 18-1/4 | 7 | 8 |
| 6 | 6 | 11A | 9-1/4 | 3-1/8 | 8-11/16 | 9-11/16 | 10-13/16 | N/A | 7-1/4 | 7-1/4 | N/A | 9-7/8 | 18-1/4 | 7 | 8 |
| 6 | 6 | 12B | 9-1/4 | 3-1/8 | 8-11/16 | 9-11/16 | 10-13/16 | N/A | 7-1/4 | 7-1/4 | N/A | 9-7/8 | 18-1/4 | 7 | 8 |
| 6 | 8 | 15 | 18 | 6 | — | 10-7/16 | 14-1/2 | N/A | N/A | N/A | N/A | 10-3/16* | N/A | N/A | N/A |
| 8 | 10 | 15 | 19 | 6 | — | 11 | 14-1/2 | N/A | N/A | N/A | N/A | 10-5/16* | N/A | N/A | N/A |

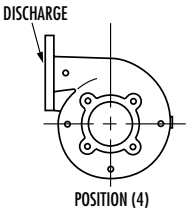
* Power Frame 21 Only

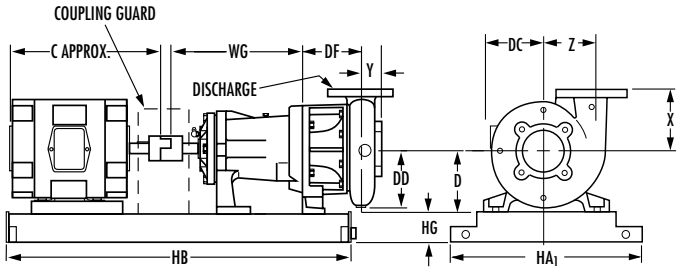
# 340A Series Engineering and Dimension Details




Model 341A

Standard Position (1)

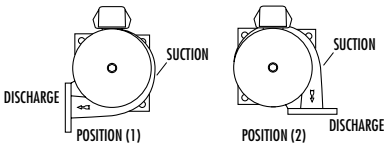


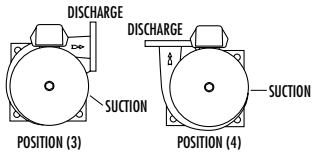




Model 344A

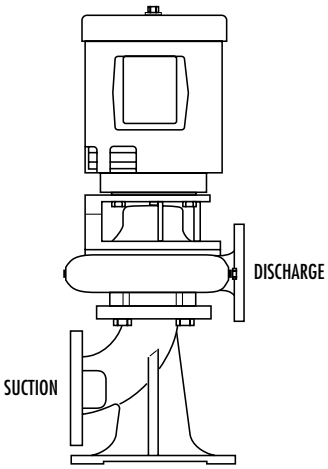
| Pump Model | Base Number | Weight Lbs. | $HA_1$ | HB | HG |
|---|---|---|---|---|---|
| 344A | 4 | 49 | 17-1/4 | 30-1/2 | 3 |
| | 5 | 59 | 17-1/4 | 36-1/2 | 3 |
| | 7 | 82 | 20-1/2 | 36-1/2 | 3 |
| | 8 | 96 | 20-1/2 | 42-1/2 | 3 |
| | 11 | 164 | 26-3/4 | 46-1/2 | 4 |
| | 15 | 291 | 30-3/4 | 54-1/2 | 4-1/2 |

| Power Frame | | | 1 | 2 | 3 |
|---|---|---|---|---|---|
| Weight in Pounds | | | 36 | 82 | 87 |
| D | Case Bore | 7 | 5-1/4 | 6-1/4 | — |
| | | 9 | 6-1/4 | 7 | 7 |
| | | 11 | — | 7 | 7 |
| | | 12 | — | 7 | 7 |
| WG | | | 10-5/16 | 13-13/16 | 13-13/16 |




| Pump Model | Motor Frame | Horsepower 3500 RPM | Horsepower 1750 RPM | Horsepower 1150 RPM | Mtr. Wgt. Lbs. | D | Pump Model 341A A | Pump Model 341A B | Pump Model 341A AG | C | Base Number | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 344A | 56 | — | 1/2-3/4 | — | 50 | 5-1/4 | — | — | — | 12 | 4 | N/A | N/A |
| 341A 342A & 344A | 143T | 1-1/2 | 1 | 3/4 | 30 | 5-1/4 | 9-3/4 | 8-5/8 | 10 | 12 | 4 | N/A | N/A |
| | 145T | 2-3 | 1-1/2-2 | 1 | 35 | 5-1/4 | 9-3/4 | 8-5/8 | 11 | 13 | 4 | 7 | N/A |
| | 182T | 5 | 3 | 1-1/2 | 45 | 5-1/4 | 9-3/4 | 8-5/8 | 11 | 13 | 4 | 7 | N/A |
| | 184T | 7-1/2 | 5 | 2 | 50 | 5-1/4 | 9-3/4 | 8-5/8 | 12 | 14 | 4 | 7 | N/A |
| | 213T | 10 | 7-1/2 | 3 | 120 | 5-1/4 | 10-1/2 | 7-1/2 | 14 | 16 | 4 | 7 | N/A |
| | 215T | 15 | 10 | 5 | 144 | 5-1/4 | 10-1/2 | 9 | 15 | 18 | 5 | 7 | N/A |
| | 254T | 20 | 15 | 7-1/2 | 217 | 6-1/4 | 12-1/2 | 10-3/4 | 17 | 21 | 7 | 8 | 8 |
| | 256T | 25 | 20 | 10 | 246 | 6-1/4 | 12-1/2 | 12-1/2 | 19 | 23 | N/A | 8 | 8 |
| | 284T | — | 25 | 15 | 320 | 7 | 13-3/4 | 11-1/2 | 19 | 24 | N/A | 8 | 8 |
| | 284TS | 30 | — | — | 320 | 7 | 13-3/4 | 11-1/2 | 19 | 22 | N/A | 8 | 8 |
| | 286T | — | 30 | 20 | 351 | 7 | 13-3/4 | 13 | 21 | 25 | N/A | 8 | 8 |
| | 286TS | 40 | — | — | 351 | 7 | 13-3/4 | 13 | 21 | 24 | N/A | 8 | 8 |
| | 324T | — | 40 | 25 | 442 | 8 | 16 | 14 | 22 | 26 | N/A | 11 | 11 |
| | 324TS | 50 | — | — | 442 | 8 | 16 | 14 | 22 | 25 | N/A | 11 | 11 |
| | 326T | — | 50 | 30 | 485 | 8 | 16 | 15-1/2 | 23 | 28 | N/A | 11 | 11 |
| | 326TS | 60 | — | — | 485 | 8 | 16 | 15-1/2 | 23 | 26 | N/A | 11 | 11 |
| 344A | 364T | — | — | 40 | 540 | 9 | 18 | 15-1/2 | 23 | 29 | N/A | 11 | 11 |
| | 364TS | 75 | 60 | — | 540 | 9 | 18 | 15-1/2 | 23 | 27 | N/A | 11 | 11 |
| | 365TS | 100 | 75 | — | 590 | 9 | 18 | 15-1/2 | 24 | 28 | N/A | 11 | 11 |
| | 404TS | 125 | 100 | — | 690 | 10 | 20 | 16-1/4 | 26 | 30 | N/A | 15 | 15 |

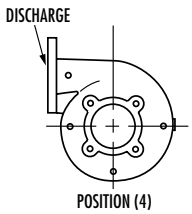


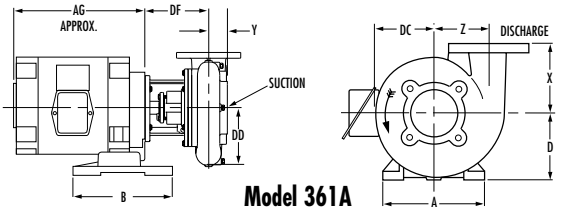

Model 342A

**Notes:**

1. Dimensions and weights are approximate.
2. All dimensions are in inches and may vary ±1/4" (6).
3. Frame sizes, "C" and "AG", dimension and motor weight are for open drip-proof motors only.
4. Conduit box is shown in approximate position. Dimensions are not specified as they vary with each motor manufacturer.
5. Not for construction purposes unless certified.
6. Discharge positions No. 2 and 3 are not available on Models 341A, 361A, 344A and 364A. Position No. 1 is furnished as standard unless otherwise specified.
7. When two "D" dimensions are indicated, always use the larger figure.
8. Power frame selection for 344A pumps can be made from the range charts.
9. Model 341A and 342A have "JM" motor frames. Model 344A has "T" frame motor.

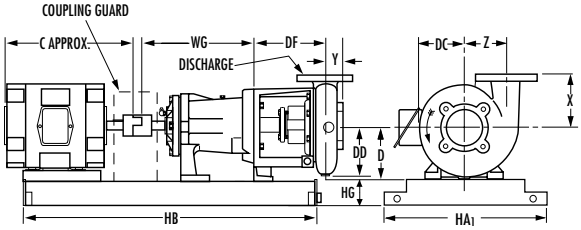
# 360A Series Engineering and Dimension Details




Model 361A

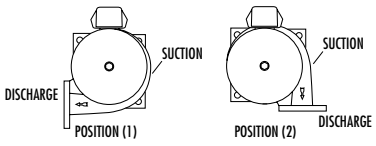
Standard Position (1)

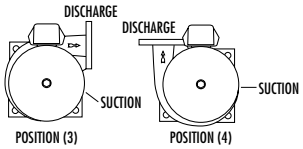


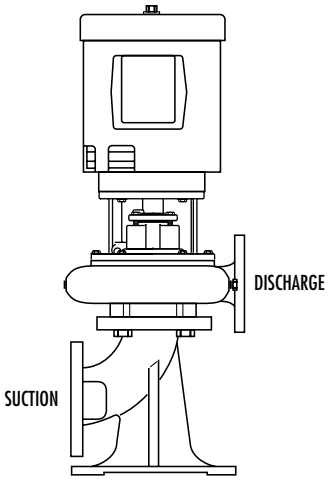

Model 364A

| Pump Model | Base Number | Weight Lbs. | $HA_1$ | HB | HG |
|---|---|---|---|---|---|
| 364A | 4 | 49 | 17-1/4 | 30-1/2 | 3 |
| | 5 | 59 | 17-1/4 | 36-1/2 | 3 |
| | 7 | 82 | 20-1/2 | 36-1/2 | 3 |
| | 8 | 96 | 20-1/2 | 42-1/2 | 3 |
| | 9 | 109 | 20-1/2 | 48-1/2 | 3 |
| | 11 | 164 | 26-3/4 | 46-1/2 | 4 |
| | 12 | 221 | 26-3/4 | 54-1/2 | 4 |
| | 15 | 291 | 30-3/4 | 54-1/2 | 4-1/2 |
| | 16 | 345 | 30-3/4 | 64-1/2 | 4-1/2 |
| | 17 | 399 | 30-3/4 | 74-1/2 | 4-1/2 |

| Power Frame | | | 1 | 2 | 3 | 21 |
|---|---|---|---|---|---|---|
| Weight in Pounds | | | 36 | 82 | 87 | 163 |
| D | Case Bore | 7 | 5-1/4 | 6-1/4 | — | — |
| | | 9 | 6-1/4 | 7 | 7 | — |
| | | 11 | — | 7 | 7 | — |
| | | 12 | — | 7 | 7 | — |
| | | 15 | — | — | — | 14-1/2 |
| WG | | | 10-5/16 | 13-13/16 | 13-13/16 | — |




Model 362A

| Pump Model | Motor Frame | Horsepower 3500 RPM | Horsepower 1750 RPM | Horsepower 1150 RPM | Mtr. Wgt. Lbs. | D | Pump Model 361A A | Pump Model 361A B | Pump Model 361A AG | C | Base Number | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 364A | 56 | — | 1/2-3/4 | — | 50 | 5-1/4 | — | — | — | 12 | 4 | N/A | N/A | N/A |
| 361A 362A & 364A | 143T | 1-1/2 | 1 | 3/4 | 30 | 5-1/4 | 9-3/4 | 8-5/8 | 10 | 12 | 4 | N/A | N/A | N/A |
| | 145T | 2-3 | 1-1/2-2 | 1 | 35 | 5-1/4 | 9-3/4 | 8-5/8 | 11 | 13 | 4 | 7 | N/A | N/A |
| | 182T | 5 | 3 | 1-1/2 | 45 | 5-1/4 | 9-3/4 | 8-5/8 | 11 | 13 | 4 | 7 | N/A | N/A |
| | 184T | 7-1/2 | 5 | 2 | 50 | 5-1/4 | 9-3/4 | 8-5/8 | 12 | 14 | 4 | 7 | N/A | N/A |
| | 213T | 10 | 7-1/2 | 3 | 120 | 5-1/4 | 10-1/2 | 7-1/2 | 14 | 16 | 4 | 7 | 7 | N/A |
| | 215T | 15 | 10 | 5 | 144 | 5-1/4 | 10-1/2 | 9 | 15 | 18 | 5 | 7 | 7 | N/A |
| | 254T | 20 | 15 | 7-1/2 | 217 | 6-1/4 | 12-1/2 | 10-3/4 | 17 | 21 | N/A | 8 | 8 | N/A |
| | 256T | 25 | 20 | 10 | 246 | 6-1/4 | 12-1/2 | 12-1/2 | 19 | 23 | N/A | 8 | 8 | N/A |
| | 284T | — | 25 | 15 | 320 | 7 | 13-3/4 | 11-1/2 | 19 | 24 | N/A | 8 | 8 | N/A |
| | 284TS | 30 | — | — | 320 | 7 | 13-3/4 | 11-1/2 | 19 | 22 | N/A | 8 | 8 | N/A |
| | 286T | — | 30 | 20 | 351 | 7 | 13-3/4 | 13 | 21 | 25 | N/A | 9 | 9 | 16 |
| | 286TS | 40 | — | — | 351 | 7 | 13-3/4 | 13 | 21 | 24 | N/A | 8 | 8 | N/A |
| | 324T | — | 40 | 25 | 442 | 8 | 16 | 14 | 22 | 26 | N/A | 11 | 11 | 16 |
| | 324TS | 50 | — | — | 442 | 8 | 16 | 14 | 22 | 25 | N/A | 11 | 11 | N/A |
| | 326T | — | 50 | 30 | 485 | 8 | 16 | 15-1/2 | 23 | 28 | N/A | 11 | 11 | 16 |
| | 326TS | 60 | — | — | 485 | 8 | 16 | 15-1/2 | 23 | 26 | N/A | 11 | 11 | N/A |
| 364A | 364T | — | — | 40 | 540 | 9 | 18 | 15-1/2 | 23 | 29 | N/A | 12 | 12 | 16 |
| | 364TS | 75 | 60 | — | 540 | 9 | 18 | 15-1/2 | 23 | 27 | N/A | 11 | 11 | 16 |
| | 365T | — | — | 50 | 590 | 9 | 18 | 15-1/2 | 24 | 28 | N/A | N/A | N/A | 16 |
| | 365TS | 100 | 75 | — | 590 | 9 | 18 | 15-1/2 | 24 | 28 | N/A | 11 | 11 | 16 |
| | 404T | — | 100 | 60 | 690 | 10 | 20 | 16-1/4 | 26 | 33 | N/A | N/A | N/A | 17 |
| | 404TS | 125 | 100 | — | 690 | 10 | 20 | 16-1/4 | 26 | 30 | N/A | 15 | 15 | 17 |
| | 405T | — | — | 75 | 780 | 10 | 20 | 17-3/4 | 27 | 34 | N/A | N/A | N/A | 17 |
| | 405TS | — | 125 | — | 780 | 10 | 20 | 17-3/4 | 27 | 31 | N/A | N/A | N/A | 17 |
| | 444TS | — | 150 | — | 950 | 11 | 22 | 18-1/2 | 30 | 34 | N/A | N/A | N/A | 17 |
| | 445TS | — | 200 | — | 1000 | 11 | 22 | 20-1/2 | 32 | 36 | N/A | N/A | N/A | 17 |

**Notes:**

1. Dimensions and weights are approximate.
2. All dimensions are in inches and may vary ±1/4" (6).
3. Frame sizes, "C" and "AG", dimension and motor weight are for open drip-proof motors only.
4. Conduit box is shown in approximate position. Dimensions are not specified as they vary with each motor manufacturer.
5. Not for construction purposes unless certified.
6. Discharge positions No. 2 and 3 are not available on Models 341A, 361A, 344A and 364A. Position No. 1 is furnished as standard unless otherwise specified.
7. When two "D" dimensions are indicated, always use the larger figure.
8. Power frame selection for 364A pumps can be made from the range charts.
9. Model 361A and 362A have "JP" motor frames. Model 364A has "T" frame motor.

# Engineering Specifications

**Flexible-Close Coupled Pumps**
The contractor shall furnish (and install as shown on the plans) Aurora Model (341A horizontal close coupled) (342A vertical close coupled) (344A horizontal flexible coupled) back pull out centrifugal pumps size …x…x… of (standard fitted) (bronze fitted) (all iron) construction.

The contractor shall furnish (and install as shown on the plans) Aurora Model (361A horizontal close coupled) (362A vertical close coupled) (364A horizontal flexible coupled) back pull out centrifugal pumps size …x…x… of (bronze fitted) (all bronze) (all iron) (stainless steel) construction. Each pump is to be furnished with a (standard) (water cooled) stuffing box with (packing) (…) (see options).

Each pump shall have a capacity of …GPM at …ft. total head, with a temperature of …°F, … specific gravity. Each pump is to be furnished with a mechanical seal with all metal parts to be 303 stainless steel with "Buna-N" elastomers, Ni-Resist seat, and carbon washer. The unit must be equipped with (bronze) (stainless steel) keylocked shaft sleeve that extends the length of the seal box. The pump shaft extension shall be "O" ring sealed from the pumped liquid. Pump shall have a case wearing ring (impeller wearing rings). Impellers to be vacuum cast, dynamically balanced, and keylocked to the shaft.

**Flexible Coupled-Frame Mounted (344A–364A)**
Pump and motor are to be mounted on a common (fabricated steel drip rim) (steel) baseplate. The shaft is to be steel, installed in a cast iron power frame. Pumps shall have a shaft design for .002" deflection at the seal face with the pump running under maximum load condition. (Grease) (oil) (permanently lubricated) ball bearings, having a 3 year minimum life (AFBMA $B_{10}$) under the maximum condition of load. Bearings to be protected by separate oil seals and slingers. The pump shall be flexible coupled to a standard horizontal NEMA … HP … phase … Hertz … volts … RPM (open drip proof) (totally enclosed fan cooled) (explosion-proof) motor. Alignment shall be checked in accordance with the standards of the Hydraulic Institute after installation and there shall be no strain transmitted to the pumps.

**Close Coupled (341A–361A) (342A–362A)**
Each pump is to be close coupled to a standard HI-NEMA-JM (340A Series) JP (360A Series). HP … phase …Hertz …volt …RPM (drip-proof) (totally enclosed) (explosion-proof) motor. Model 341A and 361A in motor frame sizes up to 184JM shall be supported by a separate support foot on the close coupled pump bracket.



**NOTE:** Aurora Pump reserves the right to make revisions to its products and their specifications, and to this bulletin and related information, without notice.

— Your Authorized Local Distributor —


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**AURORA MFG. PLANT:**
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AURORA®
Pentair Pump Group

AP-340A/360A / Rev. J 1.01 (10M 1.01)

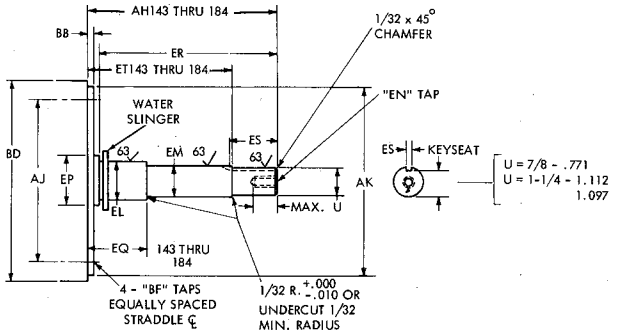
# MODELS 341A-342A-361A-362A
# 60 HERTZ MOTOR DATA SHEET
# 1 PHASE: NOT AVAILABLE
# 3 PHASE: 200 (ONLY) OR 230/460 OR 575 VOLTS

## JM & JP MOTOR FRAMES

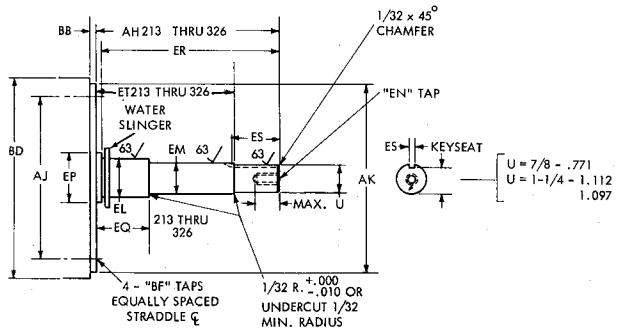
| HP | RPM | C FLANGE MOTORS HORIZONTAL FOOT MOUNTED 143-184JM ONLY-SUPPORT FOOT MOUNTED ON PUMP O.D.P. - TOTALLY ENC. - EXP. PROOF | | | | MAGNETIC STARTER SIZE REQ'D NEMA 1 ENCLOSURE | | | APPROXIMATE FULL LOAD AMPS. | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | OPEN DRIPPROOF FRAME | SERVICE FACTOR O.D.P. | TEFC & EXP. PROOF FRAME | SERVICE FACTOR TEFC & EXP. PROOF | 200V & 230V | 460V | 575V | 200V | 230V | 460V | 575V |
| 1 | 1750 | 143 | 1.15 | 143 | 1.0 | 00 | 00 | 00 | 4.0 | 3.5 | 1.8 | 1.4 |
| | 1150 | 145 | | 145 | | | | | | | | |
| 1-1/2 | 3500 | 143 | 1.15 | 143 | 1.0 | 00 | 00 | 00 | 5.4 | 4.7 | 2.4 | 1.9 |
| | 1750 | 145 | | 145 | | | | | | | | |
| | 1150 | 182 | | 182 | | | | | | | | |
| 2 | 3500 | 145 | 1.15 | 145 | 1.0 | 0 | 00 | 00 | 6.9 | 6 | 3 | 2.4 |
| | 1750 | 145 | | 145 | | | | | | | | |
| | 1150 | 184 | | 184 | | | | | | | | |
| 3 | 3500 | 145 | 1.15 | 182 | 1.0 | 0 | 0 | 0 | 9.9 | 8.6 | 4.3 | 3.4 |
| | 1750 | 182 | | 182 | | | | | | | | |
| | 1150 | 213 | | 213 | | | | | | | | |
| 5 | 3500 | 182 | 1.15 | 184 | 1.0 | 1 | 0 | 0 | 15.9 | 13.8 | 6.9 | 5.5 |
| | 1750 | 184 | | 184 | | | | | | | | |
| | 1150 | 215 | | 215 | | | | | | | | |
| 7-1/2 | 3500 | 184 | 1.15 | 213 | 1.0 | 1 | 1 | 1 | 24.3 | 21.1 | 10.5 | 8.4 |
| | 1750 | 213 | | 213 | | | | | | | | |
| | 1150 | 254 | | 254 | | | | | | | | |
| 10 | 3500 | 213 | 1.15 | 215 | 1.0 | 2 | 1 | 1 | 31 | 27 | 13.5 | 10.8 |
| | 1750 | 215 | | 215 | | | | | | | | |
| | 1150 | 256 | | 256 | | | | | | | | |
| 15 | 3500 | 215 | 1.15 | 254 | 1.0 | 3 | 2 | 2 | 45 | 39.2 | 19.6 | 15.7 |
| | 1750 | 254 | | 254 | | | | | | | | |
| | 1150 | 284 | | 284 | | | | | | | | |
| 20 | 3500 | 254 | 1.15 | 256 | 1.0 | 3 | 2 | 2 | 58.7 | 51 | 25.5 | 20 |
| | 1750 | 256 | | 256 | | | | | | | | |
| | 1150 | 286 | | 286 | | | | | | | | |
| 25 | 3500 | 256 | 1.15 | 284 | 1.0 | 3 | 2 | 2 | 72.7 | 63.2 | 31.6 | 25 |
| | 1750 | 284 | | 284 | | | | | | | | |
| | 1150 | 324 | | 324 | | | | | | | | |
| 30 | 3500 | 284 | 1.15 | 286 | 1.0 | 4 | 3 | 3 | 97.8 | 76.7 | 38.3 | 31 |
| | 1750 | 286 | | 286 | | | | | | | | |
| | 1150 | 326 | | 326 | | | | | | | | |
| 40 | 3500 | 286 | 1.15 | 324 | 1.0 | 4 | 3 | 3 | 115 | 100 | 50 | 40 |
| | 1750 | 324 | | 324 | | | | | | | | |
| 50 | 3500 | 324 | 1.15 | 326 | 1.0 | 5 | 3 | 3 | 141 | 123 | 61.5 | 49 |
| | 1750 | 326 | | 326 | | | | | | | | |
| 60 | 3500 | 326 | 1.15 | N/A | 1.0 | 5 | 4 | 4 | 163 | 142 | 71 | 57 |

NOTES:
1. APPROXIMATE FULL LOAD AMPS BASED ON AVERAGES FOR AURORA STANDARD O.D.P. MOTORS.
2. MAGNETIC STARTER SIZE BASED ON AURORA STANDARD O.D.P. MOTORS.
3. MODELS 341A & 342A USE JM MOTOR FRAMES.
   MODELS 361A & 362A USE JP MOTOR FRAMES.

# AURORA SERIES 340/360
## SHAFT EXTENSION
## JM/JP MOTOR FRAMES
## MODELS 341A-342A-361A-362A




### 143 - 184 MOTOR FRAME DIMENSIONS




### 213 - 326 MOTOR FRAME DIMENSIONS

| MOTOR FRAME SIZES | 340 U | 360 U | 340 AH | 360 AH | AJ | AK | BB | BD | 340 EL | 360 EL |
|---|---|---|---|---|---|---|---|---|---|---|
| 143 | 7/8 | 7/8 | 4-1/4 | 7-5/16 | 5-7/8 | 4-1/2 | 5/32 | 6-5/8 | 1-5/32 | 1-5/32 |
| & | .8745 | .8745 | ±.031 | ±.031 | | +.000 | +.000 | MAX. | +.000 | +.000 |
| 145 | .8740 | .8740 | | | | -.003 | -.031 | | -.002 | -.002 |
| 182 | 7/8 | 7/8 | 4-1/4 | 7-5/16 | 5-7/8 | 4-1/2 | 5/32 | 6-5/8 | 1-1/4 | 1-1/4 |
| & | .8745 | .8745 | ±.031 | ±.031 | | +.000 | +.000 | MAX. | +.000 | +.000 |
| 184 | .8740 | .8740 | | | | -.003 | -.031 | | -.002 | -.002 |
| 213 | 7/8 | 1-1/4 | 4-1/4 | 8-1/8 | 7-1/4 | 8-1/2 | 5/16 | 9 | 1-1/4 | 1-3/4 |
| & | .8745 | 1.2495 | ±.031 | ±.031 | | +.000 | +.000 | MAX. | +.000 | +.000 |
| 215 | .8740 | 1.2490 | | | | -.003 | -.062 | | -.002 | -.002 |
| 254 | 1-1/4 | 1-1/4 | 5-1/4 | 8-1/8 | 7-1/4 | 8-1/2 | 5/16 | 10 | 1-3/4 | 1-3/4 |
| & | 1.2495 | 1.2495 | ±.031 | ±.031 | | +.000 | +.000 | MAX. | +.000 | +.000 |
| 256 | 1.2490 | 1.2490 | | | | -.003 | -.062 | | -.002 | -.002 |
| 284 | 1-1/4 | 1-1/4 | 5-1/4 | 8-1/8 | 11 | 12-1/2 | 5/16 | 14 | 1-3/4 | 1-3/4 |
| Thru | 1.2490 | 1.2490 | ±.031 | ±.031 | | +.000 | +.000 | MAX. | +.000 | +.000 |
| 326 | 1.3490 | 1.3490 | | | | -.005 | -.062 | | -.002 | -.002 |

| MOTOR FRAME SIZES | 340 EM | 360 EM | EP | 340 EQ | 360 EQ | 340 ER | 360 ER | 340 ET | 360 ET |
|---|---|---|---|---|---|---|---|---|---|
| 143 | 1 | 1 | 1-5/32 | 5/8 | 1-9/16 | 4-1/4 | 7-5/16 | 2-7/8 | 5-15/16 |
| & | .0000 | .0000 | MIN. | ±.015 | ±.015 | MIN. | MIN. | ±.015 | ±.015 |
| 145 | .0005 | .0005 | | | | | | | |
| 182 | 1 | 1 | 1-1/4 | 5/8 | 1-9/16 | 4-1/4 | 7-5/16 | 2-7/8 | 5-15/16 |
| & | +.0000 | +.0000 | MIN. | ±.015 | ±.015 | MIN. | MIN. | ±.015 | ±.015 |
| 184 | -.0005 | -.0005 | | | | | | | |
| 213 | 1 | 1-3/8 | 1-3/4 | 5/8 | 2-3/8 | 4-1/4 | 8-1/8 | 2-7/8 | 5-7/8 |
| & | +.0000 | +.0000 | MIN. | ±.015 | ±.015 | MIN. | MIN. | ±.015 | ±.015 |
| 215 | -.0005 | -.0005 | | | | | | | |
| 254 | 1-3/8 | 1-3/8 | 1-3/4 | 5/8 | 2-3/8 | 5-1/4 | 8-1/8 | 3 | 5-7/8 |
| & | +.0000 | +.0000 | MIN. | ±.015 | ±.015 | MIN. | MIN. | ±.015 | ±.015 |
| 256 | -.0005 | -.0005 | | | | | | | |
| 284 | 1-3/8 | 1-3/8 | 2-1/8 | 5/8 | 2-3/8 | 5-1/4 | 8-1/8 | 3 | 5-7/8 |
| Thru | +.0000 | +.0000 | MIN. | ±.020 | ±.020 | MIN. | MIN. | ±.020 | ±.020 |
| 326 | -.0005 | -.0005 | | | | | | | |

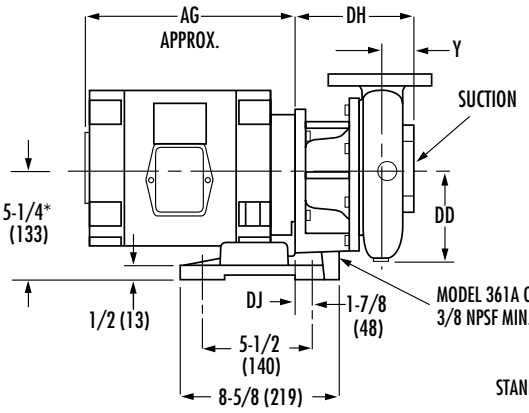
| MOTOR FRAME SIZES | ES LENGTH | ES WIDTH | EN 340 TAP SIZE CLASS 3 R.H. THR'D | EN 360 TAP SIZE CLASS 3 R.H. THR'D | EN 340 TAP DRILL DEPTH MAX. | EN 360 TAP DRILL DEPTH MAX. | EN 340 BOLT PENE-TRATION | EN 360 BOLT PENE-TRATION | BF TAP SIZE CLASS 2 | BF BOLT PENE-TRATION |
|---|---|---|---|---|---|---|---|---|---|---|
| 143 | 1.65 | 3/16 | 3/8-16 | 3/8-16 | 1-1/8 | 1-1/8 | 3/4 | 3/4 | 3/8-16 | 9/16 |
| & | MIN. | +.002 -.000 | | | | | | | | |
| 145 | | | | | | | | | | |
| 182 | 1.65 | 3/16 | 3/8-16 | 3/8-16 | 1-1/8 | 1-1/8 | 3/4 | 3/4 | 3/8-16 | 9/16 |
| & | MIN. | +.002 -.000 | | | | | | | | |
| 184 | | | | | | | | | | |
| 213 | 1.65 | * | 3/8-16 | 1/2-13 | 1-1/8 | 1-1/2 | 3/4 | 1 | 1/2-13 | 3/4 |
| & | MIN. | +.002 -.000 | | | | | | | | |
| 215 | | | | | | | | | | |
| 254 | 2.53 | 1/4 | 1/2-13 | 1/2-13 | 1-1/2 | 1-1/2 | 1 | 1 | 1/2-13 | 3/4 |
| & | MIN. | +.002 -.000 | | | | | | | | |
| 256 | | | | | | | | | | |
| 284 | 2.50 | 1/4 | 1/2-13 | 1/2-13 | 1-1/2 | 1-1/2 | 1 | 1 | 5/8-11 | 15/16 |
| Thru | MIN. | +.002 -.000 | | | | | | | | |
| 326 | | | | | | | | | | |

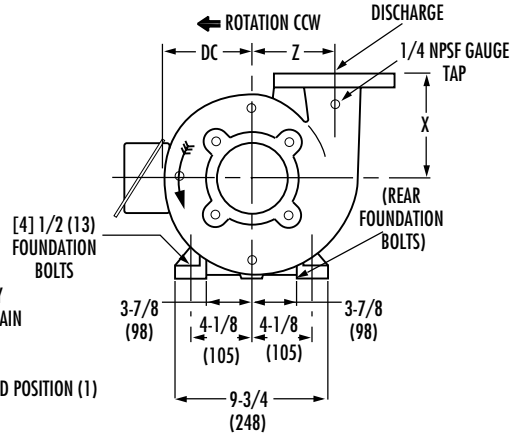
NOTES:
1. SHAFT MATERIAL - AISI 1018 STEEL
2. WATER SLINGER TO BE FURNISHED WITH MOTOR
3. END PLAY NOT TO EXCEED .005
4. SHAFT DIAMETERS AND RABBET TO BE CONCENTRIC WITHIN .004 TIR
5. JM MOTORS ARE USED ON 340 SERIES PUMPS.
   JP MOTOR ARE USED ON 360 SERIES PUMPS.

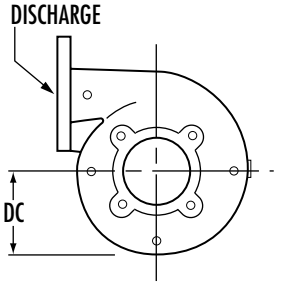
*KEYWAY WIDTH FOR 213-215 MOTOR FRAME SIZES:
JM MOTORS = 3/16" WIDE
JP MOTORS = 1/4" WIDE

# AURORA MODEL 341A & 361A PUMPS

## JM & JP MOTOR FRAMES
## 143 THROUGH 184




POSITION (4)

| PUMPS WITH THREADED CONNECTIONS | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | DH | | DJ | |
| DISCHARGE | SUCTION | CASE BORE | X | Y | Z | DC | DD | 341A | 361A | 341A | 361A |
| 1-1/4 | 1-1/2 | 7 | 5-1/4 (133) | 2-7/16 (62) | 4-3/16 (106) | 4-15/16 (125) | 5-3/16 (132) | 7-3/16 (183) | 10-1/4 (266) | | |
| 1-1/4 | 1-1/2 | 9 | 6-5/8 (168) | 2-9/16 (65) | 5-3/8 (136) | 6-3/16 (157) | 6-3/8 (162) | 7-1/4 (184) | 10-5/16 (261) | | |
| 1-1/2 | 2 | 7 | 5-3/8 (136) | 2-1/2 (63) | 4-5/16 (109) | 5-1/8 (130) | 5-3/8 (136) | 7-5/16 (186) | 10-3/8 (263) | | |
| 1-1/2 | 2 | 9 | 6-3/4 (171) | 2-5/8 (67) | 5-1/2 (140) | 6-5/16 (160) | 6-9/16 (167) | 7-3/8 (187) | 10-7/16 (262) | | |
| PUMPS WITH AM. STD. 125 LB. FLANGED CONNECTIONS | | | | | | | | | | | |
| 2 | 2-1/2 | 7 | 5-5/8 (143) | 1-7/8 (48) | 4-9/16 (116) | 5-3/8 (136) | 5-13/16 (148) | 6 -13/16 (173) | 9-7/8 (250) | 5/8 (16) | 1-7/8 (48) |
| 2 | 2-1/2 | 9 | 7 (178) | 1-7/8 (48) | 5-11/16 (144) | 6-1/2 (165) | 6-7/8 (175) | 6-3/4 (171) | 9-13/16 (249) | | |
| 2-1/2 | 3 | 7 | 5-7/8 (149) | 2 (51) | 4-13/16 (122) | 5-13/16 (148) | 6-1/4 (159) | 7-1/16 (179) | 10-1/8 (257) | | |
| 2-1/2 | 3 | 9 | 7-1/4 (184) | 2 (51) | 5-15/16 (151) | 6-3/4 (171) | 7-1/4 (184) | 7 (178) | 10-1/16 (255) | | |
| 3 | 4 | 9 | 7-1/2 (190) | 2-1/8 (54) | 6-1/8 (156) | 6-7/8 (175) | 7-7/16 (189) | 7-1/4 (184) | 10-5/16 (261) | | |
| 4 | 4 | 7 | 6-1/2 (165) | 2-1/2 (63) | 5-1/2 (140) | 6-7/16 (163) | 7-5/16 (186) | 7-15/16 (202) | 11 (279) | | |
| 4 | 5 | 9A | 7-1/4 (184) | 3-1/8 (79) | 5-3/4 (146) | 6-11/16 (169) | 7-3/8 (187) | 8-3/8 (212) | 11-7/16 (290) | | |
| 4 | 5 | 9B | 7-3/4 (196) | 2-5/8 (66) | 6-5/8 (168) | 8-1/16 (204) | 8-11/16 (220) | 8 (203) | 11 (279) | | |

**JM OR JP**

| FRAME | AG |
|---|---|
| 143 | 10 (254) |
| 145 | 11 (279) |
| 182 | 11 (279) |
| 184 | 12 (305) |

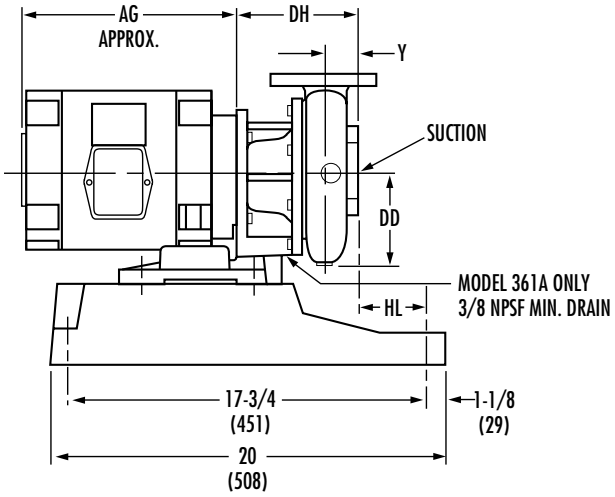
NOTES:

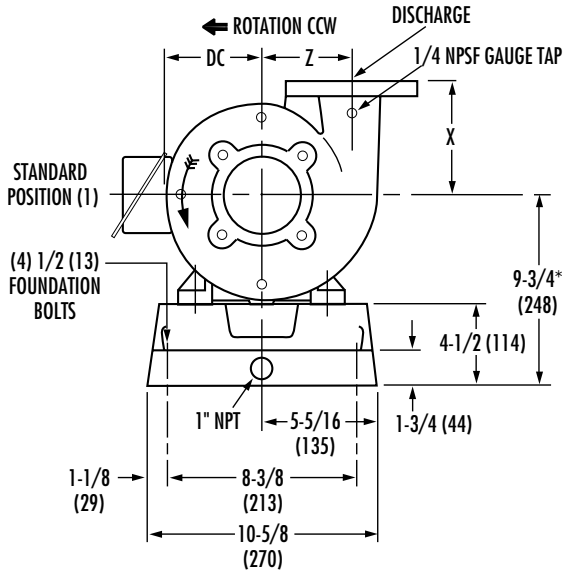
1. All dimensions in inches and (mm).
2. Dimensions may vary ± 1/4 (6).
3. Not for construction purposes unless certified.
4. Check discharge position. Casing dimension which exceed 5-1/4 (133) height may require pads for the support.
5. Conduit box is shown in approximate location. Dimensions are not specified as they vary with each motor manufacturer.
6. Model 341A uses JM motor frames.
   Model 361A uses JP motor frames.

* 6-1/4 (159) for 9 (229) case bore pumps (Model 341A only).

# AURORA MODEL 341A & 361A PUMPS

## ON CAST IRON BASE
## JM & JP MOTOR FRAMES
## 143 THROUGH 184




| PUMPS WITH THREADED CONNECTIONS | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | DH | | HL | |
| DISCHARGE | SUCTION | CASE BORE | X | Y | Z | DC | DD | 341A | 361A | 341A | 361A |
| 1-1/4 | 1-1/2 | 7 | 5-1/4 (133) | 2-7/16 (62) | 4-3/16 (106) | 4-15/16 (125) | 5-3/16 (132) | 7-3/16 (183) | 10-1/4 (260) | 3-3/16 (81) | 1-3/8 (35) |
| 1-1/4 | 1-1/2 | 9 | 6-5/8 (168) | 2-9/16 (65) | 5-3/8 (136) | 6-3/16 (157) | 6-3/8 (162) | 7-1/4 (184) | 10-5/16 (262) | 3-1/8 (79) | 1-5/16 (33) |
| 1-1/2 | 2 | 7 | 5-3/8 (136) | 2-1/2 (63) | 4-5/16 (109) | 5-1/8 (130) | 5-3/8 (136) | 7-5/16 (186) | 10-3/8 (264) | 3-1/16 (78) | 1-1/4 (32) |
| 1-1/2 | 2 | 9 | 6-3/4 (171) | 2-5/8 (67) | 5-1/2 (140) | 6-5/16 (160) | 6-9/16 (167) | 7-3/8 (187) | 10-7/16 (265) | 3 (76) | 1-3/16 (30) |
| **PUMPS WITH AM. STD. 125 LB. FLANGED CONNECTIONS** | | | | | | | | | | | |
| 2 | 2-1/2 | 7 | 5-5/8 (143) | 1-7/8 (48) | 4-9/16 (116) | 5-3/8 (136) | 5-13/16 (148) | 6 -13/16 (173) | 9-7/8 (251) | 3-9/16 (90) | 1-3/4 (44) |
| 2 | 2-1/2 | 9 | 7 (178) | 1-7/8 (48) | 5-11/16 (144) | 6-1/2 (165) | 6-7/8 (175) | 6-3/4 (171) | 9-13/16 (249) | 3-5/8 (92) | 1-13/16 (46) |
| 2-1/2 | 3 | 7 | 5-7/8 (149) | 2 (51) | 4-13/16 (122) | 5-13/16 (148) | 6-1/4 (159) | 7-1/16 (179) | 10-1/8 (257) | 3-5/16 (84) | 1-1/2 (38) |
| 2-1/2 | 3 | 9 | 7-1/4 (184) | 2 (51) | 5-15/16 (151) | 6-3/4 (171) | 7-1/4 (184) | 7 (178) | 10-1/16 (256) | 3-3/8 (86) | 1-9/16 (32) |
| 3 | 4 | 9 | 7-1/2 (190) | 2-1/8 (54) | 6-1/8 (156) | 6-7/8 (175) | 7-7/16 (189) | 7-1/4 (184) | 10-5/16 (262) | 3-1/8 (80) | 1-5/16 (33) |
| 4 | 4 | 7 | 6-1/2 (165) | 2-1/2 (63) | 5-1/2 (140) | 6-7/16 (163) | 7-5/16 (186) | 7-15/16 (202) | 11 (279) | 2-7/16 (62) | 5/8 (16) |

**JM OR JP**

| FRAME | AG |
|---|---|
| 143 | 10 (254) |
| 145 | 11 (279) |
| 182 | 11 (279) |
| 184 | 12 (305) |

NOTES:

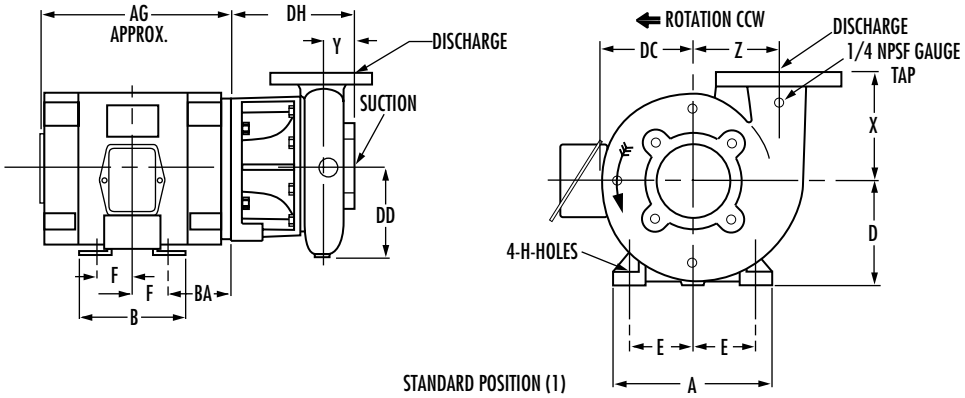
1. All dimensions in inches and (mm).
2. Dimensions may vary ± 1/4 (6).
3. Not for construction purposes unless certified.
4. Conduit box is shown in approximate location. Dimensions are not specified as they vary with each motor manufacturer.

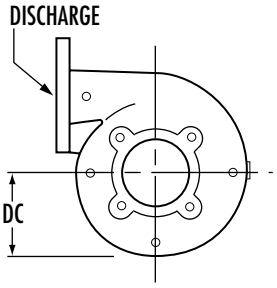
* 10-3/4 (159) for 9 (229) case bore pumps (Model 341A only).

AURORA®
Pentair Pump Group

# AURORA MODEL 341A & 361A PUMPS

## JM & JP MOTOR FRAMES
## 213 THROUGH 326




POSITION (4)

| PUMPS WITH THREADED CONNECTIONS | | | | | | | | DH | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | 341A | | | 361A |
| DISCHARGE | SUCTION | CASE BORE | X | Y | Z | DC | DD | 213JM 215JM | 254JM 256JM | 284JM 326JM | 213JP-326JP |
| 1-1/4 | 1-1/2 | 7 | 5-1/4 (133) | 2-7/16 (62) | 4-3/16 (106) | 4-15/16 (125) | 5-3/16 (132) | 7-3/16 (183) | N/A | N/A | N/A |
| 1-1/4 | 1-1/2 | 9 | 6-5/8 (168) | 2-9/16 (65) | 5-3/8 (136) | 6-3/16 (157) | 6-3/8 (162) | 7-1/4 (184) | N/A | N/A | N/A |
| 1-1/2 | 2 | 7 | 5-3/8 (136) | 2-1/2 (63) | 4-5/16 (109) | 5-1/8 (130) | 5-3/8 (136) | 7-5/16 (186) | N/A | N/A | N/A |
| 1-1/2 | 2 | 9 | 6-3/4 (171) | 2-5/8 (67) | 5-1/2 (140) | 6-5/16 (160) | 6-9/16 (167) | 7-3/8 (187) | 8-3/8 (213) | 8-3/8 (213) | 11-1/4 (286) |
| 1-1/2 | 2 | 11 | 9 (229) | 2-13/16 (71) | 6-1/8 (156) | 7-1/16 (179) | 7-1/4 (184) | 7-9/16 (192) | N/A | N/A | 11-7/16 (290) |
| 1-1/2 | 2 | 12 | 7-3/4 (197) | 2-3/4 (70) | 7-1/16 (179) | 8 (203) | 8-1/4 (210) | 7-5/8 (194) | 8-5/8 (219) | N/A | 11-1/2 (292) |
| PUMPS WITH ANSI 125 LB. FLANGED CONNECTIONS | | | | | | | | | | | |
| 2 | 2-1/2 | 7 | 5-5/8 (143) | 1-7/8 (48) | 4-9/16 (116) | 5-3/8 (136) | 5-13/16 (148) | 6 -13/16 (173) | 7-13/16 (198) | N/A | 10-11/16 (271) |
| 2 | 2-1/2 | 9 | 7 (178) | 1-7/8 (48) | 5-11/16 (144) | 6-1/2 (165) | 6-7/8 (175) | 6-3/4 (171) | 7-3/4 (197) | 7-3/4 (197) | 10-5/8 (270) |
| 2 | 2-1/2 | 12 | 8 (203) | 1-7/8 (48) | 7-3/16 (183) | 8-3/16 (208) | 8-1/2 (216) | 6-7/8 (175) | 7-7/8 (200) | N/A | 10-3/4 (273) |
| 2 | 3 | 11 | 8 (203) | 2-3/8 (60) | 6-1/2 (165) | 7 (178) | 7-3/8 (187) | 7-1/2 (190) | 8-1/2 (216) | 8-1/2 (216) | 11-3/8 (289) |
| 2-1/2 | 3 | 7 | 5-7/8 (149) | 2 (51) | 4-13/16 (122) | 5-13/16 (148) | 6-1/4 (159) | 7-1/16 (179) | 8-1/16 (205) | N/A | 10-15/16 (278) |
| 2-1/2 | 3 | 9 | 7-1/4 (184) | 2 (51) | 5-15/16 (151) | 6-3/4 (171) | 7-1/4 (184) | 7 (178) | 8 (203) | 8 (203) | 10-7/8 (276) |
| 2-1/2 | 3 | 12 | 8-1/4 (210) | 2 (51) | 7-3/8 (187) | 8-3/8 (213) | 8-3/4 (213) | 7-1/8 (181) | 8-1/8 (206) | 8-1/8 (206) | 11 (279) |
| 3 | 4 | 9 | 7-1/2 (190) | 2-1/8 (54) | 6-1/8 (156) | 6-7/8 (175) | 7-7/16 (189) | 7-1/4 (184) | 8-1/4 (210) | 8-1/4 (210) | 11-1/8 (283) |
| 3 | 4 | 11 | 9 (229) | 2-3/4 (70) | 7 (179) | 7-9/16 (192) | 8-3/16 (208) | 8-3/16 (208) | 9-3/16 (233) | 9-3/16 (233) | 12-1/16 (306) |
| 3 | 4 | 12 | 8-1/2 (216) | 2-1/8 (54) | 7-9/16 (192) | 8-7/16 (214) | 8-15/16 (227) | 7-5/8 (194) | 8-5/8 (219) | 8-5/8 (219) | 11-1/4 (286) |
| 4 | 4 | 7 | 6-1/2 (165) | 2-1/2 (63) | 5-1/2 (140) | 6-7/16 (163) | 7-5/16 (186) | 7-15/16 (202) | 8-15/16 (227) | 8-15/16 (227) | 11-13/16 (300) |
| 4 | 5 | 9A | 7-1/4 (184) | 3-1/8 (79) | 5-3/4 (146) | 6-11/16 (170) | 7-3/8 (187) | 8-3/8 (213) | 9-3/8 (238) | 9-3/8 (238) | 12-1/4 (311) |
| 4 | 5 | 9B | 7-3/4 (197) | 2-5/8 (67) | 6-5/8 (168) | 8-1/16 (205) | 8-11/16 (221) | 8 (203) | 9 (229) | N/A | 11-7/8 (302) |
| 4 | 5 | 11 | 9 (229) | 3 (76) | 7-1/4 (184) | 7-15/16 (202) | 8-11/16 (221) | 8-5/8 (219) | 9-5/8 (244) | 9-5/8 (244) | 12-1/2 (317) |
| 4 | 5 | 12 | 8-3/4 (222) | 2-5/8 (67) | 7-15/16 (202) | 8-7/8 (225) | 9-9/16 (243) | N/A | 9-3/8 (238) | 9-3/8 (238) | 12 (305) |
| 5 | 6 | 11 | 9 (229) | 3-1/8 (79) | 8-1/16 (205) | 8-11/16 (221) | 10-1/8 (257) | 9-1/8 (232) | 10-1/8 (257) | 10-1/8 (259) | 13 (330) |
| 5 | 6 | 12 | 9 (229) | 2-7/8 (73) | 8-5/16 (211) | 9-1/4 (235) | 10-1/8 (257) | N/A | 9-7/8 (251) | 9-7/8 (251) | 12-1/2 (317) |
| 6 | 6 | 9 | 8-1/4 (210) | 2-3/4 (70) | 7 (178) | 8 (203) | 9 (229) | 8-1/4 (210) | 9-1/4 (235) | N/A | 12-1/8 (308) |
| 6 | 6 | 11 | 9-1/4 (235) | 3-1/8 (79) | 8-11/16 (221) | 9-11/16 (246) | 11-1/4 (286) | N/A | 10-3/8 (264) | 10-3/8 (264) | 13 (330) |
| 6 | 6 | 12 | 9-1/4 (235) | 3-1/8 (79) | 8-11/16 (221) | 9-11/16 (246) | 11-1/4 (286) | N/A | 10-3/8 (264) | 10-3/8 (264) | 13 (330) |

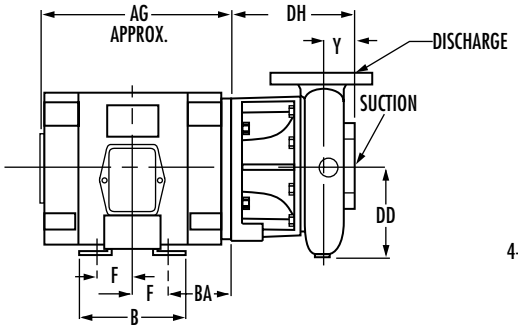
NOTES:
1. All dimensions in inches and (mm).
2. Dimensions may vary ± 1/4 (6).
3. Not for construction purposes unless certified.
4. N/A = Not Applicable.
5. Check discharge position, casing dimensions which exceed dimension "D" may require pads for the motor.
6. Conduit box is shown in approximate location. Dimensions are not specified as they vary with each motor manufacturer.

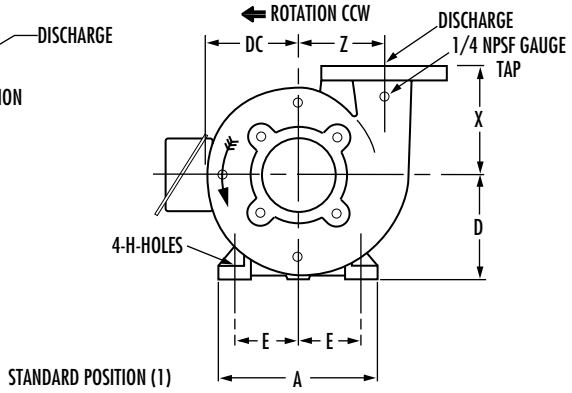
### JM OR JP MOTOR FRAMES

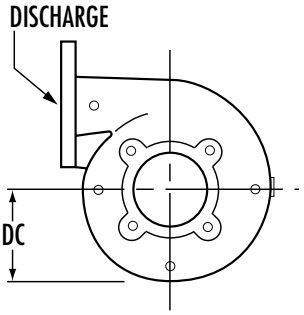
| FRAME | 213 | 215 | 254 | 256 | 284 | 286 | 324 | 326 |
|---|---|---|---|---|---|---|---|---|
| A | 10-1/2 (267) | 10-1/2 (267) | 12-1/2 (317) | 12-1/2 (317) | 14 (356) | 14 (356) | 16 (406) | 16 (406) |
| B | 7-1/2 (190) | 9 (229) | 10-3/4 (273) | 12-1/2 (317) | 12-1/2 (317) | 14 (356) | 14 (356) | 15-1/2 (394) |
| D | 5-1/4 (133) | 5-1/4 (133) | 6-1/4 (159) | 6-1/4 (159) | 7 (178) | 7 (178) | 8 (203) | 8 (203) |
| E | 4-1/4 (108) | 4-1/4 (108) | 5 (127) | 5 (127) | 5-1/2 (140) | 5-1/2 (140) | 6-1/4 (159) | 6-1/4 (159) |
| F | 2-3/4 (70) | 3-1/2 (89) | 4-1/8 (111) | 5 (127) | 4-3/4 (121) | 5-1/2 (140) | 5-1/4 (133) | 6 (152) |
| H | 13/32 (10) | 13/32 (10) | 17/32 (13) | 17/32 (13) | 17/32 (13) | 17/32 (13) | 21/32 (16) | 21/32 (16) |
| AG APPROX. | 14 (356) | 15 (381) | 17-1/2 (444) | 19 (483) | 19 (483) | 21 (533) | 22 (359) | 23 (584) |
| BA | 4-1/2 (114) | 4-1/2 (114) | 5 (127) | 5 (127) | 5 (127) | 5 (127) | 5-1/2 (140) | 5-1/2 (140) |

# AURORA MODEL 341A

5X6X12, 6X6X12
364TCZ FRAME




POSITION (4)

**ALL PUMPS 125 LB FLANGE CONNECTIONS**

| PUMP SIZE | X | Y | Z | DC | DD | DH |
|---|---|---|---|---|---|---|
| 5X6X12 | 9.00 (229) | 2.88 (73) | 8.31 (211) | 9.25 (235) | 10.13 (257) | 12.50 (318) |
| 6X6X12B | 9.25 (235) | 3.13 (80) | 8.69 (221) | 9.69 (246) | 11.25 (286) | 14.25 (362) |

| MOTOR FRAME | 364TCZ | 365TCZ |
|---|---|---|
| A | 18.00 (457) | 18.00 (457) |
| B | 14.75 (375) | 15.75 (400) |
| D | 9.00 (229) | 9.00 (229) |
| E | 7.00 (178) | 7.00 (178) |
| F | 5.63 (143) | 6.13 (156) |
| H | 0.66 (17) | 0.66 (17) |
| AG approx. | 26 (660) | 28 (711) |
| BA | 5.88 (149) | 5.88 (149) |

NOTES:

1. All dimensions in inches (mm), weight in pounds (KG).
2. Dimensions may vary ± 1/4" (6).
3. Not for construction purposes unless certified.
4. Conduit box is not specified as they vary with each motor manufacturer.

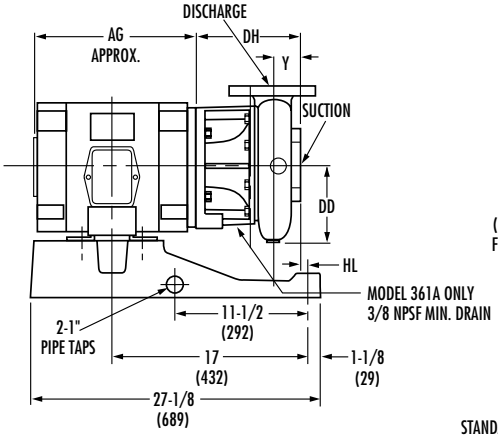
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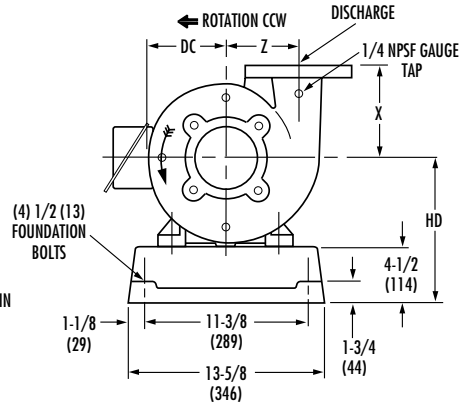
# AURORA MODEL 341A & 361A PUMPS

Dated **January 2003**

Supersedes Section 340/360 Page 204
Dated May 1996

## ON CAST IRON BASE
## JM & JP MOTOR FRAMES
## 213 THROUGH 256




STANDARD POSITION (1)

**JM OR JP**

| FRAME | AG |
|---|---|
| 213 | 14 (355) |
| 215 | 15 (381) |
| 254 | 17 (431) |
| 256 | 19 (355) |

| PUMPS WITH THREADED CONNECTIONS | | | | | | | | DH | | | HD | | HL | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | 341A | | 361A | | | 341A | | 361A |
| DISCHARGE | SUCTION | CASE BORE | X | Y | Z | DC | DD | 213JM 215JM | 254JM 256JM | 213JP- 256JP | 213 215 | 254 256 | 213JM 215JM | 254JM 256JM | 213JP 256JP |
| 1 1/4 | 1 1/2 | 7 | 5-1/4 (133) | 2- 7/16 (62) | 4- 3/16 (106) | 4-15/16 (125) | 5- 3/16 (132) | 7- 3/16 (183) | N/A | N/A | 9-3/4* (248) | N/A | 1-15/16 (49) | N/A | N/A |
| 1-1/4 | 1-1/2 | 9 | 6-5/8 (168) | 2-9/16 (65) | 5-3/8 (137) | 6-3/16 (157) | 6-3/8 (162) | 7-1/4 (184) | N/A | N/A | 9-3/4* (248) | N/A | 1-7/8 (48) | N/A | N/A |
| 1-1/2 | 2 | 7 | 5-3/8 (137) | 2-1/2 (64) | 4-5/16 (110) | 5-1/8 (130) | 5-3/8 (137) | 7-5/16 (186) | N/A | N/A | 9-3/4* (248) | N/A | 1-13/16 (46) | N/A | N/A |
| 1-1/2 | 2 | 9 | 6-3/4 (171) | 2-5/8 (67) | 5-1/2 (140) | 6-5/16 (160) | 6-9/16 (167) | 7-3/8 (187) | 8-3/8 (213) | 11-1/4 (286) | 9-3/4 (248) | 10-3/4 (273) | 1-3/4 (44) | 3/4 (19) | 2-1/8 (54) |
| 1-1/2 | 2 | 11 | 9 (229) | 2-13/16 (71) | 6-1/8 (156) | 7-1/16 (179) | 7-1/4 (184) | 7-9/16 (192) | N/A | 11-7/16 (291) | 9-3/4 (248) | N/A | 1-1/2 (38) | N/A | 2-3/8 (60) |
| 1-1/2 | 2 | 12 | 7-3/4 (197) | 2-3/4 (70) | 7-1/16 (179) | 8 (203) | 8-1/4 (210) | 7-5/8 (194) | 8-5/8 (219) | 11-1/2 (292) | 10-1/2 (267) | 10-3/4 (273) | 1-1/2 (38) | 1/2 (13) | 2-3/8 (60) |
| **PUMPS-WITH-ANSI-125-LB.-FLANGED-CONNECTIONS** | | | | | | | | | | | | | | | |
| 2 | 2-1/2 | 7 | 5-5/8 (143) | 1-7/8 (48) | 4-9/16 (116) | 5-3/8 (137) | 5-13/16 (148) | 6-13/16 (173) | 7-13/16 (198) | 10-11/16 (271) | 9-3/4 (248) | 10-3/4 (273) | 2-5/16 (59) | 1-5/16 (33) | 1-9/16 (40) |
| 2 | 2-1/2 | 9 | 7 (178) | 1-7/8 (48) | 5-11/16 (144) | 6-1/2 (165) | 6-7/8 (175) | 6-3/4 (171) | 7-3/4 (197) | 10-5/8 (270) | 9-3/4 (248) | 10-3/4 (273) | 2-3/8 (60) | 1-3/8 (35) | 1-1/2 (38) |
| 2 | 2-1/2 | 12 | 8 (203) | 1-7/8 (48) | 7-3/16 (183) | 8-3/16 (208) | 8-1/2 (216) | 6-7/8 (175) | 7-7/8 (200) | 10-3/4 (273) | 10-1/2 (267) | 10-3/4 (273) | 2-1/4 (57) | 1-1/4 (32) | 1-5/8 (41) |
| 2 | 3 | 11 | 8 (203) | 2-3/8 (60) | 6-1/2 (165) | 7 (178) | 7-3/8 (187) | 7-1/2 (191) | 8-1/2 (216) | 11-3/8 (289) | 9-3/4 (248) | 10-3/4 (273) | 1-1/2 (38) | 1/2 (13) | 2-1/16 (52) |
| 2-1/2 | 3 | 7 | 5-7/8 (149) | 2 (51) | 4-13/16 (122) | 5-13/16 (148) | 6-1/4 (159) | 7-1/16 (179) | 8-1/16 (205) | 10-15/16 (278) | 9-3/4 (248) | 10-3/4 (273) | 2-1/16 (52) | 1-1/16 (27) | 1-13/16 (46) |
| 2-1/2 | 3 | 9 | 7-1/4 (184) | 2 (51) | 5-15/16 (151) | 6-3/4 (171) | 7-1/4 (184) | 7 (178) | 8 (203) | 10-7/8 (276) | 9-3/4 (248) | 10-3/4 (273) | 2-1/8 (54) | 1-1/8 (29) | 1-3/4 (44) |
| 2-1/2 | 3 | 12 | 8-1/4 (210) | 2 (51) | 7-3/8 (187) | 8-3/8 (213) | 8-3/4 (222) | 7-1/8 (181) | 8-1/8 (206) | 11 (279) | 10-1/2 (267) | 10-3/4 (273) | 2 (51) | 1 (25) | 1-7/8 (48) |
| 3 | 4 | 9 | 7-1/2 (191) | 2-1/8 (54) | 6-1/8 (156) | 6-7/8 (175) | 7-7/16 (189) | 7-1/4 (184) | 8-1/4 (210) | 11-1/8 (283) | 9-3/4 (248) | 10-3/4 (273) | 1-7/8 (48) | 7/8 (22) | 2 (51) |
| 3 | 4 | 11 | 9 (229) | 2-3/4 (70) | 7 (178) | 7-9/16 (192) | 8-3/16 (208) | 8-3/16 (208) | 9-3/16 (233) | 12-1/16 (306) | 10-1/2 (267) | 10-3/4 (273) | 13/16 (20) | 0 | 2-3/4 (70) |
| 3 | 4 | 12 | 8-1/2 (216) | 2-1/8 (54) | 7-9/16 (192) | 8-7/16 (214) | 8-15/16 (227) | 7-5/8 (194) | 8-5/8 (219) | 11-1/4 (286) | 10-1/2 (267) | 10-3/4 (273) | 1-3/4 (44) | 3/4 (19) | 2-1/8 (54) |
| 4 | 4 | 7 | 6-1/2 (165) | 2-1/2 (64) | 5-1/2 (140) | 6-7/16 (164) | 7-5/16 (186) | 7-15/16 (202) | 8-15/16 (227) | 11-13/16 (300) | 9-3/4 (248) | 10-3/4 (273) | 1-3/16 (30) | 3/16 (4) | 2-11/16 (68) |
| 4 | 5 | 9A | 7-1/4 (184) | 3-1/8 (79) | 5-3/4 (146) | 6-11/16 (170) | 7-3/8 (187) | 8-3/8 (213) | N/A | 12-1/4 (311) | 9-3/4 (248) | N/A | 3/4 (19) | N/A | 3-1/8 (79) |
| 4 | 5 | 9B | 7-3/4 (197) | 2-5/8 (67) | 6-5/8 (168) | 8-1/16 (205) | 8-11/16 (221) | 8 (203) | 9 (229) | 11-7/8 (302) | 10-1/2 (267) | 10-3/4 (273) | 1-1/8 (29) | 1/8 (3) | 2-3/4 (70) |
| 4 | 5 | 11 | 9 (229) | 3 (76) | 7-1/4 (184) | 7-15/16 (202) | 8-11/16 (221) | 8-5/8 (219) | 9-5/8 (244) | 12-1/2 (318) | 11-1/4 (286) | 11-1/2 (292) | 3/8 (10) | 0 | 3-3/16 (81) |
| 4 | 5 | 12 | 8-3/4 (222) | 2-5/8 (67) | 7-15/16 (202) | 8-7/8 (225) | 9-9/16 (243) | N/A | 9-3/8 (238) | 12 (305) | N/A | 10-3/4 (273) | N/A | 0 | 2-7/8 (73) |
| 5 | 6 | 11 | 9 (229) | 3-1/8 (79) | 8-1/16 (205) | 8-11/16 (221) | 10-1/8 (257) | 9-1/8 (232) | 10-1/8 (257) | 13 (330) | 12-1/4 (311) | 12-1/4 (311) | 0 | 0 | 3-11/16 (94) |
| 6 | 6 | 9 | 8-1/4 (210) | 2-3/4 (70) | 7 (178) | 8 (203) | 9 (229) | 8-1/4 (210) | 9-1/4 (235) | 12-1/8 (308) | 10-1/2 (267) | 10-3/4 (273) | 7/8 (22) | 0 | 3 (76) |

NOTES:
1. All dimensions in inches and (mm).
2. Dimensions may vary ± 1/4 (6).
3. Not for construction purposes unless certified.
4. N/A = Not Applicable.
5. Conduit box is shown in approximate location. Dimensions are not specified as they vary with each motor manufacturer.

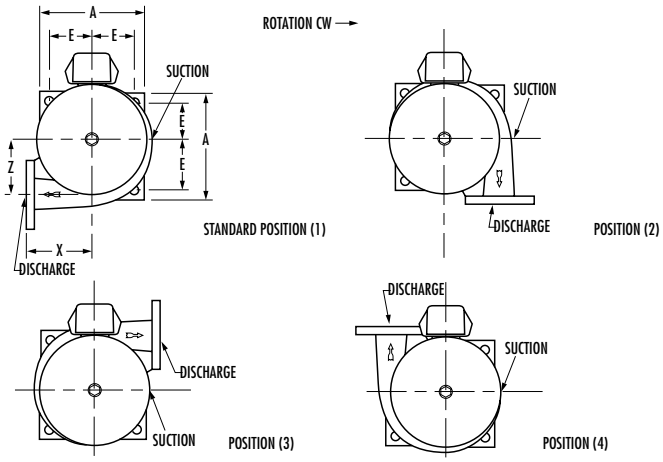
AURORA®
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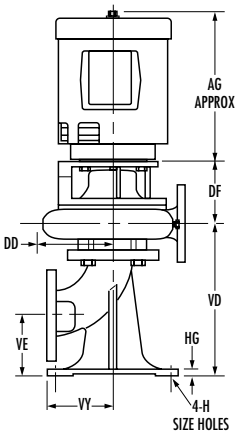
# AURORA MODEL 342A & 362A PUMPS

## JM & JP MOTOR FRAMES 143 THROUGH 326

**JM OR JP**

| FRAME | AG |
|---|---|
| 143 | 10 (254) |
| 145 | 11 (276) |
| 182 | 11 (276) |
| 184 | 12 (304) |
| 213 | 14 (255) |
| 215 | 15 (381) |
| 254 | 17 (431) |
| 256 | 19 (482) |
| 284 | 19 (482) |
| 286 | 21 (533) |
| 324 | 22 (558) |
| 326 | 23 (584) |




MODEL 342A ILLUSTRATED

| DISCHARGE | SUCTION | CASE BORE | A | E | H | X | Z | DD | 342A DF 143JM 215JM | 342A DF 254JM 256JM | 342A DF 284JM 326JM | 362A DF 143JP 184JP | 362A DF 213JP 326JP | HG | VD | VE | VY |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **PUMPS WITH FLANGED SUCTION CONNECTIONS AND THREADED DISCHARGE CONNECTIONS** | | | | | | | | | | | | | | | | | |
| 1-1/4 | 1-1/2 | 7 | 9 (228) | 3-3/4 (95) | 5/8 (16) | 5-1/4 (133) | 4-3/16 (106) | 5-3/16 (132) | 4-3/4 (121) | N/A | N/A | 7-13/16 (198) | N/A | 1/2 (13) | 9-3/8 (238) | 3-3/4 (95) | 4 (102) |
| 1-1/4 | 1-1/2 | 9 | 9 (228) | 3-3/4 (95) | 5/8 (16) | 6-5/8 (168) | 5-3/8 (137) | 6-3/8 (162) | 4-11/16 (119) | N/A | N/A | 7-3/4 (197) | N/A | 1/2 (13) | 9-3/8 (238) | 3-3/4 (95) | 4 (102) |
| 1-1/2 | 2 | 7 | 10 (254) | 4-1/8 (105) | 3/4 (19) | 5-3/8 (137) | 4-5/16 (110) | 5-3/8 (137) | 4-13/16 (122) | N/A | N/A | 7-7/8 (200) | N/A | 1/2 (13) | 10-5/16 (262) | 4-1/8 (105) | 4-1/2 (114) |
| 1-1/2 | 2 | 9 | 10 (254) | 4-1/8 (105) | 3/4 (19) | 6-3/4 (171) | 5-1/2 (140) | 6-9/16 (167) | 4-3/4 (121) | 5-3/4 (146) | N/A | 7-13/16 (198) | 8-5/8 (219) | 1/2 (13) | 10-5/16 (262) | 4-1/8 (105) | 4-1/2 (114) |
| 1-1/2 | 2 | 11 | 10 (254) | 4-1/8 (105) | 3/4 (19) | 9 (229) | 6-1/8 (156) | 7-1/4 (184) | 4-3/4 (121) | N/A | N/A | N/A | 8-5/8 (219) | 1/2 (13) | 10-1/2 (267) | 4-1/8 (105) | 4-1/2 (114) |
| 1-1/2 | 2 | 12 | 10 (254) | 4-1/8 (105) | 3/4 (19) | 7-3/4 (197) | 7-1/16 (179) | 8-1/4 (210) | 4-7/8 (124) | 5-7/8 (149) | N/A | N/A | 8-3/4 (222) | 1/2 (13) | 10-7/16 (265) | 4-1/8 (105) | 4-1/2 (114) |
| **PUMPS-WITH-ANSI-LB.-FLANGED-CONNECTIONS** | | | | | | | | | | | | | | | | | |
| 2 | 2-1/2 | 7 | 10 (254) | 4-1/8 (105) | 3/4 (19) | 5-5/8 (143) | 4-9/16 (116) | 5-13/16 (148) | 4-15/16 (125) | 5-15/16 (151) | N/A | 8 (203) | 8-13/16 (224) | 1/2 (13) | 11-7/16 (291) | 4-1/2 (114) | 5 (127) |
| 2 | 2-1/2 | 9 | 10 (254) | 4-1/8 (105) | 3/4 (19) | 7 (178) | 5-11/16 (144) | 6-7/8 (175) | 4-7/8 (124) | 5-7/8 (149) | 5-7/8 (149) | 7-15/16 (202) | 8-3/4 (222) | 1/2 (13) | 11-7/16 (291) | 4-1/2 (114) | 5 (127) |
| 2 | 2-1/2 | 12 | 10 (254) | 4-1/8 (105) | 3/4 (19) | 8 (203) | 7-3/16 (183) | 8-1/2 (216) | 5 (127) | 6 (152) | N/A | N/A | 8-7/8 (225) | 1/2 (13) | 11-7/16 (291) | 4-1/2 (114) | 5 (127) |
| 2 | 3 | 11 | 13-1/2 (342) | 5-3/4 (146) | 3/4 (19) | 8 (203) | 6-1/2 (165) | 7-3/8 (187) | 5-1/8 (130) | 6-1/8 (156) | 6-1/8 (156) | N/A | 8-5/8 (219) | 1/2 (13) | 12-7/8 (327) | 5 (127) | 5-1/2 (140) |
| 2-1/2 | 3 | 7 | 13-1/2 (342) | 5-3/4 (146) | 3/4 (19) | 5-7/8 (149) | 4-13/16 (122) | 6-1/4 (159) | 5-1/16 (129) | 6-1/16 (154) | N/A | 8-1/8 (206) | 8-15/16 (227) | 1/2 (13) | 12-9/16 (319) | 5 (127) | 5-1/2 (140) |
| 2-1/2 | 3 | 9 | 13-1/2 (342) | 5-3/4 (146) | 3/4 (19) | 7-1/4 (184) | 5-15/16 (151) | 7-1/4 (184) | 5 (127) | 6 (152) | 6 (152) | 8-1/16 (205) | 8-7/8 (225) | 1/2 (13) | 12-9/16 (319) | 5 (127) | 5-1/2 (140) |
| 2-1/2 | 3 | 12 | 13-1/2 (342) | 5-3/4 (146) | 3/4 (19) | 8-1/4 (210) | 7-3/8 (187) | 8-3/4 (222) | 5-1/8 (130) | 6-1/8 (156) | 6-1/8 (156) | N/A | 9 (229) | 1/2 (13) | 12-9/16 (319) | 5 (127) | 5-1/2 (140) |
| 3 | 4 | 9 | 13-1/2 (342) | 5-3/4 (146) | 3/4 (19) | 7-1/2 (191) | 6-1/8 (156) | 7-7/16 (189) | 5-1/8 (130) | 6-1/8 (156) | 6-1/8 (156) | 8-3/16 (208) | 9 (229) | 5/8 (16) | 14-11/16 (373) | 6 (152) | 6-1/2 (165) |
| 3 | 4 | 11 | 13-1/2 (342) | 5-3/4 (146) | 3/4 (19) | 9 (229) | 7 (178) | 8-3/16 (208) | 5-7/16 (138) | 6-7/16 (164) | 6-7/16 (164) | N/A | 9-1/8 (232) | 5/8 (16) | 15-1/4 (387) | 6 (152) | 6-1/2 (165) |
| 3 | 4 | 12 | 13-1/2 (342) | 5-3/4 (146) | 3/4 (19) | 8-1/2 (216) | 7-9/16 (192) | 8-15/16 (227) | 5-1/2 (140) | 6-1/2 (165) | 6-1/2 (165) | N/A | 9-1/8 (232) | 5/8 (16) | 14-11/16 (373) | 6 (152) | 6-1/2 (165) |
| 4 | 4 | 7 | 13-1/2 (342) | 5-3/4 (146) | 3/4 (19) | 6-1/2 (165) | 5-1/2 (140) | 7-5/16 (186) | 5-7/16 (138) | 6-7/16 (164) | N/A | 8-1/2 (216) | 9-5/16 (237) | 5/8 (16) | 14-15/16 (379) | 6 (152) | 6-1/2 (165) |
| 4 | 5 | 9A | 15 (381) | 6-3/8 (162) | 7/8 (22) | 7-1/4 (184) | 5-3/4 (146) | 7-3/8 (187) | 5-1/4 (133) | 6-1/4 (159) | 6-1/4 (159) | N/A | 9-1/8 (232) | 3/4 (19) | 17-3/16 (437) | 6-1/2 (165) | 7-1/2 (191) |
| 4 | 5 | 9B | 15 (381) | 6-3/8 (162) | 7/8 (22) | 7-3/4 (197) | 6-5/8 (168) | 8-11/16 (221) | 5-3/8 (137) | 6-3/8 (162) | N/A | N/A | 9-1/4 (235) | 3/4 (19) | 16-11/16 (424) | 6-1/2 (165) | 7-1/2 (191) |
| 4 | 5 | 11 | 15 (381) | 6-3/8 (162) | 7/8 (22) | 9 (229) | 7-1/4 (184) | 8-11/16 (221) | 5-5/8 (143) | 6-5/8 (168) | 6-5/8 (168) | N/A | 9-1/4 (235) | 3/4 (19) | 17 (432) | 6-1/2 (165) | 7-1/2 (191) |
| 4 | 5 | 12 | 15 (381) | 6-3/8 (162) | 7/8 (22) | 8-3/4 (222) | 7-15/16 (202) | 9-9/16 (243) | N/A | 6-3/4 (171) | 6-3/4 (171) | N/A | 9-3/8 (238) | 3/4 (19) | 16-11/16 (424) | 6-1/2 (165) | 7-1/2 (191) |
| 5 | 6 | 11 | 15 (381) | 6-3/8 (162) | 7/8 (22) | 9 (229) | 8-1/16 (205) | 10-1/8 (257) | 6 (152) | 7 (178) | 7 (178) | N/A | 9-5/8 (244) | 3/4 (19) | 18-1/8 (460) | 7 (178) | 8 (203) |
| 5 | 6 | 12 | 15 (381) | 6-3/8 (162) | 7/8 (22) | 9 (229) | 8-5/16 (211) | 10-1/8 (257) | N/A | 7 (178) | 7 (178) | N/A | 9-5/8 (244) | 3/4 (19) | 17-7/8 (454) | 7 (178) | 8 (203) |
| 6 | 6 | 9 | 15 (381) | 6-3/8 (162) | 7/8 (22) | 8-1/4 (210) | 7 (178) | 9 (229) | 5-1/2 (140) | 6-1/2 (165) | N/A | N/A | 9-3/8 (238) | 3/4 (19) | 17-13/16 (452) | 7 (178) | 8 (203) |
| 6 | 6 | 11 | 15 (381) | 6-3/8 (162) | 7/8 (22) | 9-1/4 (235) | 8-11/16 (221) | 11-1/4 (286) | N/A | 7-1/4 (184) | 7-1/4 (184) | N/A | 9-7/8 (251) | 3/4 (19) | 18-1/4 (464) | 7 (178) | 8 (203) |
| 6 | 6 | 12 | 15 (381) | 6-3/8 (162) | 7/8 (22) | 9-1/4 (235) | 8-11/16 (221) | 11-1/4 (286) | N/A | 7-1/4 (184) | 7-1/4 (184) | N/A | 9-7/8 (251) | 3/4 (19) | 18-1/4 (464) | 7 (178) | 8 (203) |

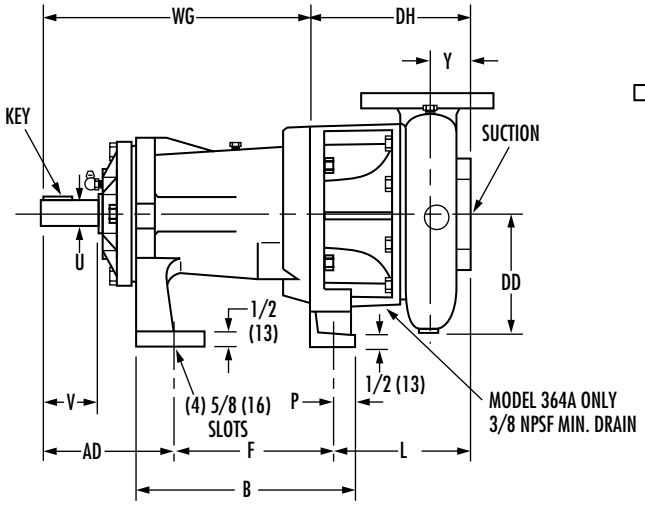
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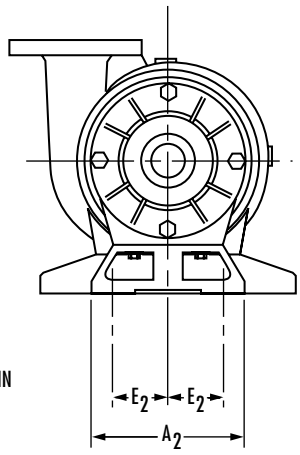
NOTES:
1. All dimensions in inches and (mm).
2. Dimensions may vary ± 1/4 (6).
3. Not for construction purposes unless certified.
4. N/A = Not Applicable.
5. Conduit box is shown in approximate location. Dimensions are not specified as they vary with each motor manufacturer.

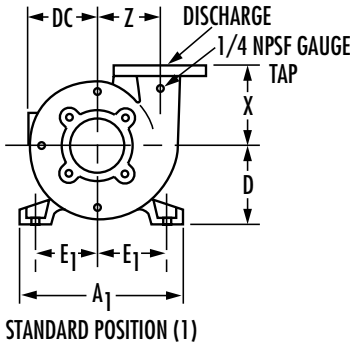
# AURORA MODEL 344A & 364A PUMPS

7″ - 9″

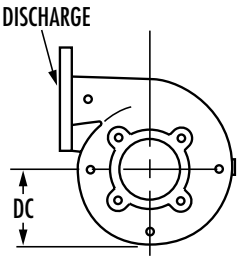
Supersedes Section 340/360 Page 206
Dated JANUARY 2003




STANDARD POSITION (1)




POSITION (4)

| FRAME | D CASE BORE | |
|---|---|---|
| | 7 | 9‡ |
| 1 | 5-1/4 (133) | 5-1/4 (133) |
| 2 | 6-1/4 (158) | 7 (177) |
| 3 | N/A | 7 (177) |

‡ 9″ BORE MODEL 344A NO.1. POWER FRAME D = 6-1/4″

| FRAME | $A_1$ | $A_2$ | 344A B | 364A B | $E_1$ | $E_2$ | 344A F | 364A F | P | U | V | AD | WG | KEY |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 10-3/4 (273) | 7-3/8 (187) | 8-1/16 (205) | 9-5/16 (237) | 4-1/8 (105) | 2 5/8 (67) | 5-13/16 (148) | 7-1/16 (179) | 1-5/16 (33) | 7/8 (22) | 2-1/8 (54) | 5 1/8 (130) | 10-5/16 (262) | 3/16 SQ X 1-3/8 LG |
| 2 | 13-1/4 (337) | 7 (178) | 10-25/32 (274) | 12 (305) | 5-1/8 (130) | 2 1/2 (64) | 7-13/32 (188) | 8-21/32 (220) | 3/4 (19) | 1-1/8 (29) | 3-1/8 (79) | 7-11/16 (195) | 13-13/16 (351) | 1/4 SQ X 1-3/4 LG |
| 3 | 13-1/4 (337) | 7 (178) | 10-25/32 (274) | 12 (305) | 5-1/8 (130) | 2 1/2 (64) | 7-13/32 (188) | 8-21/32 (220) | 3/4 (19) | 1-1/8 (29) | 3-1/8 (79) | 7-11/16 (195) | 13-13/16 (351) | 1/4 SQ X 1-3/4 LG |

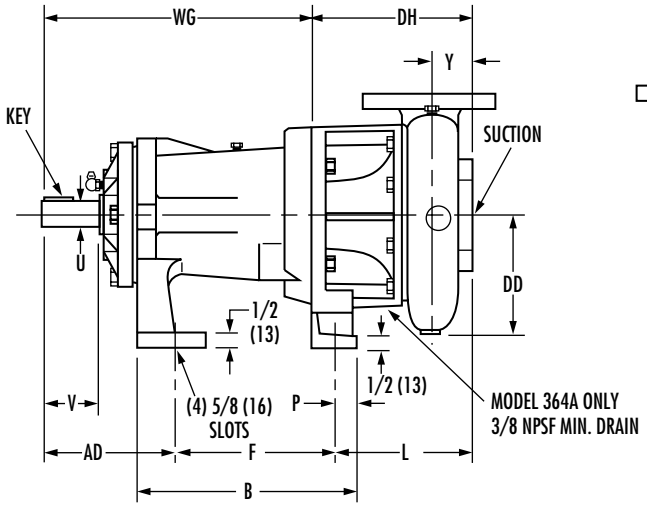
| PUMP SIZE | | | | | | | | 344 DH | | 364 DH | | 344A L | | 364A L | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DISCHARGE | SUCTION | CASE BORE | X | Y | Z | DC | DD | FRAME 1 | FRAME 2 & 3 | FRAME 1 | FRAME 2 & 3 | FRAME 1 | FRAME 2 & 3 | FRAME 1 | FRAME 2 & 3 |
| **PUMPS WITH THREADED CONNECTIONS** | | | | | | | | | | | | | | | |
| 1-1/4 | 1-1/2 | 7 | 5-1/4 (133) | 2-7/16 (62) | 4-3/16 (106) | 4-15/16 (125) | 5-3/16 (132) | 7-3/16 (183) | N/A | 10-1/4 (260) | N/A | 7-9/16 (192) | N/A | 9-3/8 (238) | N/A |
| 1-1/4 | 1-1/2 | 9 | 6-5/8 (168) | 2-9/16 (65) | 5-3/8 (137) | 6-3/16 (157) | 6-3/8 (162) | 7-1/4 (184) | N/A | 10-5/16 (262) | N/A | 7-5/8 (194) | N/A | 9-7/16 (240) | N/A |
| 1-1/2 | 2 | 7 | 5-3/8 (137) | 2-1/2 (64) | 4-5/16 (110) | 5-1/8 (130) | 5-3/8 (137) | 7-5/16 (186) | N/A | 10-3/8 (264) | N/A | 7-11/16 (195) | N/A | 9-1/2 (241) | N/A |
| 1-1/2 | 2 | 9 | 6-3/4 (171) | 2-5/8 (67) | 5-1/2 (140) | 6-5/16 (160) | 6-9/16 (167) | 7-3/8 (187) | 8-3/8 (213) | 10-7/16 (265) | 11-1/4 (286) | 7-3/4 (197) | 7-1/8 (181) | 9-9/16 (243) | 8-3/4 (222) |
| **PUMPS-WITH-ANSI-125-LB.-FLANGED-CONNECTIONS** | | | | | | | | | | | | | | | |
| 2 | 2-1/2 | 7 | 5-5/8 (143) | 1-7/8 (48) | 4-9/16 (116) | 5-3/8 (137) | 5-13/16 (148) | 6-13/16 (173) | 7-13/16 (198) | 9-7/8 (251) | 10-11/16 (271) | 6-3/16 (157) | 6-9/16 (167) | 8 (203) | 8-3/16 (208) |
| 2 | 2-1/2 | 9 | 7 (178) | 1-7/8 (48) | 5-11/16 (144) | 6-1/2 (165) | 6-7/8 (175) | 6-3/4 (171) | 7-3/4 (197) | 9-13/16 (249) | 10-5/8 (270) | 6-1/8 (156) | 6-1/8 (156) | 7-15/16 (202) | 8-1/8 (206) |
| 2-1/2 | 3 | 7 | 5-7/8 (149) | 2 (51) | 4-13/16 (122) | 5-13/16 (148) | 6-1/4 (159) | 7-1/16 (179) | 8-1/16 (205) | 10-1/8 (257) | 10-15/16 (278) | 6-7/16 (164) | 6-13/16 (173) | 8-1/4 (210) | 8-7/16 (214) |
| 2-1/2 | 3 | 9 | 7-1/4 (184) | 2 (51) | 5-15/16 (151) | 6-3/4 (171) | 7-1/4 (184) | 7 (178) | 8 (203) | N/A | 10-7/8 (276) | 6-3/8 (162) | 6-3/4 (171) | N/A | 8-3/8 (213) |
| 3 | 4 | 9 | 7-1/2 (191) | 2-1/8 (54) | 6-1/8 (156) | 6-7/8 (175) | 7-7/16 (189) | 7-1/4 (184) | 8-1/4 (210) | N/A | 11-1/8 (283) | 6-5/8 (168) | 7 (178) | N/A | 8-5/8 (219) |
| 4 | 4 | 7 | 6-1/2 (165) | 2-1/2 (64) | 5-1/2 (140) | 6-7/16 (164) | 7-5/16 (186) | 7-15/16 (202) | 8-15/16 (227) | 11 (279) | 11-13/16 (300) | 7-5/16 (186) | 7-11/16 (195) | 9-1/8 (232) | 9-5/16 (237) |
| 4 | 5 | 9A | 7-1/4 (184) | 3-1/8 (79) | 5-3/4 (146) | 6-11/16 (170) | 7-3/8 (187) | N/A | 9-3/8 (238) | N/A | 12-1/4 (311) | N/A | 8-1/8 (206) | N/A | 9-3/4 (248) |
| 4 | 5 | 9B | 7-3/4 (197) | 2-5/8 (67) | 6-5/8 (168) | 8-1/16 (205) | 8-11/16 (221) | N/A | 9 (229) | N/A | 11-7/8 (302) | N/A | 7-3/4 (197) | N/A | 9-3/8 (238) |
| 6 | 6 | 9 | 8-1/4 (210) | 2-3/4 (70) | 7 (178) | 8 (203) | 9 (229) | N/A | 9-1/4 (235) | N/A | 12-1/8 (308) | N/A | 8 (203) | N/A | 9-5/8 (244) |

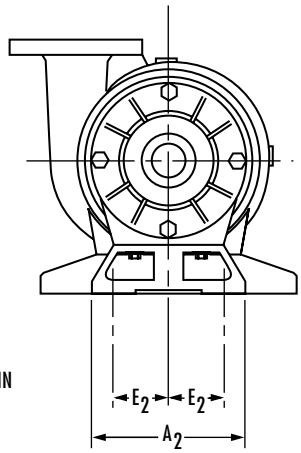
NOTES:
1. All dimensions in inches and (mm).
2. Dimensions may vary ± 1/4 (6).
3. Not for construction purposes unless certified.
4. N/A = Not Applicable.
5. Check discharge position, casing dimensions which exceed dimension "D" may require pads for the pump and/or motor.

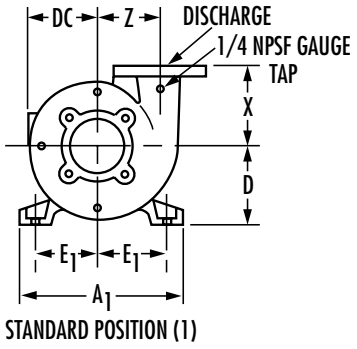
AURORA®
Pentair Pump Group

# AURORA MODEL 344A & 364A PUMPS

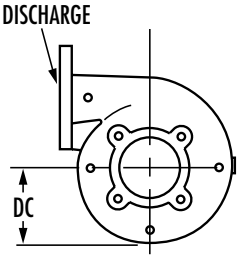
11" - 12"




STANDARD POSITION (1)




POSITION (4)

| FRAME | D CASE BORE | |
|---|---|---|
| | 11 | 12 |
| 2 | 7 (177) | 7 (177) |
| 3 | 7 (177) | 7 (177) |

| FRAME | $A_1$ | $A_2$ | 344A B | 364A B | $E_1$ | $E_2$ | 344A F | 364A F | P | U | V | AD | WG | KEY |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2 | 13-1/4 (337) | 7 (178) | 10-25/32 (274) | 12 (305) | 5-1/8 (130) | 2-1/2 (64) | 7-13/32 (188) | 8-21/32 (220) | 3/4 (19) | 1-1/8 (29) | 3-1/8 (79) | 7-11/16 (195) | 13-13/16 (351) | 1/4 SQ X 1-3/4 LG |
| 3 | 13-1/4 (337) | 7 (178) | 10-25/32 (274) | 12 (305) | 5-1/8 (130) | 2-1/2 (64) | 7-13/32 (188) | 8-21/32 (220) | 3/4 (19) | 1-1/8 (29) | 3-1/8 (79) | 7-11/16 (195) | 13-13/16 (351) | 1/4 SQ X 1-3/4 LG |

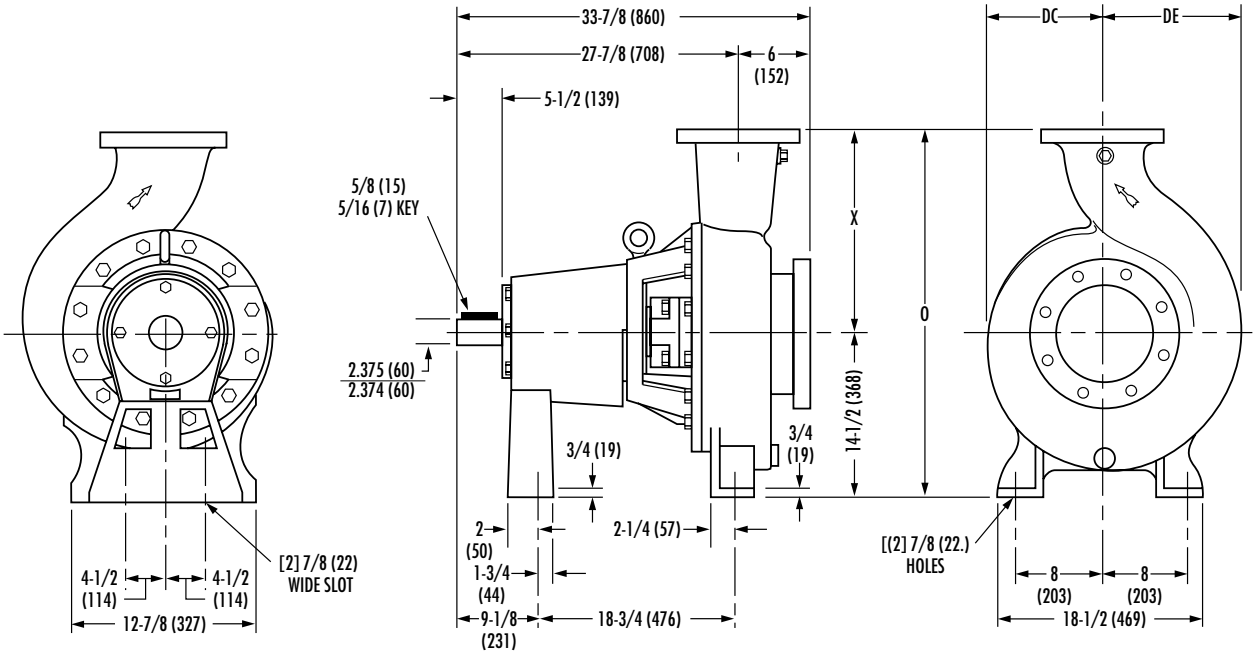
| PUMP SIZE | | | | | | | | 344 DH | | 364 DH | | 344A L | | 364A L | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DISCHARGE | SUCTION | CASE BORE | X | Y | Z | DC | DD | FRAME 1 | FRAME 2 & 3 | FRAME 1 | FRAME 2 & 3 | FRAME 1 | FRAME 2 & 3 | FRAME 1 | FRAME 2 & 3 |
| **PUMPS WITH THREADED CONNECTIONS** | | | | | | | | | | | | | | | |
| 1-1/2 | 2 | 11 | 9 (229) | 2-13/16 (71) | 6-1/8 (156) | 7-1/16 (179) | 7-1/4 (184) | N/A | 8-9/16 (217) | N/A | 11-7/16 (291) | N/A | 7-1/4 (184) | N/A | 8-7/8 (225) |
| 1-1/2 | 2 | 12 | 7-3/4 (197) | 2-3/4 (70) | 7-1/16 (179) | 8 (203) | 8-1/4 (210) | N/A | 8-5/8 (219) | N/A | 11-1/2 (292) | N/A | 7-3/8 (187) | N/A | 9 (229) |
| **PUMPS WITH ANSI 125 LB. FLANGED CONNECTIONS** | | | | | | | | | | | | | | | |
| 2 | 2-1/2 | 12 | 8 (203) | 1-7/8 (48) | 7-3/16 (183) | 8-3/16 (208) | 8-1/2 (216) | N/A | 7-7/8 (200) | N/A | 10-3/4 (273) | N/A | 6-5/8 (168) | N/A | 8-1/4 (210) |
| 2 | 3 | 11 | 8 (203) | 2-3/8 (60) | 6-1/2 (165) | 7 (178) | 7-3/8 (187) | N/A | 8-1/2 (216) | N/A | 11-3/8 (289) | N/A | 6-15/16 (176) | N/A | 9-15/16 (252) |
| 2-1/2 | 3 | 12 | 8-1/4 (210) | 2 (51) | 7-3/8 (187) | 8-3/8 (213) | 8-3/4 (222) | N/A | 8-1/8 (206) | N/A | 11 (279) | N/A | 6-7/8 (175) | N/A | 8-1/2 (216) |
| 3 | 4 | 11 | 9 (229) | 2-3/4 (70) | 7 (178) | 7-9/16 (192) | 8-3/16 (208) | N/A | 9-3/16 (233) | N/A | 12-1/16 (306) | N/A | 7-9/16 (192) | N/A | 9-9/16 (243) |
| 3 | 4 | 12 | 8-1/2 (216) | 2-1/8 (54) | 7-9/16 (192) | 8-7/16 (214) | 8-15/16 (227) | N/A | 8-3/8 (213) | N/A | 11-1/4 (286) | N/A | 7-1/8 (181) | N/A | 8-3/4 (222) |
| 4 | 5 | 11 | 9 (229) | 3 (76) | 7-1/4 (184) | 7-15/16 (202) | 8-11/16 (221) | N/A | 9-5/8 (244) | N/A | 12-1/2 (318) | N/A | 8 (203) | N/A | 10 (254) |
| 4 | 5 | 12 | 8-3/4 (222) | 2-5/8 (67) | 7-15/16 (202) | 8-7/8 (225) | 9-9/16 (243) | N/A | 9-1/8 (232) | N/A | 12 (305) | N/A | 7-7/8 (200) | N/A | 9-1/2 (241) |
| 5 | 6 | 11 | 9 (229) | 3-1/8 (79) | 8-1/16 (205) | 8-11/16 (221) | 10-1/8 (257) | N/A | 10-1/8 (257) | N/A | 13 (330) | N/A | 8-1/2 (216) | N/A | 10-1/2 (267) |
| 5 | 6 | 12 | 9 (229) | 2-7/8 (73) | 8-5/16 (211) | 9-1/4 (235) | 10-1/8 (257) | N/A | 9-5/8 (244) | N/A | 12-1/2 (318) | N/A | 8-3/8 (213) | N/A | 10 (254) |
| 6 | 6 | 11 | 9-1/4 (235) | 3-1/8 (79) | 8-11/16 (221) | 9-11/16 (246) | 10-13/16 (275) | N/A | 10-1/8 (257) | N/A | 13 (330) | N/A | 8-7/8 (225) | N/A | 10-1/2 (267) |
| 6 | 6 | 12 | 9-1/4 (235) | 3-1/8 (79) | 8-11/16 (221) | 9-11/16 (246) | 10-13/16 (275) | N/A | 10-1/8 (257) | N/A | 13 (330) | N/A | 8-7/8 (225) | N/A | 10-1/2 (267) |

AURORA®
Pentair Pump Group

NOTES:
1. All dimensions in inches and (mm).
2. Dimensions may vary ± 1/4 (6).
3. Not for construction purposes unless certified.
4. N/A = Not Applicable.
5. Check discharge position, casing dimensions which exceed dimension "D" may require pads for the pump and/or motor.

# AURORA MODEL 364A PUMPS

## 15″ CASE BORE/POWER FRAME 21



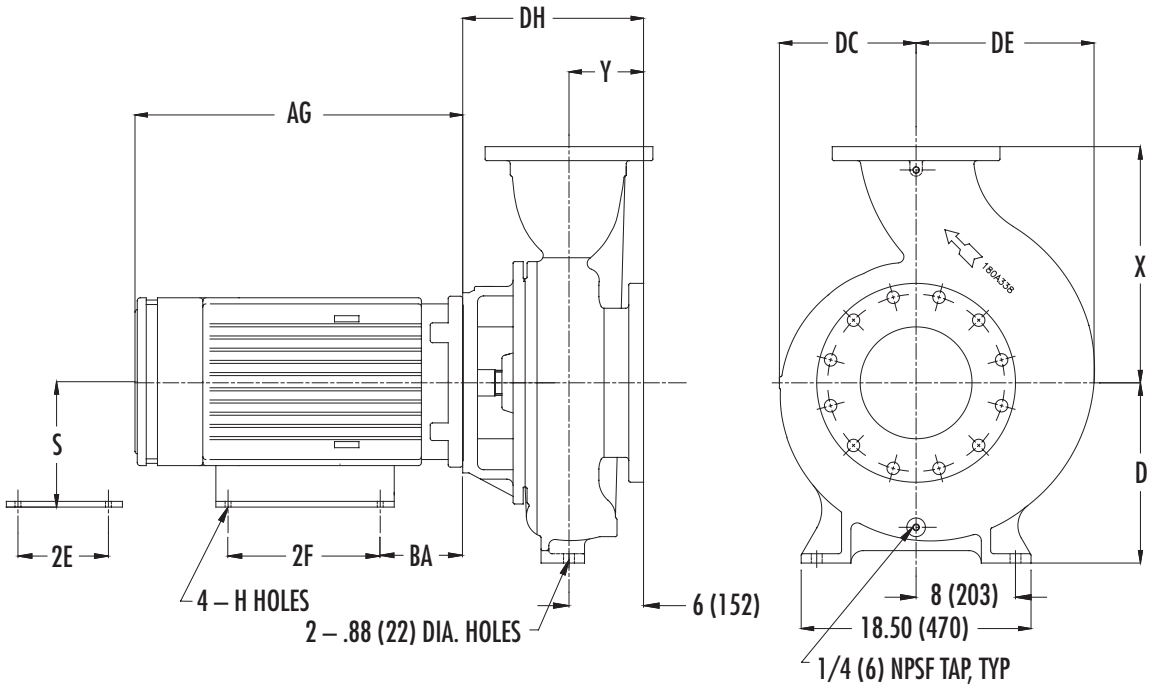

| PUMP SIZE | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| DISCHARGE | SUCTION | CASE BORE | FLANGE SIZE DISCHARGE | FLANGE SIZE SUCTION | O | X | DC | DE |
| 6 | 8 | 15 | 6 (152) | 8 (203) | 32-1/2 (826) | 18 (457) | 10-7/16 (265) | 12-7/8 (327) |
| 8 | 10 | 15 | 8 (203) | 10 (254) | 33-1/2 (851) | 19 (483) | 11 (279) | 14-3/8 (365) |

NOTES:

1. All dimensions in inches and (mm).
2. Dimensions may vary ± 1/4 (6).
3. Not for construction purposes unless certified.
4. Standard flanges are 150 lb. per ANSI B16.5.

# AURORA MODEL 341A PUMPS

6X8X15 & 8X10X15
365TCZ-444TCZ



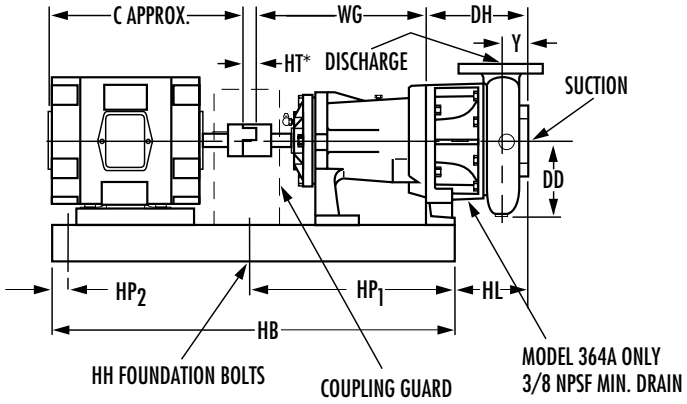

| PUMP SIZE | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| DISCHARGE | SUCTION | CASE BORE | X | Y | D | DE | DC | DH | PUMP WEIGHT |
| 6 | 8 | 15 | 18.00 (457) | 6.00 (152) | 14.50 (368) | 12.88 (327) | 10.44 (265) | 9.56 (243) | 365 (166) |
| 8 | 10 | 15 | 19.00 (483) | 6.00 (152) | 14.50 (368) | 14.38 (365) | 11.00 (279) | 9.56 (243) | 505 (229) |

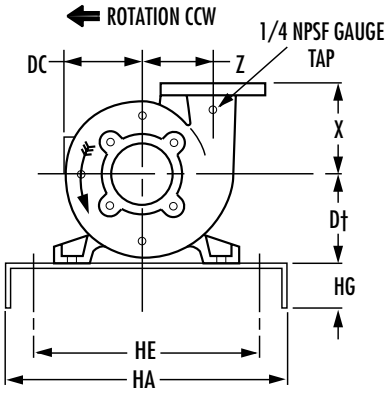
| Motor Frame | 364TCZ | 365TCZ | 404TCZ | 405TCZ | 444TCZ | 445TCZ |
|---|---|---|---|---|---|---|
| BA | 5.88 (149) | 5.88 (149) | 6.62 (168) | 6.62 (168) | 7.50 (191) | 7.50 (191) |
| 2F | 11.25 (286) | 12.25 (311) | 12.25 (311) | 13.75 (349) | 14.50 (368) | 16.50 (419) |
| 2E | 14.00 (356) | 14.00 (356) | 16.00 (406) | 16.00 (406) | 18.00 (457) | 18.00 (457) |
| S | 9.00 (229) | 9.00 (229) | 10.00 (254) | 10.00 (254) | 11.00 (279) | 11.00 (279) |
| H | 0.66 (17) | 0.66 (17) | 0.81 (21) | 0.81 (21) | 0.81 (21) | 0.81 (21) |
| AG approx | 31.5 (800) | 32.5 (826) | 34 (864) | 37.5 (953) | 43 (1092) | 48 (1219) |

NOTES:
1. ALL DIMENSIONS IN INCHES (MM), WEIGHT IN POUNDS (KG)
2. DIMENSIONS MAY VARY PLUS/MINUS 1/4"
3. NOT FOR CONSTRUCTON PURPOSED UNLESS CERTIFIED.
4. CONDUIT BOX IS NOT SPECIFIED AS THEY VARY WITH EACH MOTOR MANUFACTURER.

# AURORA MODEL 344A & 364A PUMPS

## ON STEEL BASES




STANDARD POSITION (1)

| BASE | SIZE | HA | HB | HE | HG | HH | | $HP_1$ | $HP_2$ |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | QTY | SIZE | | |
| 1 | 12 X 30 | 12 | 30 | 9 | 3 | 2 | 5/8 | 15 | – |
| 2 | 17 X 34 | 17 | 34 | 15 | 3 | 4 | 5/8 | 1-1/4 | 1-1/4 |
| 3 | 18 X 38 | 18 | 38 | 16 | 4 | 4 | 5/8 | 1-1/4 | 1-1/4 |
| 4 | 18 X 42 | 18 | 42 | 16 | 4 | 4 | 5/8 | 1-1/4 | 1-1/4 |
| 5 | 18 X 44 | 18 | 44 | 15 | 4 | 4 | 5/8 | 1 | 1 |
| 6 | 18 X 48 | 18 | 48 | 15 | 4 | 4 | 5/8 | 1 | 1 |
| 7 | 22 X 60 | 22 | 60 | 19 | 4 | 4 | 5/8 | 1 | 1 |

| NOTE: WHEN TWO "D" DIMENSIONS ARE INDICATED ALWAYS USE THE LARGER FIGURE. | | POWER FRAME | 1 | 2 | 340 3 | 360 3 |
|---|---|---|---|---|---|---|
| | | WG | 10-5/16 | 13-13/16 | 13-13/16 | 13-13/16 |
| D | 340 CASE BORE | 7 | 5-1/4 | 6-1/4 | – | – |
| | | 9 | 6-1/4 | 7 | 7 | 7 |
| | | 11 | – | 7 | 7 | 7 |
| | | 12 | – | 7 | 7 | 7 |
| | 360 CASE BORE | 7 | 5-1/4 | 6-1/4 | – | – |
| | | 9 | 5-1/4 | 7 | 7 | 7 |
| | | 11 | – | 7 | 7 | 7 |
| | | 12 | – | 7 | 7 | 7 |

| MOTOR FRAME | C APPROX | D | BASE NUMBER | | | |
|---|---|---|---|---|---|---|
| 56 | 12 | | 1 | N/A | N/A | N/A |
| 143T | 12 | | 1 | N/A | N/A | N/A |
| 145T | 13 | | 1 | 3 | N/A | N/A |
| 182T | 13 | | 1 | 3 | N/A | N/A |
| 184T | 14 | | 1 | 3 | N/A | N/A |
| 213T | 16 | 5-1/4 | 2 | 3 | N/A | 3 |
| 215T | 18 | 5-1/4 | 2 | 3 | N/A | 3 |
| 254T | 21 | 6-1/4 | 3 | 4 | 4 | 4 |
| 256T | 23 | 6-1/4 | N/A | 4 | 4 | 4 |
| 284T | 24 | 7 | N/A | 5 | 5 | 5 |
| 284TS | 22 | 7 | N/A | 5 | 5 | 5 |
| 286T | 25 | 7 | N/A | 5 | 5 | 5 |
| 286TS | 24 | 7 | N/A | 5 | 5 | 5 |
| 324T | 26 | 8 | N/A | 6 | 6 | 6 |
| 324TS | 25 | 8 | N/A | 6 | 6 | 6 |
| 326T | 28 | 8 | N/A | 6 | 6 | 6 |
| 326TS | 26 | 8 | N/A | 6 | 6 | 6 |
| 364T | 29 | 9 | N/A | 6 | 6 | 6 |
| 364TS | 27 | 9 | N/A | 6 | 6 | 6 |
| 365TS | 28 | 9 | N/A | 6 | 6 | 6 |
| 404TS | 30 | 10 | N/A | 7 | 7 | 7 |

| PUMP SIZE | | | | | | | | 344A DH | | 364A DH | | 344A HL | | | 364A HL | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DISCH | SUCT | CASE BORE | X | Y | Z | DC | DD | FRAME 1 | FRAME 2 & 3 | FRAME 1 | FRAME 2 & 3 | FRAME 1 | FRAME 2 | FRAME 3 | FRAME 1 | FRAME 2 | FRAME 3 |
| **PUMPS WITH THREADED CONNECTIONS** | | | | | | | | | | | | | | | | | |
| 1-1/4 | 1-1/2 | 7 | 5-1/4 | 2-7/16 | 4-3/16 | 4-15/16 | 5-3/16 | 7-3/16 | N/A | 10-1/4 | N/A | 4-11/16 | N/A | N/A | 6-1/2 | N/A | N/A |
| 1-1/4 | 1-1/2 | 9 | 6-5/8 | 2-9/16 | 5-3/8 | 6-3/16 | 6-3/8 | 7-1/4 | N/A | 10-5/16 | N/A | 4-3/4 | N/A | N/A | 6-9/16 | N/A | N/A |
| 1-1/2 | 2 | 7 | 5-3/8 | 2-1/2 | 4-5/16 | 5-1/8 | 5-3/8 | 7-5/16 | N/A | 10-3/8 | N/A | 4-13/16 | N/A | N/A | 6-5/8 | N/A | N/A |
| 1-1/2 | 2 | 9 | 6-3/4 | 2-5/8 | 5-1/2 | 6-5/16 | 6-9/16 | 7-3/8 | 8-3/8 | 10-7/16 | 11-1/4 | 4-7/8 | 6-3/8 | N/A | 6-11/16 | 8 | N/A |
| 1-1/2 | 2 | 11 | 9 | 2-13/16 | 6-1/8 | 7-1/16 | 7-1/4 | N/A | 8-9/16 | N/A | 11-7/16 | N/A | 6-1/2 | N/A | N/A | 8-1/8 | N/A |
| 1-1/2 | 2 | 12 | 7-3/4 | 2-3/4 | 7-1/16 | 8 | 8-1/4 | N/A | 8-5/8 | N/A | 11-1/2 | N/A | 6-5/8 | N/A | N/A | 8-1/4 | 8-1/4 |
| **PUMPS WITH ANSI 125 LB FLANGED CONNECTIONS** | | | | | | | | | | | | | | | | | |
| 2 | 2-1/2 | 7 | 5-5/8 | 1-7/8 | 4-9/16 | 5-3/8 | 5-13/16 | 6-13/16 | 7-13/16 | 9-7/8 | 10-11/16 | 4-5/16 | 5-13/16 | N/A | 6-1/8 | 7-7/16 | N/A |
| 2 | 2-1/2 | 9 | 7 | 1-7/8 | 5-11/16 | 6-1/2 | 6-7/8 | 6-3/4 | 7-3/4 | 9-13/16 | 10-5/8 | 4-1/4 | N/A | 5-3/4 | 6-1/16 | N/A | 7-3/8 |
| 2 | 2-1/2 | 12 | 8 | 1-7/8 | 7-3/16 | 8-3/16 | 8-1/2 | N/A | 7-7/8 | N/A | 10-3/4 | N/A | 5-7/8 | N/A | N/A | 7-1/2 | N/A |
| 2 | 3 | 11 | 8 | 2-3/8 | 6-1/2 | 7 | 7-3/8 | N/A | 8 1/2 | N/A | 11-3/8 | N/A | 6-3/16 | N/A | N/A | 7-13/16 | N/A |
| 2-1/2 | 3 | 7 | 5-7/8 | 2 | 4-13/16 | 5-13/16 | 6-1/4 | 7-1/16 | 8-1/16 | 10-1/8 | 10-15/16 | 4-9/16 | 6-1/16 | N/A | 6-3/8 | 7-11/16 | N/A |
| 2-1/2 | 3 | 9 | 7-1/4 | 2 | 5-15/16 | 6-3/4 | 7-1/4 | 7 | 8 | N/A | 10-7/8 | 4-1/2 | N/A | 6 | N/A | 7-5/8 | 7-5/8 |
| 2-1/2 | 3 | 12 | 8-1/4 | 2 | 7-3/8 | 8-3/8 | 8-3/4 | N/A | 8-1/8 | N/A | 11 | N/A | 6-1/8 | N/A | N/A | 7-3/4 | 7-3/4 |
| 3 | 4 | 9 | 7-1/2 | 2-1/8 | 6-1/8 | 6-7/8 | 7-7/16 | 7-1/4 | 8-1/4 | N/A | 11-1/8 | 4-3/4 | 6-1/4 | 6-1/4 | N/A | 7-7/8 | 7-7/8 |
| 3 | 4 | 11 | 9 | 2-3/4 | 7 | 7-9/16 | 8-3/16 | N/A | 9-3/16 | N/A | 12-1/16 | N/A | 6-13/16 | N/A | N/A | 8-7/16 | N/A |
| 3 | 4 | 12 | 8-1/2 | 2-1/8 | 7-9/16 | 8-7/16 | 8-15/16 | N/A | 8-3/8 | N/A | 11-1/4 | N/A | 6-3/8 | 6-3/8 | N/A | 8 | 8 |
| 4 | 4 | 7 | 6-1/2 | 2-1/2 | 5-1/2 | 6-7/16 | 7-5/16 | 7-15/16 | 8-15/16 | 11 | 11-13/16 | 5-7/16 | 6-15/16 | N/A | 7-1/4 | 8-9/16 | N/A |
| 4 | 5 | 9A | 7-1/4 | 3-1/8 | 5-3/4 | 6-11/16 | 7-3/8 | N/A | 9-3/8 | N/A | 12-1/4 | N/A | 7-3/8 | 7-3/8 | N/A | 9 | 9 |
| 4 | 5 | 9B | 7-3/4 | 2-5/8 | 6-5/8 | 8-1/16 | 8-11/16 | N/A | 9 | N/A | 11-7/8 | N/A | 7 | N/A | N/A | 8-5/8 | N/A |
| 4 | 5 | 11 | 9 | 3 | 7-1/4 | 7-15/16 | 8-11/16 | N/A | 9-5/8 | N/A | 12-1/2 | N/A | 7-1/4 | N/A | N/A | 8-7/8 | N/A |
| 4 | 5 | 12 | 8-3/4 | 2-5/8 | 7-15/16 | 8-7/8 | 9-9/16 | N/A | 9-1/8 | N/A | 12 | N/A | 7-1/8 | 7-1/8 | N/A | 8-3/4 | 8-3/4 |
| 5 | 6 | 11 | 9 | 3-1/8 | 8-1/16 | 8-11/16 | 10-1/8 | N/A | 10-1/8 | N/A | 13 | N/A | 7-3/4 | 7-3/4 | N/A | 9-3/8 | 9-3/8 |
| 5 | 6 | 12 | 9 | 2-7/8 | 8-5/16 | 9-1/4 | 10-1/8 | N/A | 9-5/8 | N/A | 12-1/2 | N/A | 7-5/8 | 7-5/8 | N/A | 9-1/4 | 9-1/4 |
| 6 | 6 | 9 | 8-1/4 | 2-3/4 | 7 | 8 | 9 | N/A | 9-1/4 | N/A | 12-1/8 | N/A | 7-1/4 | N/A | N/A | 8-7/8 | N/A |
| 6 | 6 | 11 | 9-1/4 | 3-1/8 | 8-11/16 | 9-11/16 | 10-13/16 | N/A | 10-1/8 | N/A | 13 | N/A | 8-1/8 | 8-1/8 | N/A | 9-3/4 | 9-3/4 |
| 6 | 6 | 12 | 9-1/4 | 3-1/8 | 8-11/16 | 9-11/16 | 10-13/16 | N/A | 10-1/8 | N/A | 13 | N/A | N/A | 8-1/8 | N/A | N/A | 9-3/4 |

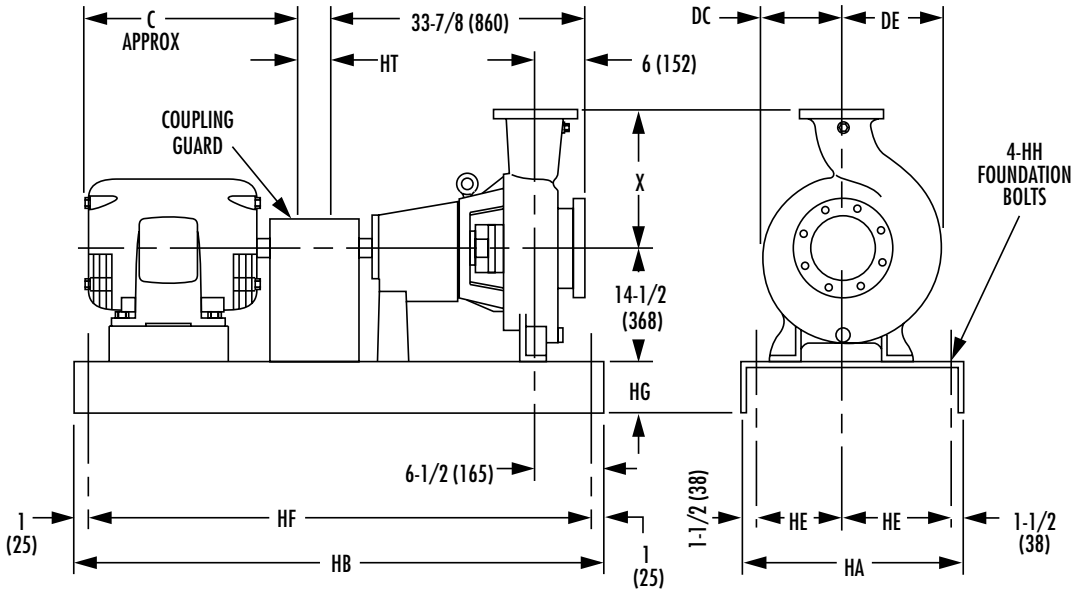
NOTES:
1. All dimensions in inches.
2. Dimensions may vary ± 1/4.
3. Not for construction purposes unless certified.
4. N/A = not applicable.
5. Check discharge position. Casing dimensions which exceed dimension "D" may require pads for the pump and/or motor.
6. Conduit box is shown in approximate location. Dimensions are not specified as they vary with each motor manufacturer

* Dim "HT" may vary 1/8" TO 1".

† D Dimension of 5 x 6 x 11, 5 x 6 x 12, 6 x 6 x 11 and 6 x 6 x 12 pump with 213T thru 326T motor is 8".

# AURORA MODEL 364A PUMPS

## 15 CASE BORE POWER FRAME 21 ON FORMED STEEL BASE



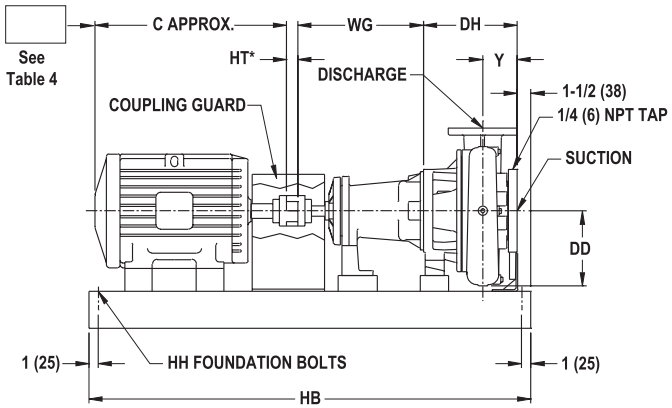

| FRAME SIZE | C | HA | HB | HE | HF | HG | HH | HT | BASEPLATE DESIGNATION |
|---|---|---|---|---|---|---|---|---|---|
| 286T | 25 (635) | | 60 (1524) | | 58 (1473) | | | | 15 (381) |
| 324T | 26 (660) | | | | | | | 1-1/16 (27) | |
| 326T | 28 (711) | | | | | | | | |
| 364T | 29 (737) | | | | | | | 1/4 (6) | |
| 364TS | 27 (686) | | | | | | | | |
| 365T | 30 (762) | | | | | | | 2 (51) | |
| 365TS | 28 (711) | 22 (559) | 72 (1829) | 9-1/2 (241) | 70 (1778) | 4 (102) | 3/4 (19) | 2 (51) | 16 (406) |
| 404T | 33 (838) | | | | | | | 2-1/16 (52) | |
| 404TS | 30 (762) | | | | | | | 2 (51) | |
| 405TS | 34 (864) | | | | | | | | |
| 405TS | 31 (787) | | | | | | | 2-1/16 (52) | |
| 444TS | 34 (864) | | | | | | | | |
| 445TS | 36 (914) | | | | | | | 1-1/4 (32 | |

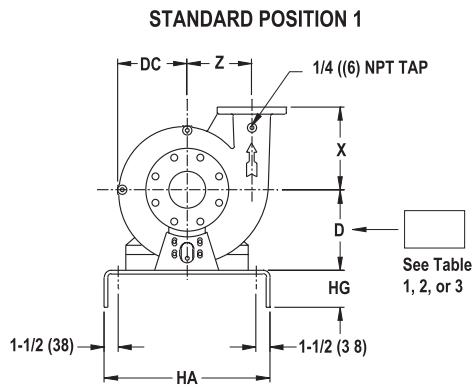
| PUMP SIZE | FLANGE SIZE | | DC | DE | X |
|---|---|---|---|---|---|
| | DISCH. | SUCT. | | | |
| 6 x 8 x 15 | 6 (152) | 8 (203) | 10-7/16 (265) | 12-7/8 (327) | 18 (457) |
| 8 x 10 x 15 | 8 (203) | 10 (254) | 11 (279) | 14-3/8 (365) | 19 (483) |

Standard flanges 150 lb. per ANSI B16.5

NOTES:
1. Dimensions are approximate.
2. Dimensions are in inches (mm) and may vary ± 1/4 (6).
3. Not for construction purposes unless certified.

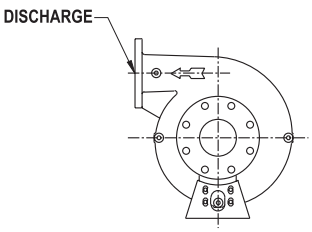
AURORA®
Pentair Pump Group




## MODEL 344A ILLUSTRATED

| PUMPS WITH FLANGE SUCTION CONNECTIONS AND THREADED DISCHARGE CONNECTIONS | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| PUMP SIZE | | | | | | | | | |
| DISCHARGE | SUCTION | CASE BORE | X | Y | Z | DC | DD | FRAME 1 DH | FRAME 2 & 3 DH |
| 1-1/4 | 1-1/2 | 7 | 5-1/4 (133) | 3-3/8 (86) | 4-3/16 (106) | 4-15/16 (125) | 5-3/16 (132) | 8-1/8 (206) | N/A |
| 1-1/4 | 1-1/2 | 9 | 6-5/8 (168) | 3-1/2 (89) | 5-3/8 (137) | 6-3/16 (157) | 6-3/8 (162) | 8-3/16 (208) | N/A |
| 1-1/2 | 2 | 7 | 5-3/8 (137) | 3-7/16 (87) | 4-5/16 (110) | 5-1/8 (130) | 5-3/8 (137) | 8-1/4 (210) | N/A |
| 1-1/2 | 2 | 9 | 6-3/4 (171) | 3-9/16 (90) | 5-1/2 (140) | 6-5/16 (160) | 6-9/16 (167) | 8-5/16 (211) | 9-5/16 (237) |
| 1-1/2 | 2 | 12 | 7-3/4 (197) | 3-11/16 (94) | 7-1/16 (179) | 8 (203) | 8-1/4 (210) | N/A | 9-5/16 (237) |
| PUMPS WITH ANSI 125 LB. FLANGED CONNECTIONS | | | | | | | | | |
| 2 | 2-1/2 | 7 | 5-5/8 (143) | 2-13/16 (71) | 4-9/16 (116) | 5-3/8 (137) | 5-13/16 (148) | 7-3/4 (197) | 8-3/4 (222) |
| 2 | 2-1/2 | 9 | 7 (178) | 2-13/16 (71) | 5-11/16 (144) | 6-1/2 (165) | 6-7/8 (175) | 7-11/16 (195) | 8-11/16 (221) |
| 2 | 2-1/2 | 12 | 8 (203) | 2-13/16 (71) | 7-3/16 (183) | 8-3/16 (208) | 8-1/2 (216) | N/A | 8-13/16 (224) |
| 2 | 3 | 11 | 8 (203) | 3-5/16 (84) | 6-1/2 (165) | 7 (178) | 7-3/8 (187) | N/A | 9-7/16 (240) |
| 2-1/2 | 3 | 7 | 5-7/8 (149) | 2-15/16 (75) | 4-13/16 (122) | 5-13/16 (148) | 6-1/4 (159) | 8 (203) | 9 (229) |
| 2-1/2 | 3 | 9 | 7-1/4 (184) | 2-15/16 (75) | 5-15/16 (151) | 6-3/4 (171) | 7-1/4 (184) | 7-15/16 (202) | 8-15/16 (227) |
| 2-1/2 | 3 | 12 | 8-1/4 (210) | 2-15/16 (75) | 7-3/8 (187) | 8-3/8 (213) | 8-3/4 (222) | N/A | 9-1/16 (230) |
| 3 | 4 | 9 | 7-1/2 (191) | 3-1/16 (78) | 6-1/8 (156) | 6-7/8 (175) | 7-7/16 (189) | 8-3/16 (208) | 9-3/16 (233) |
| 3 | 4 | 11 | 9 (229) | 3-11/16 (94) | 7 (178) | 7-9/16 (192) | 8-3/16 (208) | N/A | 10-1/8 (257) |
| 3 | 4 | 12 | 8-1/2 (216) | 3-1/16 (78) | 7-9/16 (192) | 8-7/16 (214) | 8-15/16 (227) | N/A | 9-5/16 (237) |
| 4 | 4 | 7 | 6-1/2 (165) | 3-7/16 (87) | 5-1/2 (140) | 6-7/16 (164) | 7-5/16 (186) | 8-7/8 (225) | 9-7/8 (251) |
| 4 | 5 | 9A | 7-1/4 (184) | 4-1/16 (103) | 5-3/4 (146) | 6-11/16 (170) | 7-3/8 (187) | N/A | 10-5/16 (262) |
| 4 | 5 | 9B | 7-3/4 (197) | 3-9/16 (90) | 6-5/8 (168) | 8-1/16 (205) | 8-11/16 (221) | N/A | 9-15/16 (252) |
| 4 | 5 | 11 | 9 (229) | 3-15/16 (100) | 7-1/4 (184) | 7-15/16 (202) | 8-11/16 (221) | N/A | 10-9/16 (268) |
| 4 | 5 | 12 | 8-3/4 (222) | 3-9/16 (90) | 7-15/16 (202) | 8-7/8 (225) | 9-9/16 (243) | N/A | 10-1/16 (256) |
| 5 | 6 | 11 | 9 (229) | 4-1/8 (105) | 8-1/16 (205) | 8-11/16 (221) | 10-1/8 (257) | N/A | 11-1/8 (283) |
| 5 | 6 | 12 | 9 (229) | 3-7/8 (98) | 8-5/16 (211) | 9-1/4 (235) | 10-1/8 (257) | N/A | 10-5/8 (270) |
| 6 | 6 | 9 | 8-1/4 (210) | 3-3/4 (95) | 7 (178) | 8 (203) | 9 (229) | N/A | 10-1/4 (260) |
| 6 | 6 | 11 | 9-1/4 (235) | 4-1/8 (105) | 8-11/16 (221) | 9-11/16 (246) | 10-13/16 (275) | N/A | 11-1/8 (283) |
| 6 | 6 | 12 | 9-1/4 (235) | 4-1/8 (105) | 8-11/16 (221) | 9-11/16 (246) | 10-13/16 (275) | N/A | 11-1/8 (283) |




POSITION (4)

| BASE | HA | HB | HG | HH |
|---|---|---|---|---|
| 1 | 12 (304) | 34 (863) | 3 (76) | 1/2 (12) |
| 2 | 12 (304) | 38 (965) | 3 (76) | 1/2 (12) |
| 3 | 13 (330) | 42 (1066) | 4 (102) | 5/8 (15) |
| 4 | 15 (381) | 38 (965) | 3-3/8 (857) | 5/8 (15) |
| 5 | 15 (381) | 44 (1117) | 3-3/8 (857) | 5/8 (15) |
| 6 | 15 (381) | 52 (1320) | 4-1/8 (104) | 5/8 (15) |
| 7 | 18 (457) | 54 (1371) | 4 (102) | 5/8 (15) |
| 8 | 22 (558) | 54 (1371) | 4 (102) | 5/8 (15) |
| 9 | 22 (558) | 60 (1524) | 4 (102) | 5/8 (15) |

NOTES:

1. All dimensions in inches (mm).
2. Dimensions may vary ± 1/4" (6).
3. Not for construction purposes unless certified.
4. N/A = not applicable.
5. Conduit box is shown in approximate location. Dimensions are not specified as they vary with each motor manufacturer.

* Dimension "HT" may vary 1/8" (3) to 1" (25).

# AURORA MODEL 344A PUMPS

## OPTIONAL CASING FOOT POWER FRAME TABLES

Supersedes Section 340A Page 256
Dated October 1993

**TABLE 4**

| MOTOR FRAME | C | MOTOR FRAME | C |
|---|---|---|---|
| 56C | 12 (304) | 284TS | 22 (558) |
| 143T | 12 (304) | 286T | 25 (635) |
| 145T | 13 (330) | 286TS | 24 (609) |
| 182T | 13 (330) | 324T | 26 (660) |
| 184T | 14 (355) | 324TS | 25 (635) |
| 213T | 16 (406) | 326T | 28 (711) |
| 215T | 18 (457) | 326TS | 26 (660) |
| 254T | 21 (533) | 364TS | 27 (685) |
| 256T | 23 (584) | 365TS | 28 (711) |
| 284T | 24 (609) | 404TS | 30 (762) |

**TABLE 1** — **POWER FRAME 1**

| DISCHARGE | SUCTION | CASE BORE | BASE | FRAME 56C D | BASE | FRAME 143T-145T D | BASE | FRAME 182T-184T D | BASE | FRAME 213T-215T D | BASE | FRAME 254T D |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1-1/4 | 1-1/2 | 7 | 1 | 6-3/4 (171) | 1 | 6-3/4 (171) | 1 | 6-3/4 (171) | 2 | 6-3/4 (171) | 3 | 6-3/4 (171) |
| 1-1/4 | 1-1/2 | 9 | 1 | 6-3/4 (171) | 1 | 6-3/4 (171) | 1 | 6-3/4 (171) | 2 | 6-3/4 (171) | 3 | 6-3/4 (171) |
| 1-1/2 | 2 | 7 | 1 | 6-3/4 (171) | 1 | 6-3/4 (171) | 1 | 6-3/4 (171) | 2 | 6-3/4 (171) | 3 | 6-3/4 (171) |
| 1-1/2 | 2 | 9 | 1 | 6-3/4 (171) | 1 | 6-3/4 (171) | 1 | 6-3/4 (171) | 2 | 6-3/4 (171) | 3 | 6-3/4 (171) |
| 2 | 2-1/2 | 7 | 1 | 7-1/2 (191) | 1 | 7-1/2 (191) | 1 | 7-1/2 (191) | 2 | 7-1/2 (191) | 3 | 7-1/2 (191) |
| 2 | 2-1/2 | 9 | 1 | 7-1/2 (191) | 1 | 7-1/2 (191) | 1 | 7-1/2 (191) | 2 | 7-1/2 (191) | 3 | 7-1/2 (191) |
| 2-1/2 | 3 | 7 | 1 | 7-1/2 (191) | 1 | 7-1/2 (191) | 1 | 7-1/2 (191) | 2 | 7-1/2 (191) | 3 | 7-1/2 (191) |
| 2-1/2 | 3 | 9 | 1 | 7-1/2 (191) | 1 | 7-1/2 (191) | 1 | 7-1/2 (191) | 2 | 7-1/2 (191) | 3 | 7-1/2 (191 |
| 3 | 4 | 9 | 1 | 8-1/4 (210) | 1 | 8-1/4 (210) | 1 | 8-1/4 (210) | 2 | 8-1/4 (210) | 3 | 8-1/4 (210) |
| 4 | 4 | 7 | 1 | 8-1/4 (210) | 1 | 8-1/4 (210) | 2 | 8-1/4 (210) | 2 | 8-1/4 (210) | 3 | 8-1/4 (210) |

**TABLE 2** — **POWER FRAME 2**

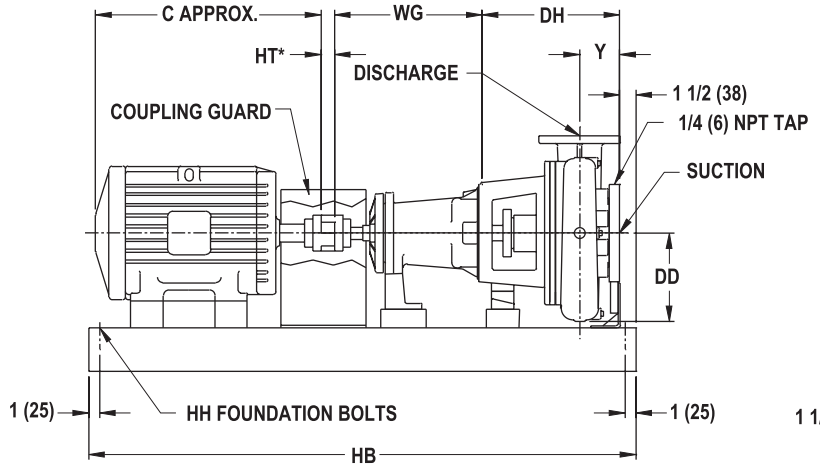
| DISCHARGE | SUCTION | CASE BORE | BASE | FRAME 143T-145T D | BASE | FRAME 182T-184T D | BASE | FRAME 213T-215T D | BASE | FRAME 254T-256T D | BASE | FRAME 284T/TS-286T/TS D | BASE | FRAME 324T/TS-326T/TS D | BASE | FRAME 364TS-365TS D |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1-1/2 | 2 | 9 | 4 | 7 (178) | 4 | 7 (178) | 5 | 7 (178) | 6 | 7 (178) | 6 | 7 (178) | 7 | 8-5/8 (219) | 8 | 9 (229) |
| 1-1/2 | 2 | 12 | 4 | 8-5/8 (219) | 4 | 8-5/8 (219) | 5 | 8-5/8 (219) | 6 | 8-5/8 (219) | 6 | 8-5/8 (219) | 7 | 8-5/8 (219) | 8 | 9 (229) |
| 2 | 2-1/2 | 7 | 4 | 7-1/2 (191) | 4 | 7-1/2 (191) | 5 | 7-1/2 (191) | 6 | 7-1/2 (191) | 6 | 7-1/2 (191) | - | N/A | - | N/A |
| 2 | 2-1/2 | 12 | 4 | 9-1/4 (235) | 4 | 9-1/4 (235) | 5 | 9-1/4 (235) | 6 | 9-1/4 (235) | 6 | 9-1/4 (235) | 7 | 9-1/4 (235) | 8 | 9-1/4 (235) |
| 2 | 3 | 11 | 4 | 7-3/4 (197) | 4 | 7-3/4 (197) | 5 | 7-3/4 (197) | 6 | 7-3/4 (197) | 6 | 7-3/4 (197) | 7 | 9-1/8 (232) | - | N/A |
| 2-1/2 | 3 | 7 | 4 | 7-1/2 (191) | 4 | 7-1/2 (191) | 5 | 7-1/2 (191) | 6 | 7-1/2 (191) | 6 | 7-1/2 (191) | - | N/A | - | N/A |
| 2-1/2 | 3 | 12 | 4 | 9-1/2 (241) | 4 | 9-1/2 (241) | 5 | 9-1/2 (241) | 6 | 9-1/2 (241) | 6 | 9-1/2 (241) | 7 | 9-1/2 (241) | 8 | 9-1/2 (241) |
| 3 | 4 | 9 | 4 | 8-1/4 (210) | 4 | 8-1/4 (210) | 5 | 8-1/4 (210) | 6 | 8-1/4 (210) | 6 | 8-1/4 (210) | 7 | 8-1/4 (210) | 8 | 10 (254) |
| 3 | 4 | 11 | 4 | 8-5/8 (219) | 4 | 8-5/8 (219) | 5 | 8-5/8 (219) | 6 | 8-5/8 (219) | 6 | 8-5/8 (219) | 7 | 8-5/8 (219) | - | N/A |
| 3 | 4 | 12 | 4 | 10 (254) | 4 | 10 (254) | 5 | 10 (254) | 6 | 10 (254) | 6 | 10 (254) | 7 | 10 (254) | 8 | 10 (254) |
| 4 | 4 | 7 | 4 | 8-1/4 (102) | 4 | 8-1/4 (127) | 5 | 8-1/4 (152) | 6 | 8-1/4 (152) | 6 | 8-1/4 (152) | - | N/A | - | N/A |
| 4 | 5 | 9A | 4 | 8-7/8 (225) | 4 | 8-7/8 (225) | 5 | 8-7/8 (225) | 6 | 8-7/8 (225) | 6 | 8-7/8 (225) | 7 | 8-7/8 (225) | 8 | 9 (229) |
| 4 | 5 | 9B | 4 | 9 (229) | 5 | 9 (229) | 5 | 9 (229) | 6 | 9 (229) | 6 | 9 (229) | 7 | 9 (229) | 8 | 9 (229) |
| 4 | 5 | 11 | 4 | 9 (229) | 5 | 9 (229) | 5 | 9 (229) | 6 | 9 (229) | 6 | 9 (229) | 7 | 9 (229) | - | N/A |
| 4 | 5 | 12 | 4 | 10-3/4 (273) | 5 | 10-3/4 (273) | 5 | 10-3/4 (273) | 6 | 10-3/4 (273) | 6 | 10-3/4 (273) | 7 | 10-3/4 (273) | 8 | 10-3/4 (273) |
| 5 | 6 | 11 | - | N/A | - | N/A | 5 | 11-1/4 (286) | 6 | 11-1/4 (286) | 6 | 11-1/4 (286) | 7 | 11-1/4 (286) | - | N/A |
| 5 | 6 | 12 | - | N/A | - | N/A | - | N/A | 6 | 11-1/4 (286) | 6 | 11-1/4 (286) | 7 | 11-1/4 (286) | 8 | 11-1/4 (286) |
| 6 | 6 | 9 | - | N/A | - | N/A | 5 | 9-1/2 (241) | 6 | 9-1/2 (241) | 6 | 9-1/2 (241) | 7 | 9-1/2 (241) | - | N/A |
| 6 | 6 | 11 | - | N/A | - | N/A | 5 | 11-1/2 (292) | 6 | 11-1/2 (292) | 6 | 11-1/2 (292) | 7 | 11-1/2 (292) | - | N/A |

**TABLE 3** — **POWER FRAME 3**

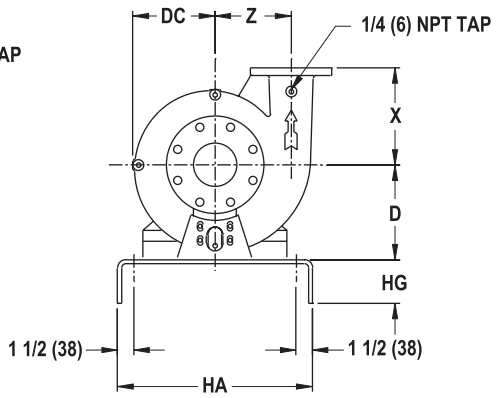
| DISCHARGE | SUCTION | CASE BORE | BASE | FRAME 143T-145T D | BASE | FRAME 182T-184T D | BASE | FRAME 213T-215T D | BASE | FRAME 254T-256T D | BASE | FRAME 284T/TS-286T/TS D | BASE | FRAME 324T/TS-326T/TS D | BASE | FRAME 364TS-365TS D | BASE | FRAME 404TS D |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2 | 2-1/2 | 9 | 4 | 7-1/2 (191) | 4 | 7-1/2 (191) | 5 | 7-1/2 (191) | 6 | 7-1/2 (191) | 6 | 7-1/2 (191) | 7 | 9 (229) | 8 | 9 (229) | - | N/A |
| 2-1/2 | 3 | 9 | 4 | 7-1/2 (191) | 4 | 7-1/2 (191) | 5 | 7-1/2 (191) | 6 | 7-1/2 (191) | 6 | 7-1/2 (191) | 7 | 9-1/4 (235) | 8 | 9-1/4 (235) | - | N/A |
| 3 | 4 | 9 | 4 | 8-1/4 (210) | 4 | 8-1/4 (210) | 5 | 8-1/4 (210) | 6 | 8-1/4 (210) | 6 | 8-1/4 (210) | 7 | 8-1/4 (210) | 8 | 10 (254) | - | N/A |
| 3 | 4 | 12 | 4 | 10 (254) | 4 | 10 (254) | 5 | 10 (254) | 6 | 10 (254) | 6 | 10 (254) | 7 | 10 (254) | 8 | 10 (254) | - | N/A |
| 4 | 5 | 9A | 4 | 8-7/8 (225) | 4 | 8-7/8 (225) | 5 | 8-7/8 (225) | 6 | 8-7/8 (225) | 6 | 8-7/8 (225) | 7 | 8-7/8 (225) | 8 | 9 (229) | - | N/A |
| 4 | 5 | 12 | 4 | 10-3/4 (273) | 5 | 10-3/4 (273) | 5 | 10-3/4 (273) | 6 | 10-3/4 (273) | 6 | 10-3/4 (273) | 7 | 10-3/4 (273) | 8 | 10-3/4 (273) | - | N/A |
| 5 | 6 | 11 | - | N/A | - | N/A | 5 | 11-1/4 (286) | 6 | 11-1/4 (286) | 6 | 11-1/4 (286) | 7 | 11-1/4 (286) | - | N/A | - | N/A |
| 5 | 6 | 12 | - | N/A | - | N/A | - | N/A | 6 | 11-1/4 (286) | 6 | 11-1/4 (286) | 7 | 11-1/4 (286) | 8 | 11-1/4 (286) | - | N/A |
| 6 | 6 | 11 | - | N/A | - | N/A | 5 | 11-1/2 (292) | 6 | 11-1/2 (292) | 6 | 11-1/2 (292) | 7 | 11-1/2 (292) | - | N/A | - | N/A |
| 6 | 6 | 12 | - | N/A | - | N/A | - | N/A | 6 | 11-3/8 (289) | 6 | 11-3/8 (289) | 7 | 11-3/8 (289) | 8 | 11-3/8 (289) | 9 (229) | 11-3/8 (289) |

# AURORA MODEL 364A PUMPS

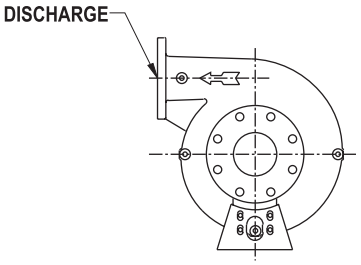
FORMED STEEL BASE WITH OPTIONAL CASING FOOT




**STANDARD POSITION 1**




| PUMPS WITH FLANGE SUCTION CONNECTIONS AND THREADED DISCHARGE CONNECTIONS | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| PUMP SIZE | | | | | | | | | |
| DISCHARGE | SUCTION | CASE BORE | X | Y | Z | DC | DD | FRAME 1 DH | FRAME 2 & 3 DH |
| 1-1/4 | 1-1/2 | 7 | 5-1/4 (133) | 3-3/8 (86) | 4-3/16 (106) | 4-15/16 (125) | 5-3/16 (132) | 11-3/16 (284) | N/A |
| 1-1/4 | 1-1/2 | 9 | 6-5/8 (168) | 3-1/2 (89) | 5-3/8 (137) | 6-3/16 (157) | 6-3/8 (162) | 11-1/4 (286) | N/A |
| 1-1/2 | 2 | 7 | 5-3/8 (137) | 3-7/16 (87) | 4-5/16 (110) | 5-1/8 (130) | 5-3/8 (137) | 11-15/16 (303) | N/A |
| 1-1/2 | 2 | 9 | 6-3/4 (171) | 3-9/16 (90) | 5-1/2 (140) | 6-5/16 (160) | 6-9/16 (167) | 11-3/8 (289) | 12-3/16 (310) |
| 1-1/2 | 2 | 12 | 7-3/4 (197) | 3-11/16 (94) | 7-1/16 (179) | 8 (203) | 8-1/4 (210) | N/A | 12-7/16 (316) |
| **PUMPS WITH ANSI 125 LB. FLANGED CONNECTIONS** | | | | | | | | | |
| 2 | 2-1/2 | 7 | 5-5/8 (143) | 2-13/16 (71) | 4-9/16 (116) | 5-3/8 (137) | 5-13/16 (148) | 10-13/16 (275) | 11-5/8 (295) |
| 2 | 2-1/2 | 9 | 7 (178) | 2-13/16 (71) | 5-11/16 (144) | 6-1/2 (165) | 6-7/8 (175) | 10-3/4 (273) | 11-9/16 (294) |
| 2 | 2-1/2 | 12 | 8 (203) | 2-13/16 (71) | 7-3/16 (183) | 8-3/16 (208) | 8-1/2 (216) | N/A | 11-11/16 (297) |
| 2 | 3 | 11 | 8 (203) | 3-5/16 (84) | 6-1/2 (165) | 7 (178) | 7-3/8 (187) | N/A | 12-5/16 (313) |
| 2-1/2 | 3 | 7 | 5-7/8 (149) | 2-15/16 (75) | 4-13/16 (122) | 5-13/16 (148) | 6-1/4 (159) | 11-1/16 (281) | 11-7/8 (302) |
| 2-1/2 | 3 | 9 | 7-1/4 (184) | 2-15/16 (75) | 5-15/16 (151) | 6-3/4 (171) | 7-1/4 (184) | 7-15/16 (202) | 11-13/16 (300) |
| 2-1/2 | 3 | 12 | 8-1/4 (210) | 2-15/16 (75) | 7-3/8 (187) | 8-3/8 (213) | 8-3/4 (222) | N/A | 11-15/16 (303) |
| 3 | 4 | 9 | 7-1/2 (191) | 3-1/16 (78) | 6-1/8 (156) | 6-7/8 (175) | 7-7/16 (189) | N/A | 12-1/6 (309) |
| 3 | 4 | 11 | 9 (229) | 3-11/16 (94) | 7 (178) | 7-9/16 (192) | 8-3/16 (208) | N/A | 13 (330) |
| 3 | 4 | 12 | 8-1/2 (216) | 3-1/16 (78) | 7-9/16 (192) | 8-7/16 (214) | 8-15/16 (227) | N/A | 12-3/16 (310) |
| 4 | 4 | 7 | 6-1/2 (165) | 3-7/16 (87) | 5-1/2 (140) | 6-7/16 (164) | 7-5/16 (186) | 11-15/16 (303) | 12-3/4 (324) |
| 4 | 5 | 9A | 7-1/4 (184) | 4-1/16 (103) | 5-3/4 (146) | 6-11/16 (170) | 7-3/8 (187) | N/A | 13-3/16 (335) |
| 4 | 5 | 9B | 7-3/4 (197) | 3-9/16 (90) | 6-5/8 (168) | 8-1/16 (205) | 8-11/16 (221) | N/A | 12-13/16 (325) |
| 4 | 5 | 11 | 9 (229) | 3-15/16 (100) | 7-1/4 (184) | 7-15/16 (202) | 8-11/16 (221) | N/A | 13-3/16 (335) |
| 4 | 5 | 12 | 8-3/4 (222) | 3-9/16 (90) | 7-15/16 (202) | 8-7/8 (225) | 9-9/16 (243) | N/A | 12-13/16 (325) |
| 5 | 6 | 11 | 9 (229) | 4-1/8 (105) | 8-1/16 (205) | 8-11/16 (221) | 10-1/8 (257) | N/A | 14 (356) |
| 5 | 6 | 12 | 9 (229) | 3-7/8 (98) | 8-5/16 (211) | 9-1/4 (235) | 10-1/8 (257) | N/A | 13-1/2 (343) |
| 6 | 6 | 9 | 8-1/4 (210) | 3-3/4 (95) | 7 (178) | 8 (203) | 9 (229) | N/A | 13-1/8 (333) |
| 6 | 6 | 11 | 9-1/4 (235) | 4-1/8 (105) | 8-11/16 (221) | 9-11/16 (246) | 10-13/16 (275) | N/A | 14 (356) |
| 6 | 6 | 12 | 9-1/4 (235) | 4-1/8 (105) | 8-11/16 (221) | 9-11/16 (246) | 10-13/16 (275) | N/A | 14 (356) |




| BASE | HA | HB | HG | HH |
|---|---|---|---|---|
| 1 | 12 (304) | 38 (965) | 3 (76) | 1/2 (12) |
| 2 | 12 (304) | 48 (1219) | 3 (76) | 1/2 (12) |
| 3 | 13 (330) | 54 (1372) | 4 (102) | 5/8 (15) |
| 4 | 15 (381) | 54 (1372) | 4 (102) | 5/8 (15) |
| 5 | 15 (381) | 60 (1524) | 3-3/8 (86) | 5/8 (15) |
| 6 | 18 (457) | 60 (1524) | 4 (102) | 5/8 (15) |
| 7 | 22 (558) | 60 (1524) | 4 (102) | 5/8 (15) |
| 8 | 22 (558) | 72 (1829) | 4 (102) | 5/8 (15) |

NOTES:

1. All dimensions in inches (mm).
2. Dimensions may vary ± 1/4" (6).
3. Not for construction purposes unless certified.
4. N/A = not applicable.
5. Conduit box is shown in approximate location. Dimensions are not specified as they vary with each motor manufacturer.

* Dimension "HT" may vary 1/8" (3) to 1" (25).

# AURORA MODEL 364A PUMPS

## OPTIONAL CASING FOOT POWER FRAME TABLES

Supersedes Section 360A Page 256
Dated October 1993

**TABLE 4**

| MOTOR FRAME | C | MOTOR FRAME | C |
|---|---|---|---|
| 56C | 12 (304) | 284TS | 22 (558) |
| 143T | 12 (304) | 286T | 25 (635) |
| 145T | 13 (330) | 286TS | 24 (609) |
| 182T | 13 (330) | 324T | 26 (660) |
| 184T | 14 (355) | 324TS | 25 (635) |
| 213T | 16 (406) | 326T | 28 (711) |
| 215T | 18 (457) | 326TS | 26 (660) |
| 254T | 21 (533) | 364TS | 27 (685) |
| 256T | 23 (584) | 365TS | 28 (711) |
| 284T | 24 (609) | 404TS | 30 (762) |

**TABLE 1** — **POWER FRAME 1**

| DISCHARGE | SUCTION | CASE BORE | BASE | FRAME 56C D | BASE | FRAME 143T-145T D | BASE | FRAME 182T-184T D | BASE | FRAME 213T-215T D | BASE | FRAME 254T D |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1-1/4 | 1-1/2 | 7 | 1 | 6-3/4 (171) | 1 | 6-3/4 (171) | 1 | 6-3/4 (171) | 2 | 6-3/4 (171) | 3 | 6-3/4 (171) |
| 1-1/4 | 1-1/2 | 9 | 1 | 6-3/4 (171) | 1 | 6-3/4 (171) | 1 | 6-3/4 (171) | 2 | 6-3/4 (171) | 3 | 6-3/4 (171) |
| 1-1/2 | 2 | 7 | 1 | 6-3/4 (171) | 1 | 6-3/4 (171) | 1 | 6-3/4 (171) | 2 | 6-3/4 (171) | 3 | 6-3/4 (171) |
| 1-1/2 | 2 | 9 | 1 | 6-3/4 (171) | 1 | 6-3/4 (171) | 1 | 6-3/4 (171) | 2 | 6-3/4 (171) | 3 | 6-3/4 (171) |
| 2 | 2-1/2 | 7 | 1 | 7-1/2 (191) | 1 | 7-1/2 (191) | 1 | 7-1/2 (191) | 2 | 7-1/2 (191) | 3 | 7-1/2 (191) |
| 2 | 2-1/2 | 9 | 1 | 7-1/2 (191) | 1 | 7-1/2 (191) | 1 | 7-1/2 (191) | 2 | 7-1/2 (191) | 3 | 7-1/2 (191) |
| 2-1/2 | 3 | 7 | 1 | 7-1/2 (191) | 1 | 7-1/2 (191) | 1 | 7-1/2 (191) | 2 | 7-1/2 (191) | 3 | 7-1/2 (191) |
| 2-1/2 | 3 | 9 | 1 | 7-1/2 (191) | 1 | 7-1/2 (191) | 1 | 7-1/2 (191) | 2 | 7-1/2 (191) | 3 | 7-1/2 (191 |
| 3 | 4 | 9 | 1 | 8-1/4 (210) | 1 | 8-1/4 (210) | 1 | 8-1/4 (210) | 2 | 8-1/4 (210) | 3 | 8-1/4 (210) |
| 4 | 4 | 7 | 1 | 8-1/4 (210) | 1 | 8-1/4 (210) | 2 | 8-1/4 (210) | 2 | 8-1/4 (210) | 3 | 8-1/4 (210) |

**TABLE 2** — **POWER FRAME 2**

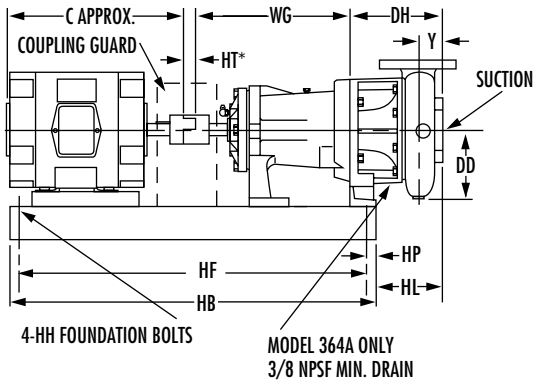
| DISCHARGE | SUCTION | CASE BORE | BASE | FRAME 143T-145T D | BASE | FRAME 182T-184T D | BASE | FRAME 213T-215T D | BASE | FRAME 254T-256T D | BASE | FRAME 284T/TS-286T/TS D | BASE | FRAME 324T/TS-326T/TS D | BASE | FRAME 364TS 365TS D |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1-1/2 | 2 | 9 | 4 | 7 (178) | 4 | 7 (178) | 5 | 7 (178) | 6 | 7 (178) | 6 | 7 (178) | 7 | 8-5/8 (219) | 8 | 9 (229) |
| 1-1/2 | 2 | 12 | 4 | 8-5/8 (219) | 4 | 8-5/8 (219) | 5 | 8-5/8 (219) | 6 | 8-5/8 (219) | 6 | 8-5/8 (219) | 7 | 8-5/8 (219) | 8 | 9 (229) |
| 2 | 2-1/2 | 7 | 4 | 7-1/2 (191) | 4 | 7-1/2 (191) | 5 | 7-1/2 (191) | 6 | 7-1/2 (191) | 6 | 7-1/2 (191) | - | N/A | - | N/A |
| 2 | 2-1/2 | 12 | 4 | 9-1/4 (235) | 4 | 9-1/4 (235) | 5 | 9-1/4 (235) | 6 | 9-1/4 (235) | 6 | 9-1/4 (235) | 7 | 9-1/4 (235) | 8 | 9-1/4 (235) |
| 2 | 3 | 11 | 4 | 7-3/4 (197) | 4 | 7-3/4 (197) | 5 | 7-3/4 (197) | 6 | 7-3/4 (197) | 6 | 7-3/4 (197) | 7 | 9-1/8 (232) | - | N/A |
| 2-1/2 | 3 | 7 | 4 | 7-1/2 (191) | 4 | 7-1/2 (191) | 5 | 7-1/2 (191) | 6 | 7-1/2 (191) | 6 | 7-1/2 (191) | - | N/A | - | N/A |
| 2-1/2 | 3 | 12 | 4 | 9-1/2 (241) | 4 | 9-1/2 (241) | 5 | 9-1/2 (241) | 6 | 9-1/2 (241) | 6 | 9-1/2 (241) | 7 | 9-1/2 (241) | 8 | 9-1/2 (241) |
| 3 | 4 | 9 | 4 | 8-1/4 (210) | 4 | 8-1/4 (210) | 5 | 8-1/4 (210) | 6 | 8-1/4 (210) | 6 | 8-1/4 (210) | 7 | 8-1/4 (210) | 8 | 10 (254) |
| 3 | 4 | 11 | 4 | 8-5/8 (219) | 4 | 8-5/8 (219) | 5 | 8-5/8 (219) | 6 | 8-5/8 (219) | 6 | 8-5/8 (219) | 7 | 8-5/8 (219) | - | N/A |
| 3 | 4 | 12 | 4 | 10 (254) | 4 | 10 (254) | 5 | 10 (254) | 6 | 10 (254) | 6 | 10 (254) | 7 | 10 (254) | 8 | 10 (254) |
| 4 | 4 | 7 | 4 | 8-1/4 (102) | 4 | 8-1/4 (127) | 5 | 8-1/4 (152) | 6 | 8-1/4 (152) | 6 | 8-1/4 (152) | - | N/A | - | N/A |
| 4 | 5 | 9A | 4 | 8-7/8 (225) | 4 | 8-7/8 (225) | 5 | 8-7/8 (225) | 6 | 8-7/8 (225) | 6 | 8-7/8 (225) | 7 | 8-7/8 (225) | 8 | 9 (229) |
| 4 | 5 | 9B | 4 | 9 (229) | 5 | 9 (229) | 5 | 9 (229) | 6 | 9 (229) | 6 | 9 (229) | 7 | 9 (229) | 8 | 9 (229) |
| 4 | 5 | 11 | 4 | 9 (229) | 5 | 9 (229) | 5 | 9 (229) | 6 | 9 (229) | 6 | 9 (229) | 7 | 9 (229) | - | N/A |
| 4 | 5 | 12 | 4 | 10-3/4 (273) | 5 | 10-3/4 (273) | 5 | 10-3/4 (273) | 6 | 10-3/4 (273) | 6 | 10-3/4 (273) | 7 | 10-3/4 (273) | 8 | 10-3/4 (273) |
| 5 | 6 | 11 | - | N/A | - | N/A | 5 | 11-1/4 (286) | 6 | 11-1/4 (286) | 6 | 11-1/4 (286) | 7 | 11-1/4 (286) | - | N/A |
| 5 | 6 | 12 | - | N/A | - | N/A | - | N/A | 6 | 11-1/4 (286) | 6 | 11-1/4 (286) | 7 | 11-1/4 (286) | 8 | 11-1/4 (286) |
| 6 | 6 | 9 | - | N/A | - | N/A | 5 | 9-1/2 (241) | 6 | 9-1/2 (241) | 6 | 9-1/2 (241) | 7 | 9-1/2 (241) | - | N/A |
| 6 | 6 | 11 | - | N/A | - | N/A | 5 | 11-1/2 (292) | 6 | 11-1/2 (292) | 6 | 11-1/2 (292) | 7 | 11-1/2 (292) | - | N/A |

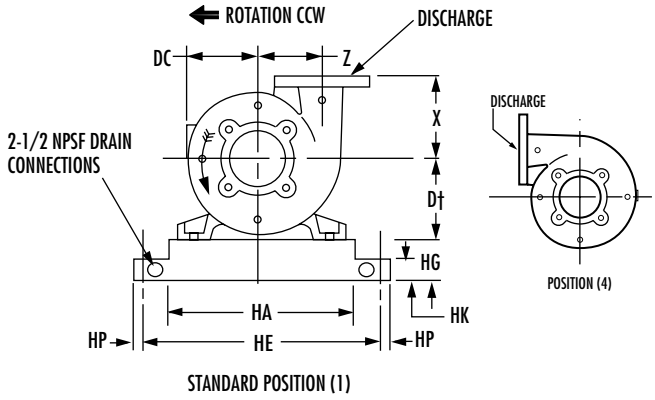
**TABLE 3** — **POWER FRAME 3**

| DISCHARGE | SUCTION | CASE BORE | BASE | FRAME 143T-145T D | BASE | FRAME 182T-184T D | BASE | FRAME 213T-215T D | BASE | FRAME 254T-256T D | BASE | FRAME 284T/TS-286T/TS D | BASE | FRAME 324T/TS-326T/TS D | BASE | FRAME 364TS 365TS D | BASE | FRAME 404TS D |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2 | 2-1/2 | 9 | 4 | 7-1/2 (191) | 4 | 7-1/2 (191) | 5 | 7-1/2 (191) | 6 | 7-1/2 (191) | 6 | 7-1/2 (191) | 7 | 9 (229) | 8 | 9 (229) | - | N/A |
| 2-1/2 | 3 | 9 | 4 | 7-1/2 (191) | 4 | 7-1/2 (191) | 5 | 7-1/2 (191) | 6 | 7-1/2 (191) | 6 | 7-1/2 (191) | 7 | 9-1/4 (235) | 8 | 9-1/4 (235) | - | N/A |
| 3 | 4 | 9 | 4 | 8-1/4 (210) | 4 | 8-1/4 (210) | 5 | 8-1/4 (210) | 6 | 8-1/4 (210) | 6 | 8-1/4 (210) | 7 | 8-1/4 (210) | 8 | 10 (254) | - | N/A |
| 3 | 4 | 12 | 4 | 10 (254) | 4 | 10 (254) | 5 | 10 (254) | 6 | 10 (254) | 6 | 10 (254) | 7 | 10 (254) | 8 | 10 (254) | - | N/A |
| 4 | 5 | 9A | 4 | 8-7/8 (225) | 4 | 8-7/8 (225) | 5 | 8-7/8 (225) | 6 | 8-7/8 (225) | 6 | 8-7/8 (225) | 7 | 8-7/8 (225) | 8 | 9 (229) | - | N/A |
| 4 | 5 | 12 | 4 | 10-3/4 (273) | 5 | 10-3/4 (273) | 5 | 10-3/4 (273) | 6 | 10-3/4 (273) | 6 | 10-3/4 (273) | 7 | 10-3/4 (273) | 8 | 10-3/4 (273) | - | N/A |
| 5 | 6 | 11 | - | N/A | - | N/A | 5 | 11-1/4 (286) | 6 | 11-1/4 (286) | 6 | 11-1/4 (286) | 7 | 11-1/4 (286) | - | N/A | - | N/A |
| 5 | 6 | 12 | - | N/A | - | N/A | - | N/A | 6 | 11-1/4 (286) | 6 | 11-1/4 (286) | 7 | 11-1/4 (286) | 8 | 11-1/4 (286) | - | N/A |
| 6 | 6 | 11 | - | N/A | - | N/A | 5 | 11-1/2 (292) | 6 | 11-1/2 (292) | 6 | 11-1/2 (292) | 7 | 11-1/2 (292) | - | N/A | - | N/A |
| 6 | 6 | 12 | - | N/A | - | N/A | - | N/A | 6 | 11-3/8 (289) | 6 | 11-3/8 (289) | 7 | 11-3/8 (289) | 8 | 11-3/8 (289) | 8 (203) | 11-3/8 (289) |

# AURORA MODEL 344A & 364A PUMPS

## ON STEEL DRIP RIM BASE




## MODEL 344A ILUSTRATED

| BASE | SIZE | HA | HB | HE | HG | HH | HP | HK | HF |
|---|---|---|---|---|---|---|---|---|---|
| 4 | 11 X 30 | 11 | 30-1/2 | 15-7/8 | 3 | 1/2 | 11/16 | 1-1/2 | 29-1/8 |
| 5 | 11 X 36 | 11 | 36-1/2 | 15-7/8 | 3 | 1/2 | 11/16 | 1-1/2 | 35-1/8 |
| 7 | 14 X 36 | 14 | 36-1/2 | 19 | 3 | 5/8 | 3/4 | 1-1/2 | 35 |
| 8 | 14 X 42 | 14 | 42-1/2 | 19 | 3 | 5/8 | 3/4 | 1-1/2 | 41 |
| 9 | 14 X 48 | 14 | 48-1/2 | 19 | 3 | 5/8 | 3/4 | 1-1/2 | 47 |
| 11 | 18 X 46 | 18 | 46-1/2 | 25-1/8 | 4 | 3/4 | 13/16 | 2 | 44-7/8 |
| 12 | 18 X 54 | 18 | 54-1/2 | 25-1/8 | 4 | 3/4 | 13/16 | 2 | 52-7/8 |
| 15 | 22 X 54 | 22 | 54-1/2 | 29-1/8 | 4-1/2 | 3/4 | 13/16 | 2 | 52-7/8 |

| NOTE: WHEN TWO "D" DIMENSIONS ARE INDICATED ALWAYS USE THE LARGER FIGURE. | | POWER FRAME | MODEL 344A | | | MODEL 364A | | |
|---|---|---|---|---|---|---|---|---|
| | | | 1 | 2 | 3 | 1 | 2 | 3 |
| | | WG | 10-5/16 | 13-13/16 | 13-13/16 | 10-5/16 | 13-13/16 | 13-13/16 |
| D | 340 CASE BORE | 7 | 5-1/4 | 6-1/4 | – | | | |
| | | 9 | 6-1/4 | 7 | 7 | | | |
| | | 11 | – | 7 | 7 | | | |
| | | 12 | – | 7 | 7 | | | |
| | 360 CASE BORE | 7 | – | – | | 5-1/4 | 6-1/4 | – |
| | | 9 | – | – | | 5-1/4 | 7 | 7 |
| | | 11 | – | – | | – | 7 | 7 |
| | | 12 | – | – | | – | 7 | 7 |

| MOTOR FRAME | C APPROX | D | BASE NUMBER | | | | | |
|---|---|---|---|---|---|---|---|---|
| 56 | 12 | | 4 | N/A | N/A | 4 | N/A | N/A |
| 143T | 12 | | 4 | N/A | N/A | 4 | N/A | N/A |
| 145T | 13 | | 4 | 7 | N/A | 4 | 7 | N/A |
| 182T | 13 | | 4 | 7 | N/A | 4 | 7 | N/A |
| 184T | 14 | | 4 | 7 | N/A | 4 | 7 | N/A |
| 213T | 16 | 5-1/4 | 4 | 7 | N/A | 5 | 7 | 7 |
| 215T | 18 | 5-1/4 | 5 | 7 | N/A | 5 | 7 | 7 |
| 254T | 21 | 6-1/4 | 7 | 8 | 8 | N/A | 8 | 8 |
| 256T | 23 | 6-1/4 | N/A | 8 | 8 | N/A | 8 | 8 |
| 284T | 24 | 7 | N/A | 8 | 8 | N/A | 8 | 8 |
| 284TS | 22 | 7 | N/A | 8 | 8 | N/A | 8 | 8 |
| 286T | 25 | 7 | N/A | 8 | 8 | N/A | 9 | 9 |
| 286TS | 24 | 7 | N/A | 8 | 8 | N/A | 8 | 8 |
| 324T | 26 | 8 | N/A | 11 | 11 | N/A | 11 | 11 |
| 324TS | 25 | 8 | N/A | 11 | 11 | N/A | 11 | 11 |
| 326T | 28 | 8 | N/A | 11 | 11 | N/A | 11 | 11 |
| 326TS | 26 | 8 | N/A | 11 | 11 | N/A | 11 | 11 |
| 364T | 29 | 9 | N/A | 11 | 11 | N/A | 12 | 12 |
| 364TS | 27 | 9 | N/A | 11 | 11 | N/A | 11 | 11 |
| 365TS | 28 | 9 | N/A | 11 | 11 | N/A | 11 | 11 |
| 404TS | 30 | 10 | N/A | 15 | 15 | N/A | 15 | 15 |

| PUMPS WITH THREADED CONNECTIONS | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| PUMP SIZE | | | | | | | | 344A DH | | 364A DH | | 344A HL | | | 364A HL | | |
| DISCH | SUCT | CASE BORE | X | Y | Z | DC | DD | FRAME 1 | FRAME 2 & 3 | FRAME 1 | FRAME 2 & 3 | FRAME 1 | FRAME 2 | FRAME 3 | FRAME 1 | FRAME 2 | FRAME 3 |
| 1-1/4 | 1-1/2 | 7 | 5-1/4 | 2-7/16 | 4-3/16 | 4-15/16 | 5-3/16 | 7-3/16 | N/A | 10-1/4 | N/A | 4-3/16 | N/A | N/A | 4-3/4 | N/A | N/A |
| 1-1/4 | 1-1/2 | 9 | 6-5/8 | 2-9/16 | 5-3/8 | 6-3/16 | 6-3/8 | 7-1/4 | N/A | 10-5/16 | N/A | 4-1/4 | N/A | N/A | 4-13/16 | N/A | N/A |
| 1-1/2 | 2 | 7 | 5-3/8 | 2-1/2 | 4-5/16 | 5-1/8 | 5-3/8 | 7-5/16 | N/A | 10-3/8 | N/A | 4-5/16 | N/A | N/A | 4-7/8 | N/A | N/A |
| 1-1/2 | 2 | 9 | 6-3/4 | 2-5/8 | 5-1/2 | 6-5/16 | 6-9/16 | 7-3/8 | 8-3/8 | 10-7/16 | 11-1/4 | 4-3/8 | 4-7/8 | N/A | 4-15/16 | 5 | N/A |
| 1-1/2 | 2 | 11 | 9 | 2-13/16 | 6-1/8 | 7-1/16 | 7-1/4 | N/A | 8-9/16 | N/A | 11-7/16 | N/A | 5-3/8 | N/A | N/A | 7 | N/A |
| 1-1/2 | 2 | 12 | 7-3/4 | 2-3/4 | 7-1/16 | 8 | 8-1/4 | N/A | 8-5/8 | N/A | 11-1/2 | N/A | 5-5/8 | N/A | N/A | 5-1/4 | 5-1/4 |
| PUMPS WITH ANSI 125 LB FLANGED CONNECTIONS | | | | | | | | | | | | | | | | | |
| 2 | 2-1/2 | 7 | 5-5/8 | 1-7/8 | 4-9/16 | 5-3/8 | 5-13/16 | 6-13/16 | 7-13/16 | 9-7/8 | 10-11/16 | 3-13/16 | 4-5/16 | N/A | 4-3/8 | 4-7/16 | N/A |
| 2 | 2-1/2 | 9 | 7 | 1-7/8 | 5-11/16 | 6-1/2 | 6-7/8 | 6-3/4 | 7-3/4 | 9-13/16 | 10-5/8 | 3-3/4 | N/A | 3-7/8 | 4-5/16 | N/A | 4-3/8 |
| 2 | 2-1/2 | 12 | 8 | 1-7/8 | 7-3/16 | 8-3/16 | 8-1/2 | N/A | 7-7/8 | N/A | 10-3/4 | N/A | 4-7/8 | N/A | N/A | 4-1/2 | N/A |
| 2 | 3 | 11 | 8 | 2-3/8 | 6-1/2 | 7 | 7-3/8 | N/A | 8 1/2 | N/A | 11-3/8 | N/A | 5-1/32 | N/A | N/A | 5-5/32 | N/A |
| 2-1/2 | 3 | 7 | 5-7/8 | 2 | 4-13/16 | 5-13/16 | 6-1/4 | 7-1/16 | 8-1/16 | 10-1/8 | 10-15/16 | 4-1/16 | 4-9/16 | N/A | 4-5/8 | 4-11/16 | N/A |
| 2-1/2 | 3 | 9 | 7-1/4 | 2 | 5-15/16 | 6-3/4 | 7-1/4 | 7 | 8 | N/A | 10-7/8 | 4 | N/A | 4-1/2 | N/A | 4-5/8 | 4-5/8 |
| 2-1/2 | 3 | 12 | 8-1/4 | 2 | 7-3/8 | 8-3/8 | 8-3/4 | N/A | 8-1/8 | N/A | 11 | N/A | 5-1/8 | N/A | N/A | 4-3/4 | 4-3/4 |
| 3 | 4 | 9 | 7-1/2 | 2-1/8 | 6-1/8 | 6-7/8 | 7-7/16 | 7-1/4 | 8-1/4 | N/A | 11-1/8 | 4-1/4 | N/A | 4-3/4 | N/A | N/A | 4-7/8 |
| 3 | 4 | 11 | 9 | 2-3/4 | 7 | 7-9/16 | 8-3/16 | N/A | 9-3/16 | N/A | 12-1/16 | N/A | 5-11/16 | N/A | N/A | 5-13/16 | N/A |
| 3 | 4 | 12 | 8-1/2 | 2-1/8 | 7-9/16 | 8-7/16 | 8-15/16 | N/A | 8-3/8 | N/A | 11-1/4 | N/A | 5-3/8 | 5-3/8 | N/A | 5 | 5 |
| 4 | 4 | 7 | 6-1/2 | 2-1/2 | 5-1/2 | 6-7/16 | 7-5/16 | 7-15/16 | 8-15/16 | 11 | 11-13/16 | 4-15/16 | 5-7/16 | N/A | 5-1/2 | 5-9/16 | N/A |
| 4 | 5 | 9A | 7-1/4 | 3-1/8 | 5-3/4 | 6-11/16 | 7-3/8 | N/A | 9-3/8 | N/A | 12-1/4 | N/A | 5-7/8 | 5-7/8 | N/A | 6 | 6 |
| 4 | 5 | 9B | 7-3/4 | 2-5/8 | 6-5/8 | 8-1/16 | 8-11/16 | N/A | 9 | N/A | 11-7/8 | N/A | 5-1/2 | N/A | N/A | 5-5/8 | N/A |
| 4 | 5 | 11 | 9 | 3 | 7-1/4 | 7-15/16 | 8-11/16 | N/A | 9-5/8 | N/A | 12-1/2 | N/A | 6-1/8 | N/A | N/A | 6-1/4 | N/A |
| 4 | 5 | 12 | 8-3/4 | 2-5/8 | 7-15/16 | 8-7/8 | 9-9/16 | N/A | 9-1/8 | N/A | 12 | N/A | 6-1/8 | 6-1/8 | N/A | 5-3/4 | 5-3/4 |
| 5 | 6 | 11 | 9 | 3-1/8 | 8-1/16 | 8-11/16 | 10-1/8 | N/A | 10-1/8 | N/A | 13 | N/A | 6-5/8 | 6-5/8 | N/A | 6-3/4 | 6-3/4 |
| 5 | 6 | 12 | 9 | 2-7/8 | 8-5/16 | 9-1/4 | 10-1/8 | N/A | 9-5/8 | N/A | 12-1/2 | N/A | 6-5/8 | 6-5/8 | N/A | 6-1/4 | 6-1/4 |
| 6 | 6 | 9 | 8-1/4 | 2-3/4 | 7 | 8 | 9 | N/A | 9-1/4 | N/A | 12-1/8 | N/A | 5-3/4 | N/A | N/A | 5-7/8 | N/A |
| 6 | 6 | 11 | 9-1/4 | 3-1/8 | 8-11/16 | 9-11/16 | 10-13/16 | N/A | 10-1/8 | N/A | 13 | N/A | 7-1/8 | 7-1/8 | N/A | 6-3/4 | 6-3/4 |
| 6 | 6 | 12 | 9-1/4 | 3-1/8 | 8-11/16 | 9-11/16 | 10-13/16 | N/A | 10-1/8 | N/A | 13 | N/A | N/A | 7-1/8 | N/A | N/A | 6-3/4 |

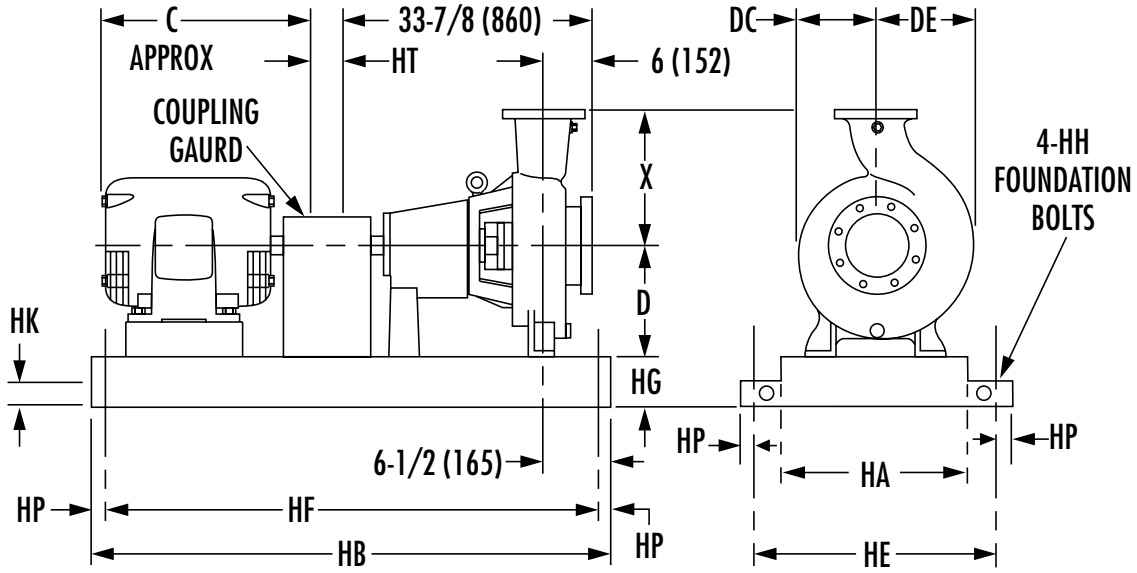
NOTES:
1. All dimensions in inches (mm).
2. Dimensions may vary ± 1/4.
3. Not for construction purposes unless certified.
4. N/A = not applicable.
5. Check discharge position. Casing dimensions which exceed dimension "D" may require pads for the pump and/or motor.
6. Conduit box is shown in approximate location. Dimensions are not specified as they vary with each motor manufacturer

* Dim "HT" may vary 1/8 TO 1.

† D Dimension of 5 x 6 x 11, 5 x 6 x 12, 6 x 6 x 11 and 6 x 6 x 12 pump with 213T thru 286T motor is 9.

# AURORA MODEL 364A PUMPS

## 15 (381) CASE BORE POWER FRAME 21 ON STEEL DRIP RIM BASE




| | |
|---|---|
| **CASE BORE** | 15 (381) |
| **"D" PUMP** | 14-1/2 (368) |

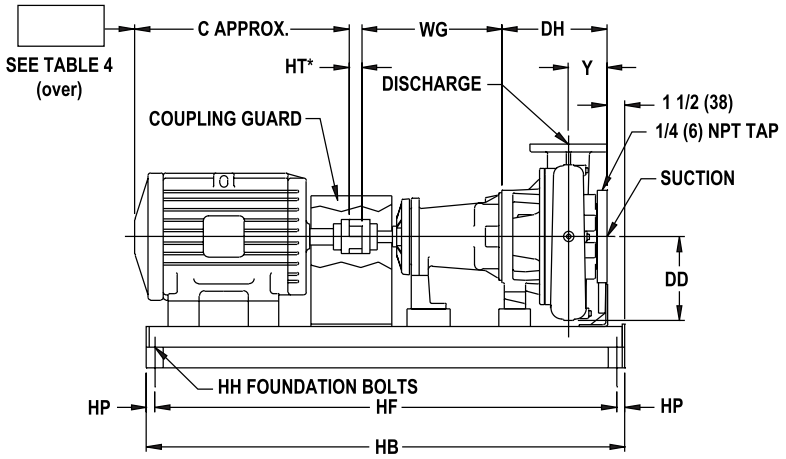
| FRAME SIZE | C | "D" MOTOR | HA | HB | HE | HF | HG | HH | HP | HK | HT | BASEPLATE DESIGNATION |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 286T | 25 (635) | 7 (178) | 22 (559) | 64-1/2 (1638) | 29-1/8 (740) | 62-7/8 (1597) | 4-1/2 (114) | 3/4 (19) | 13/16 (21) | 2 (51) | 1-1/16 (27) | 16 (406) |
| 324T | 26 (660) | 8 (203) | | | | | | | | | | |
| 326T | 28 (711) | | | | | | | | | | | |
| 364T | 29 (737) | 9 (229) | | | | | | | | | 1-1/4 (6) | |
| 364TS | 27 (686) | | | | | | | | | | | |
| 365T | 30 (762) | | | | | | | | | | 2 (51) | |
| 365TS | 28 (711) | | | | | | | | | | | |
| 404T | 33 (838) | 10 (254) | | 74-1/2 (1892) | | 72-7/8 (1851) | | | | | 2-1/16 (52) | 17 (432) |
| 404TS | 30 (762) | | | | | | | | | | 2 (51) | |
| 405TS | 34 (864) | | | | | | | | | | 2-1/16 (52) | |
| 405TS | 31 (787) | | | | | | | | | | | |
| 444TS | 34 (864) | 11 (279) | | | | | | | | | 1-1/4 (32) | |
| 445TS | 36 (914) | | | | | | | | | | | |

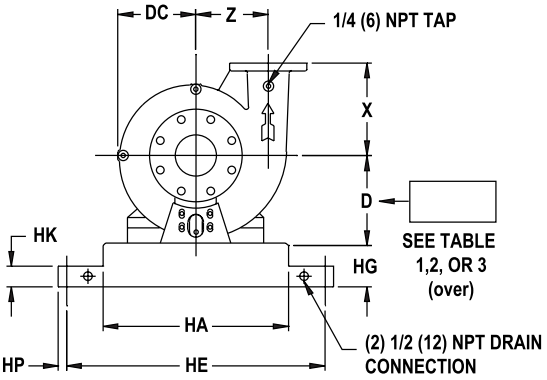
| PUMP SIZE | FLANGE SIZE DISCH. | FLANGE SIZE SUCT. | DC | DE | X |
|---|---|---|---|---|---|
| 6 x 8 x 15 | 6 (152) | 8 (203) | 10-7/16 (265) | 12-7/8 (327) | 18 (457) |
| 8 x 10 x 15 | 8 (203) | 10 (254) | 11 (279) | 14-3/8 (365) | 19 (483) |

Standard flanges 150 lb. per ANSI B16.5

NOTES:
1. Dimensions are approximate.
2. Dimensions are in inches (mm) and may vary ± 1/4 (6).
3. Not for construction purposes unless certified.
4. Three grout holes are provided in top of base.
5. Dimension "D" is determined by larger "D" dimension of pump and motor combination.

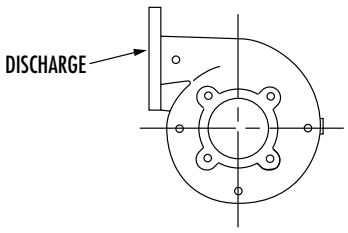
AURORA®
Pentair Pump Group




## MODEL 344A ILLUSTRATED

| PUMPS WITH FLANGED SUCTION CONNECTIONS AND THREADED DISCHARGE CONNECTIONS | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| PUMP SIZE | | | | | | | | | |
| DISCHARGE | SUCTION | CASE BORE | X | Y | Z | DC | DD | FRAME 1 DH | FRAME 2 & 3 DH |
| 1-1/4 | 1-1/2 | 7 | 5-1/4 (133) | 3-3/8 (86) | 4-3/16 (106) | 4-15/16 (125) | 5-3/16 (132) | 8-1/8 (206) | N/A |
| 1-1/4 | 1-1/2 | 9 | 6-5/8 (168) | 3-1/2 (89) | 5-3/8 (137) | 6-3/16 (157) | 6-3/8 (162) | 8-3/16 (208) | N/A |
| 1-1/2 | 2 | 7 | 5-3/8 (137) | 3-7/16 (87) | 4-5/16 (110) | 5-1/8 (130) | 5-3/8 (137) | 8-1/4 (210) | N/A |
| 1-1/2 | 2 | 9 | 6-3/4 (171) | 3-9/16 (90) | 5-1/2 (140) | 6-5/16 (160) | 6-9/16 (167) | 8-5/16 (211) | 9-5/16 (237) |
| 1-1/2 | 2 | 12 | 7-3/4 (197) | 3-11/16 (94) | 7-1/16 (179) | 8 (203) | 8-1/14 (205) | N/A | 9-5/16 (237) |
| PUMPS WITH ANSI 125 LB. FLANGED CONNECTIONS | | | | | | | | | |
| 2 | 2-1/2 | 7 | 5-5/8 (143) | 2-13/16 (71) | 4-9/16 (116) | 5-3/8 (137) | 5-13/16 (148) | 7-3/4 (197) | 8-3/4 (222) |
| 2 | 2-1/2 | 9 | 7 (178) | 2-13/16 (71) | 5-11/16 (144) | 6-1/2 (165) | 6-7/8 (175) | 7-11/16 (195) | 8-11/16 (221) |
| 2 | 2-1/2 | 12 | 8 (203) | 2-13/16 (71) | 7-3/16 (183) | 8-3/16 (208) | 8-1/2 (216) | N/A | 8-13/16 (224) |
| 2 | 3 | 11 | 8 (203) | 3-5/16 (84) | 6-1/2 (165) | 7 (178) | 7-3/8 (187) | N/A | 9-7/16 (240) |
| 2-1/2 | 3 | 7 | 5-7/8 (149) | 2-15/16 (75) | 4-13/16 (122) | 5-13/16 (148) | 6-1/4 (159) | 8 (203) | 9 (229) |
| 2-1/2 | 3 | 9 | 7-1/4 (184) | 2-15/16 (75) | 5-15/16 (151) | 6-3/4 (171) | 7-1/4 (184) | 7-15/16 (202) | 8-15/16 (227) |
| 2-1/2 | 3 | 12 | 8-1/4 (210) | 2-15/16 (75) | 7-3/8 (187) | 8-3/8 (213) | 8-3/4 (222) | N/A | 9-1/16 (230) |
| 3 | 4 | 9 | 7-1/2 (191) | 3-1/16 (78) | 6-1/8 (156) | 6-7/8 (175) | 7-7/16 (189) | 8-3/16 (208) | 9-3/16 (233) |
| 3 | 4 | 11 | 9 (229) | 3-11/16 (94) | 7 (178) | 7-9/16 (192) | 8-3/16 (208) | N/A | 10-1/8 (257) |
| 3 | 4 | 12 | 8-1/2 (216) | 3-1/16 (78) | 7-9/16 (192) | 8-7/16 (214) | 8-15/16 (227) | N/A | 9-5/16 (237) |
| 4 | 4 | 7 | 6-1/2 (165) | 3-7/16 (87) | 5-1/2 (140) | 6-7/16 (164) | 7-5/16 (186) | 8-7/8 (225) | 9-7/8 (251) |
| 4 | 5 | 9A | 7-1/4 (184) | 4-1/16 (103) | 5-3/4 (146) | 6-11/16 (170) | 7-3/8 (187) | N/A | 10-5/16 (262) |
| 4 | 5 | 9B | 7-3/4 (197) | 3-9/16 (90) | 6-5/8 (168) | 8-1/16 (205) | 8-11/16 (221) | N/A | 9-15/16 (252) |
| 4 | 5 | 11 | 9 (229) | 3-15/16 (100) | 7-1/4 (184) | 7-15/16 (202) | 8-11/16 (221) | N/A | 10-9/16 (268) |
| 4 | 5 | 12 | 8-3/4 (222) | 3-9/16 (90) | 7-15/16 (202) | 8-7/8 (225) | 9-9/16 (243) | N/A | 10-1/16 (256) |
| 5 | 6 | 11 | 9 (229) | 4-1/8 (105) | 8-1/16 (205) | 8-11/16 (221) | 10-1/8 (257) | N/A | 11-1/8 (283) |
| 5 | 6 | 12 | 9 (229) | 3-7/8 (98) | 8-5/16 (211) | 9-1/4 (235) | 10-1/8 (257) | N/A | 10-5/8 (270) |
| 6 | 6 | 9 | 8-1/4 (210) | 3-3/4 (95) | 7 (178) | 8 (203) | 9 (229) | N/A | 10-1/4 (260) |
| 6 | 6 | 11 | 9-1/4 (235) | 4-1/8 (105) | 8-11/16 (221) | 9-11/16 (246) | 10-13/16 (275) | N/A | 11-1/8 (283) |
| 6 | 6 | 12 | 9-1/4 (235) | 4-1/8 (105) | 8-11/16 (221) | 9-11/16 (246) | 10-13/16 (275) | N/A | 11-1/8 (283) |




POSITION (4)

| BASE | SIZE | HA | HB | HE | HG | HH | HP | HK | HF |
|---|---|---|---|---|---|---|---|---|---|
| 7 | 14x36 | 14 (355) | 36-1/2 (927) | 19 (482) | 3 (76) | 5/8 (15) | 3/4 (19) | 1-1/2 (38) | 35 (889) |
| 8 | 14x42 | 14 (355) | 42-1/2 (1079) | 19 (482) | 3 (76 | 5/8 (15) | 3/4 (19) | 1-1/2 (38) | 41 (1041) |
| 11 | 18x46 | 18 (457) | 46-1/2 (1181) | 25-1/8 (638) | 4 (102) | 3/4 (19) | 13/16 (20) | 2 (50) | 44-7/8 (1139) |
| 12 | 18x54 | 18 (457) | 54-1/2 (1384) | 25-1/8 (638) | 4 (102) | 3/4 (19) | 13/16 (20) | 2 (50) | 52-7/8 (1343) |
| 15 | 22x54 | 22 (558) | 54-1/2 (1384) | 29-1/8 (739) | 4-1/2 (114) | 3/4 (19) | 13/16 (20) | 2 (50) | 52-7/8 (1343) |
| 16 | 22x64 | 22 (558) | 64-1/2 (1638) | 29-1/8 (739) | 4-1/2 (114) | 3/4 (19) | 13/16 (20) | 2 (50) | 62-7/8 (1597) |

NOTES:
1. All dimensions in inches (mm).
2. Dimensions may vary ± 1/4" (6).
3. Not for construction purposes unless certified.
4. N/A = not applicable.
5. Conduit box is shown in approximate location. Dimensions are not specified as they vary with each motor manufacturer.

* Dimension "HT" may vary 1/8" (3) to 1" (25).

# AURORA MODEL 344A PUMPS

## OPTIONAL CASING FOOT POWER FRAME TABLES

Supersedes Section 340A Page 306
Dated October 1993

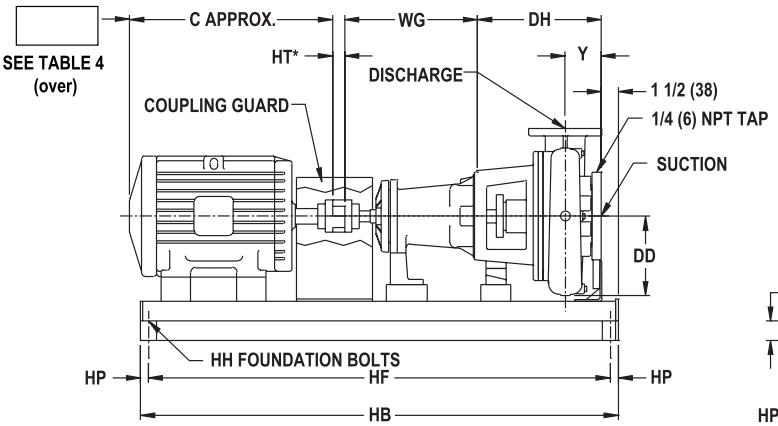
| TABLE 4 | | | |
|---|---|---|---|
| MOTOR FRAME | C | MOTOR FRAME | C |
| 56C | 12 | 284TS | 22 |
| 143T | 12 | 286T | 25 |
| 145T | 13 | 286TS | 24 |
| 182T | 13 | 324T | 26 |
| 184T | 14 | 324TS | 25 |
| 213T | 16 | 326T | 28 |
| 215T | 18 | 326TS | 26 |
| 254T | 21 | 364TS | 27 |
| 256T | 23 | 365TS | 28 |
| 284T | 24 | 404TS | 30 |

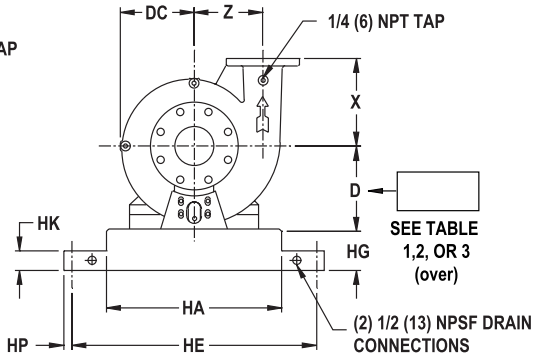
| TABLE 1 | | | POWER FRAME 1 | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DISCHARGE | SUCTION | CASE BORE | BASE | FRAME 56C D | BASE | FRAME 143T-45T D | BASE | FRAME 182T-184T D | BASE | FRAME 213T-215T D | BASE | FRAME 254T D |
| 1-1/4 (32) | 1-1/2 (38) | 7 (178) | 7 | 6-3/4 (171) | 7 | 6-3/4 (171) | 7 | 6-3/4 (171) | 8 | 6-3/4 (171) | 8 | 6-3/4 (171) |
| 1-1/4 (32) | 1-1/2 (38) | 9 (229) | 7 | 6-3/4 (171) | 7 | 6-3/4 (171) | 7 | 6-3/4 (171) | 8 | 6-3/4 (171) | 8 | 6-3/4 (171) |
| 1-1/2 (38) | 2 (51) | 7 (178) | 7 | 6-3/4 (171) | 7 | 6-3/4 (171) | 7 | 6-3/4 (171) | 8 | 6-3/4 (171) | 8 | 6-3/4 (171) |
| 1-1/2 (38) | 2 (51) | 9 (229) | 7 | 6-3/4 (171) | 7 | 6-3/4 (171) | 7 | 6-3/4 (171) | 8 | 6-3/4 (171) | 8 | 6-3/4 (171) |
| 2 (51) | 2-1/2 (64) | 7 (178) | 7 | 7-1/2 (191) | 7 | 7-1/2 (191) | 7 | 7-1/2 (191) | 8 | 7-1/2 (191) | 8 | 7-1/2 (191) |
| 2 (51) | 2-1/2 (64) | 9 (229) | 7 | 7-1/2 (191) | 7 | 7-1/2 (191) | 7 | 7-1/2 (191) | 8 | 7-1/2 (191) | 8 | 7-1/2 (191) |
| 2-1/2 (64) | 3 (76) | 7 (178) | 7 | 7-1/2 (191) | 7 | 7-1/2 (191) | 7 | 7-1/2 (191) | 8 | 7-1/2 (191) | 8 | 7-1/2 (191) |
| 2-1/2 (64) | 3 (76) | 9 (229) | 7 | 7-1/2 (191) | 7 | 7-1/2 (191) | 7 | 7-1/2 (191) | 8 | 7-1/2 (191) | 8 | 7-1/2 (191) |
| 3 (76) | 4 (102) | 9 (229) | 7 | 8-1/4 (210) | 7 | 8-1/4 (210) | 7 | 8-1/4 (210) | 8 | 8-1/4 (210) | 8 | 8-1/4 (210) |
| 4 (102) | 4 (102) | 7 (178) | 7 | 8-1/4 (210) | 7 | 8-1/4 (210) | 8 | 8-1/4 (210) | 8 | 8-1/4 (210) | 8 | 8-1/4 (210) |

| TABLE 2 | | | POWER FRAME 2 | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DISCHARGE | SUCTION | CASE BORE | BASE | FRAME 143T-145T D | BASE | FRAME 182T-184T D | BASE | FRAME 213T-215T D | BASE | FRAME 254T-256T D | BASE | FRAME 284T/TS-286T/TS D | BASE | FRAME 324T/TS-326T/TS D | BASE | FRAME 364TS-365TS D |
| 1-1/2 | 2 | 9 | 8 | 7 (178) | 8 | 7 (178) | 11 | 7 (178) | 12 | 7 (178) | 12 | 7 (178) | 12 | 8-5/8 (219) | 15 | 9 (229) |
| 1-1/2 | 2 | 12 | 8 | 8-5/8 (219) | 8 | 8-5/8 (219) | 11 | 8-5/8 (219) | 12 | 8-5/8 (219) | 12 | 8-5/8 (219) | 12 | 8-5/8 (219) | 15 | 9 (229) |
| 2 | 2-1/2 | 7 | 8 | 7-1/2 (191) | 8 | 7-1/2 (191) | 11 | 7-1/2 (191) | 12 | 7-1/2 (191) | 12 | 7-1/2 (191) | - | N/A | - | N/A |
| 2 | 2-1/2 | 12 | 8 | 9-1/4 (235) | 8 | 9-1/4 (235) | 11 | 9-1/4 (235) | 12 | 9-1/4 (235) | 12 | 9-1/4 (235) | 12 | 9-1/4 (235) | 15 | 9-1/4 (235) |
| 2 | 3 | 11 | 8 | 7-3/4 (197) | 8 | 7-3/4 (197) | 11 | 7-3/4 (197) | 12 | 7-3/4 (197) | 12 | 7-3/4 (197) | 12 | 9-1/8 (232) | - | N/A |
| 2-1/2 | 3 | 7 | 8 | 7-1/2 (191) | 8 | 7-1/2 (191) | 11 | 7-1/2 (191) | 12 | 7-1/2 (191) | 12 | 7-1/2 (191) | - | N/A | - | N/A |
| 2-1/2 | 3 | 12 | 8 | 9-1/2 (241) | 8 | 9-1/2 (241) | 11 | 9-1/2 (241) | 12 | 9-1/2 (241) | 12 | 9-1/2 (241) | 12 | 9-1/2 (241) | 15 | 9-1/2 (241) |
| 3 | 4 | 9 | 8 | 8-1/4 (210) | 8 | 8-1/4 (210) | 11 | 8-1/4 (210) | 12 | 8-1/4 (210) | 12 | 8-1/4 (210) | 12 | 8-1/4 (210) | 15 | 10 (254) |
| 3 | 4 | 11 | 8 | 8-5/8 (219) | 8 | 8-5/8 (219) | 11 | 8-5/8 (219) | 12 | 8-5/8 (219) | 12 | 8-5/8 (219) | 12 | 8-5/8 (219) | - | N/A |
| 3 | 4 | 12 | 8 | 10 (254) | 8 | 10 (254) | 11 | 10 (254) | 12 | 10 (254) | 12 | 10 (254) | 12 | 10 (254) | 15 | 10 (254) |
| 4 | 4 | 7 | 8 | 8-1/4 (210) | 8 | 8-1/4 (210) | 11 | 8-1/4 (210) | 12 | 8-1/4 (210) | 12 | 8-1/4 (210) | - | N/A | - | N/A |
| 4 | 5 | 9A | 8 | 8-7/8 (225) | 8 | 8-7/8 (225) | 11 | 8-7/8 (225) | 12 | 8-7/8 (225) | 12 | 8-7/8 (225) | 12 | 8-7/8 (225) | 15 | 9 (229) |
| 4 | 5 | 9B | 8 | 9 (229) | 11 | 9 (229) | 11 | 9 (229) | 12 | 9 (229) | 12 | 9 (229) | 12 | 9 (229) | 15 | 9 (229) |
| 4 | 5 | 11 | 8 | 9 (229) | 11 | 9 (229) | 11 | 9 (229) | 12 | 9 (229) | 12 | 9 (229) | 12 | 9 (229) | - | N/A |
| 4 | 5 | 12 | 8 | 10-3/4 (273) | 11 | 10-3/4 (273) | 11 | 10-3/4 (273) | 12 | 10-3/4 (273) | 12 | 10-3/4 (273) | 12 | 10-3/4 (273) | 15 | 10-3/4 (273) |
| 5 | 6 | 11 | - | N/A | - | N/A | 11 | 11-1/4 (286) | 12 | 11-1/4 (286) | 12 | 11-1/4 (286) | 12 | 11-1/4 (286) | - | N/A |
| 5 | 6 | 12 | - | N/A | - | N/A | - | N/A | 12 | 11-1/4 (286) | 12 | 11-1/4 (286) | 12 | 11-1/4 (286) | 15 | 11-1/4 (286) |
| 6 | 6 | 9 | - | N/A | - | N/A | 11 | 9-1/2 (241) | 12 | 9-1/2 (241) | 12 | 9-1/2 (241) | 12 | 9-1/2 (241) | - | N/A |
| 6 | 6 | 11 | - | N/A | - | N/A | 11 | 11-1/2 (292) | 12 | 11-1/2 (292) | 12 | 11-1/2 (292) | 12 | 11-1/2 (292) | - | N/A |

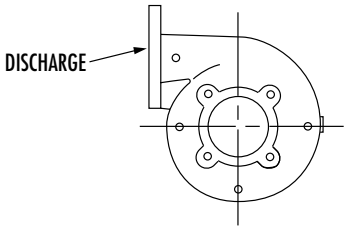
| TABLE 3 | | | POWER FRAME 3 | | | | | | | | | | | | | | BASE | FRAME 404TS D |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2 | 2-1/2 | 9 | 8 | 7-1/2 (191) | 8 | 7-1/2 (191) | 11 | 7-1/2 (191) | 12 | 7-1/2 (191) | 12 | 7-1/2 (191) | 12 | 9 (229) | 15 | 9 (229) | - | N/A |
| 2-1/2 | 3 | 9 | 8 | 7-1/2 (191) | 8 | 7-1/2 (191) | 11 | 7-1/2 (191) | 12 | 7-1/2 (191) | 12 | 7-1/2 (191) | 12 | 9-1/4 (235) | 15 | 9-1/4 (235) | - | N/A |
| 3 | 4 | 9 | 8 | 8-1/4 (210) | 8 | 8-1/4 (210) | 11 | 8-1/4 (210) | 12 | 8-1/4 (210) | 12 | 8-1/4 (210) | 12 | 8-1/4 (210) | 15 | 10 (254) | - | N/A |
| 3 | 4 | 12 | 8 | 10 (254) | 8 | 10 (254) | 11 | 10 (254) | 12 | 10 (254) | 12 | 10 (254) | 12 | 10 (254) | 15 | 10 (254) | - | N/A |
| 4 | 5 | 9A | 8 | 8-7/8 (225) | 8 | 8-7/8 (225) | 11 | 8-7/8 (225) | 12 | 8-7/8 (225) | 12 | 8-7/8 (225) | 12 | 8-7/8 (225) | 15 | 9 (229) | - | N/A |
| 4 | 5 | 12 | 8 | 10-3/4 (273) | 11 | 10-3/4 (273) | 11 | 10-3/4 (273) | 12 | 10-3/4 (273) | 12 | 10-3/4 (273) | 12 | 10-3/4 (273) | 15 | 10-3/4 (273) | - | N/A |
| 5 | 6 | 11 | - | N/A | - | N/A | 11 | 11-1/4 (286) | 12 | 11-1/4 (286) | 12 | 11-1/4 (286) | 12 | 11-1/4 (286) | - | N/A | - | N/A |
| 5 | 6 | 12 | - | N/A | - | N/A | - | N/A | 12 | 11-1/4 (286) | 12 | 11-1/4 (286) | 12 | 11-1/4 (286) | 15 | 11-1/4 (286) | - | N/A |
| 6 | 6 | 11 | - | N/A | - | N/A | 11 | 11-1/2 (292) | 12 | 11-1/2 (292) | 12 | 11-1/2 (292) | 12 | 11-1/2 (292) | - | N/A | - | N/A |
| 6 | 6 | 12 | - | N/A | - | N/A | - | N/A | 12 | 11-3/8 (289) | 12 | 11-3/8 (289) | 12 | 11-3/8 (289) | 15 | 11-3/8 (289) | 16 | 11-3/8 (289) |

AURORA®
Pentair Pump Group




| PUMPS WITH FLANGED SUCTION CONNECTIONS AND THREADED DISCHARGE CONNECTIONS | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| PUMP SIZE | | | | | | | | | |
| DISCHARGE | SUCTION | CASE BORE | X | Y | Z | DC | DD | FRAME 1 DH | FRAME 2 & 3 DH |
| 1-1/4 | 1-1/2 | 7 | 5-1/4 (133) | 3-3/8 (86) | 4-3/16 (106) | 4-15/16 (125) | 5-3/16 (132) | 11-3/16 (284) | N/A |
| 1-1/4 | 1-1/2 | 9 | 6-5/8 (168) | 3-1/2 (89) | 5-3/8 (137) | 6-3/16 (157) | 6-3/8 (162) | 11-1/4 (286) | N/A |
| 1-1/2 | 2 | 7 | 5-3/8 (137) | 3-7/16 (87) | 4-5/16 (110) | 5-1/8 (130) | 5-3/8 (137) | 11-15/16 (303) | N/A |
| 1-1/2 | 2 | 9 | 6-3/4 (171) | 3-9/16 (90) | 5-1/2 (140) | 6-5/16 (160) | 6-9/16 (167) | 11-3/8 (290) | 12-3/16 (310) |
| 1-1/2 | 2 | 12 | 7-3/4 (197) | 3-11/16 (94) | 7-1/16 (179) | 8 (203) | 8-1/4 (210) | N/A | 12-7/16 (316) |
| PUMPS WITH ANSI 125 LB. FLANGED CONNECTIONS | | | | | | | | | |
| 2 | 2-1/2 | 7 | 5-5/8 (143) | 2-13/16 (71) | 4-9/16 (116) | 5-3/8 (137) | 5-13/16 (148) | 10-13/16 (275) | 11-5/8 (295) |
| 2 | 2-1/2 | 9 | 7 (178) | 2-13/16 (71) | 5-11/16 (144) | 6-1/2 (165) | 6-7/8 (175) | 10-3/4 (273) | 11-9/16 (294) |
| 2 | 2-1/2 | 12 | 8 (203) | 2-13/16 (71) | 7-3/16 (183) | 8-3/16 (208) | 8-1/2 (216) | N/A | 11-11/16 (297) |
| 2 | 3 | 11 | 8 (203) | 3-5/16 (84) | 6-1/2 (165) | 7 (178) | 7-3/8 (187) | N/A | 12-5/16 (313) |
| 2-1/2 | 3 | 7 | 5-7/8 (149) | 2-15/16 (75) | 4-13/16 (122) | 5-13/16 (148) | 6-1/4 (159) | 11-1/16 (281) | 11-7/8 (302) |
| 2-1/2 | 3 | 9 | 7-1/4 (184) | 2-15/16 (75) | 5-15/16 (151) | 6-3/4 (171) | 7-1/4 (184) | 7-15/16 (202) | 11-13/16 (300) |
| 2-1/2 | 3 | 12 | 8-1/4 (210) | 2-15/16 (75) | 7-3/8 (187) | 8-3/8 (213) | 8-3/4 (222) | N/A | 11-15/16 (303) |
| 3 | 4 | 9 | 7-1/2 (191) | 3-1/16 (78) | 6-1/8 (156) | 6-7/8 (175) | 7-7/16 (189) | N/A | 12-1/6 (309) |
| 3 | 4 | 11 | 9 (229) | 3-11/16 (94) | 7 (178) | 7-9/16 (192) | 8-3/16 (208) | N/A | 13 (330) |
| 3 | 4 | 12 | 8-1/2 (216) | 3-1/16 (78) | 7-9/16 (192) | 8-7/16 (214) | 8-15/16 (227) | N/A | 12-3/16 (310) |
| 4 | 4 | 7 | 6-1/2 (165) | 3-7/16 (87) | 5-1/2 (140) | 6-7/16 (164) | 7-5/16 (186) | 11-15/16 (303) | 12-3/4 (324) |
| 4 | 5 | 9A | 7-1/4 (184) | 4-1/16 (103) | 5-3/4 (146) | 6-11/16 (170) | 7-3/8 (187) | N/A | 13-3/16 (335) |
| 4 | 5 | 9B | 7-3/4 (197) | 3-9/16 (90) | 6-5/8 (168) | 8-1/16 (205) | 8-11/16 (221) | N/A | 12-13/16 (325) |
| 4 | 5 | 11 | 9 (229) | 3-15/16 (100) | 7-1/4 (184) | 7-15/16 (202) | 8-11/16 (221) | N/A | 13-3/16 (335) |
| 4 | 5 | 12 | 8-3/4 (222) | 3-9/16 (90) | 7-15/16 (202) | 8-7/8 (225) | 9-9/16 (243) | N/A | 12-13/16 (325) |
| 5 | 6 | 11 | 9 (229) | 4-1/8 (105) | 8-1/16 (205) | 8-11/16 (221) | 10-1/8 (257) | N/A | 14 (356) |
| 5 | 6 | 12 | 9 (229) | 3-7/8 (98) | 8-5/16 (211) | 9-1/4 (235) | 10-1/8 (257) | N/A | 13-1/2 (343) |
| 6 | 6 | 9 | 8-1/4 (210) | 3-3/4 (95) | 7 (178) | 8 (203) | 9 (229) | N/A | 13-1/8 (333) |
| 6 | 6 | 11 | 9-1/4 (235) | 4-1/8 (105) | 8-11/16 (221) | 9-11/16 (246) | 10-13/16 (275) | N/A | 14 (356) |
| 6 | 6 | 12 | 9-1/4 (235) | 4-1/8 (105) | 8-11/16 (221) | 9-11/16 (246) | 10-13/16 (275) | N/A | 14 (356) |




POSITION (4)

| BASE | SIZE | HA | HB | HE | HG | HH | HP | HK | HF |
|---|---|---|---|---|---|---|---|---|---|
| 7 | 14 x 36 | 14 (356) | 36-1/2 (927) | 19 (483) | 3 (76) | 5/8 (16) | 3/4 (19) | 1-1/2 (38) | 35 (889) |
| 8 | 14 x 42 | 14 (356) | 42-1/2 (1080) | 19 (483) | 3 (76) | 5/8 (16) | 13/16 (20) | 1-1/2 (38) | 41 (1041) |
| 11 | 18 x 46 | 18 (457) | 46-1/2 (1181) | 25-1/8 (638) | 4 (102) | 3/4 (19) | 13/16 (20) | 2 (51) | 44-7/8 (1140) |
| 12 | 18 x 54 | 18 (457) | 54-1/2 (1384) | 25-1/8 (638) | 4 (102) | 3/4 (19) | 13/16 (20) | 2 (51) | 52-7/8 (1343) |
| 15 | 22 X 54 | 22 (559) | 54-1/2 (1384) | 29-1/8 (740) | 4-1/2 (114) | 3/4 (19) | 13/16 (20) | 2 (51) | 52-1/8 (1324) |
| 16 | 22 X 64 | 22 (559) | 64-1/2 (1638) | 29-1/8 (740) | 4-1/2 (114) | 3/4 (19) | 13/16 (20) | 2 (51) | 62-7/8 (1597) |

NOTES:
1. All dimensions in inches.
2. Dimensions may vary ± 1/4" (mm).
3. Not for construction purposes unless certified (6).
4. N/A = not applicable.
5. Conduit box is shown in approximate location. Dimensions are not specified as they vary with each motor manufacturer.

* Dimension "HT" may vary 1/8" (3) to 1" (24).

# AURORA MODEL 364A PUMPS

## OPTIONAL CASING FOOT POWER FRAME TABLES

Supersedes Section 360A Page 306
Dated October 1993

**TABLE 1** — **POWER FRAME 1**

| DISCHARGE | SUCTION | CASE BORE | BASE | FRAME 56C D | BASE | FRAME 143T-145T D | BASE | FRAME 182T-184T D | BASE | FRAME 213T-215T D | BASE | FRAME 254T D |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1- 1/4 | 1-1/2 | 7 | 7 | 6-3/4 (171) | 7 | 6-3/4 (171) | 7 | 6-3/4 (171) | 8 | 6-3/4 (171) | 8 | 6-3/4 (171) |
| 1-1/4 | 1-1/2 | 9 | 7 | 6-3/4 (171) | 7 | 6-3/4 (171) | 7 | 6-3/4 (171) | 8 | 6-3/4 (171) | 8 | 6-3/4 (171) |
| 1-1/2 | 2 | 7 | 7 | 6-3/4 (171) | 7 | 6-3/4 (171) | 7 | 6-3/4 (171) | 8 | 6-3/4 (171) | 8 | 6-3/4 (171) |
| 1-1/2 | 2 | 9 | 7 | 6-3/4 (171) | 7 | 6-3/4 (171) | 7 | 6-3/4 (171) | 8 | 6-3/4 (171) | 8 | 6-3/4 (171) |
| 2 | 2-1/2 | 7 | 7 | 7-1/2 (191) | 7 | 7-1/2 (191) | 7 | 7-1/2 (191) | 8 | 7-1/2 (191) | 8 | 7-1/2 (191) |
| 2 | 2-1/2 | 9 | 7 | 7-1/2 (191) | 7 | 7-1/2 (191) | 7 | 7-1/2 (191) | 8 | 7-1/2 (191) | 8 | 7-1/2 (191) |
| 2-1/2 | 3 | 7 | 7 | 7-1/2 (191) | 7 | 7-1/2 (191) | 7 | 7-1/2 (191) | 8 | 7-1/2 (191) | 8 | 7-1/2 (191) |
| 2-1/2 | 3 | 9 | 7 | 7-1/2 (191) | 7 | 7-1/2 (191) | 7 | 7-1/2 (191) | 8 | 7-1/2 (191) | 8 | 7-1/2 (191) |
| 3 | 4 | 9 | 7 | 8-1/4 (210) | 7 | 8-1/4 (210) | 7 | 8-1/4 (210) | 8 | 8-1/4 (210) | 8 | 8-1/4 (210) |
| 4 | 4 | 7 | 7 | 8-1/4 (210) | 7 | 8-1/4 (210) | 8 | 8-1/4 (210) | 8 | 8-1/4 (210) | 8 | 8-1/4 (210) |

**TABLE 4**

| MOTOR FRAME | C | MOTOR FRAME | C |
|---|---|---|---|
| 56C | 12 (304) | 284TS | 22 (558) |
| 143T | 12 (304) | 286T | 25 (635) |
| 145T | 13 (330) | 286TS | 24 (609) |
| 182T | 13 (330) | 324T | 26 (660) |
| 184T | 14 (355) | 324TS | 25 (635) |
| 213T | 16 (406) | 326T | 28 (711) |
| 215T | 18 (457) | 326TS | 26 (660) |
| 254T | 21 (533) | 364TS | 27 (685) |
| 256T | 23 (584) | 365TS | 28 (711) |
| 284T | 24 (609) | 404TS | 30 (762) |

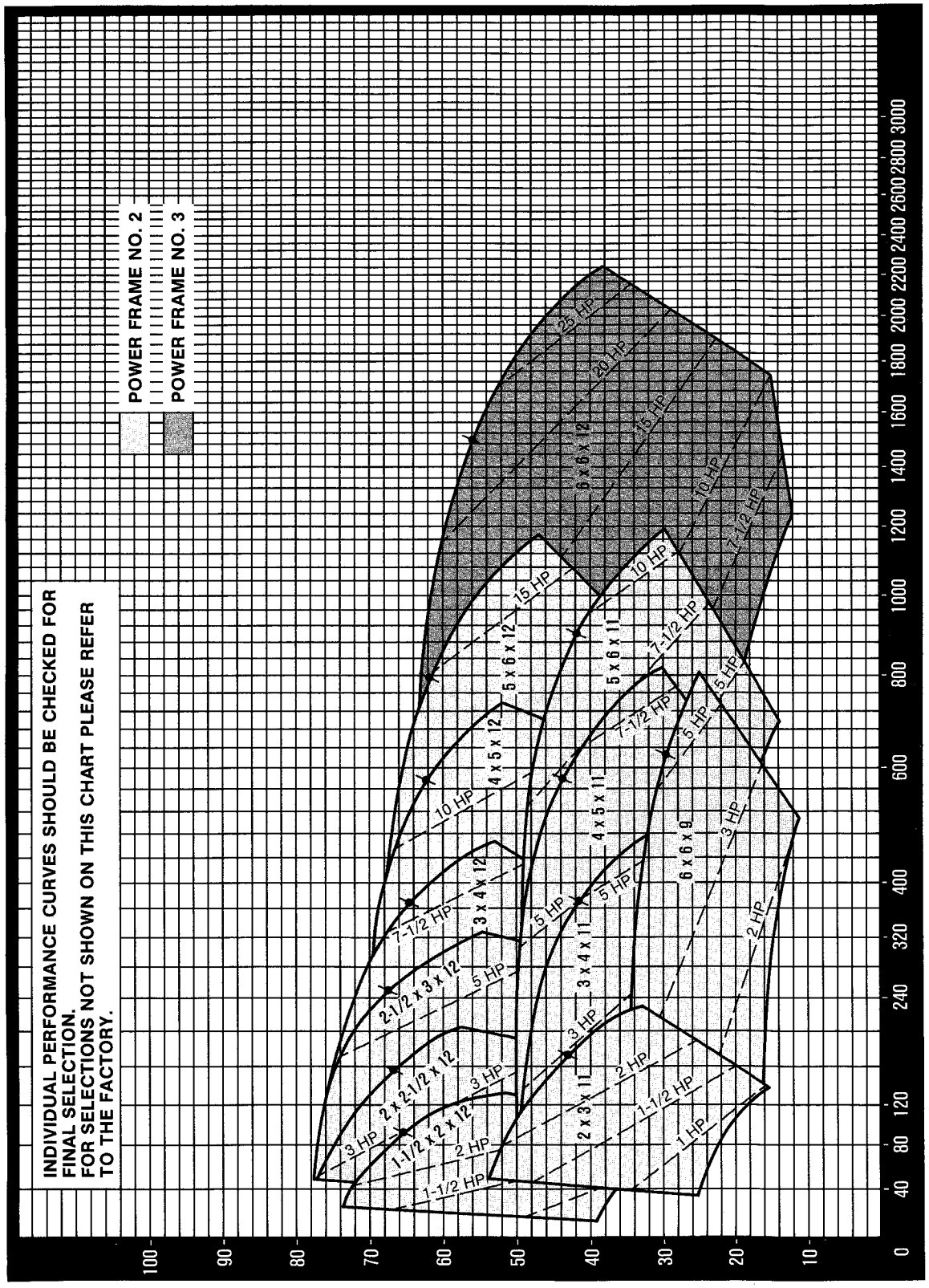
**TABLE 2** — **POWER FRAME 2**

| DISCHARGE | SUCTION | CASE BORE | BASE | FRAME 143T-145T D | BASE | FRAME 182T-184T D | BASE | FRAME 213T-215T D | BASE | FRAME 254T-256T D | BASE | FRAME 284T/TS-286T/TS D | BASE | FRAME 324T/TS-326T/TS D | BASE | FRAME 364TS-365TS D |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1-1/2 | 2 | 9 | 8 | 7 (178) | 8 | 7 (178) | 11 | 7 (178) | 12 | 7 (178) | 12 | 7 (178) | 12 | 8-5/8 (219) | 15 | 9 (229) |
| 1-1/2 | 2 | 12 | 8 | 8-5/8 (219) | 8 | 8-5/8 (219) | 11 | 8-5/8 (219) | 12 | 8-5/8 (219) | 12 | 8-5/8 (219) | 12 | 8-5/8 (219) | 15 | 9 (229) |
| 2 | 2-1/2 | 7 | 8 | 7-1/2 (191) | 8 | 7-1/2 (191) | 11 | 7-1/2 (191) | 12 | 7-1/2 (191) | 12 | 7-1/2 (191) | - | N/A | - | N/A |
| 2 | 2-1/2 | 12 | 8 | 9-1/4 (235) | 8 | 9-1/4 (235) | 11 | 9-1/4 (235) | 12 | 9-1/4 (235) | 12 | 9-1/4 (235) | 12 | 9-1/4 (235) | 15 | 9-1/4 (235) |
| 2 | 3 | 11 | 8 | 7-3/4 (197) | 8 | 7-3/4 (197) | 11 | 7-3/4 (197) | 12 | 7-3/4 (197) | 12 | 7-3/4 (197) | 12 | 9-1/8 (232) | - | N/A |
| 2-1/2 | 3 | 7 | 8 | 7-1/2 (191) | 8 | 7-1/2 (191) | 11 | 7-1/2 (191) | 12 | 7-1/2 (191) | 12 | 7-1/2 (191) | - | N/A | - | N/A |
| 2-1/2 | 3 | 12 | 8 | 9-1/2 (241) | 8 | 9-1/2 (241) | 11 | 9-1/2 (241) | 12 | 9-1/2 (241) | 12 | 9-1/2 (241) | 12 | 9-1/2 (241) | 15 | 9-1/2 (241) |
| 3 | 4 | 9 | 8 | 8-1/4 (210) | 8 | 8-1/4 (210) | 11 | 8-1/4 (210) | 12 | 8-1/4 (210) | 12 | 8-1/4 (210) | 12 | 8-1/4 (210) | 15 | 10 (254) |
| 3 | 4 | 11 | 8 | 8-5/8 (219) | 8 | 8-5/8 (219) | 11 | 8-5/8 (219) | 12 | 8-5/8 (219) | 12 | 8-5/8 (219) | 12 | 8-5/8 (219) | - | N/A |
| 3 | 4 | 12 | 8 | 10 (254) | 8 | 10 (254) | 11 | 10 (254) | 12 | 10 (254) | 12 | 10 (254) | 12 | 10 (254) | 15 | 10 (254) |
| 4 | 4 | 7 | 8 | 8-1/4 (210) | 8 | 8-1/4 (210) | 11 | 8-1/4 (210) | 12 | 8-1/4 (210) | 12 | 8-1/4 (210) | - | N/A | - | N/A |
| 4 | 5 | 9A | 8 | 8-7/8 (225) | 8 | 8-7/8 (225) | 11 | 8-7/8 (225) | 12 | 8-7/8 (225) | 12 | 8-7/8 (225) | 12 | 8-7/8 (225) | 15 | 9 (229) |
| 4 | 5 | 9B | 8 | 9 (229) | 11 | 9 (229) | 11 | 9 (229) | 12 | 9 (229) | 12 | 9 (229) | 12 | 9 (229) | 15 | 9 (229) |
| 4 | 5 | 11 | 8 | 9 (229) | 11 | 9 (229) | 11 | 9 (229) | 12 | 9 (229) | 12 | 9 (229) | 12 | 9 (229) | - | N/A |
| 4 | 5 | 12 | 8 | 10-3/4 (273) | 11 | 10-3/4 (273) | 11 | 10-3/4 (273) | 12 | 10-3/4 (273) | 12 | 10-3/4 (273) | 12 | 10-3/4 (273) | 15 | 10-3/4 (273) |
| 5 | 6 | 11 | - | N/A | - | N/A | 11 | 11-1/4 (286) | 12 | 11-1/4 (286) | 12 | 11-1/4 (286) | 12 | 11-1/4 (286) | - | N/A |
| 5 | 6 | 12 | - | N/A | - | N/A | - | N/A | 12 | 11-1/4 (286) | 12 | 11-1/4 (286) | 12 | 11-1/4 (286) | 15 | 11-1/4 (286) |
| 6 | 6 | 9 | - | N/A | - | N/A | 11 | 9-1/2 (241) | 12 | 9-1/2 (241) | 12 | 9-1/2 (241) | 12 | 9-1/2 (241) | - | N/A |
| 6 | 6 | 11 | - | N/A | - | N/A | 11 | 11-1/2 (292) | 12 | 11-1/2 (292) | 12 | 11-1/2 (292) | 12 | 11-1/2 (292) | - | N/A |

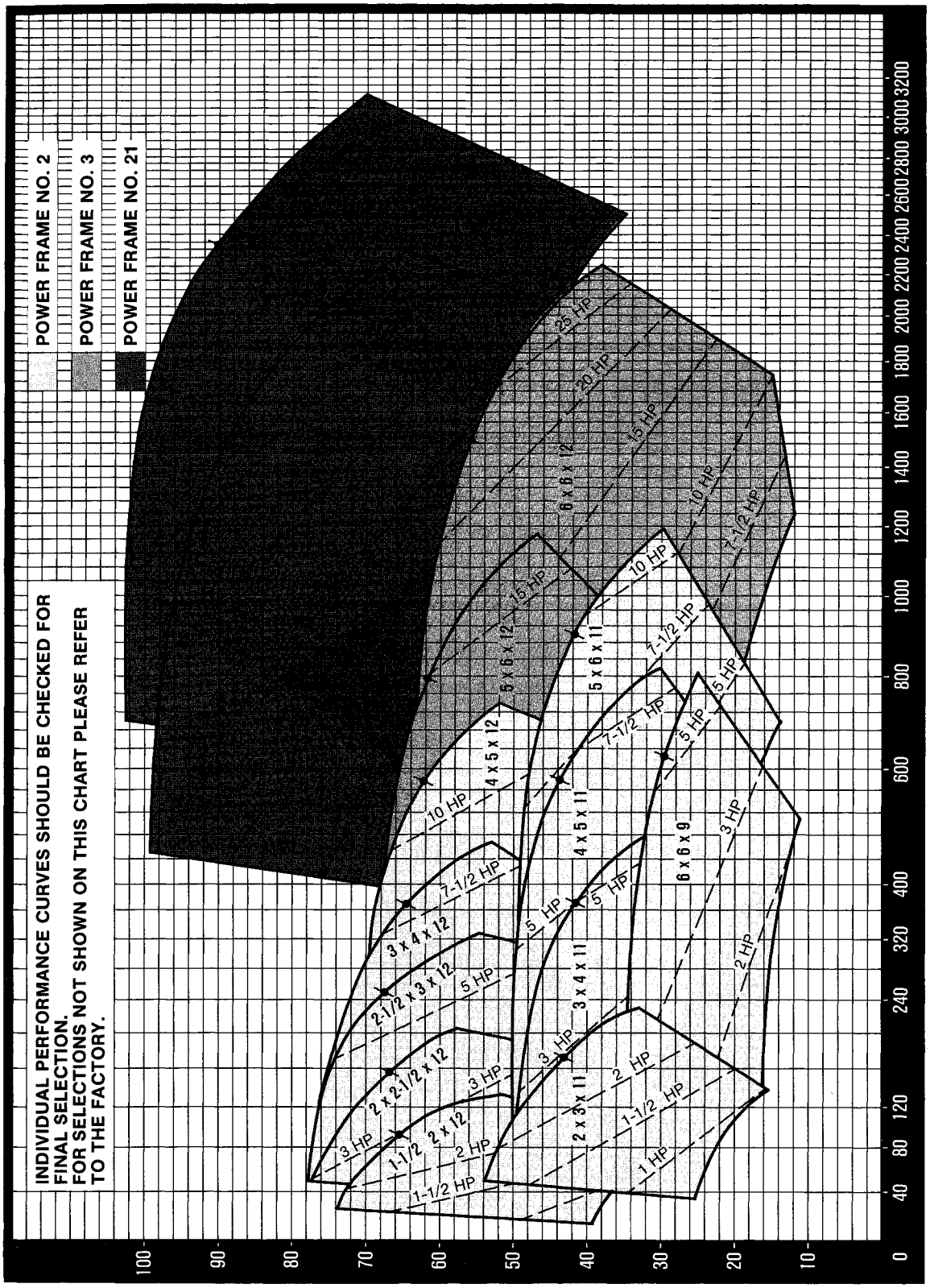
**TABLE 3** — **POWER FRAME 3**

| DISCHARGE | SUCTION | CASE BORE | BASE | FRAME 143T-145T D | BASE | FRAME 182T-184T D | BASE | FRAME 213T-215T D | BASE | FRAME 254T-256T D | BASE | FRAME 284T/TS-286T/TS D | BASE | FRAME 324T/TS-326T/TS D | BASE | FRAME 364TS-365TS D | BASE | FRAME 404TS D |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2 | 2-1/2 | 9 | 8 | 7-1/2 (191) | 8 | 7-1/2 (191) | 11 | 7-1/2 (191) | 12 | 7-1/2 (191) | 12 | 7-1/2 (191) | 12 | 9 (229) | 15 | 9 (229) | - | N/A |
| 2-1/2 | 3 | 9 | 8 | 7-1/2 (191) | 8 | 7-1/2 (191) | 11 | 7-1/2 (191) | 12 | 7-1/2 (191) | 12 | 7-1/2 (191) | 12 | 9-1/4 (235) | 15 | 9-1/4 (235) | - | N/A |
| 3 | 4 | 9 | 8 | 8-1/4 (210) | 8 | 8-1/4 (210) | 11 | 8-1/4 (210) | 12 | 8-1/4 (210) | 12 | 8-1/4 (210) | 12 | 8-1/4 (210) | 15 | 10 (254) | - | N/A |
| 3 | 4 | 12 | 8 | 10 (254) | 8 | 10 (254) | 11 | 10 (254) | 12 | 10 (254) | 12 | 10 (254) | 12 | 10 (254) | 15 | 10 (254) | - | N/A |
| 4 | 5 | 9A | 8 | 8-7/8 (225) | 8 | 8-7/8 (225) | 11 | 8-7/8 (225) | 12 | 8-7/8 (225) | 12 | 8-7/8 (225) | 12 | 8-7/8 (225) | 15 | 9 (229) | - | N/A |
| 4 | 5 | 12 | 8 | 10-3/4 (273) | 11 | 10-3/4 (273) | 11 | 10-3/4 (273) | 12 | 10-3/4 (273) | 12 | 10-3/4 (273) | 12 | 10-3/4 (273) | 15 | 10-3/4 (273) | - | N/A |
| 5 | 6 | 11 | - | N/A | - | N/A | 11 | 11-1/4 (286) | 12 | 11-1/4 (286) | 12 | 11-1/4 (286) | 12 | 11-1/4 (286) | - | N/A | - | N/A |
| 5 | 6 | 12 | - | N/A | - | N/A | - | N/A | 12 | 11-1/4 (286) | 12 | 11-1/4 (286) | 12 | 11-1/4 (286) | 15 | 11-1/4 (286) | - | N/A |
| 6 | 6 | 11 | - | N/A | - | N/A | 11 | 11-1/2 (292) | 12 | 11-1/2 (292) | 12 | 11-1/2 (292) | 12 | 11-1/2 (292) | - | N/A | - | N/A |
| 6 | 6 | 12 | - | N/A | - | N/A | - | N/A | 12 | 11-3/8 (289) | 12 | 11-3/8 (289) | 12 | 11-3/8 (289) | 15 | 11-3/8 (289) | 16 | 11-3/8 (289) |

# SELECTION CHART
# 1150 R.P.M.
# ENCLOSED IMPELLER



# AURORA SERIES 360
## SELECTION CHART
## 1150 R.P.M.
## ENCLOSED IMPELLER




AURORA®
PENTAIR PUMP GROUP

# Performance Curves for the 340/360 Series

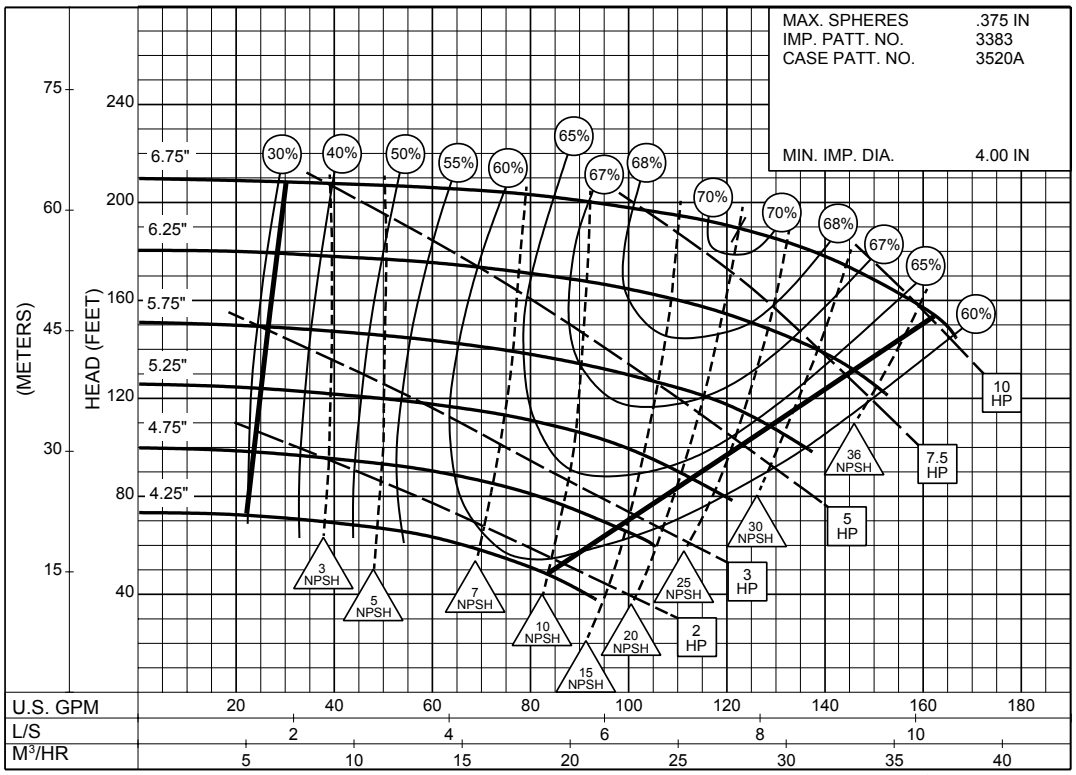
| MODEL/SIZE | R.P.M. | CATALOG PAGE | PDF PAGE |
|---|---|---|---|
| 1-1/4 x 1-1/2 x 7 | 3500/1750 | 401 | 2 |
| 1-1/4 x 1-1/2 x 9B | 1750 | 402 | 3 |
| 1-1/2 x 2 x 7 | 3500/1750 | 403 | 4 |
| 1-1/2 x 2 x 9A | 1750 | 404 | 5 |
| 1-1/2 x 2 x 9B | 1750 | 405 | 6 |
| 1-1/2 x 2 x 9C | 3500/1750 | 406 | 7 |
| 1-1/2 x 2 x 11 | 3500 | 406a | 8 |
| 1-1/2 x 2 x 11 | 1750/1150 | 407 | 10 |
| 1-1/2 x 2 x 12 | 1750/1150 | 408 | 11 |
| 2 x 2-1/2 x 7A | 3500/1750 | 409 | 12 |
| 2 x 2-1/2 x 7B | 3500/1750 | 410 | 13 |
| 2 x 2-1/2 x 9 | 3500/1750 | 411 | 14 |
| 2 x 2-1/2 x 12 | 1750/1150 | 412 | 15 |
| 2 x 3 x 11 | 1750/1150 | 413 | 16 |
| 2-1/2 x 3 x 7A | 3500/1750 | 414 | 17 |
| 2-1/2 x 3 x 7B | 3500/1750 | 415 | 18 |
| 2-1/2 x 3 x 9 | 3500/1750 | 416 | 19 |
| 2-1/2 x 3 x 12 | 1750/1150 | 417 | 20 |
| 3 x 4 x 9A | 3500/1750 | 418 | 21 |
| 3 x 4 x 9B | 3500/1750 | 419 | 22 |
| 3 x 4 x 11 | 1750/1150 | 420 | 23 |
| 3 x 4 x 12 | 1750/1150 | 421 | 24 |
| 4 x 4 x 7A | 3500/1750 | 422 | 25 |
| 4 x 4 x 7B | 3500/1750 | 423 | 26 |
| 4 x 4 x 7B | 3500/1750 | 424 | 27 |
| 4 x 5 x 9A | 3500/1750 | 425 | 28 |
| 4 x 5 x 9B | 1750 | 426 | 29 |
| 4 x 5 x 11 | 1750/1150 | 427 | 30 |
| 4 x 5 x 12 | 1750/1150 | 428 | 31 |
| 5 x 6 x 11 | 1750/1150 | 429 | 32 |
| 5 x 6 x 12 | 1750/1150 | 430 | 33 |
| 6 x 6 x 9 | 1750/1150 | 431 | 34 |
| 6 x 6 x 11 | 1750/1150 | 432 | 35 |
| 6 x 6 x 11A | 1750/1150 | 433 | 36 |
| 6 x 6 x 12B | 1750/1150 | 434 | 37 |
| 6 x 8 x 15 | 1775/1150 | 436 | 39 |
| 8 x 10 x 15 | 1750/1175 | 437 | 40 |

# 1-1/4 x 1-1/2 x 7
# SERIES 340 OR 360

ENCLOSED IMPELLER

Supersedes Section 340/360 Page 401
Dated January 1986

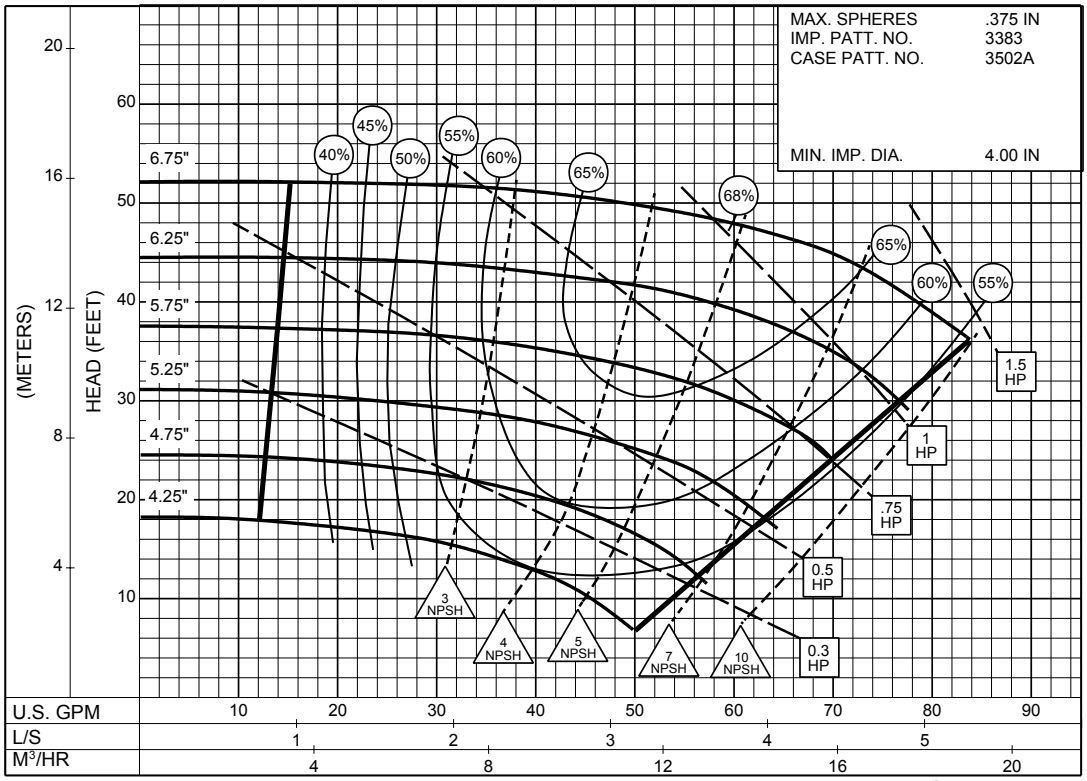
**SIZE : 1-1/4x1-1/2x7 TYPE : 340/360 IMPELLER : Enclosed R. P. M. : 3500**




3PC-116272A

**3500 RPM**

**SIZE : 1-1/4x1-1/2x7 TYPE : 340/360 IMPELLER : Enclosed R. P. M. : 1750**




3PC-116273A

**1750 RPM**

AURORA®
Pentair Pump Group

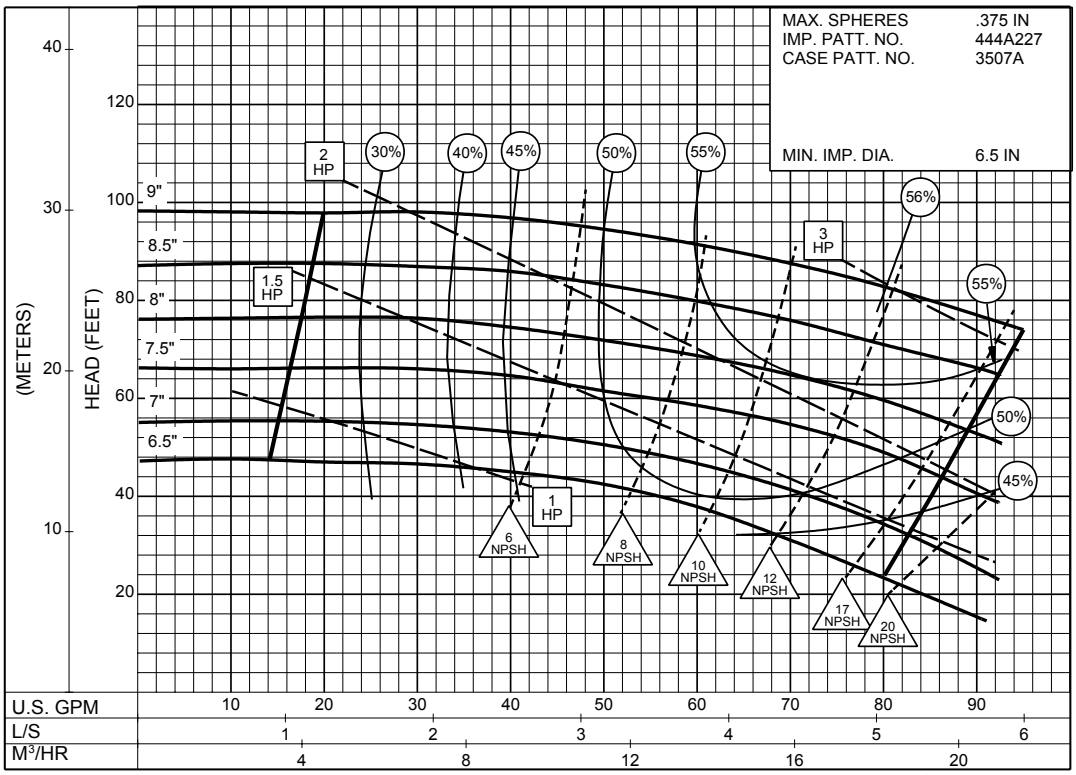
Supersedes Section 340/360 Page 402
Dated January 1986

# 1-1/4 x 1-1/2 x 9B
# Series 340 OR 360

ENCLOSED IMPELLER

**1750**
RPM

**SIZE : 1-1/4x1-1/2x9B  TYPE : 340/360  IMPELLER : Enclosed  R. P. M. : 1750**



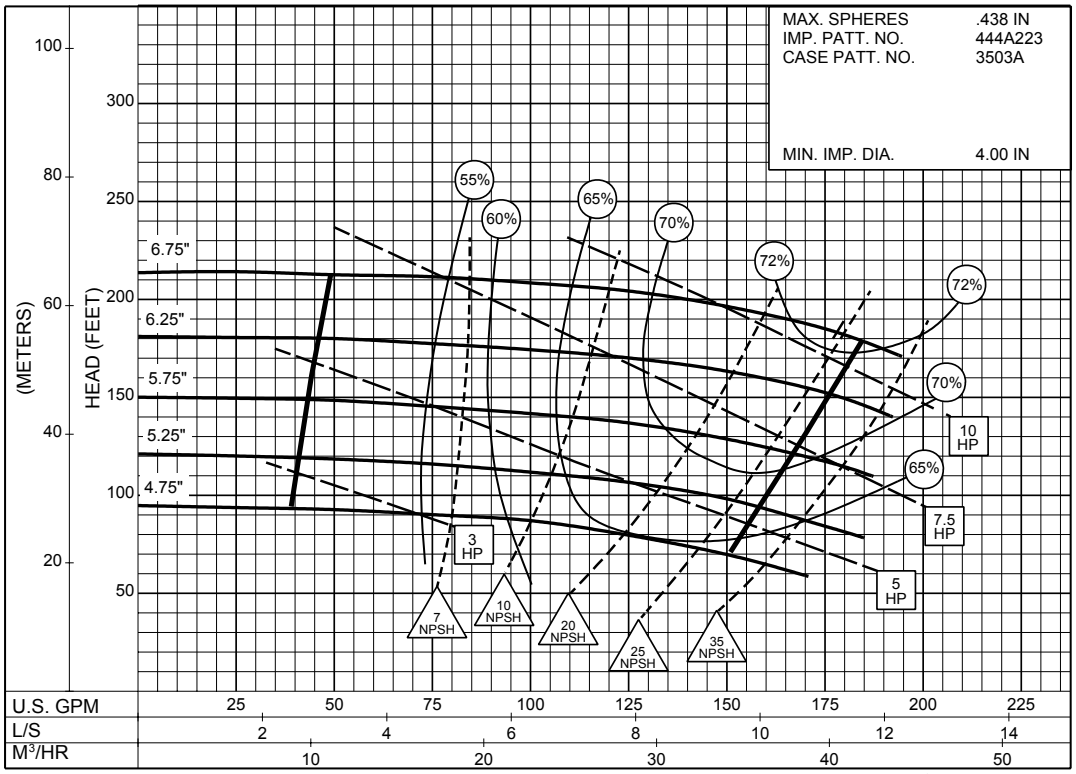

**3PC-116274A**

# 1-1/2 x 2 x 7
# SERIES 340 OR 360

ENCLOSED IMPELLER

Supersedes Section 340/360 Page 403
Dated January 1986

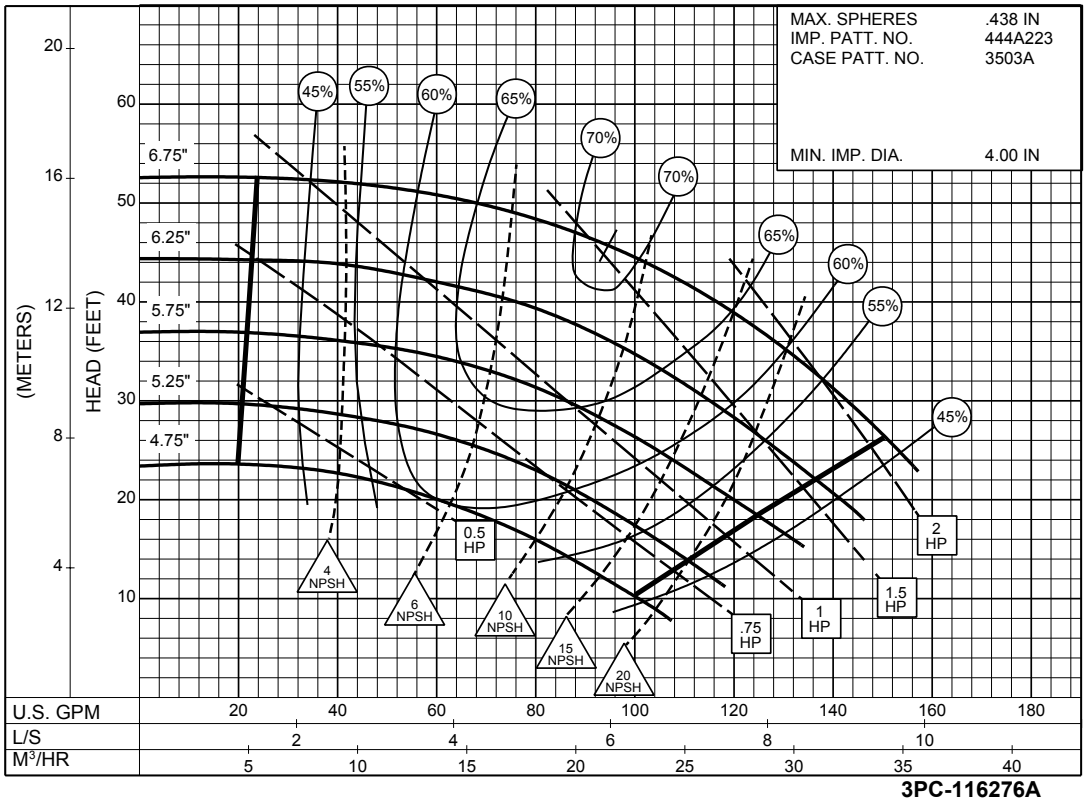
**SIZE : 1-1/2x2x7** **TYPE : 340/360** **IMPELLER : Enclosed** **R. P. M. : 3500**




3PC-116275B

**3500** RPM

**SIZE : 1-1/2x2x7** **TYPE : 340/360** **IMPELLER : Enclosed** **R. P. M. : 1750**




3PC-116276A

**1750** RPM

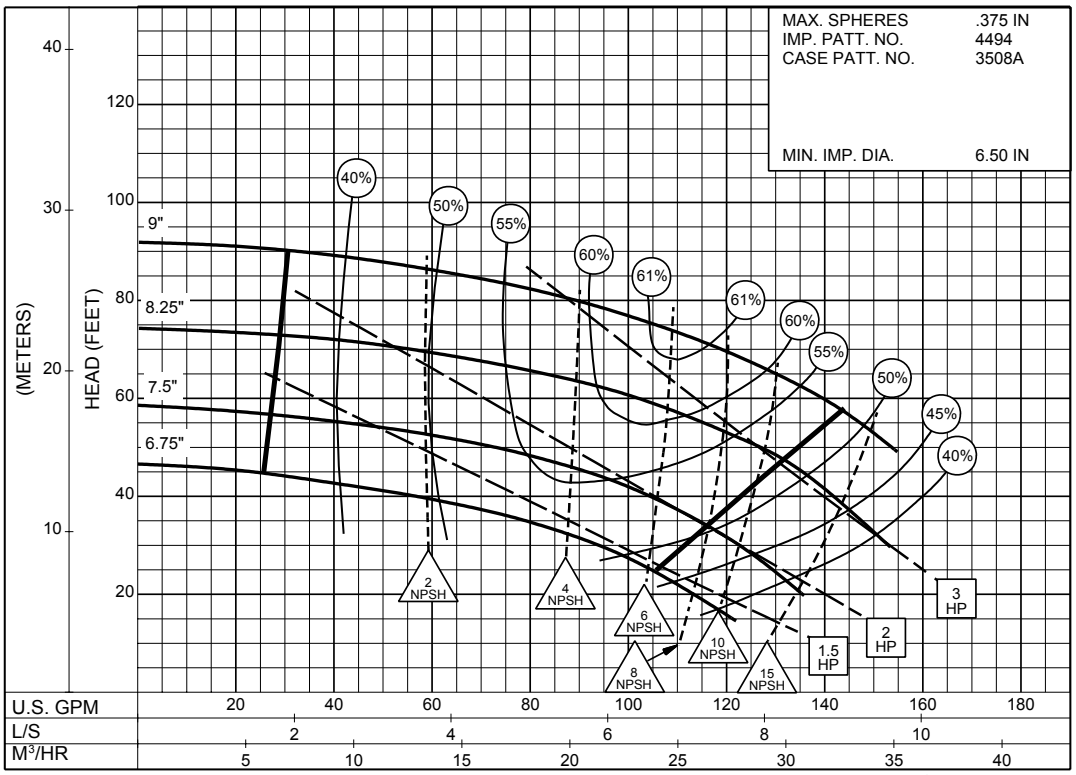
Supersedes Section 340/360 Page 404
Dated January 1986

# 1-1/2 X 2 X 9A
# SERIES 340 OR 360

ENCLOSED IMPELLER

**1750**
RPM

**SIZE : 1-1/2x2x9A** **TYPE : 340/360 IMPELLER : Enclosed** **R. P. M. : 1750**



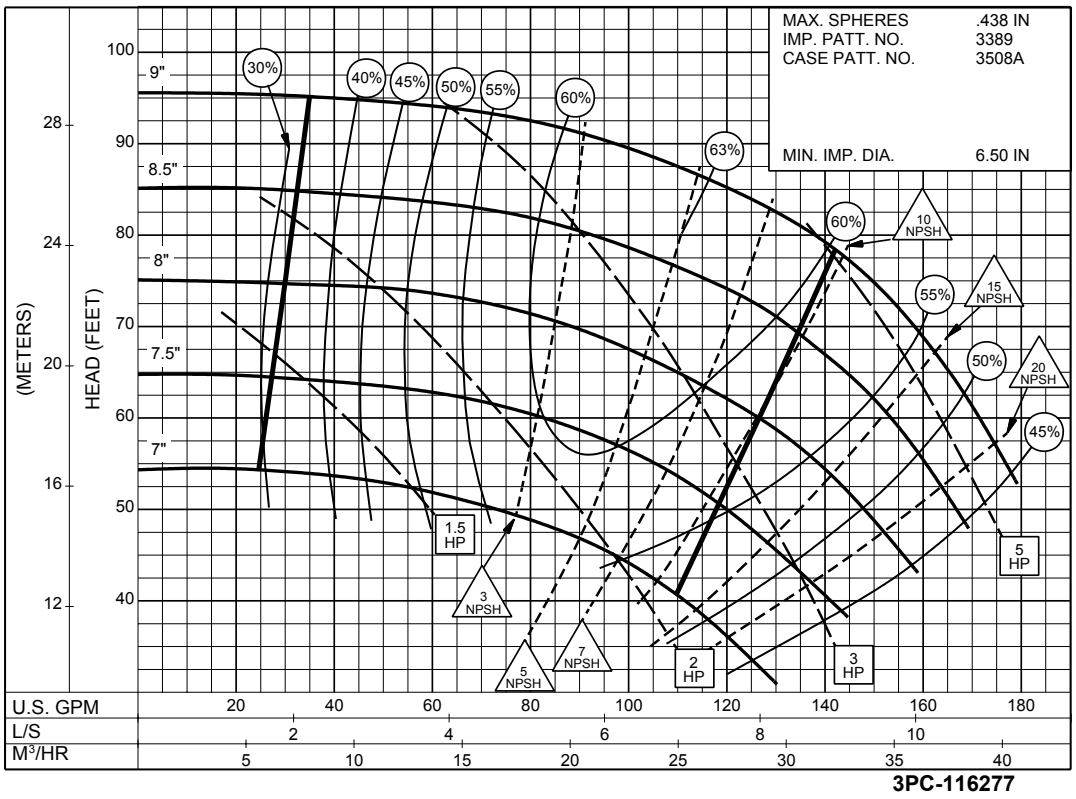

3PC-116331

# 1-1/2 x 2 x 9B
# SERIES 340 OR 360

ENCLOSED IMPELLER

Supersedes Section 340/360 Page 405
Dated January 1986

**SIZE : 1-1/2x2x9B** **TYPE : 340/360** **IMPELLER : Enclosed** **R. P. M. : 1750**




3PC-116277

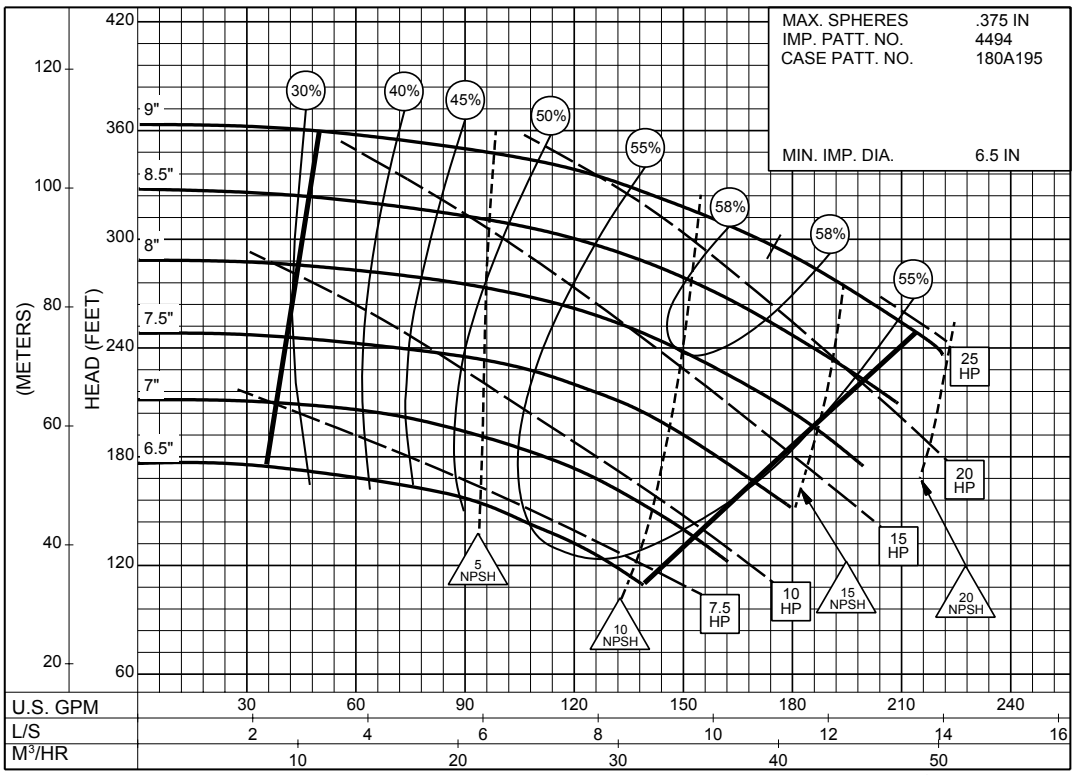
**1750** RPM

# 1-1/2 X 2 X 9C
# SERIES 340 OR 360

ENCLOSED IMPELLER

**3500** RPM

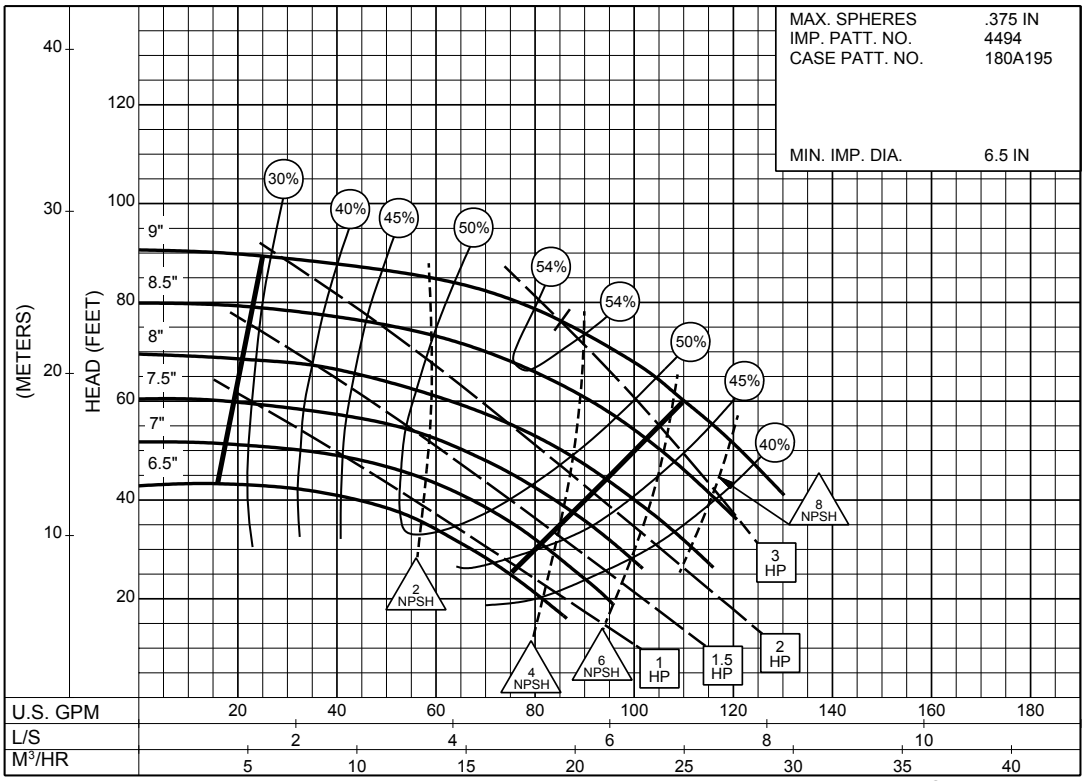
**SIZE : 1-1/2x2x9C** **TYPE : 340/360** **IMPELLER : Enclosed** **R. P. M. : 3500**




**3PC-116278**

**1750** RPM

**SIZE : 1-1/2x2x9C** **TYPE : 340/360** **IMPELLER : Enclosed** **R. P. M. : 1750**



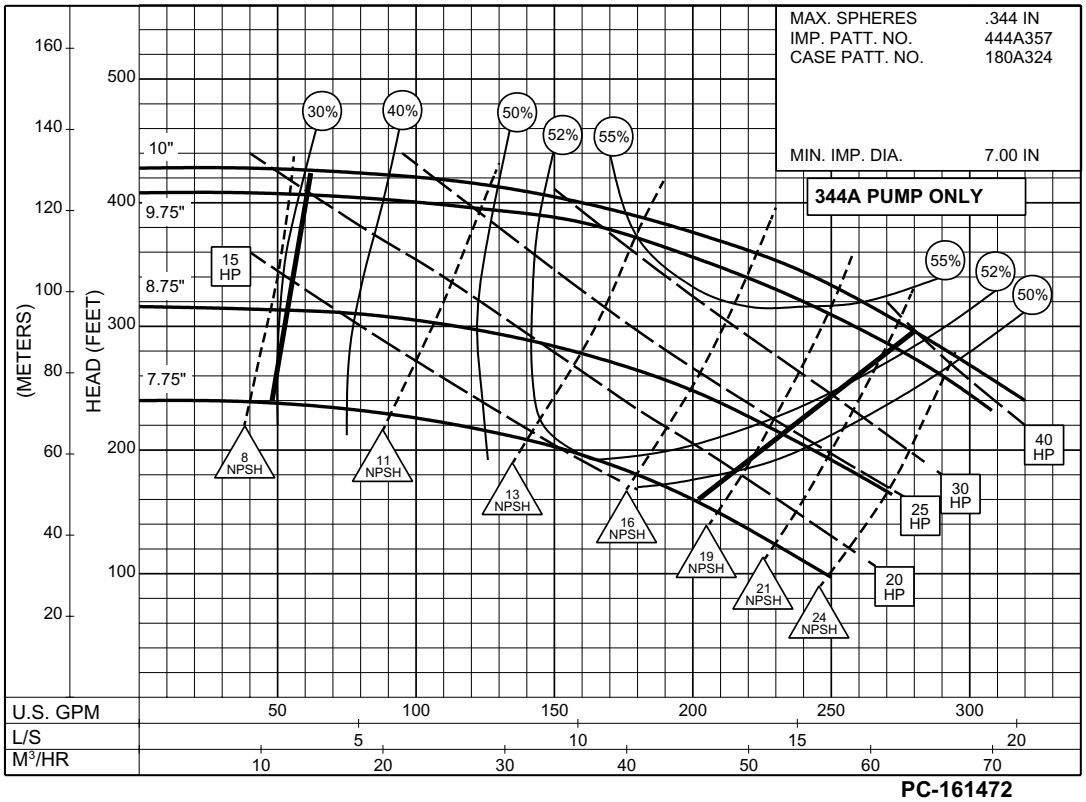

**3PC-116279**

# 1-1/2 x 2 x 11
# SERIES 340 ONLY

ENCLOSED IMPELLER

Supersedes Section 340/360 Page 406a
Dated January 2001

**SIZE : 1-1/2x2x11** **TYPE : 340** **IMPELLER : Enclosed** **R. P. M. : 3500**




PC-161472

**3500** RPM

Supersedes Section 340/360 Page 408b
Dated January 1986

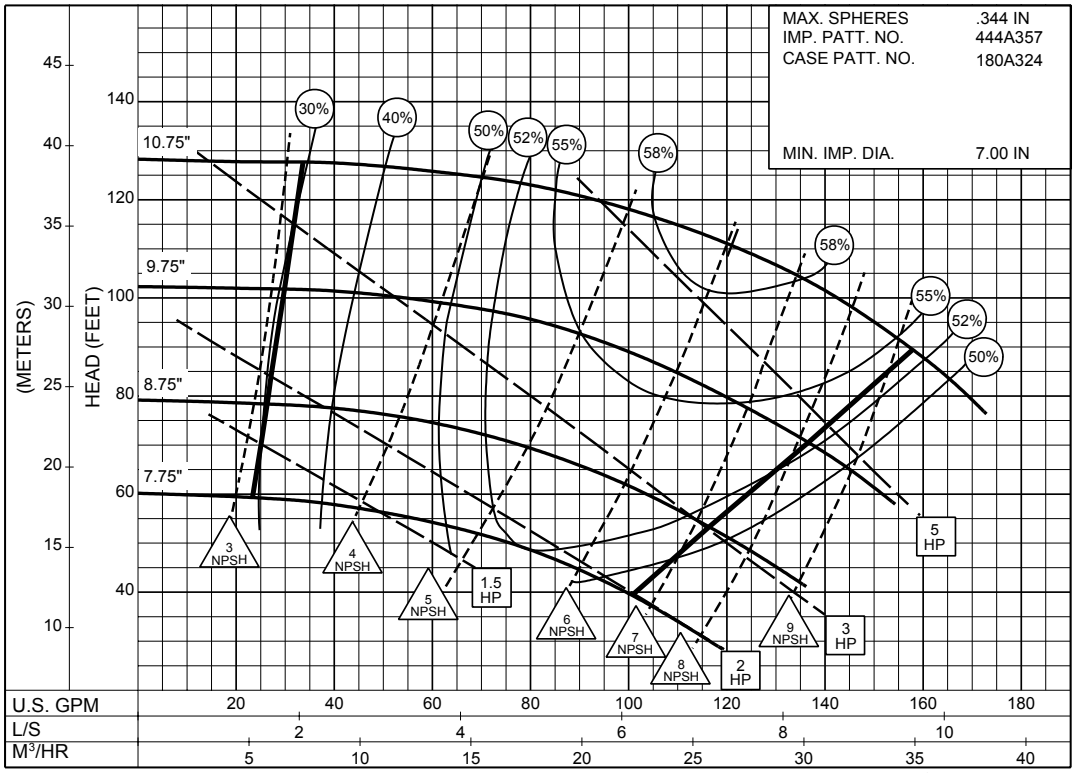
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# 1-1/2 x 2 x 11
# SERIES 340 OR 360

ENCLOSED IMPELLER

Supersedes Section 340/360 Page 407
Dated April 1991

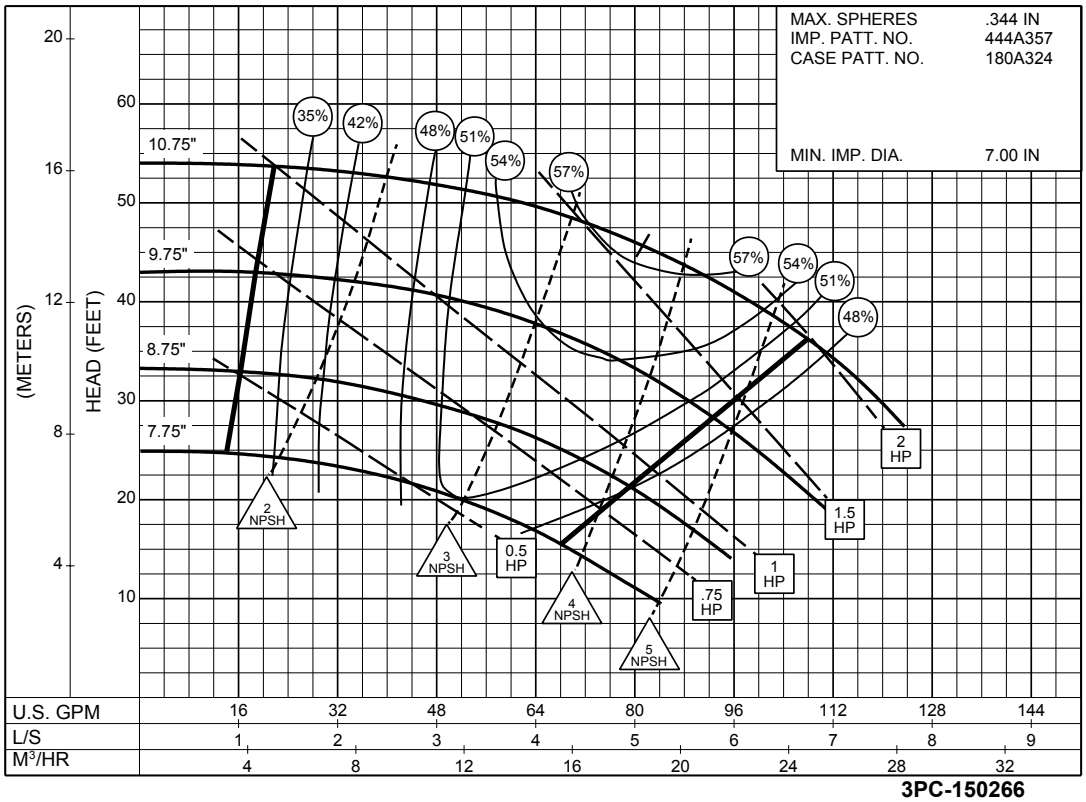
**SIZE : 1-1/2x2x11** **TYPE : 340/360** **IMPELLER : Enclosed** **R. P. M. : 1750**




3PC-150265

**1750** RPM

**SIZE : 1-1/2x2x11** **TYPE : 340/360** **IMPELLER : Enclosed** **R. P. M. : 1150**




3PC-150266

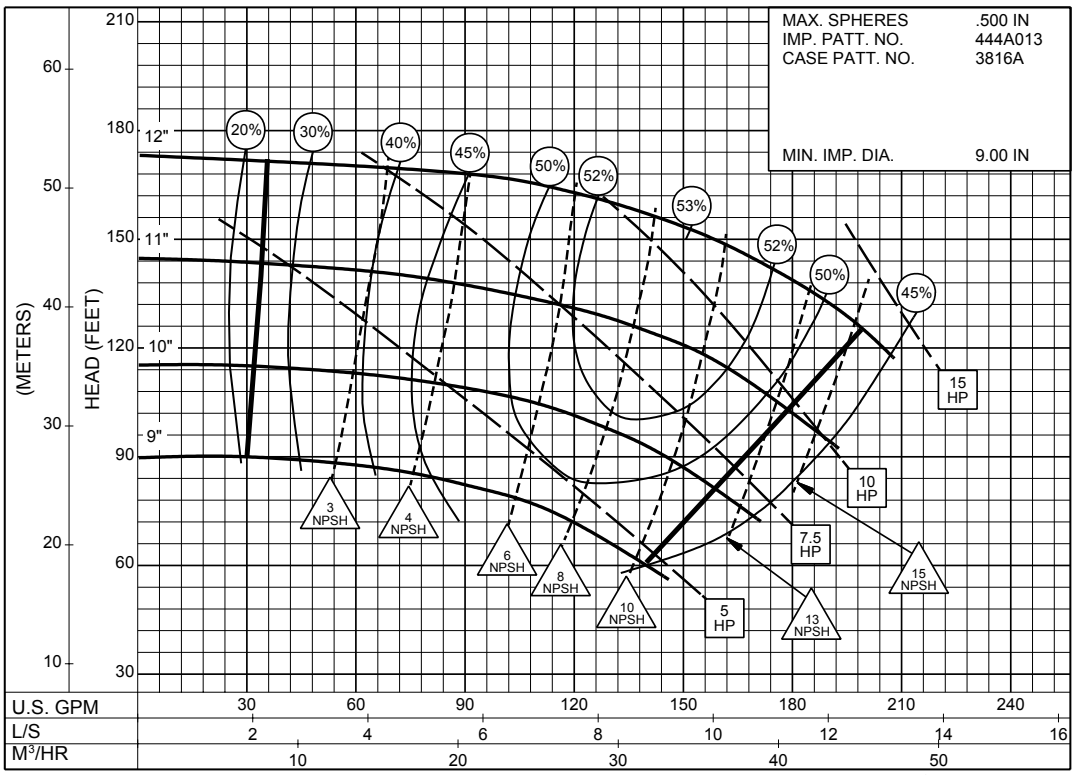
**1150** RPM

Supersedes Section 340/360 Page 408
Dated April 1991

# 1-1/2 x 2 x 12
# SERIES 340 OR 360
## ENCLOSED IMPELLER

**1750** RPM

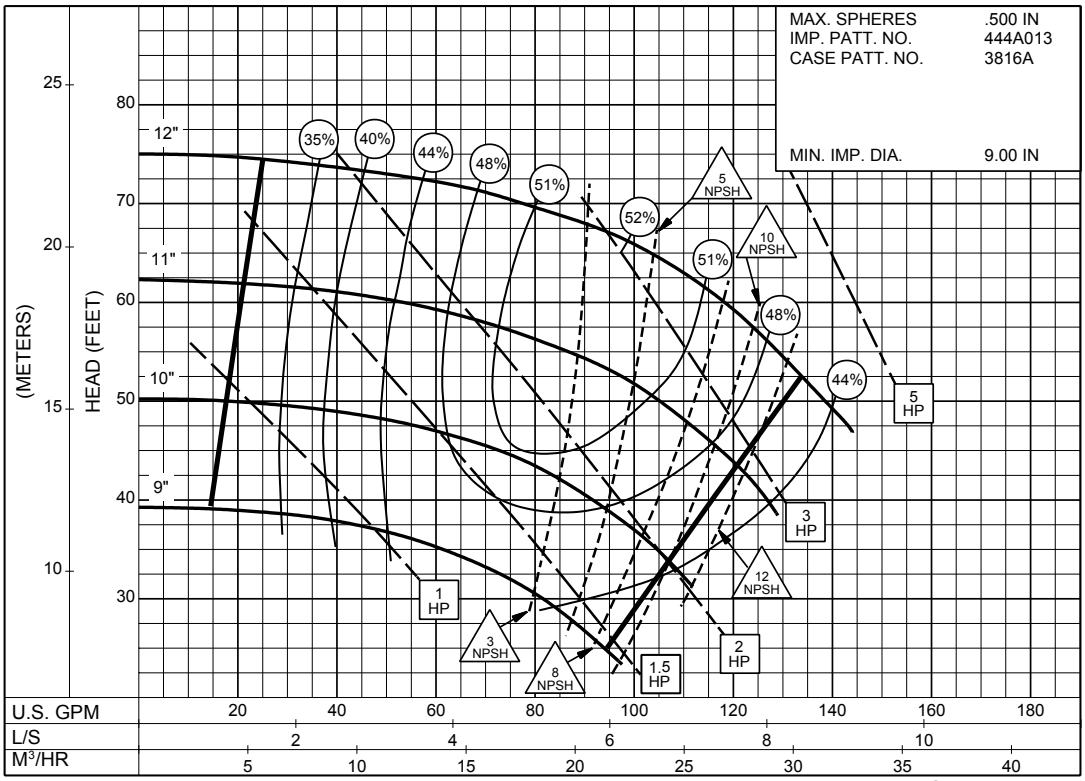
**SIZE : 1-1/2x2x12** **TYPE : 340/360** **IMPELLER : Enclosed** **R. P. M. : 1750**




3PC-116280A

**1150** RPM

**SIZE : 1-1/2x2x12** **TYPE : 340/360** **IMPELLER : Enclosed** **R. P. M. : 1150**



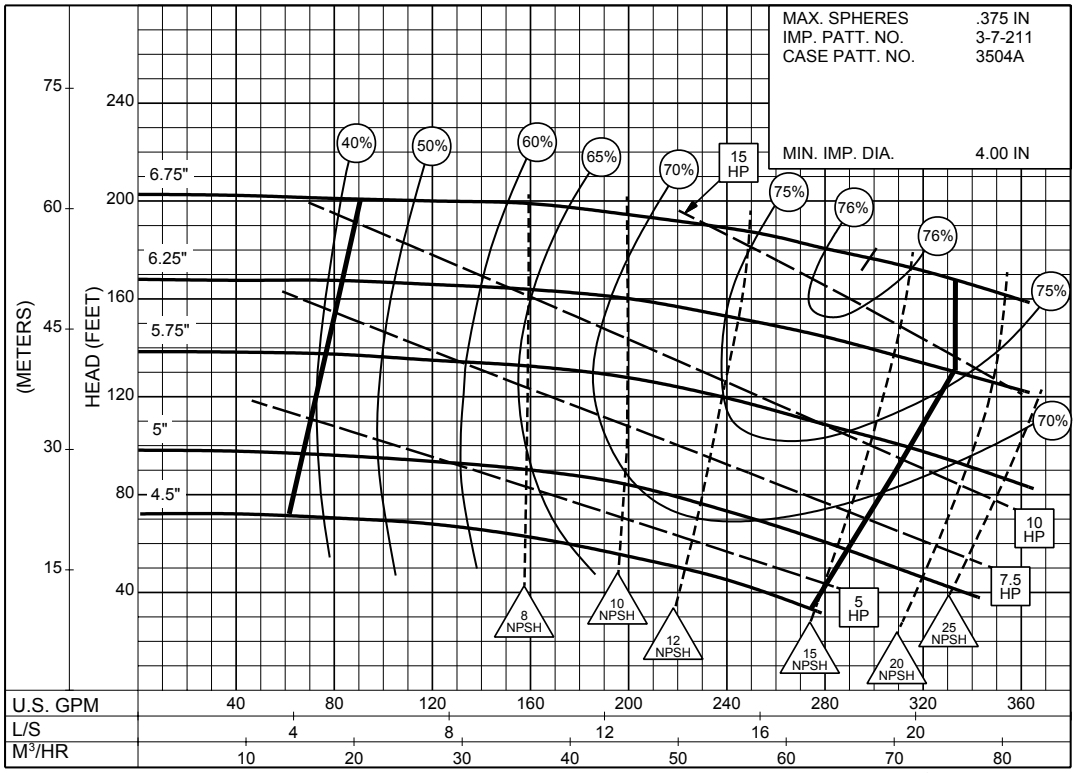

3PC-116281A

# 2 x 2-1/2 x 7A
# SERIES 340 OR 360

ENCLOSED IMPELLER

Supersedes Section 340/360 Page 409
Dated June 1987

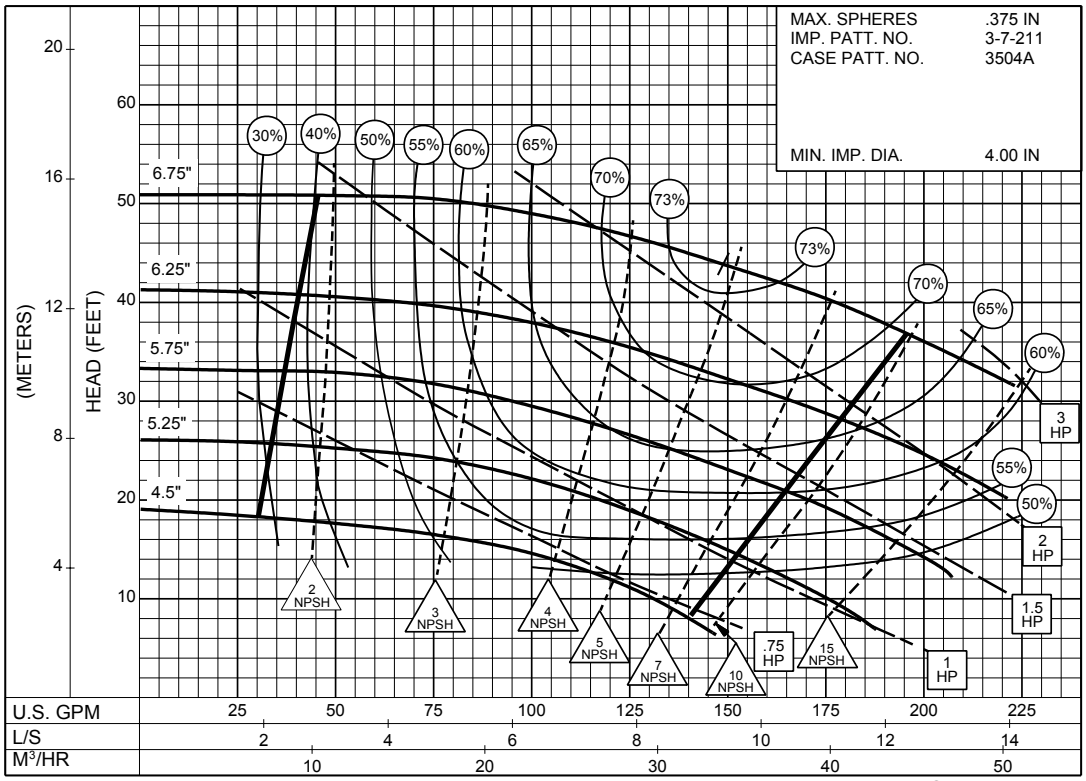
**SIZE : 2x2-1/2x7A** **TYPE : 340/360** **IMPELLER : Enclosed** **R. P. M. : 3500**




3PC-116282

**3500 RPM**

**SIZE : 2x2-1/2x7A** **TYPE : 340/360** **IMPELLER : Enclosed** **R. P. M. : 1750**




3PC-116283

**1750 RPM**

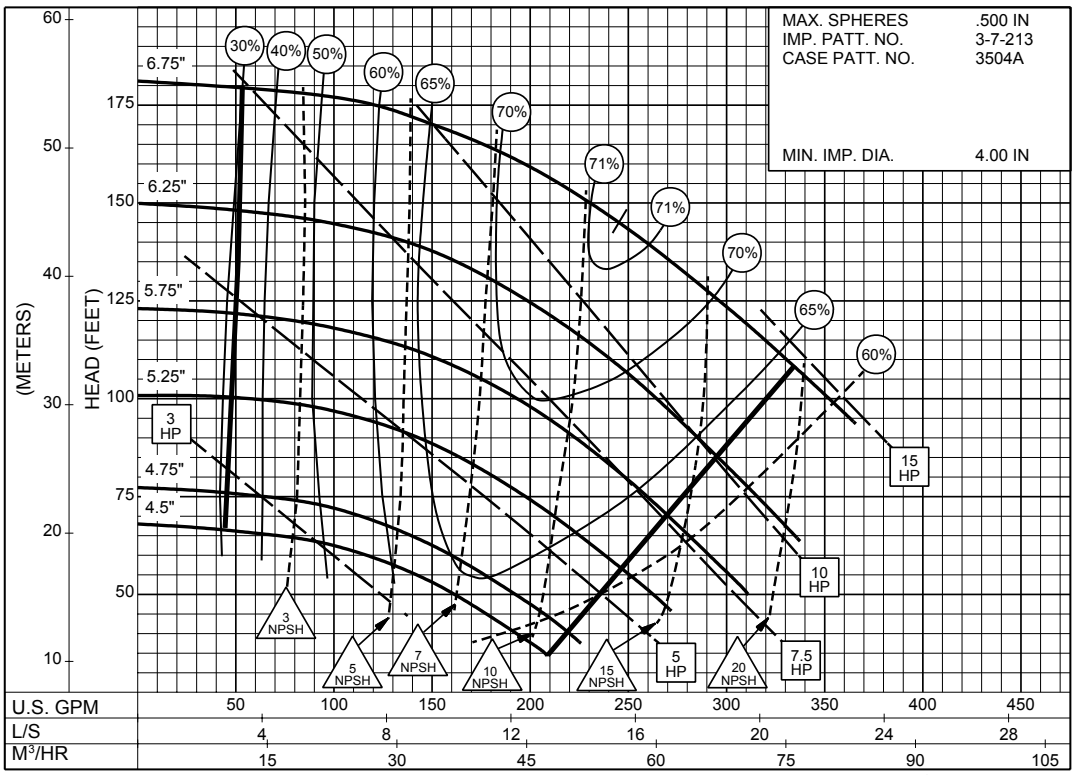
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Supersedes Section 340/360 Page 410
Dated January 1986

# 2 x 2-1/2 x 7B
# SERIES 340 OR 360
## ENCLOSED IMPELLER

**3500** RPM

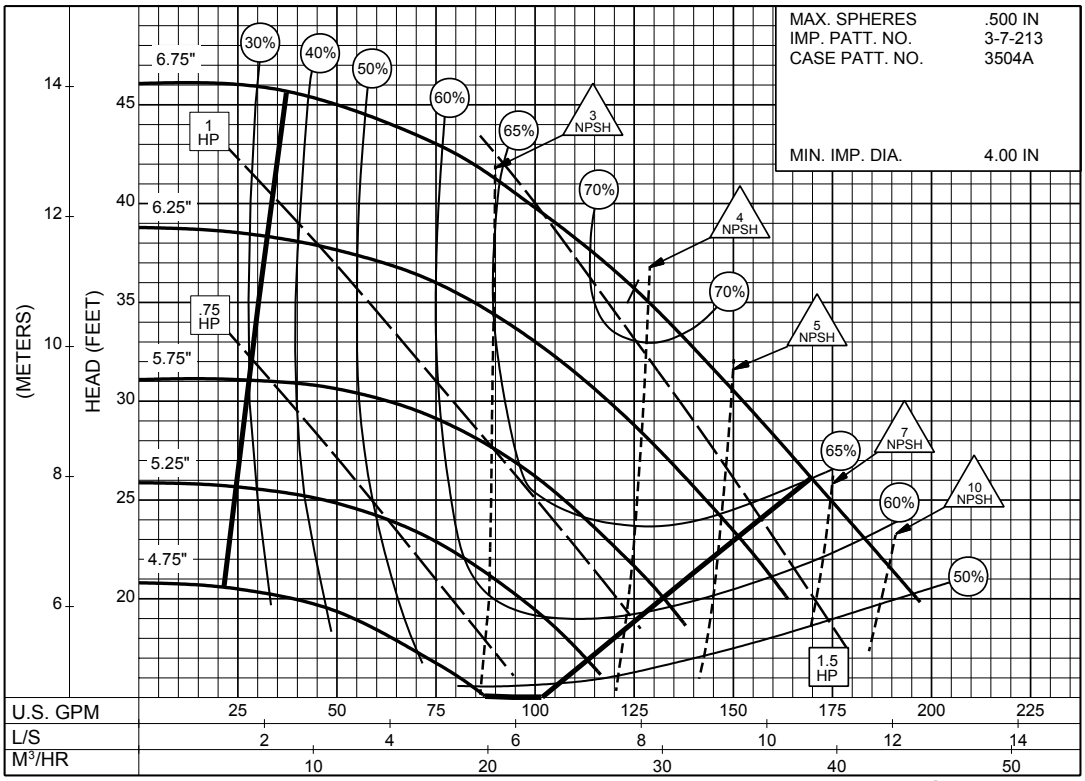
**SIZE : 2x2-1/2x7B** **TYPE : 340/360** **IMPELLER : Enclosed** **R. P. M. : 3500**




3PC-116284

**1750** RPM

**SIZE : 2x2-1/2x7B** **TYPE : 340/360** **IMPELLER : Enclosed** **R. P. M. : 1750**




3PC-116285

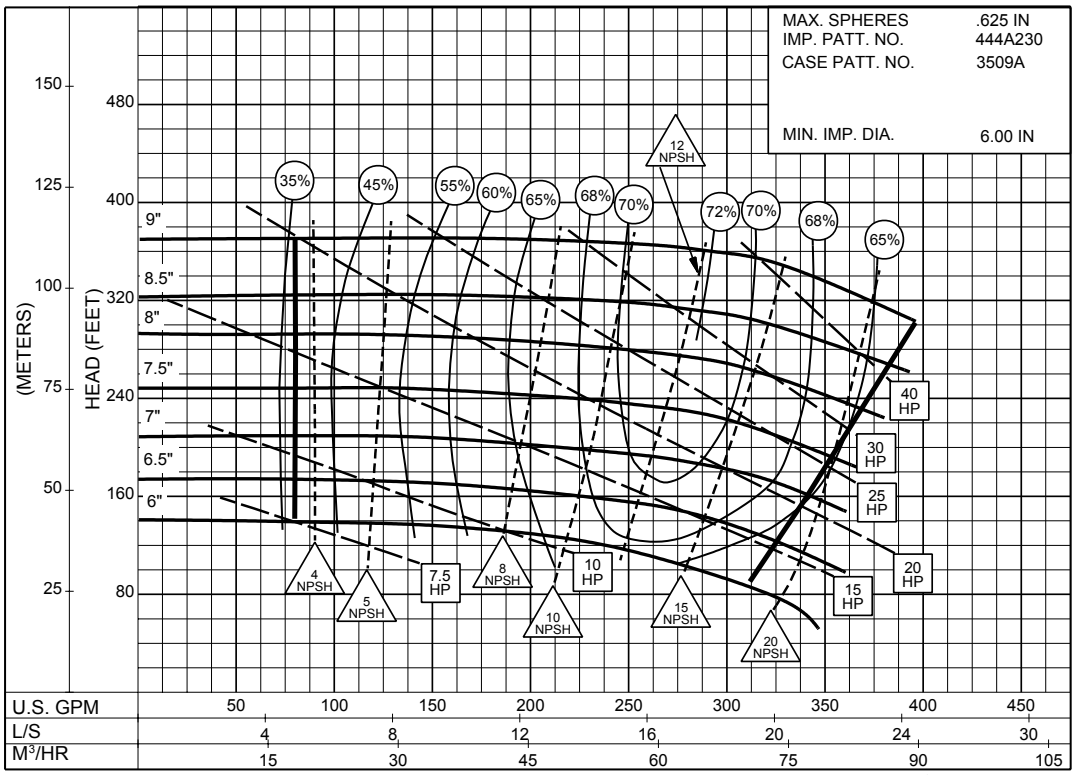
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# 2 x 2-1/2 x 9
# SERIES 340 OR 360

ENCLOSED IMPELLER

Supersedes Section 340/360 Page 411
Dated June 1987

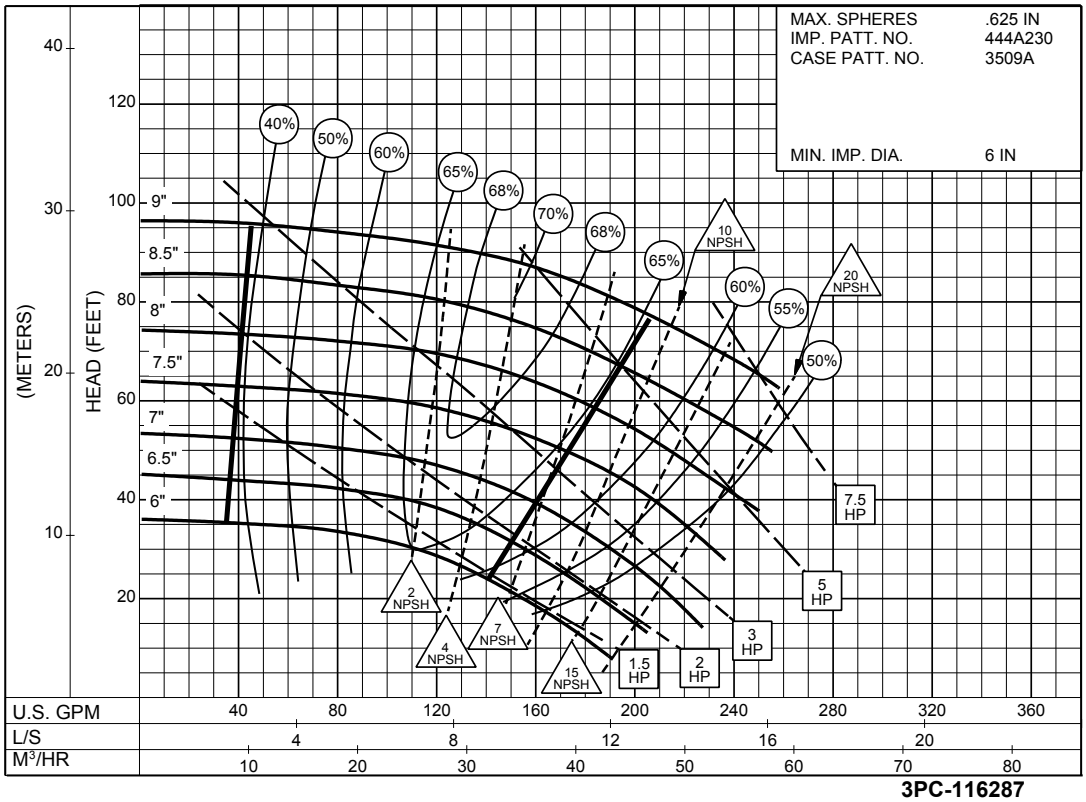
**SIZE : 2x2-1/2x9** **TYPE : 340/360** **IMPELLER : Enclosed** **R. P. M. : 3500**




**3PC-116286A**

**3500 RPM**

**SIZE : 2x2-1/2x9** **TYPE : 340/360** **IMPELLER : Enclosed** **R. P. M. : 1750**




**3PC-116287**

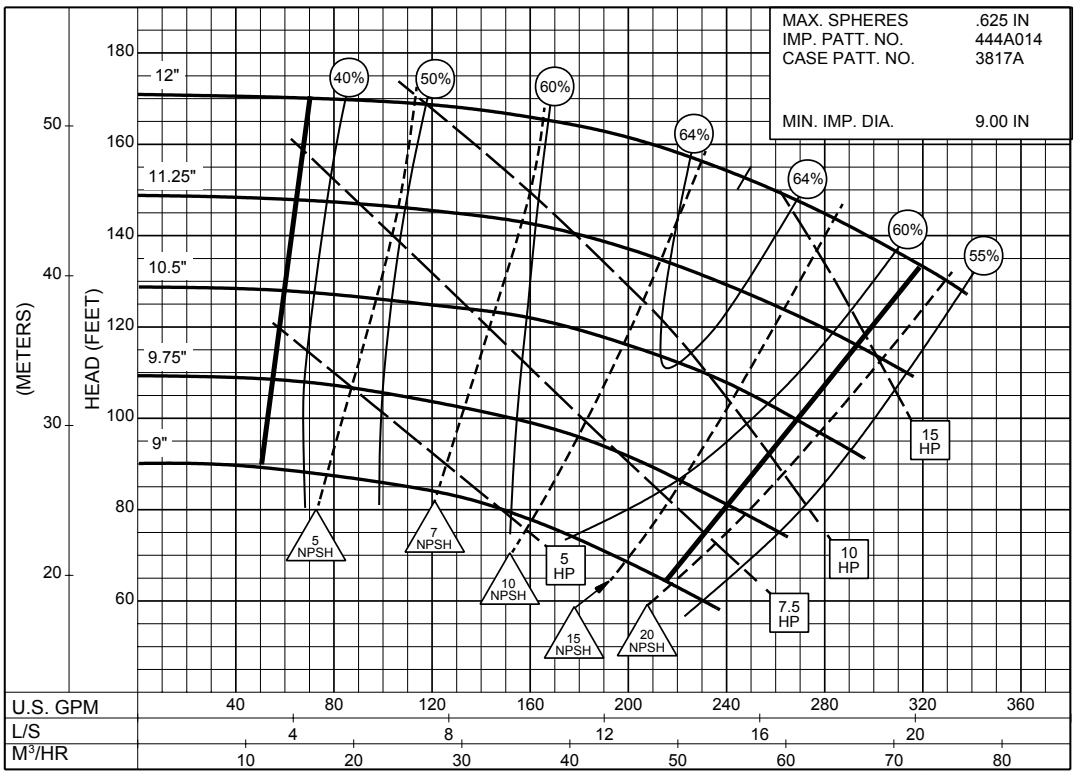
**1750 RPM**

Supersedes Section 340/360 Page 412
Dated January 1986

# 2 x 2-1/2 x 12
# SERIES 340 OR 360
## ENCLOSED IMPELLER

**1750 RPM**

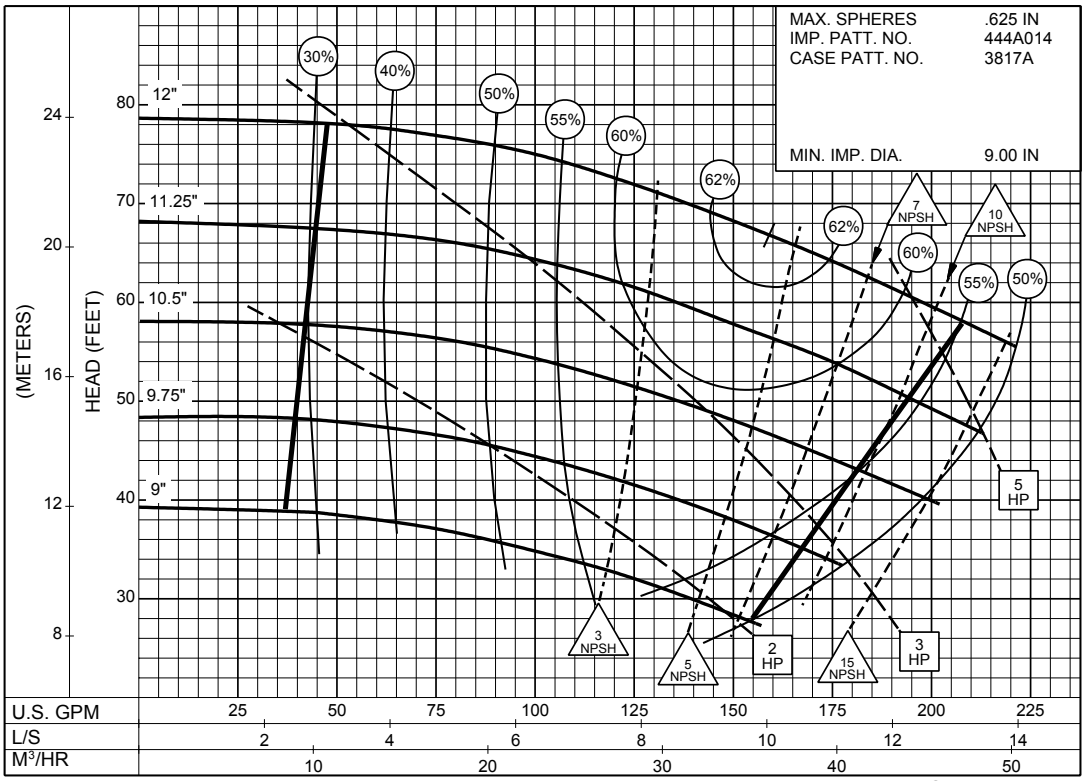
**SIZE : 2x2-1/2x12 TYPE : 340/360 IMPELLER : Enclosed R. P. M. : 1750**




3PC-116288

**1150 RPM**

**SIZE : 2x2-1/2x12 TYPE : 340/360 IMPELLER : Enclosed R. P. M. : 1150**

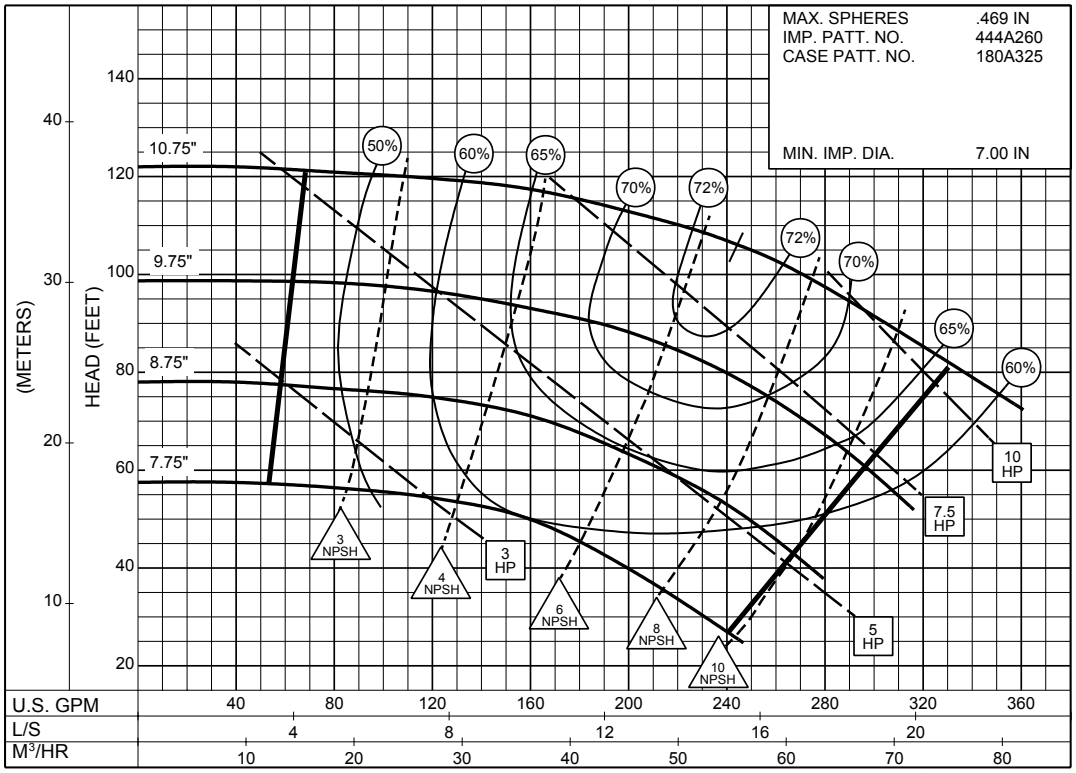



3PC-116289

# 2 x 3 x 11
# SERIES 340 OR 360
## ENCLOSED IMPELLER

Supersedes Section 340/360 Page 413
Dated January 1986

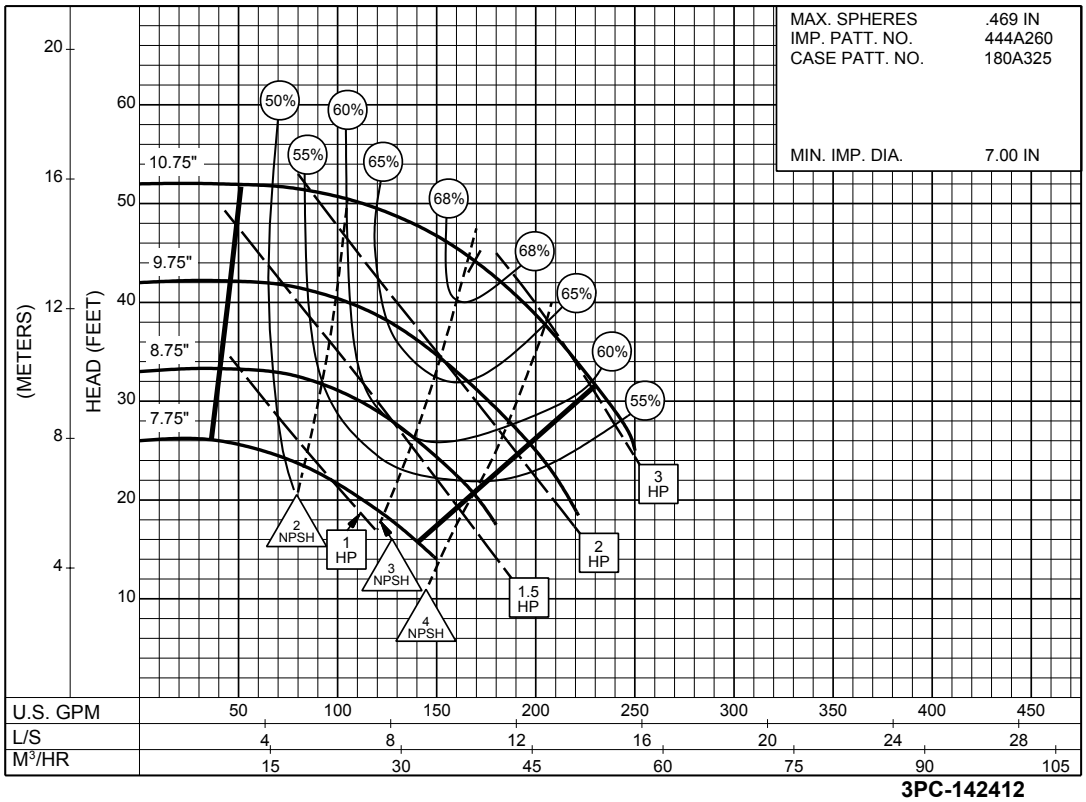
**SIZE : 2x3x11** **TYPE : 340/360** **IMPELLER : Enclosed** **R. P. M. : 1750**




3PC-142411

**1750 RPM**

**SIZE : 2x3x11** **TYPE : 340/360** **IMPELLER : Enclosed** **R. P. M. : 1150**




3PC-142412

**1150 RPM**

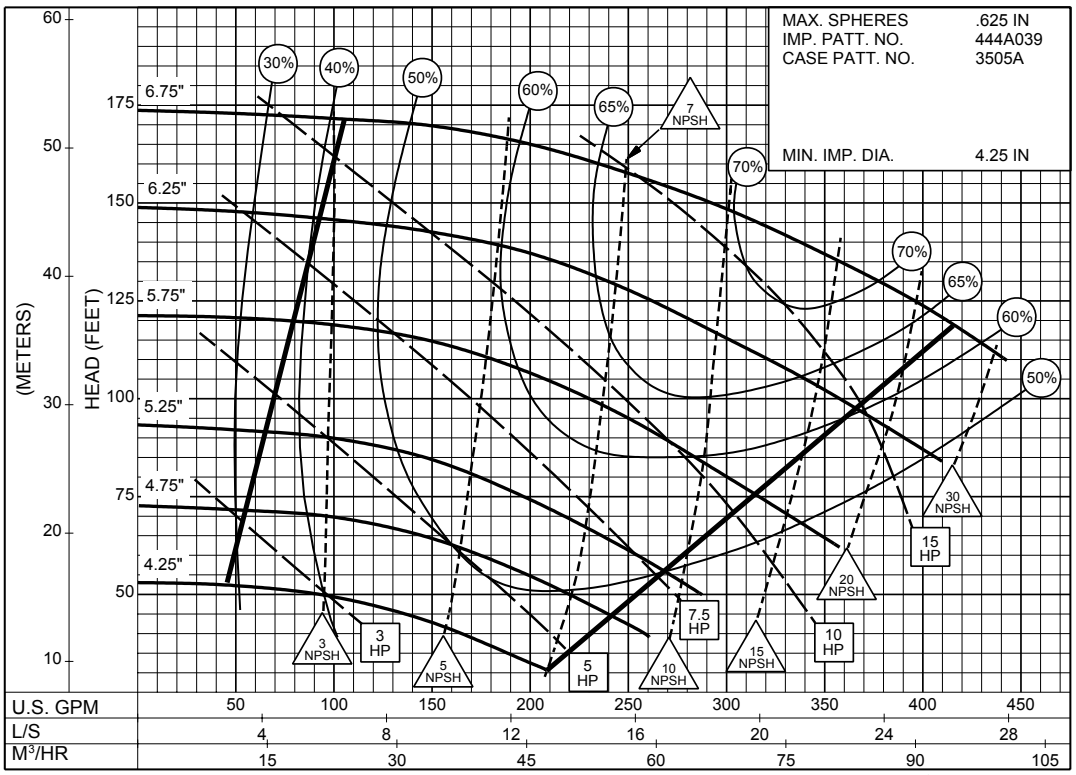
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Supersedes Section 340/360 Page 414
Dated January 1986

# 2-1/2 x 3 x 7A
# SERIES 340 OR 360
ENCLOSED IMPELLER

**3500** RPM

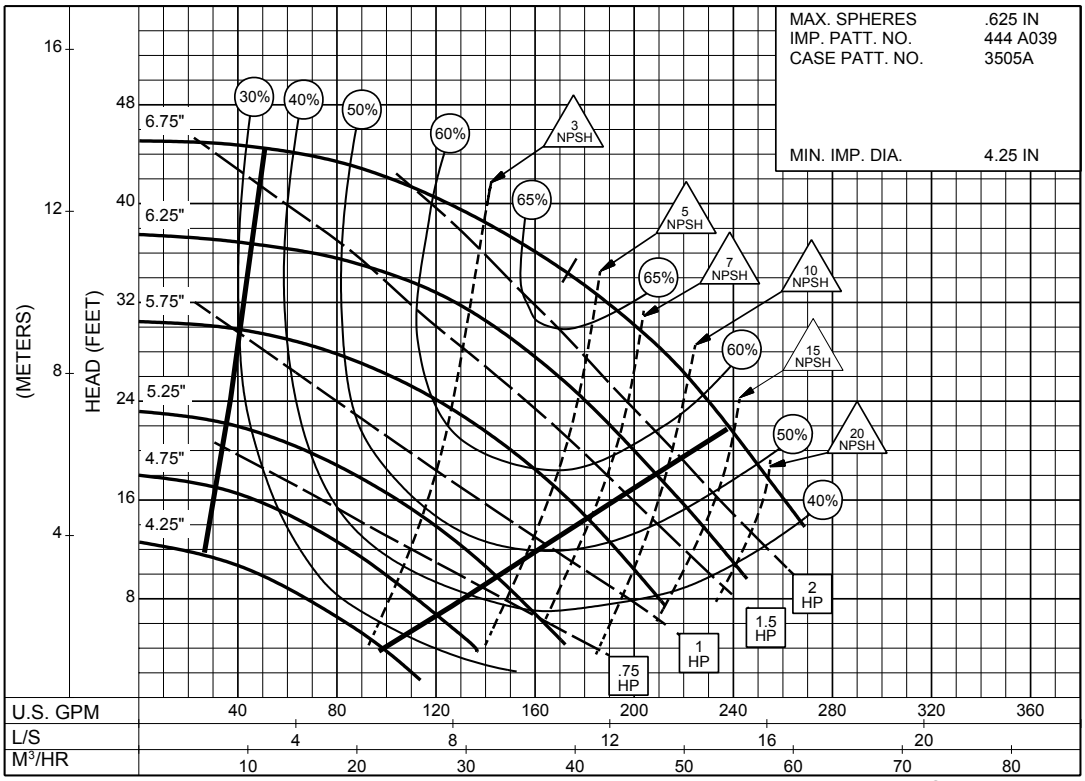
**SIZE : 2-1/2x3x7A** **TYPE : 340/360** **IMPELLER : Enclosed** **R. P. M. : 3500**




3PC-116290

**1750** RPM

**SIZE : 2-1/2x3x7A** **TYPE : 340/360** **IMPELLER : Enclosed** **R. P. M. : 1750**



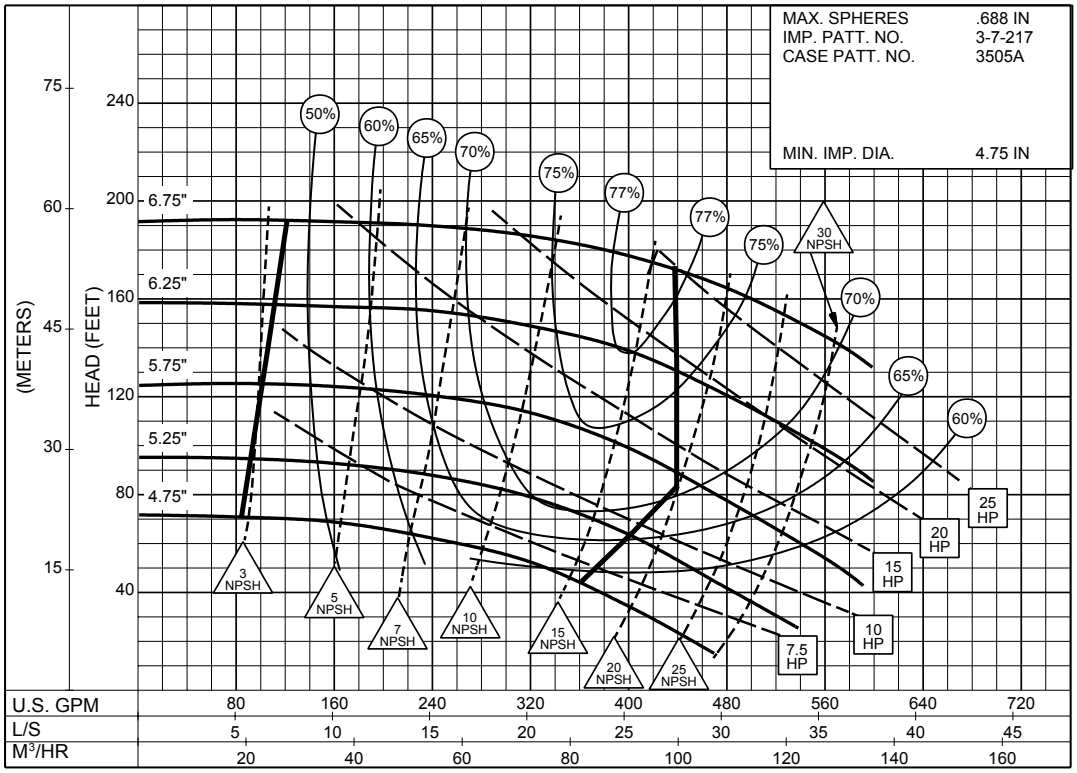

3PC-116291

# 2-1/2 x 3 x 7B
# SERIES 340 OR 360

ENCLOSED IMPELLER

Supersedes Section 340/360 Page 415
Dated January 1986

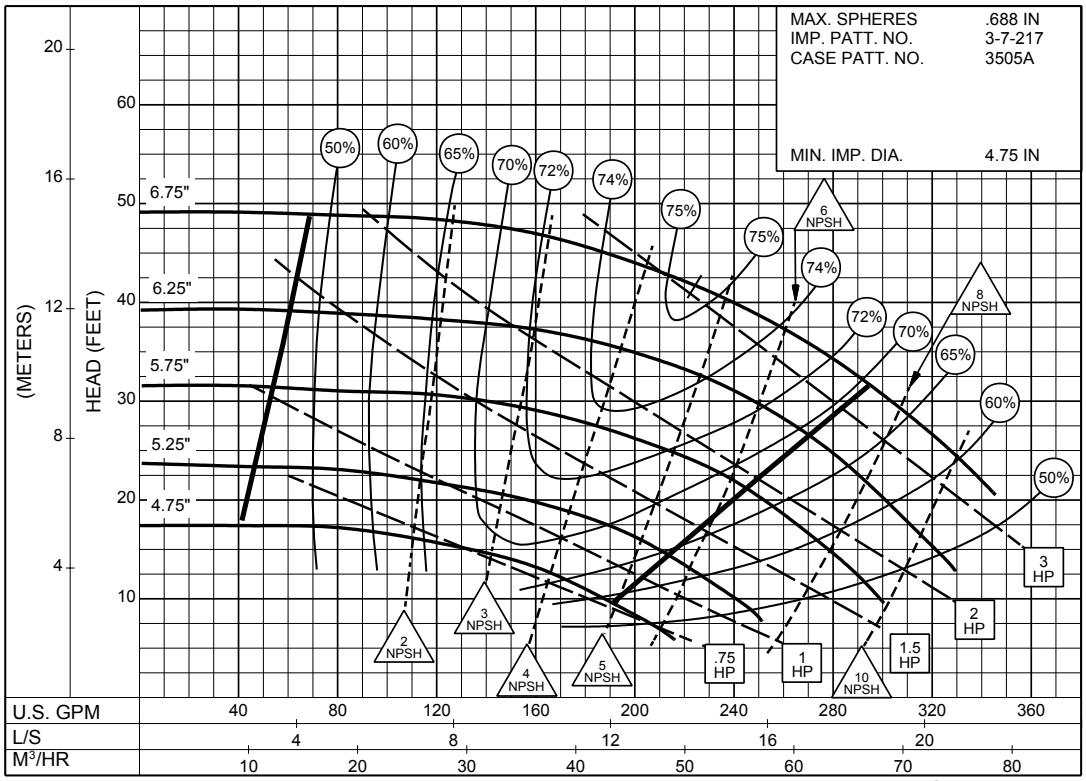
**SIZE : 2-1/2x3x7B** **TYPE : 340/360** **IMPELLER : Enclosed** **R. P. M. : 3500**




3PC-116292

**3500** RPM

**SIZE : 2-1/2x3x7B** **TYPE : 340/360** **IMPELLER : Enclosed** **R. P. M. : 1750**




3PC-116293

**1750** RPM

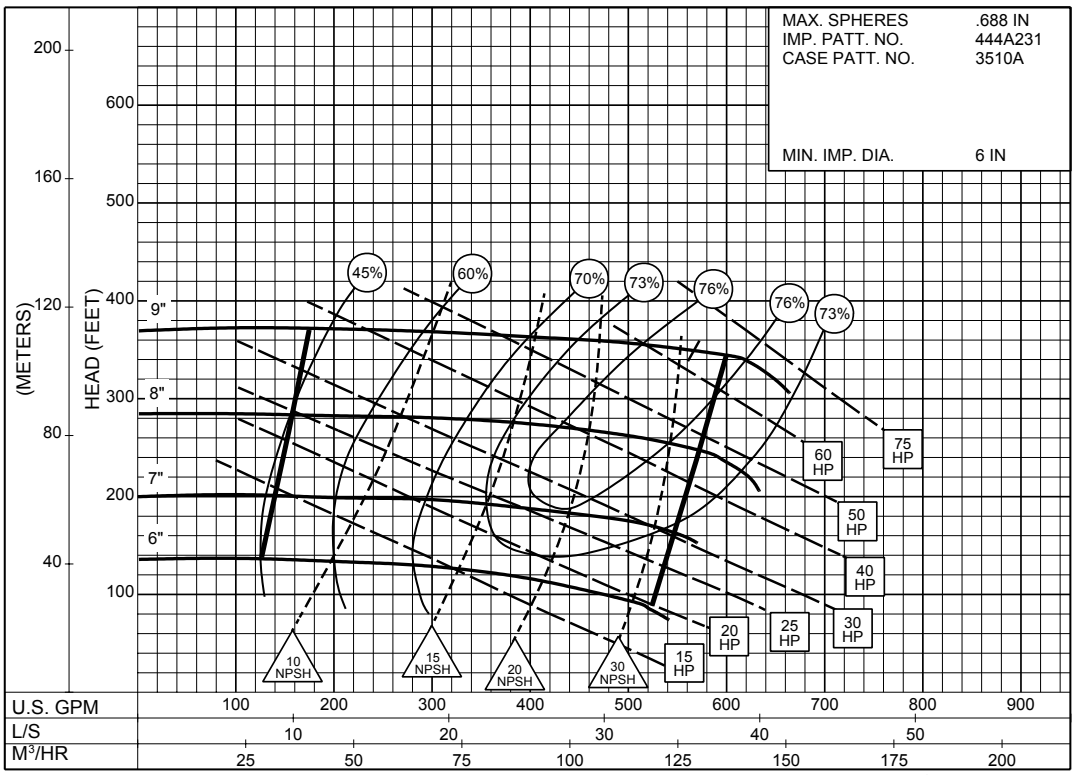
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Supersedes Section 340/360 Page 416
Dated January 1986

# 2-1/2 x 3 x 9
# SERIES 340 OR 360
## ENCLOSED IMPELLER

**3500** RPM

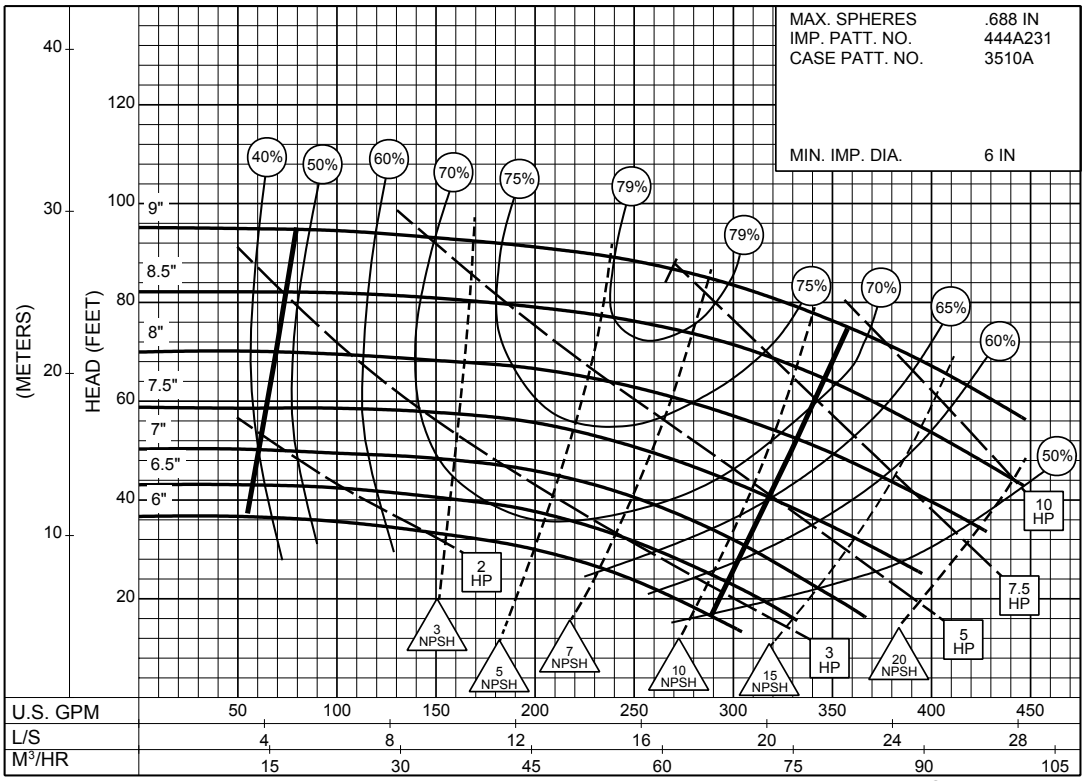
**SIZE : 2-1/2x3x9** **TYPE : 340/360** **IMPELLER : Enclosed** **R. P. M. : 3500**




3PC-140728

**1750** RPM

**SIZE : 2-1/2x3x9** **TYPE : 340/360** **IMPELLER : Enclosed** **R. P. M. : 1750**




3PC-116295

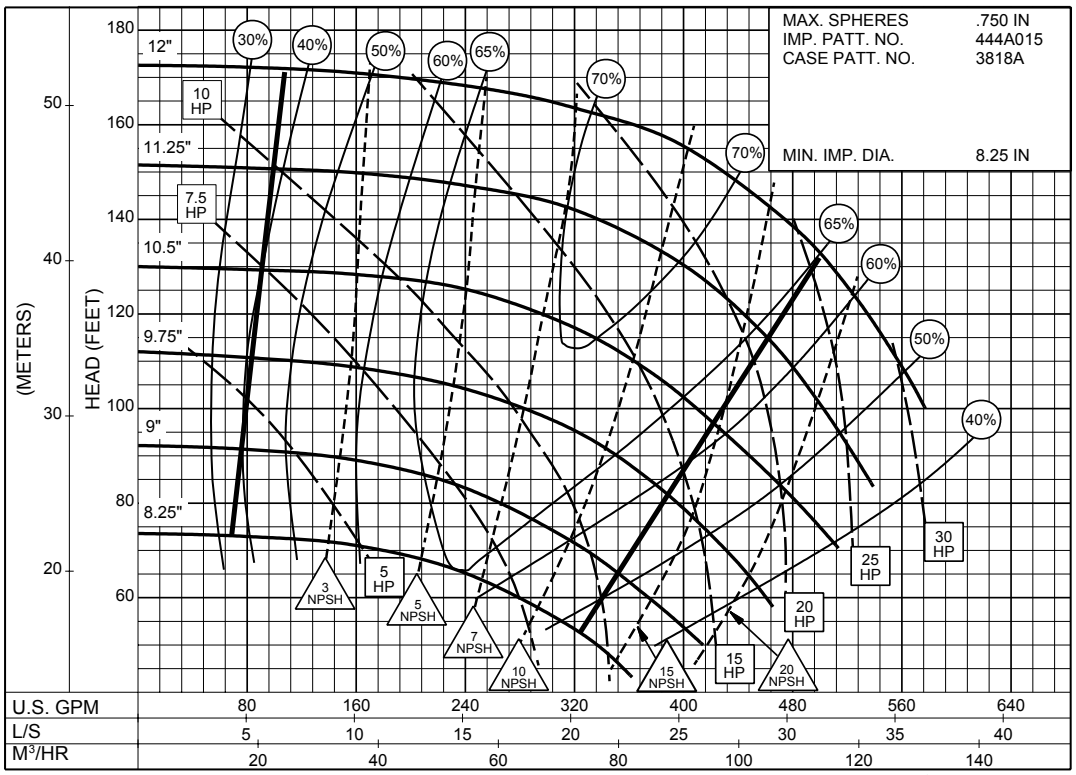
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# 2-1/2 x 3 x 12
# SERIES 340 OR 360

ENCLOSED IMPELLER

Supersedes Section 340/360 Page 417
Dated January 1986

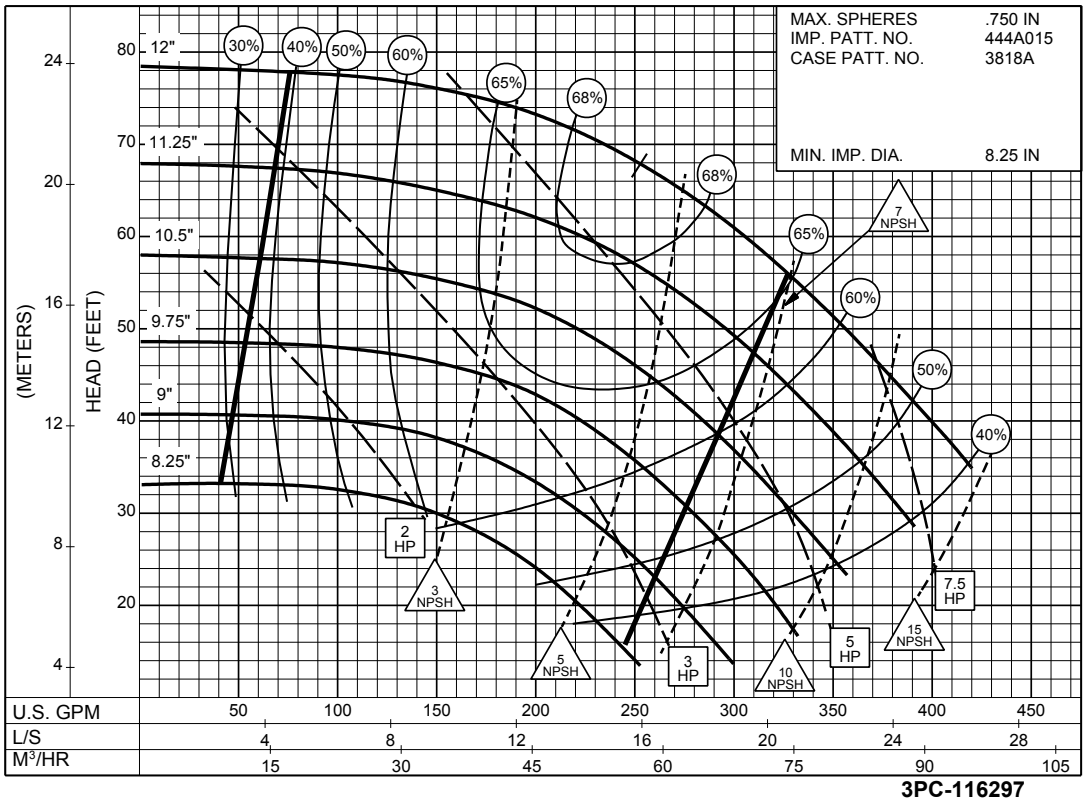
**SIZE : 2-1/2x3x12 TYPE : 340/360 IMPELLER : Enclosed R. P. M. : 1750**




3PC-116296

**1750 RPM**

**SIZE : 2-1/2x3x12 TYPE : 340/360 IMPELLER : Enclosed R. P. M. : 1150**




3PC-116297

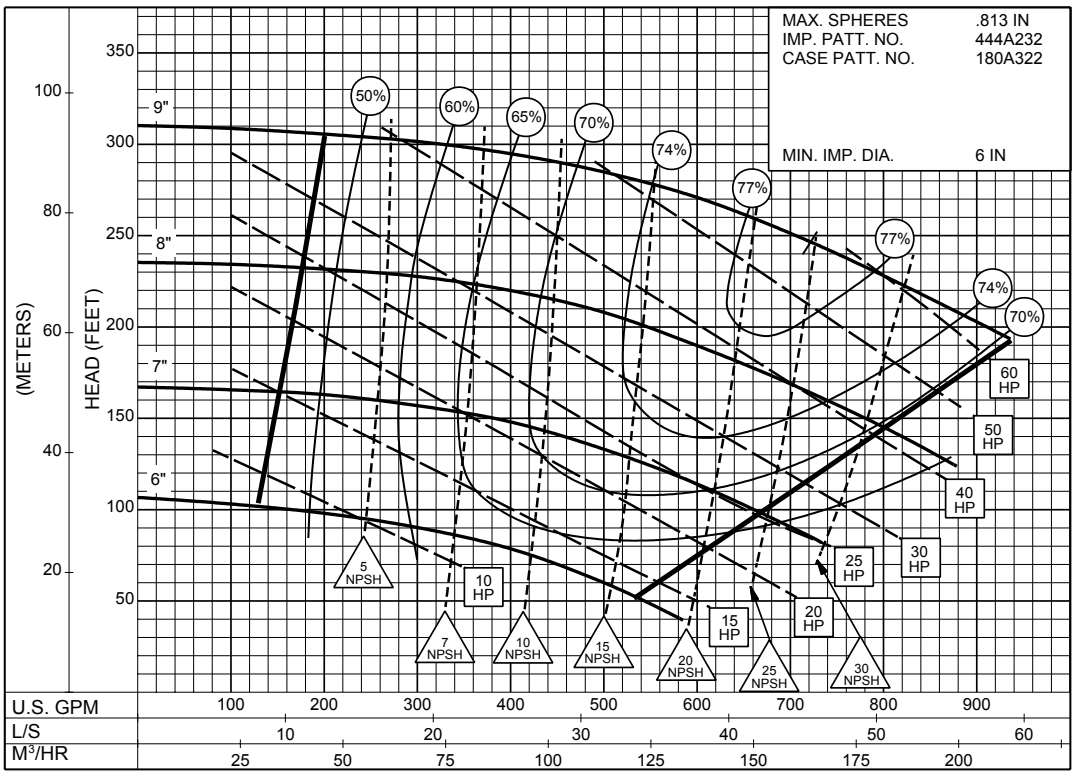
**1150 RPM**

Supersedes Section 340/360 Page 418
Dated January 1986

# 3 x 4 x 9A
# SERIES 340 OR 360
## ENCLOSED IMPELLER

**3500** RPM

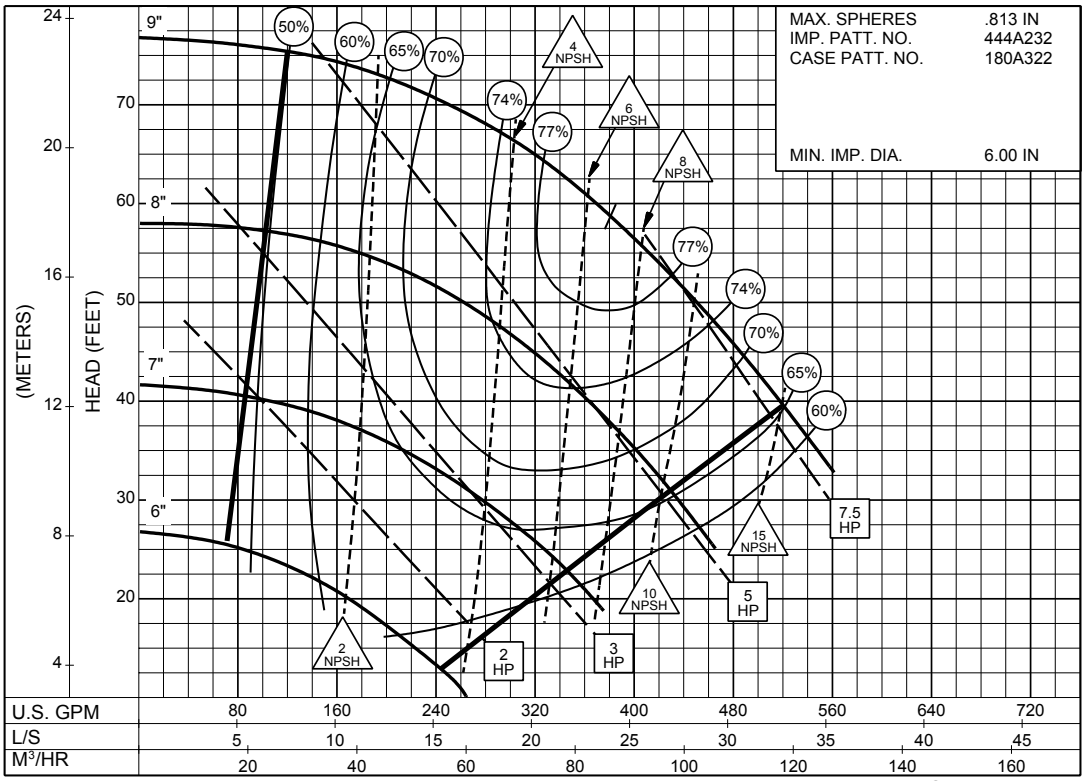
**SIZE : 3x4x9A** **TYPE : 340/360** **IMPELLER : Enclosed** **R. P. M. : 3500**




**3PC-142439**

**1750** RPM

**SIZE : 3x4x9A** **TYPE : 340/360** **IMPELLER : Enclosed** **R. P. M. : 1750**



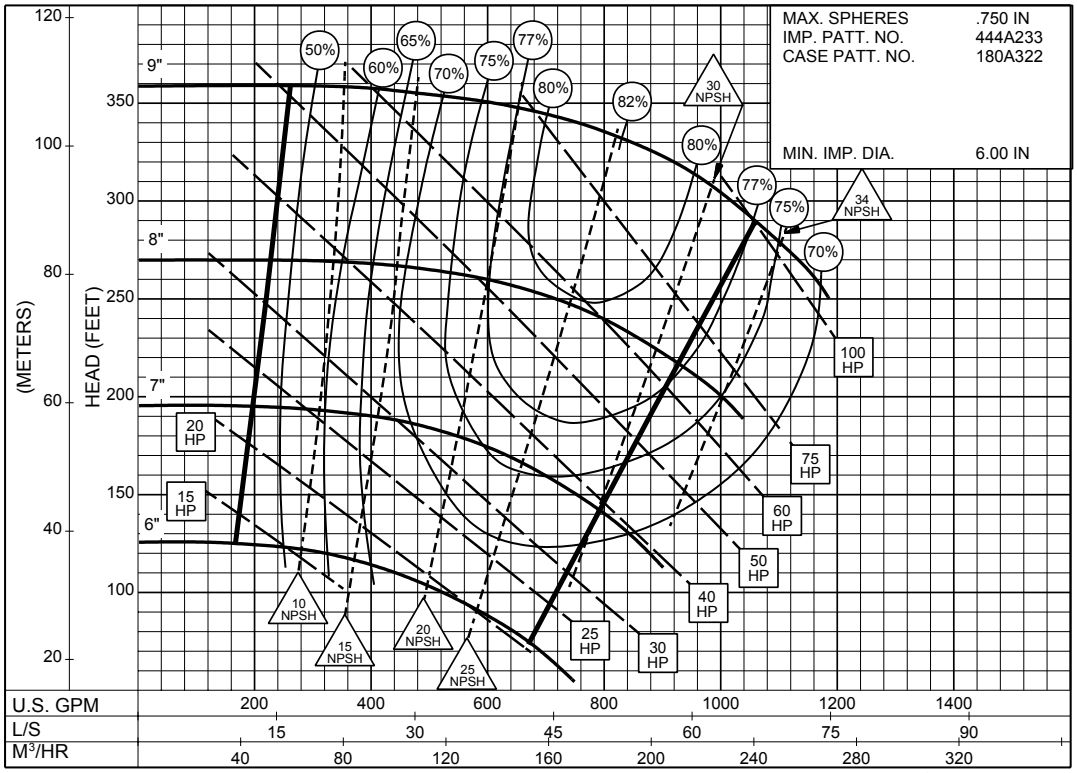

**3PC-142438**

# 3 x 4 x 9B
# SERIES 340 OR 360

ENCLOSED IMPELLER

Supersedes Section 340/360 Page 419
Dated January 1986

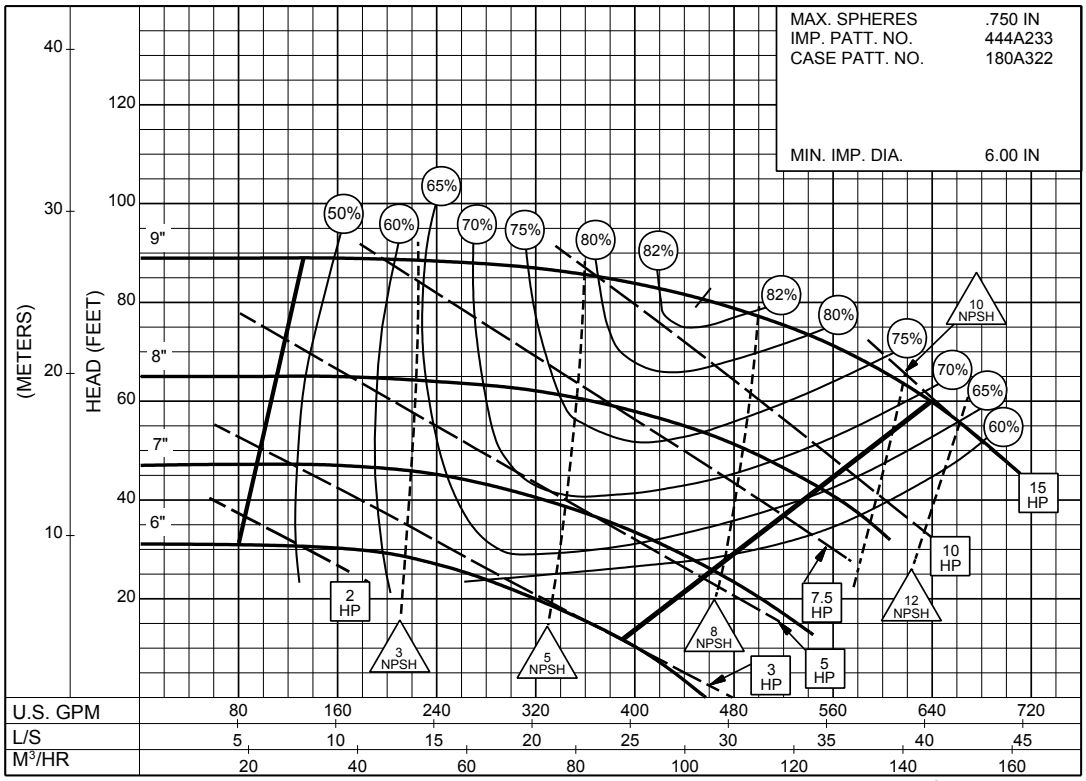
**SIZE : 3x4x9B** **TYPE : 340/360** **IMPELLER : Enclosed** **R. P. M. : 3500**




**3PC-142441**

**3500** RPM

**SIZE : 3x4x9B** **TYPE : 340/360** **IMPELLER : Enclosed** **R. P. M. : 1750**



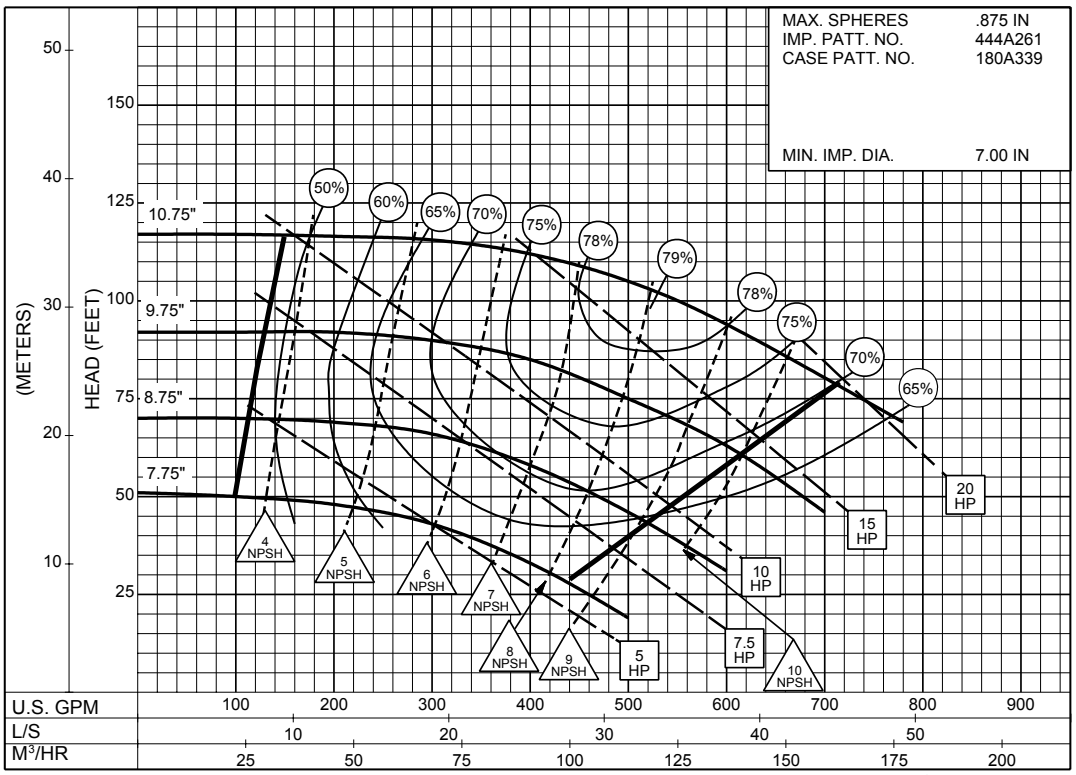

**3PC-142440**

**1750** RPM

# 3 x 4 x 11
# SERIES 340 OR 360
## ENCLOSED IMPELLER

**1750** RPM

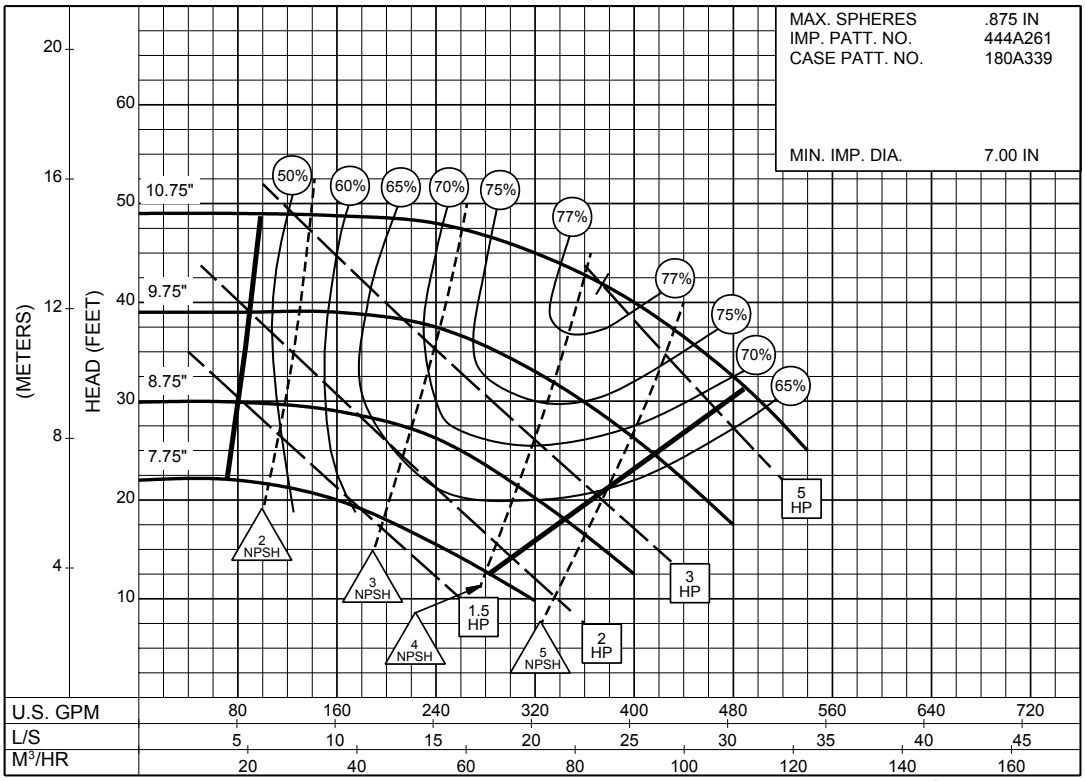
**SIZE : 3x4x11** **TYPE : 340/360** **IMPELLER : Enclosed** **R. P. M. : 1750**




**3PC-142413**

**1150** RPM

**SIZE : 3x4x11** **TYPE : 340/360** **IMPELLER : Enclosed** **R. P. M. : 1150**

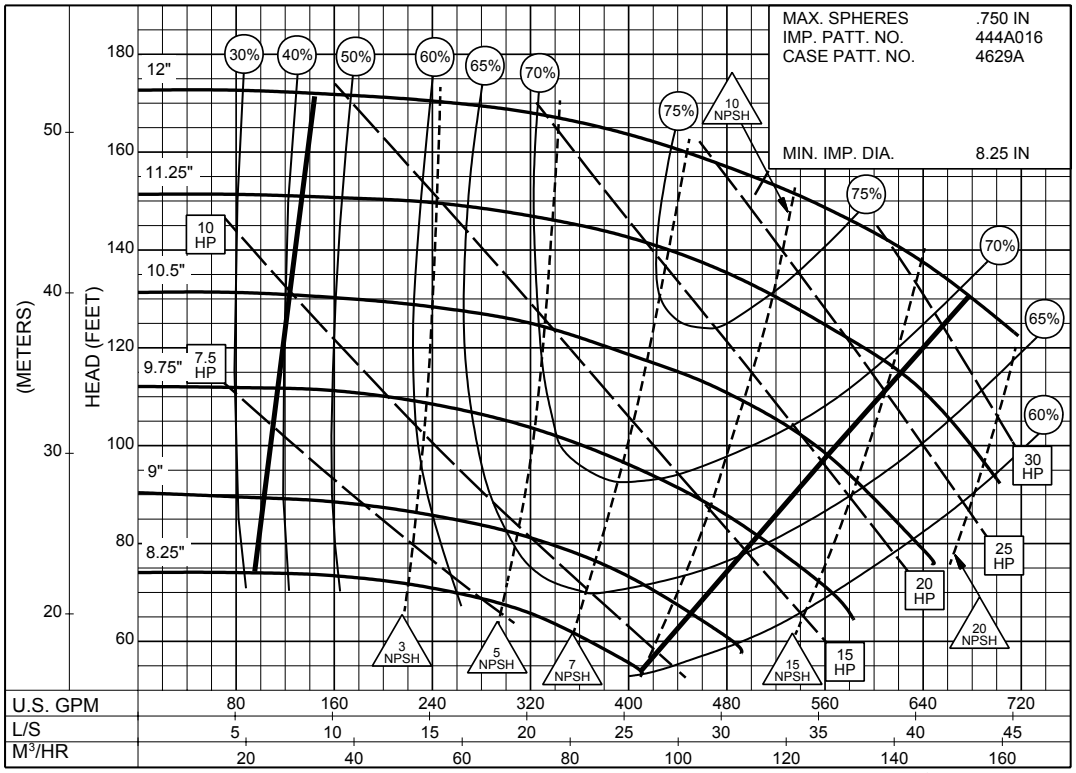



**3PC-142414**

# 3 x 4 x 12
# SERIES 340 OR 360
## ENCLOSED IMPELLER

Supersedes Section 340/360 Page 421
Dated January 1986

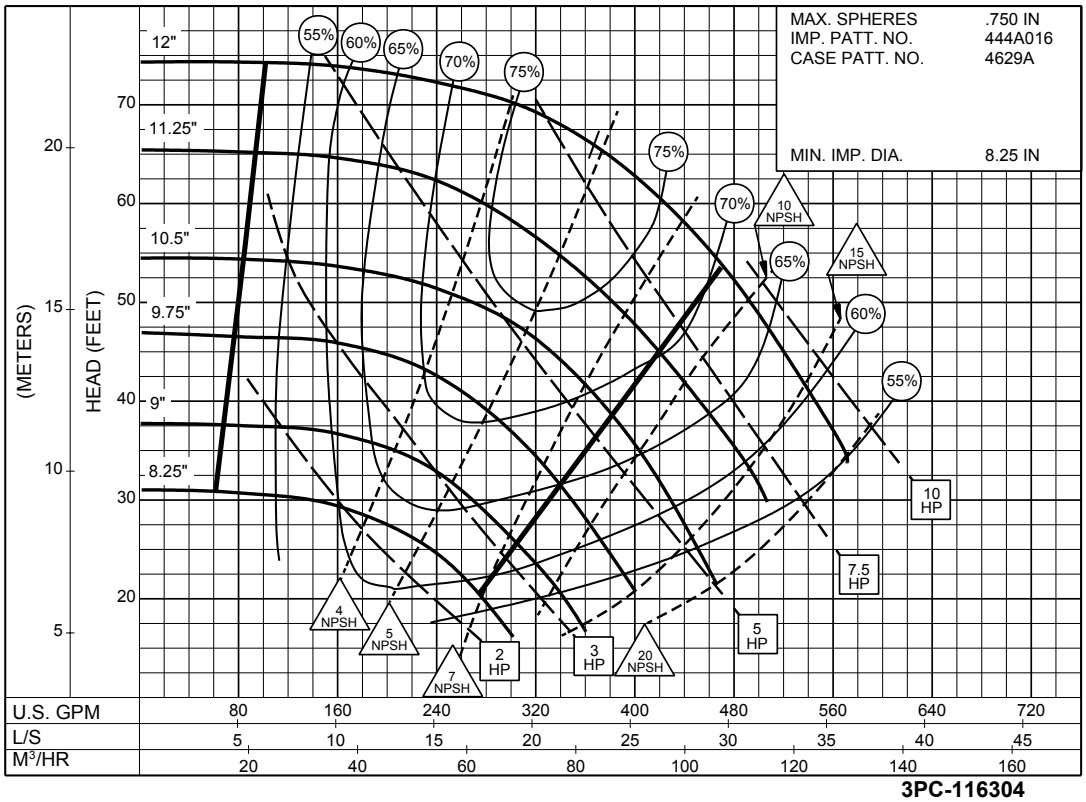
**SIZE : 3x4x12** **TYPE : 340/360** **IMPELLER : Enclosed** **R. P. M. : 1750**




**3PC-116303**

**1750 RPM**

**SIZE : 3x4x12** **TYPE : 340/360** **IMPELLER : Enclosed** **R. P. M. : 1150**




**3PC-116304**

**1150 RPM**

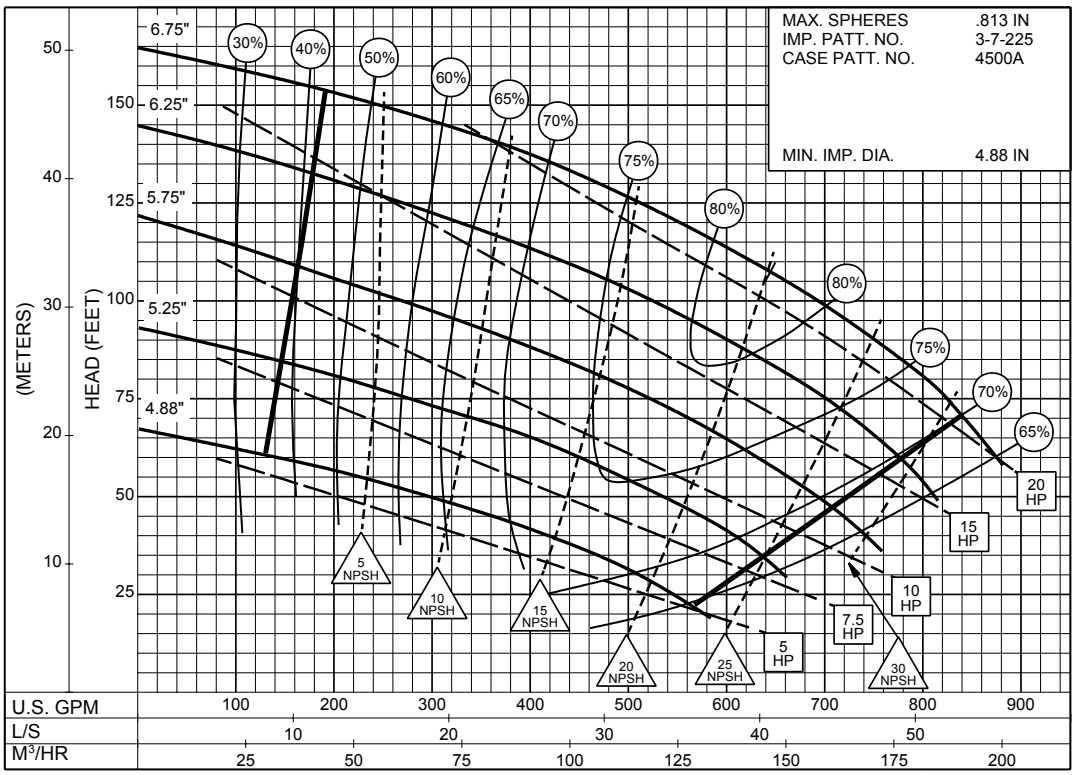
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Supersedes Section 340/360 Page 422
Dated January 1986

# 4 x 4 x 7A
# SERIES 340 OR 360
## ENCLOSED IMPELLER

**3500** RPM

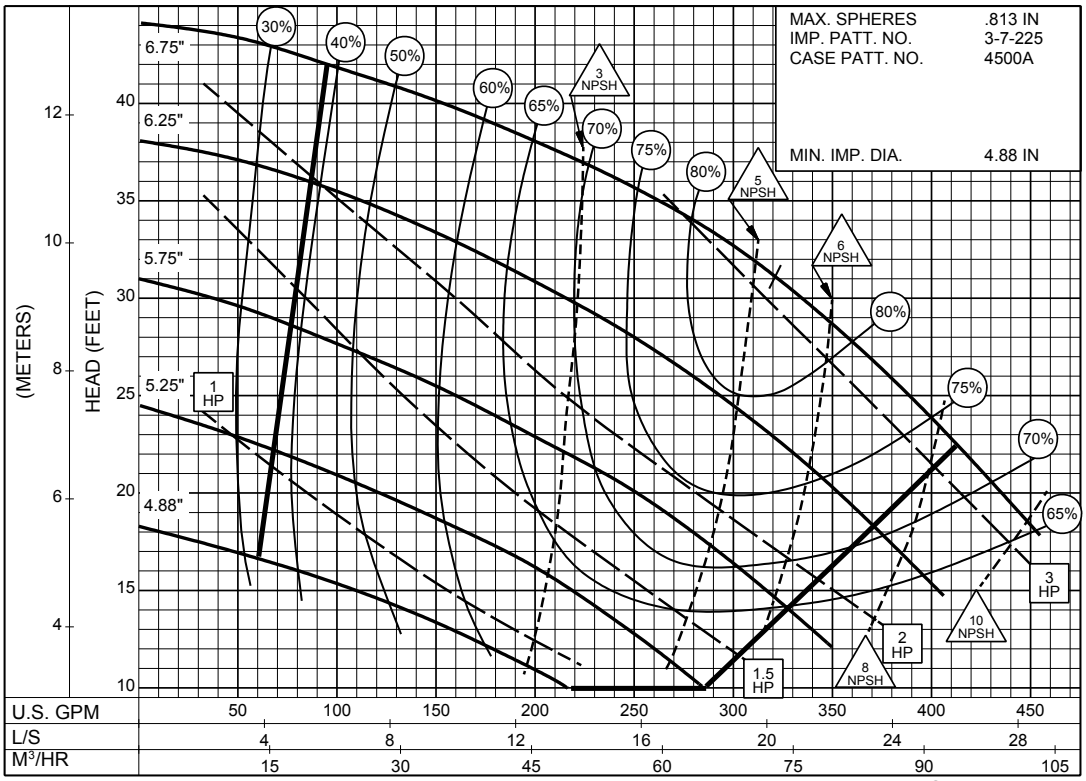
**SIZE : 4x4x7A** **TYPE : 340/360** **IMPELLER : Enclosed** **R. P. M. : 3500**




3PC-116305

**1750** RPM

**SIZE : 4x4x7A** **TYPE : 340/360** **IMPELLER : Enclosed** **R. P. M. : 1750**

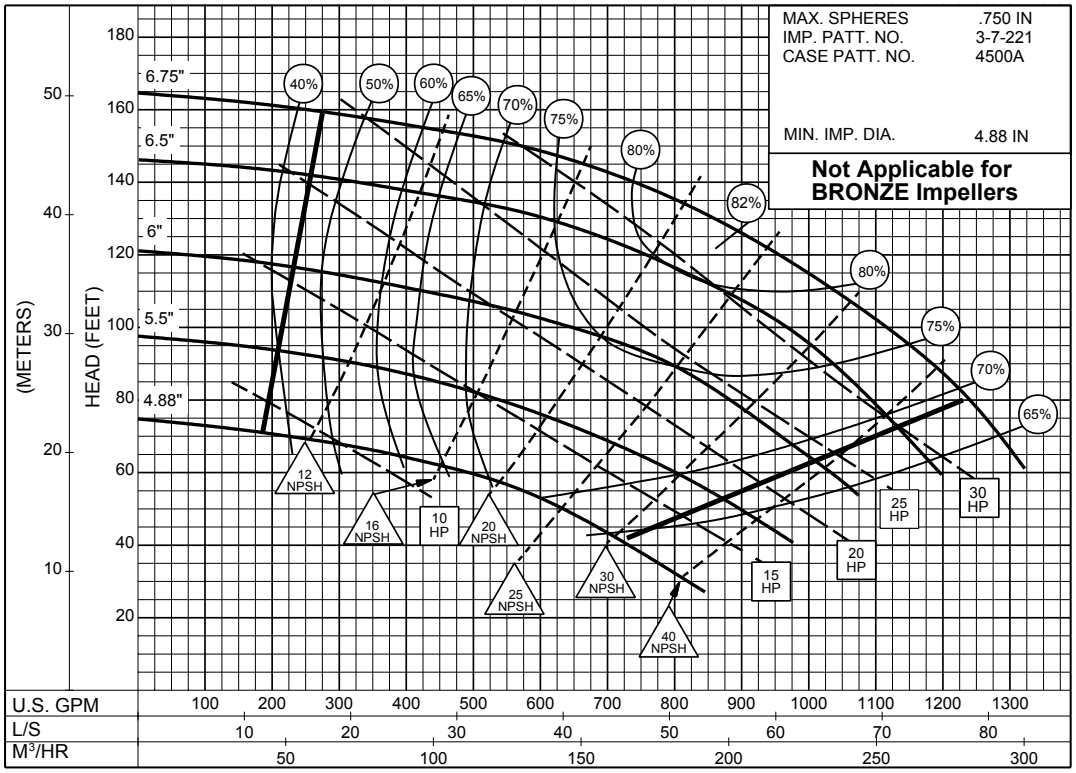



3PC-116306

# 4 x 4 x 7B
# SERIES 340 OR 360
## ENCLOSED IMPELLER

Supersedes Section 340/360 Page 423
Dated January 1986

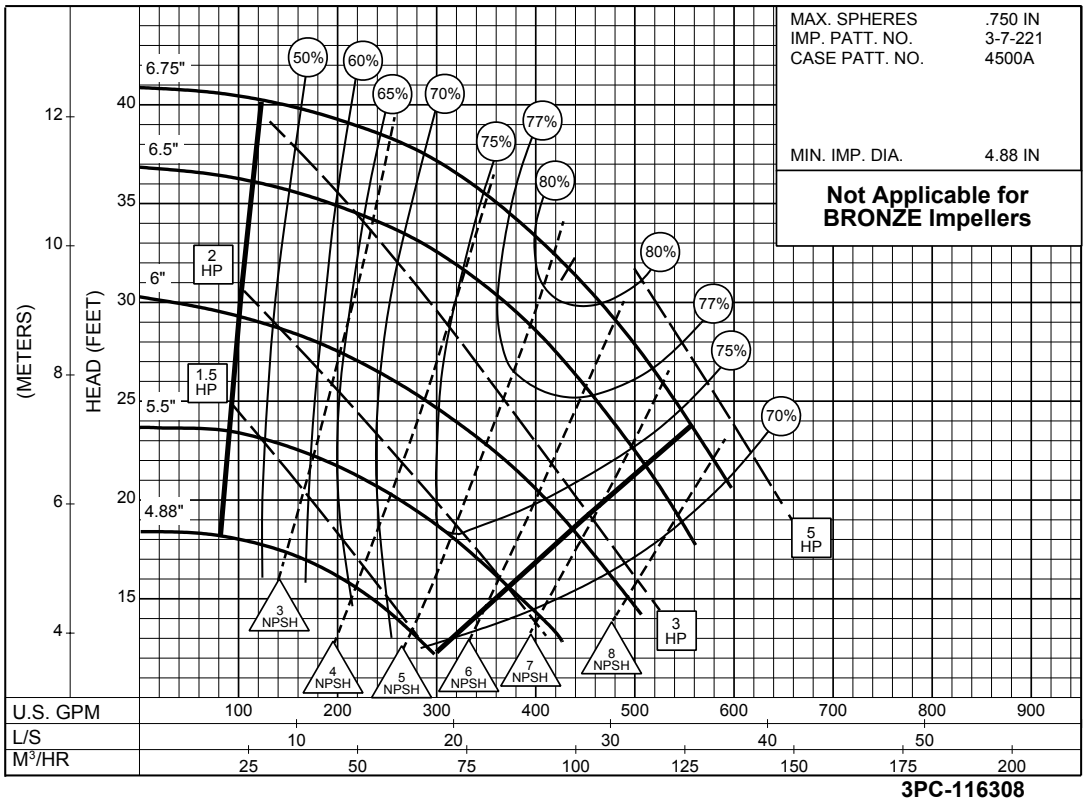
**SIZE : 4x4x7B** **TYPE : 340/360** **IMPELLER : Enclosed** **R. P. M. : 3500**




3PC-116307

**3500 RPM**

**SIZE : 4x4x7B** **TYPE : 340/360** **IMPELLER : Enclosed** **R. P. M. : 1750**




3PC-116308

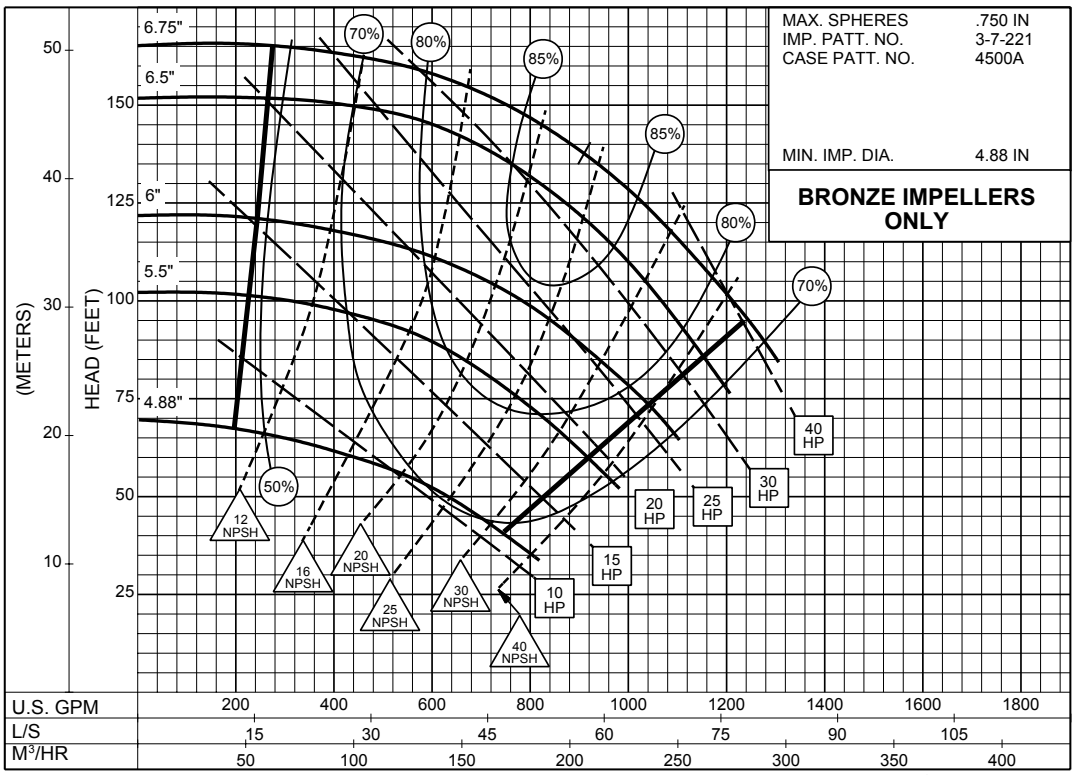
**1750 RPM**

Supersedes Section 340/360 Page 424
Dated January 1986

# 4 x 4 x 7B
# SERIES 340 OR 360
## ENCLOSED IMPELLER

**3500** RPM

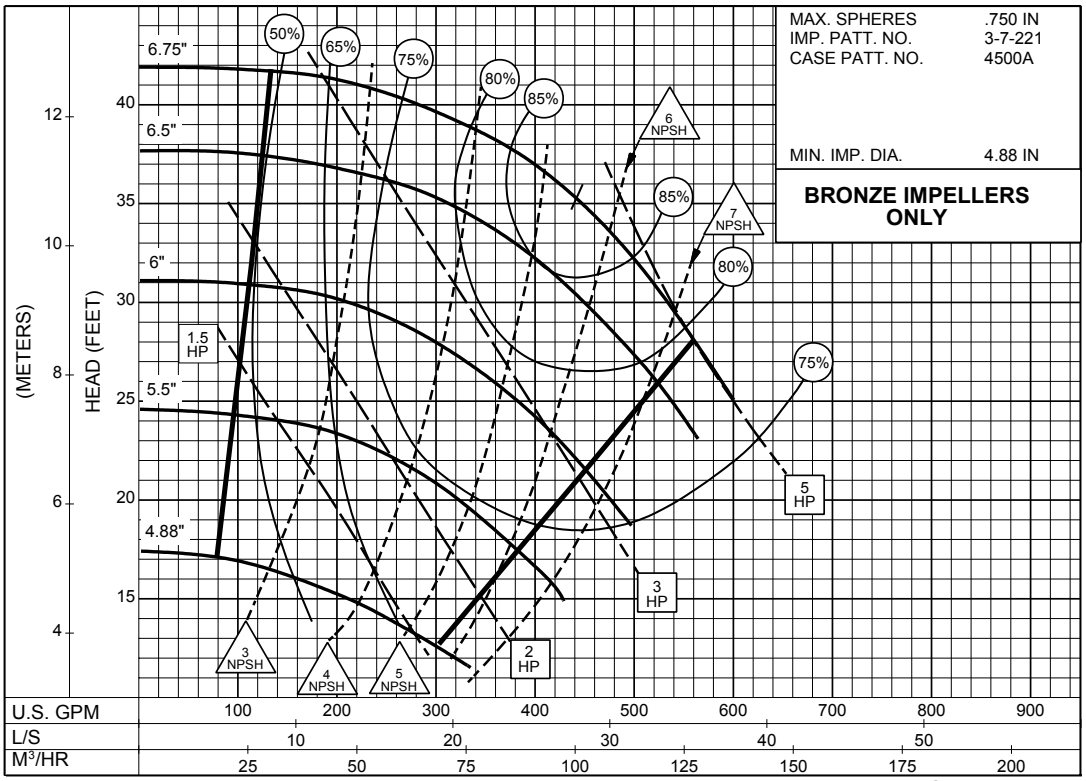
**SIZE : 4x4x7B** **TYPE : 340/360** **IMPELLER : Enclosed** **R. P. M. : 3500**




3PC-116307A

**1750** RPM

**SIZE : 4x4x7B** **TYPE : 360/360** **IMPELLER : Enclosed** **R. P. M. : 1750**



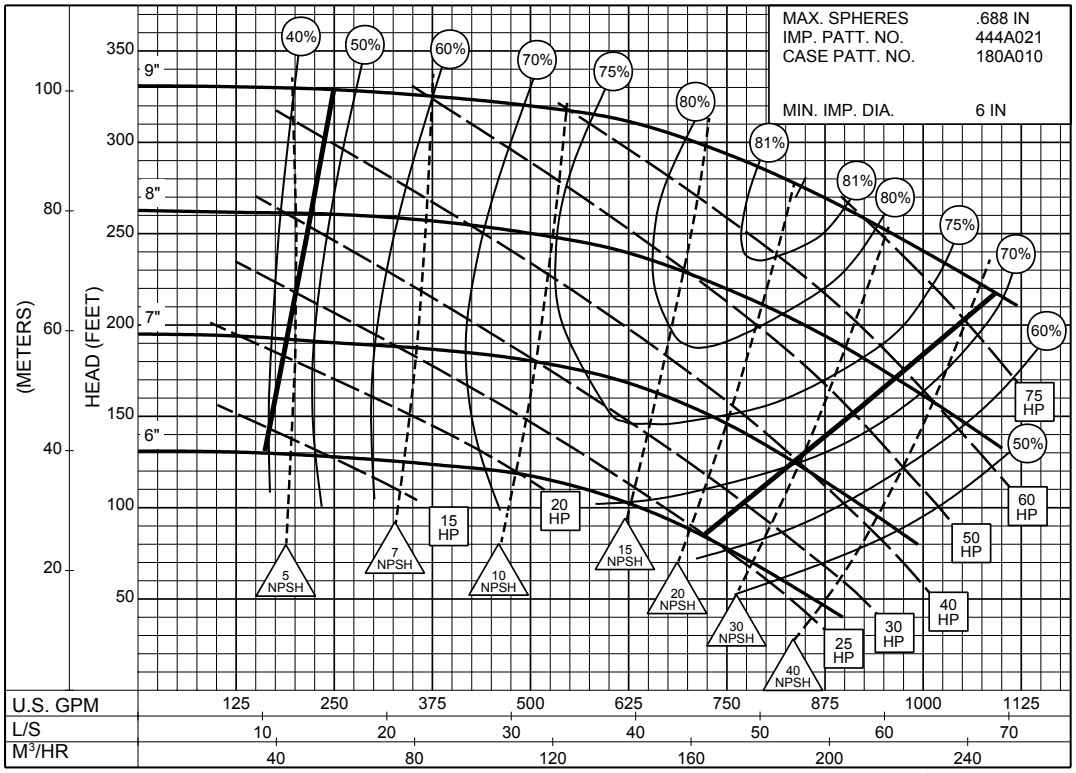

3PC-116308A

AURORA®
Pentair Pump Group

# 4 x 5 x 9A
# SERIES 340 OR 360
## ENCLOSED IMPELLER

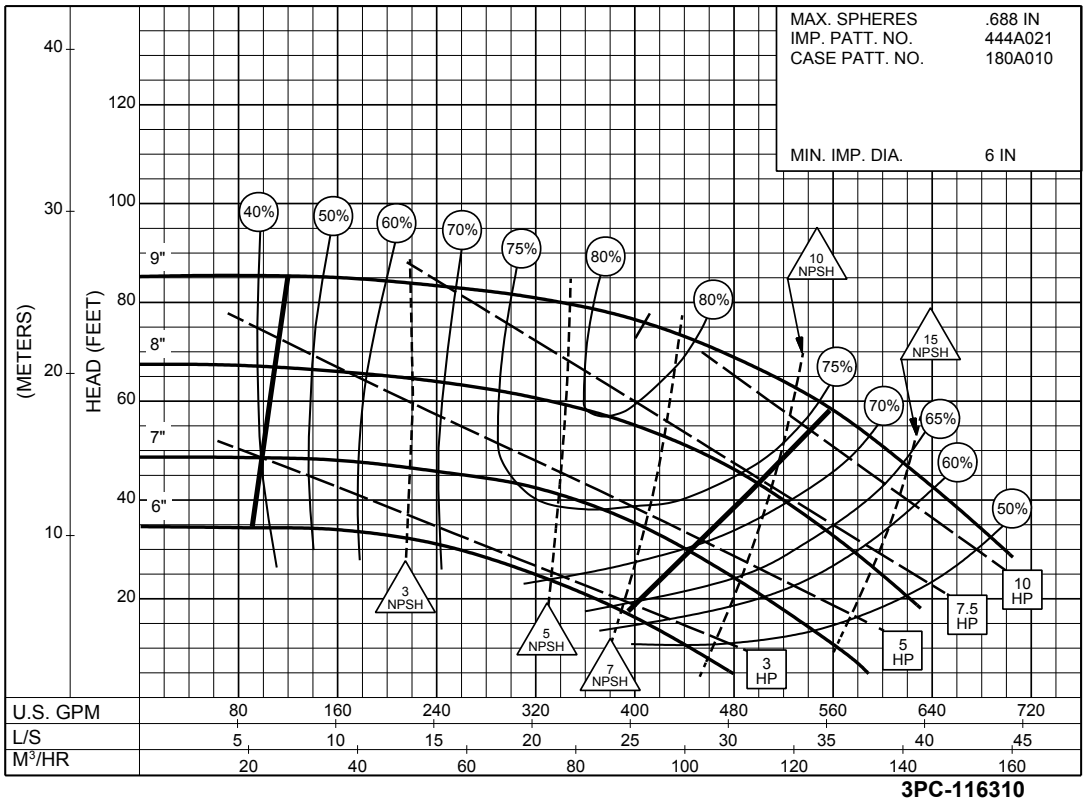
Supersedes Section 340/360 Page 425
Dated January 1986

**SIZE : 4x5x9A** **TYPE : 340/360** **IMPELLER : Enclosed** **R. P. M. : 3500**




**3500 RPM**

**SIZE : 4x5x9A** **TYPE : 340/360** **IMPELLER : Enclosed** **R. P. M. : 1750**




**1750 RPM**

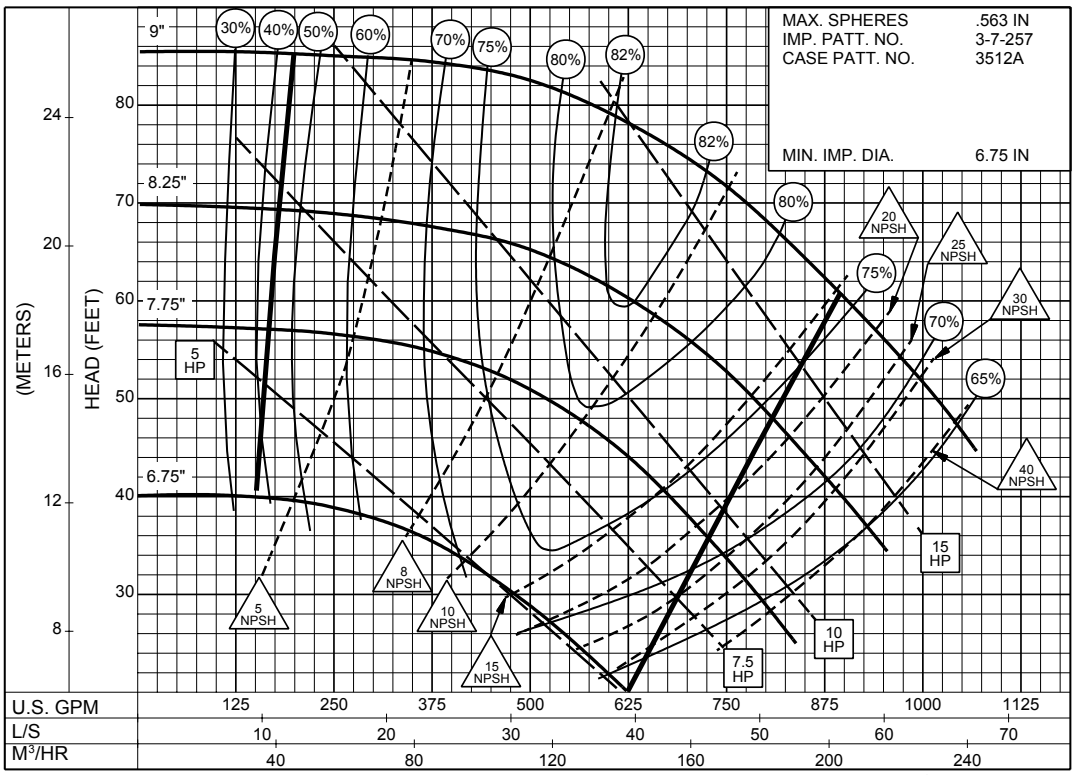
Supersedes Section 340/360 Page 426
Dated March 1989

# 4 x 5 x 9B
# SERIES 340 OR 360

ENCLOSED IMPELLER

**1750**
RPM

**SIZE : 4x5x9B** **TYPE : 340/360** **IMPELLER : Enclosed** **R. P. M. : 1750**



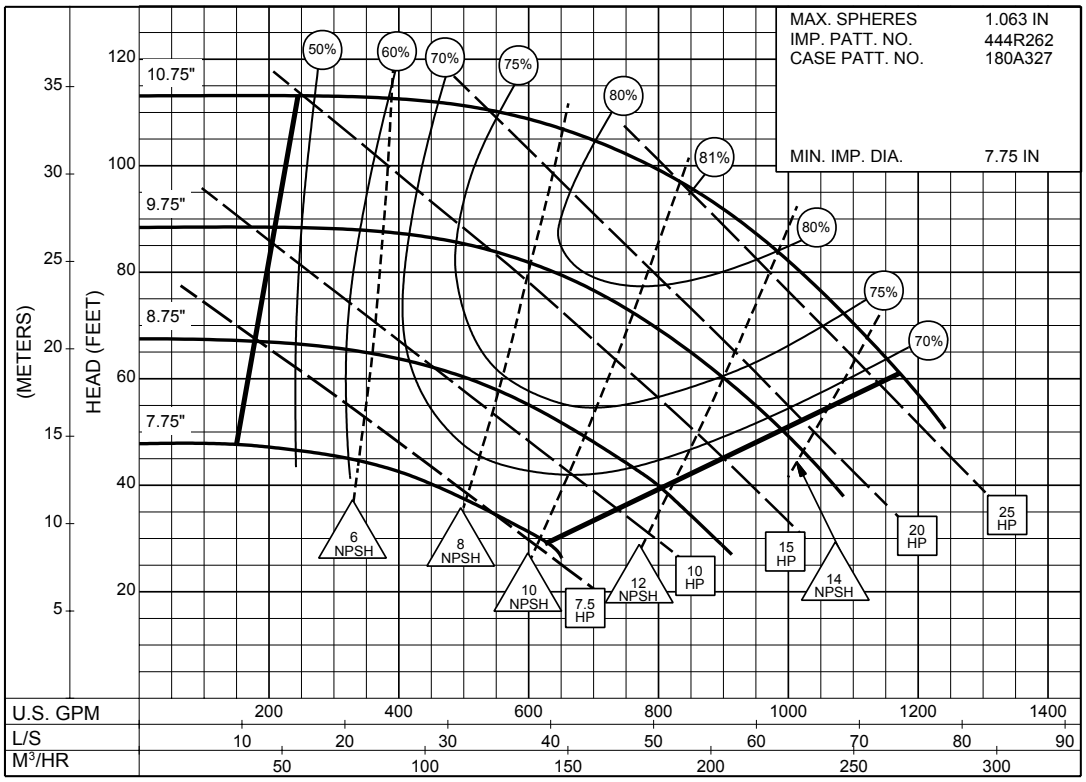

3PC-116311

# 4 x 5 x 11
# SERIES 340 OR 360

ENCLOSED IMPELLER

Supersedes Section 340/360 Page 427
Dated July 1998

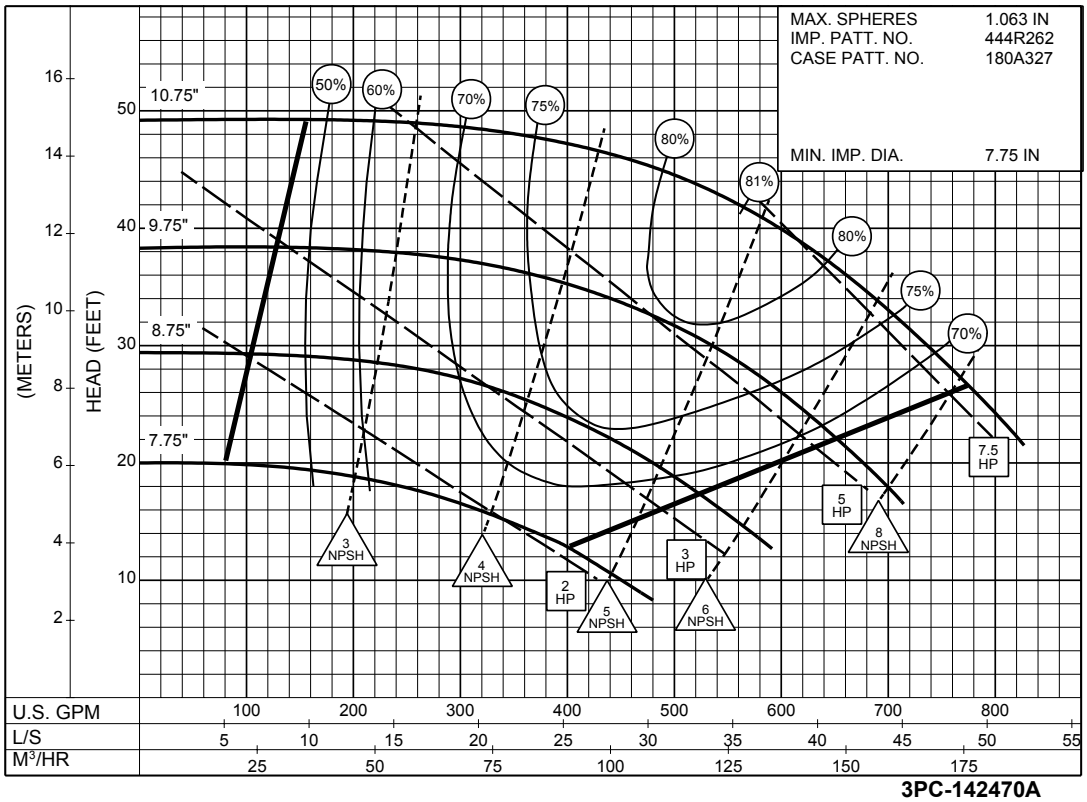
**SIZE : 4x5x11 TYPE : 340/360 IMPELLER : Enclosed R. P. M. : 1750**




3PC-142471A

**1750 RPM**

**SIZE : 4x5x11 TYPE : 340/360 IMPELLER : Enclosed R. P. M. : 1150**




3PC-142470A

**1150 R.P.M**

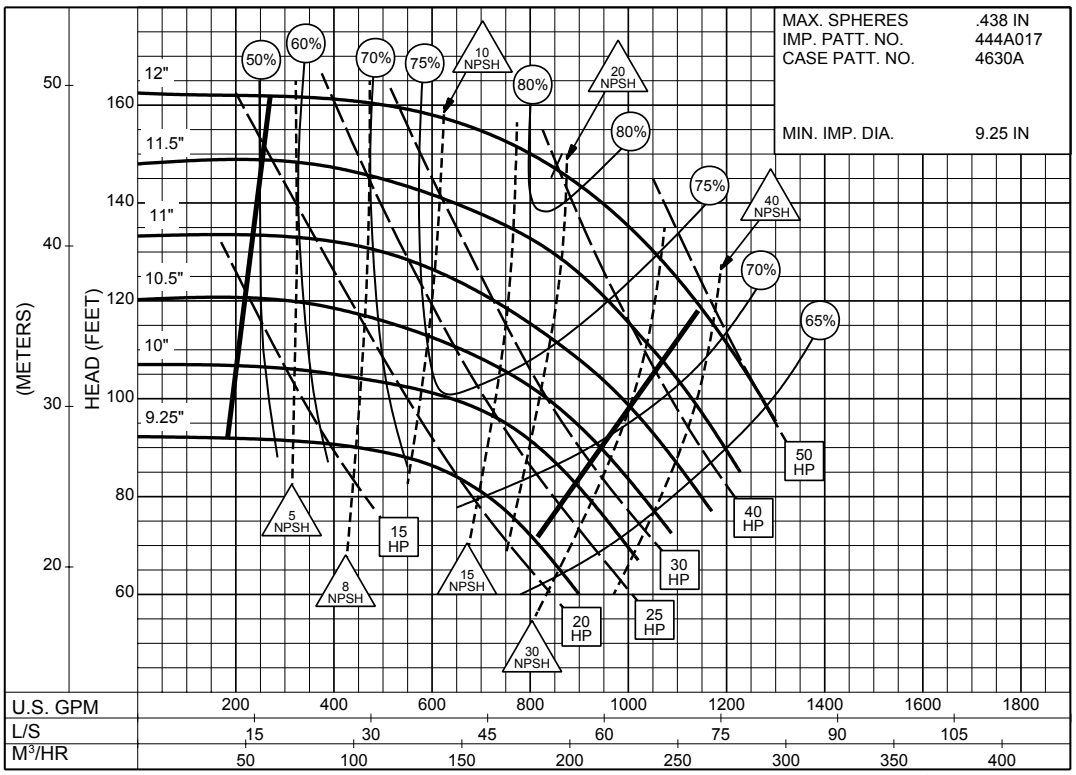
AURORA®
Pentair Pump Group

Supersedes Section 340/360 Page 428
Dated January 1986

# 4 x 5 x 12
# SERIES 340 OR 360
## ENCLOSED IMPELLER

**1750** R.P.M

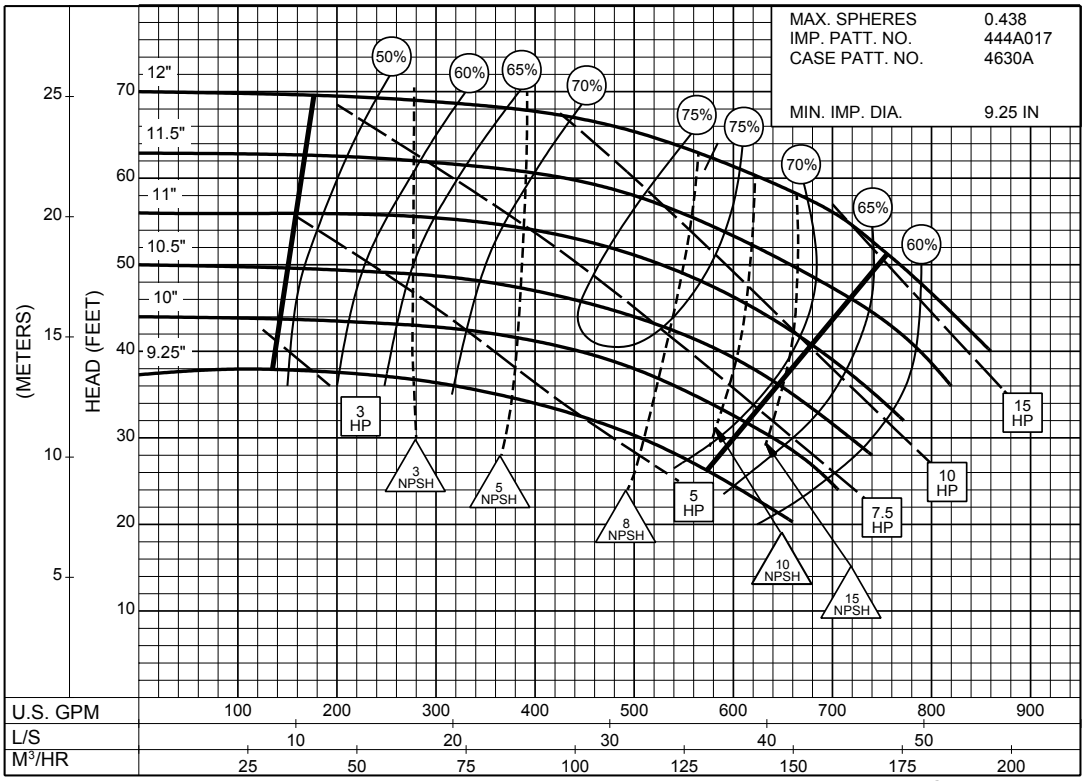
**SIZE : 4x5x12** **TYPE : 340/360** **IMPELLER : Enclosed** **R. P. M. : 1750**




3PC-116312

**1150** R.P.M

**SIZE : 4x5x12** **TYPE : 340/360** **IMPELLER : Enclosed** **R. P. M. : 1150**



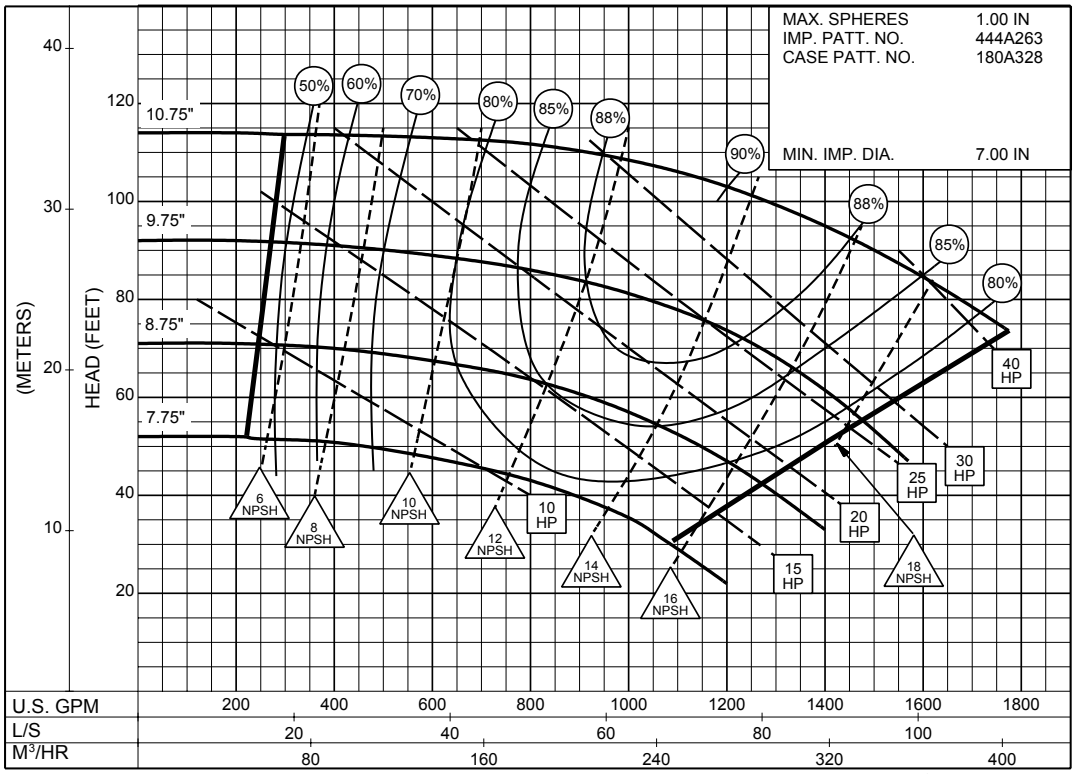

3PC-116313

AURORA®
Pentair Pump Group

# 5 x 6 x 11
# SERIES 340 OR 360
## ENCLOSED IMPELLER

Supersedes Section 340/360 Page 429
Dated January 1986

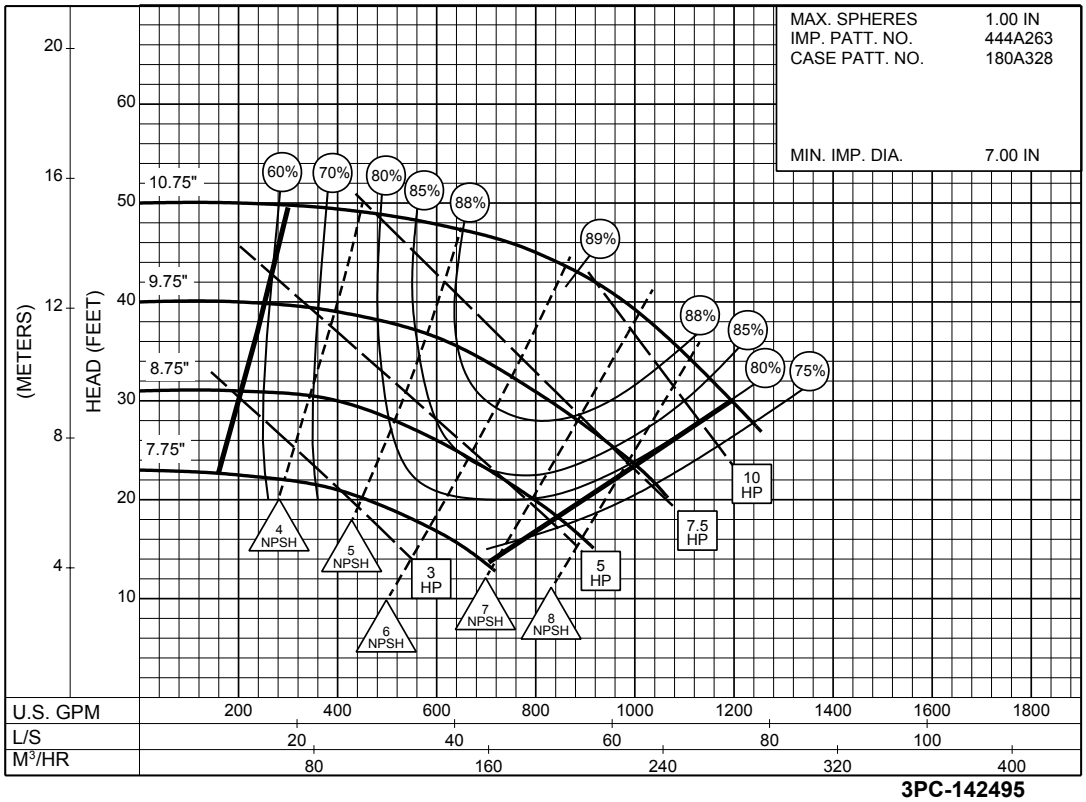
**SIZE : 5x6x11** **TYPE : 340/360 IMPELLER : Enclosed** **R. P. M. : 1750**




3PC-142494

**1750** RPM

**SIZE : 5x6x11** **TYPE : 340/360 IMPELLER : Enclosed** **R. P. M. : 1150**




3PC-142495

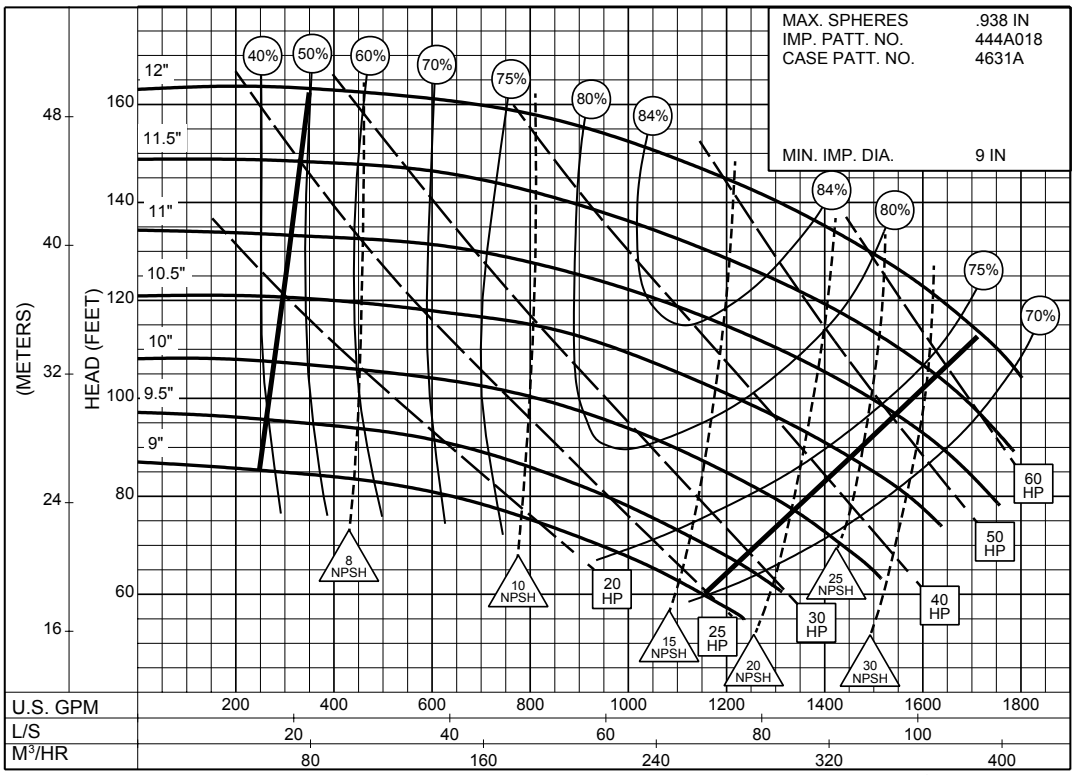
**1150** RPM

AURORA®
Pentair Pump Group

# 5 x 6 x 12
# SERIES 340 OR 360
## ENCLOSED IMPELLER

**1750** RPM

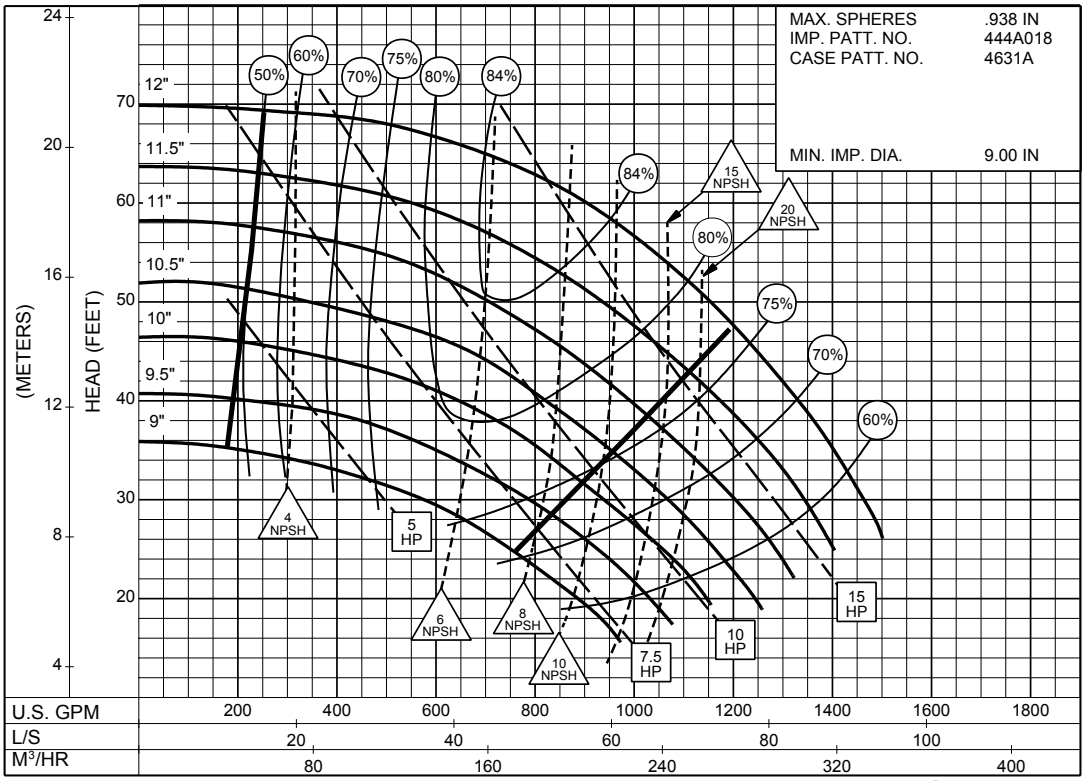
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**3PC-116314**

**1150** RPM

**SIZE : 5x6x12** **TYPE : 340/360 IMPELLER : Enclosed** **R. P. M. : 1150**

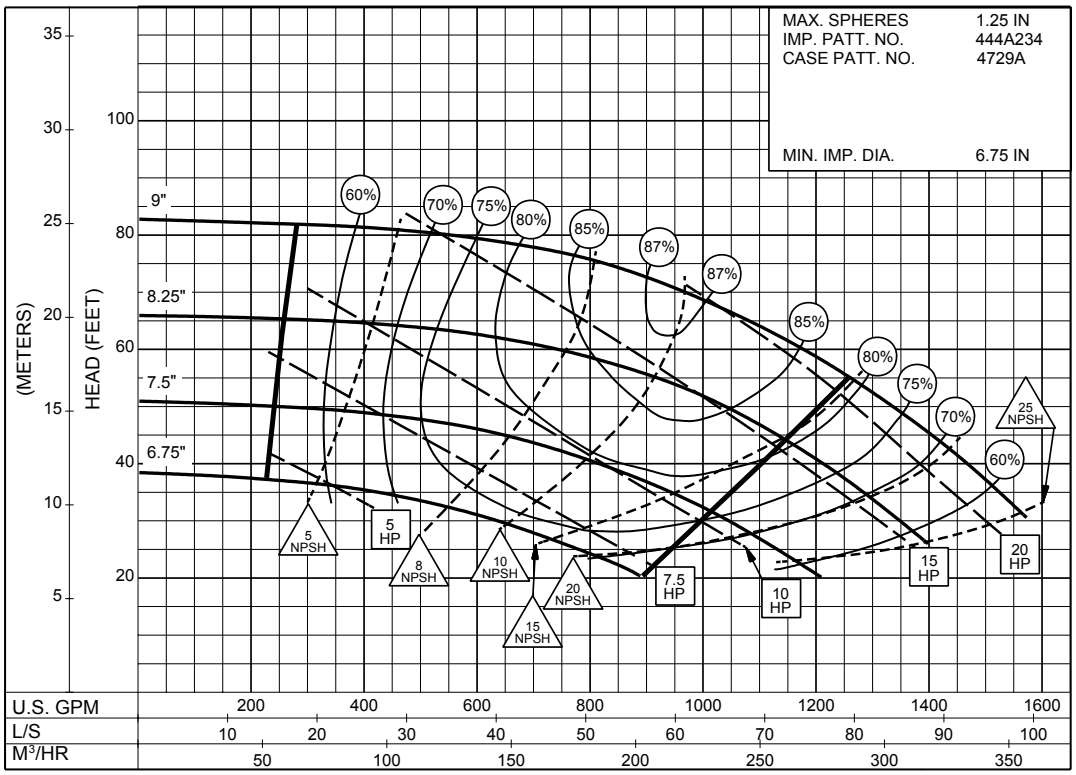



**3PC-116315**

# 6 x 6 x 9
# SERIES 340 OR 360
## ENCLOSED IMPELLER

Supersedes Section 340/360 Page 431
Dated January 1986

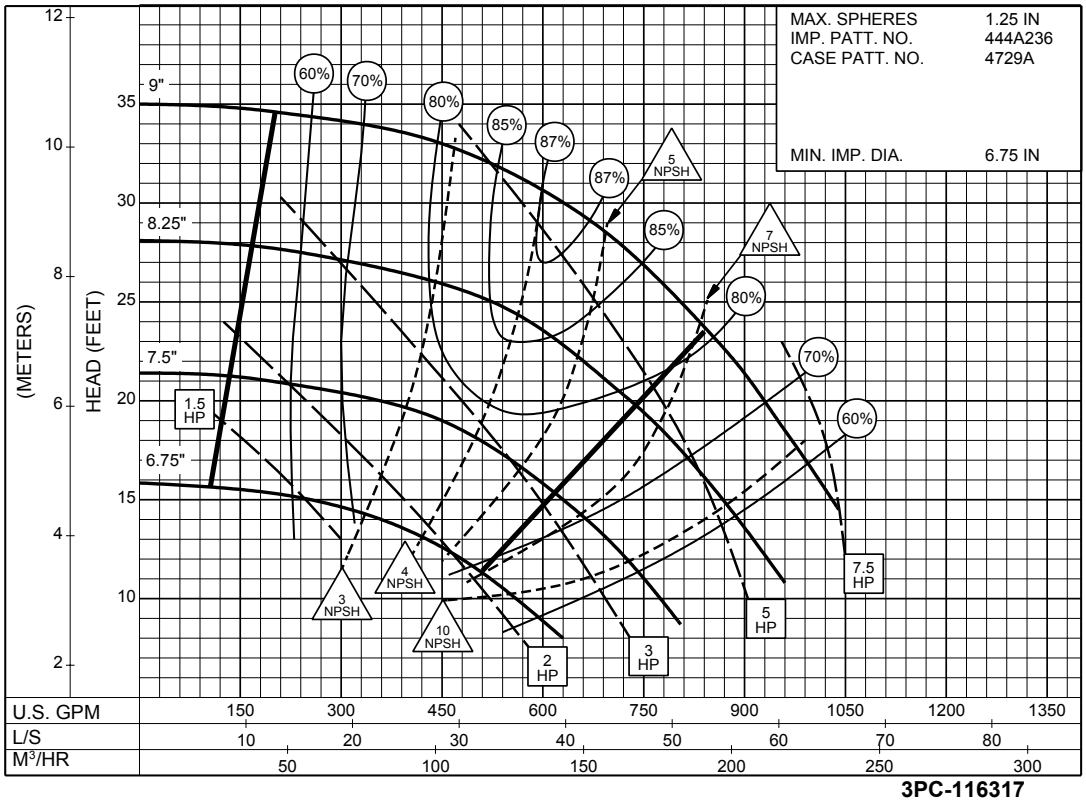
**SIZE : 6x6x9** **TYPE : 340/360** **IMPELLER : Enclosed** **R. P. M. : 1750**




**3PC-116316**

**1750** RPM

**SIZE : 6x6x9** **TYPE : 340/360** **IMPELLER : Enclosed** **R. P. M. : 1150**




**3PC-116317**

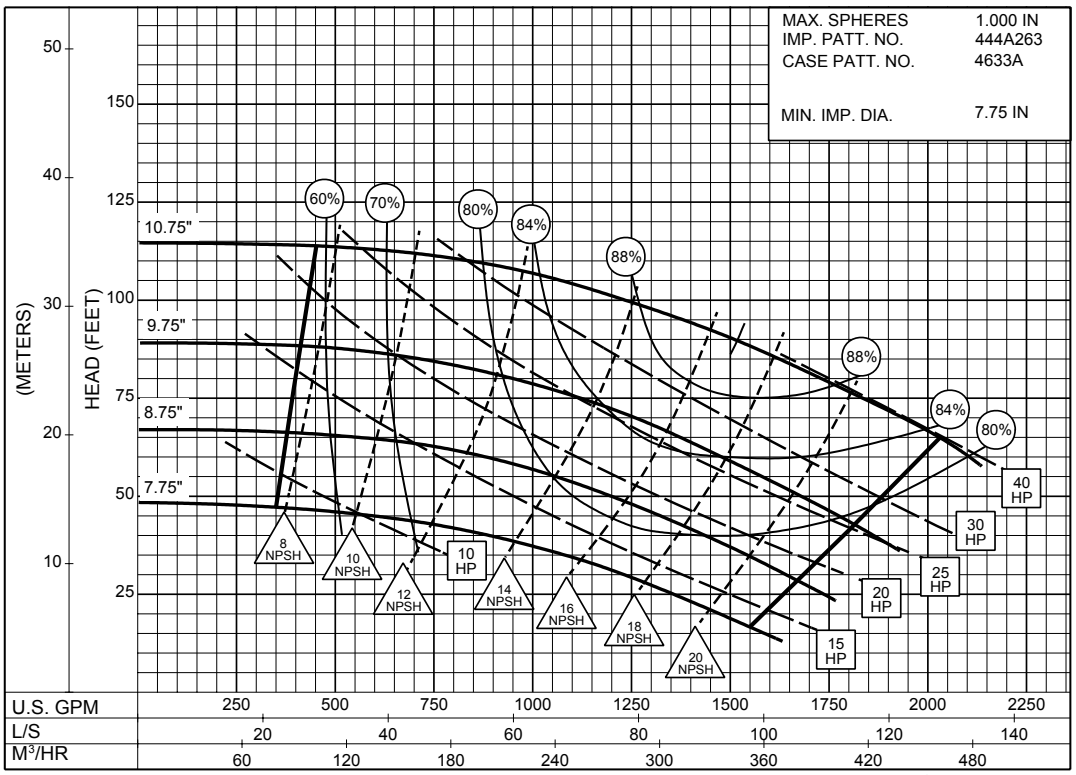
**1150** RPM

AURORA®
Pentair Pump Group

# 6 x 6 x 11
# SERIES 340 OR 360
## ENCLOSED IMPELLER

**1750 RPM**

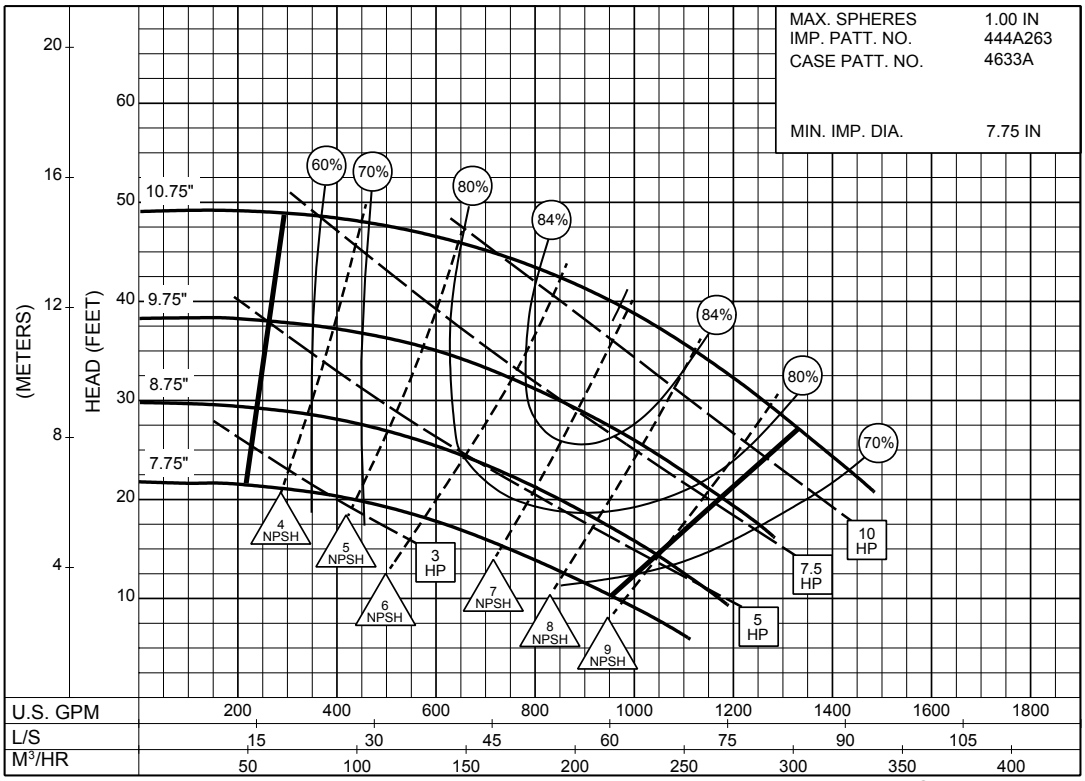
**SIZE : 6x6x11** **TYPE : 340/360 IMPELLER : Enclosed** **R. P. M. : 1750**




**3PC-148716**

**1150 RPM**

**SIZE : 6x6x11** **TYPE : 340/360 IMPELLER : Enclosed** **R. P. M. : 1150**




**PC-148715**

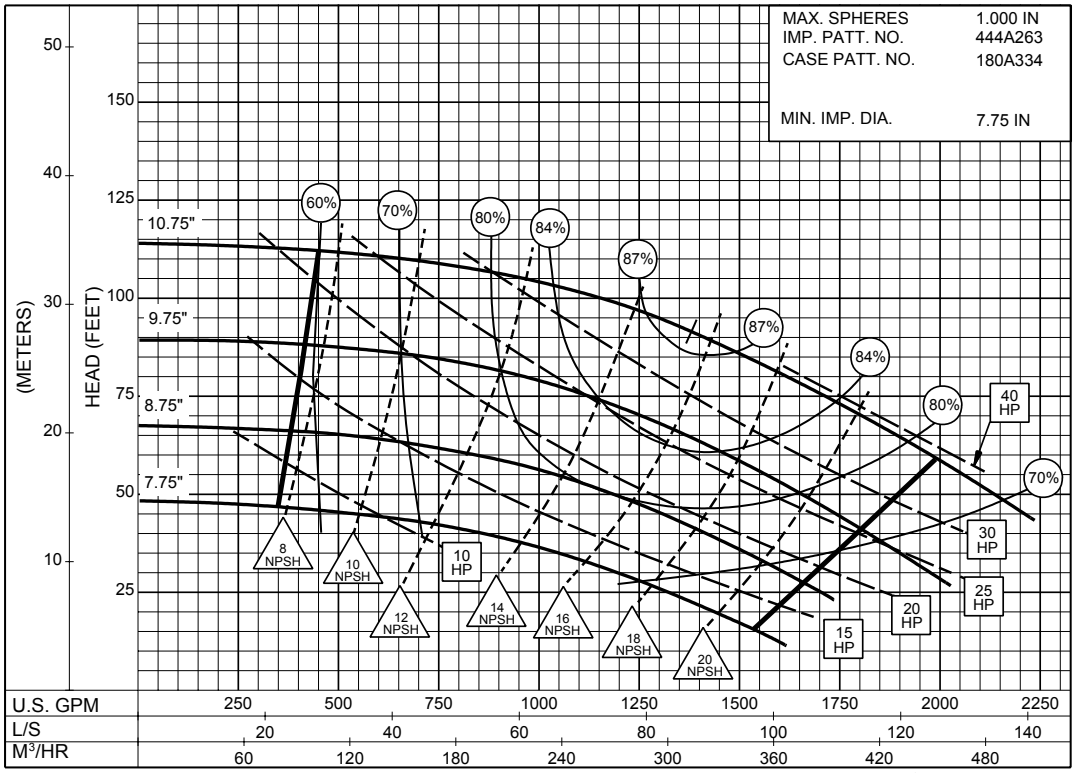
AURORA®
Pentair Pump Group

# 6 x 6 x 11A
# SERIES 340 OR 360

ENCLOSED IMPELLER

Supersedes Section 340/360 Page 433
Dated June 1989

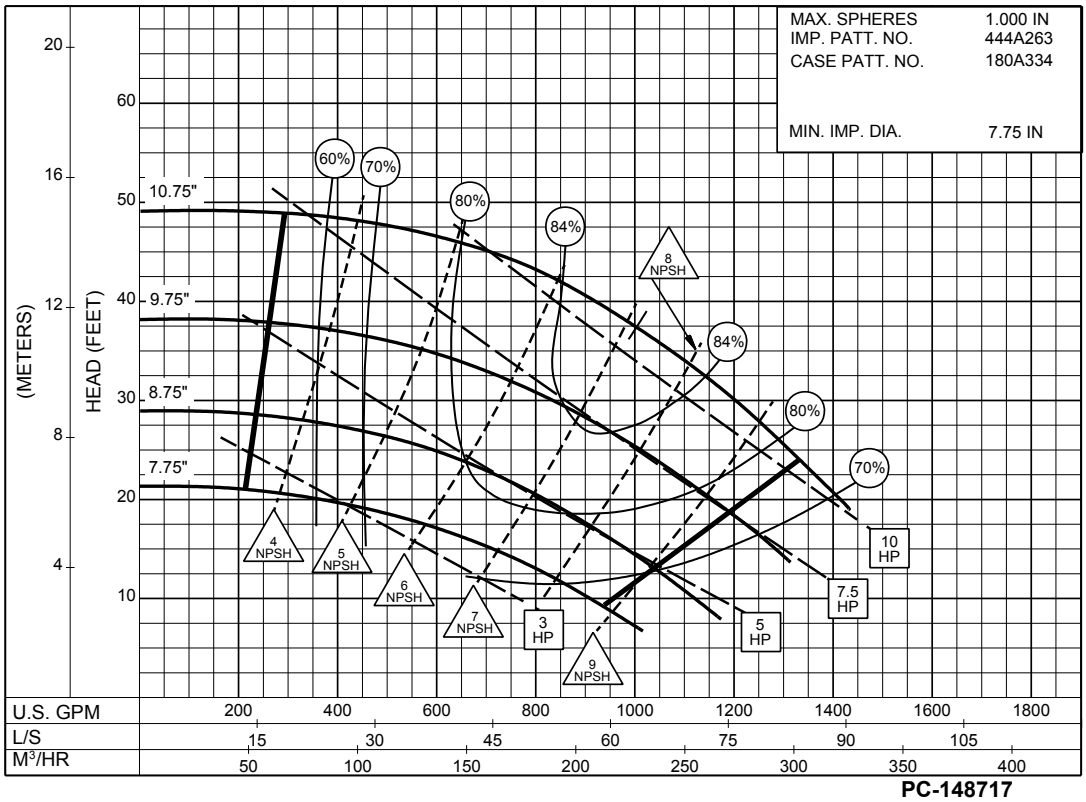
**SIZE : 6x6x11A** **TYPE : 340/360 IMPELLER : Enclosed** **R. P. M. : 1750**




PC-148718

**1750** RPM

**SIZE : 6x6x11A** **TYPE : 340/360 IMPELLER : Enclosed** **R. P. M. : 1150**




PC-148717

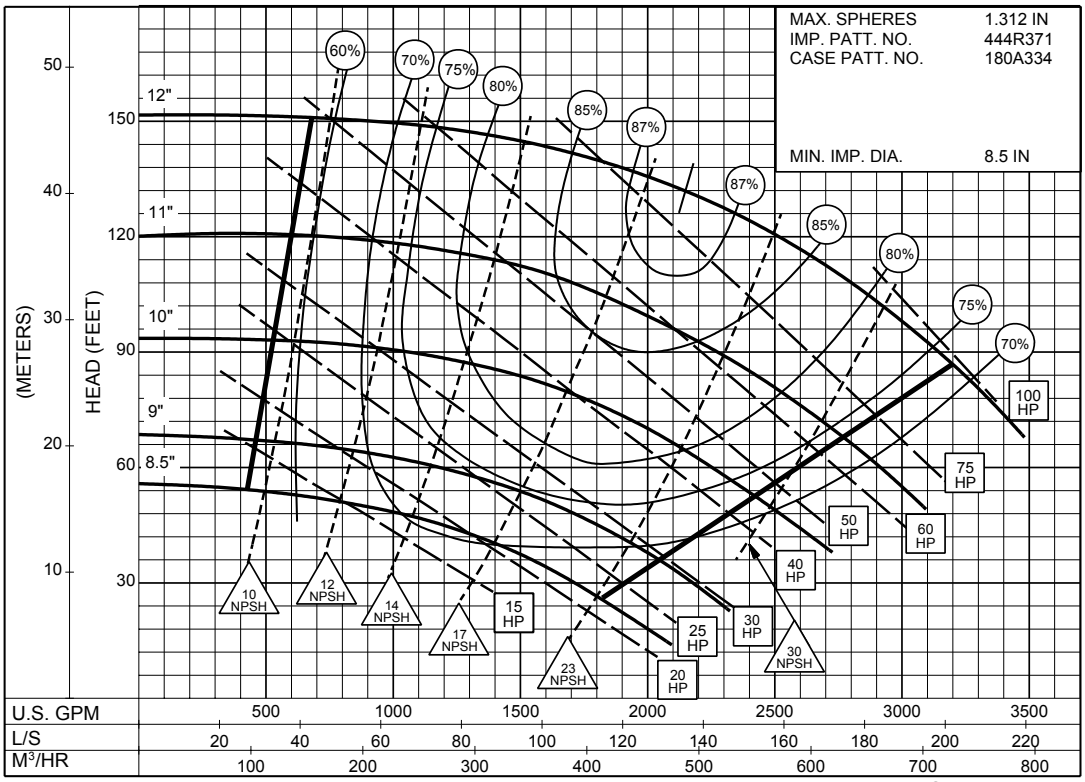
**1150** RPM

AURORA®
Pentair Pump Group

# 6 x 6 x 12B
# SERIES 340 OR 360
## ENCLOSED IMPELLER

**1750** RPM

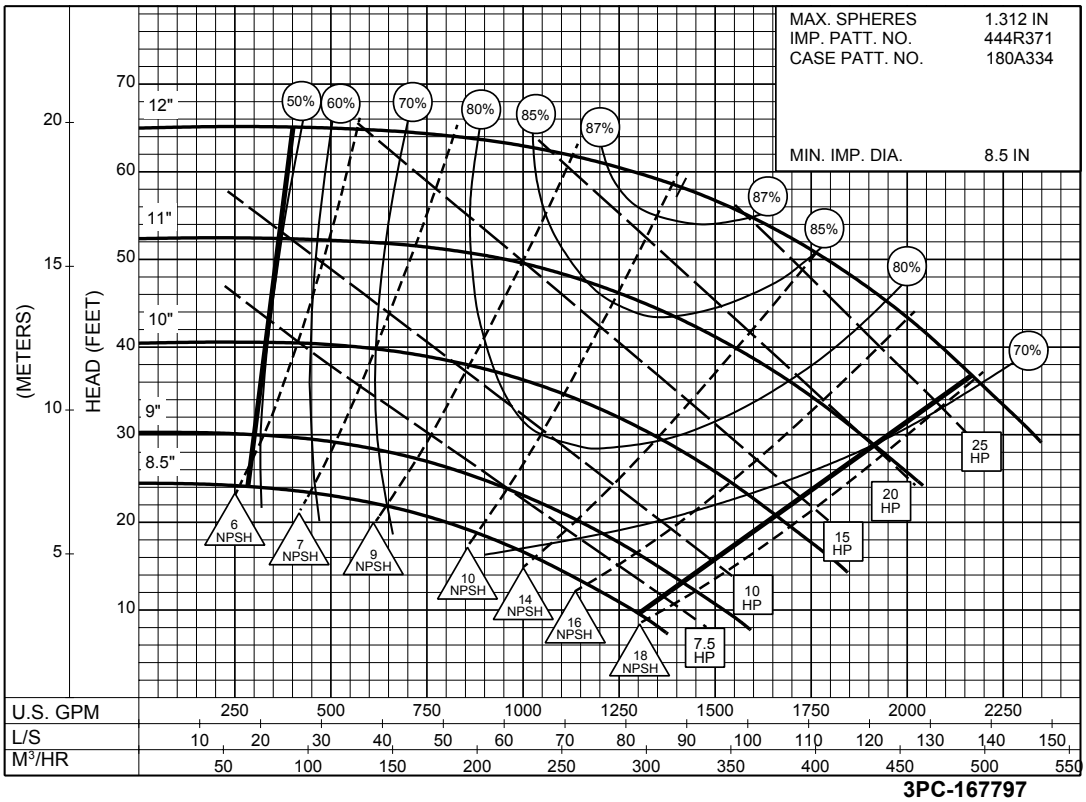
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3PC-167796

**1150** RPM

**SIZE : 6x6x12B** **TYPE : 340/360** **IMPELLER : Enclosed** **R. P. M. : 1150**




3PC-167797

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Pentair Pump Group

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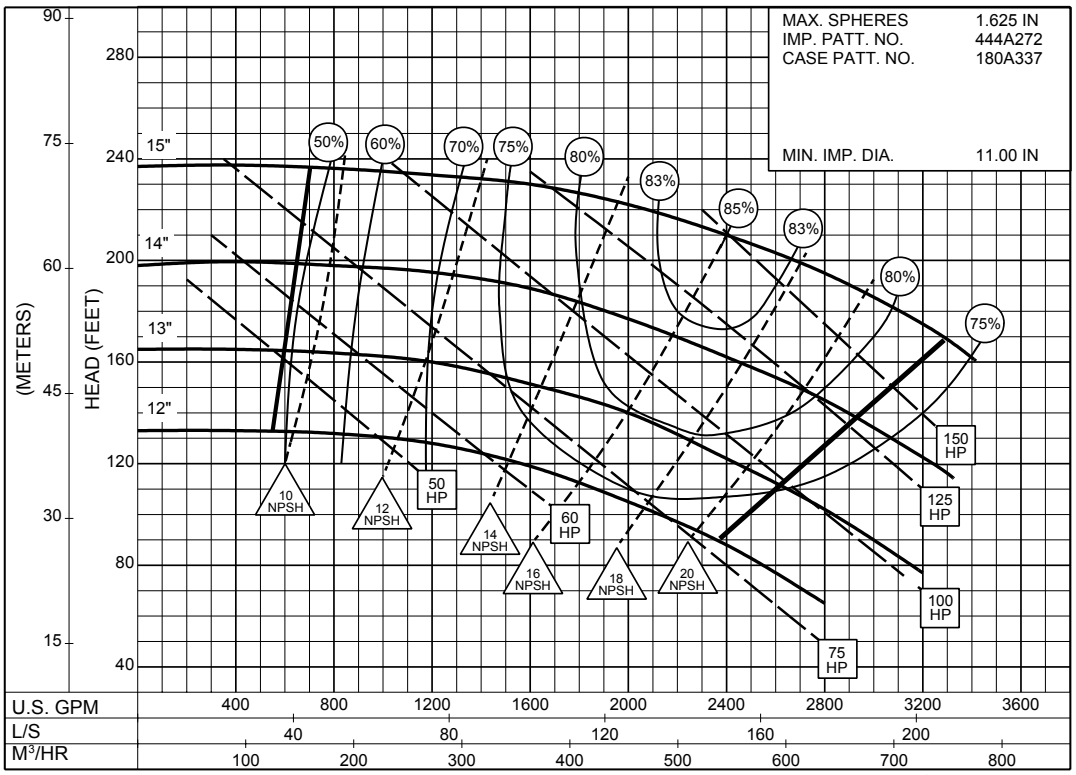
Supersedes Section 340/360 Page 436
Dated June 1989

# 6 x 8 x 15
# SERIES 360

ENCLOSED IMPELLER
AVAILABLE AS MODEL 364 ONLY

**1775** RPM

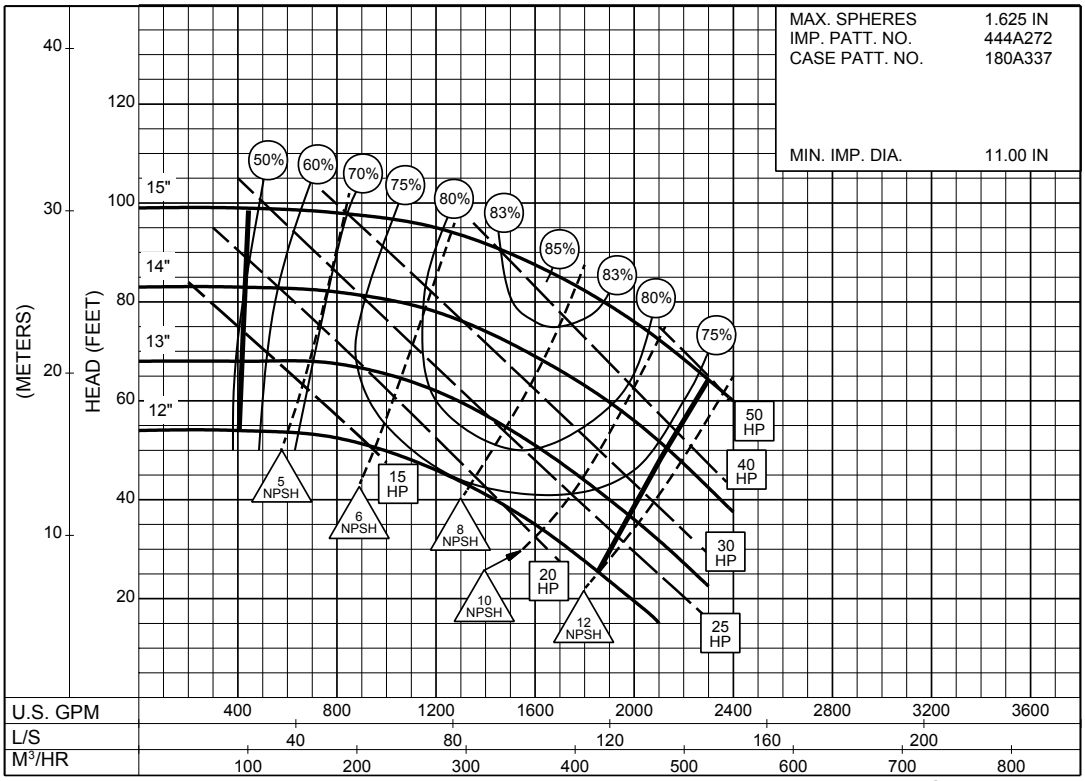
**SIZE : 6x8x15** **TYPE : 360** **IMPELLER : Enclosed** **R. P. M. : 1775**




3PC-142655

**1150** RPM

**SIZE : 6x8x15** **TYPE : 360** **IMPELLER : Enclosed** **R. P. M. : 1150**



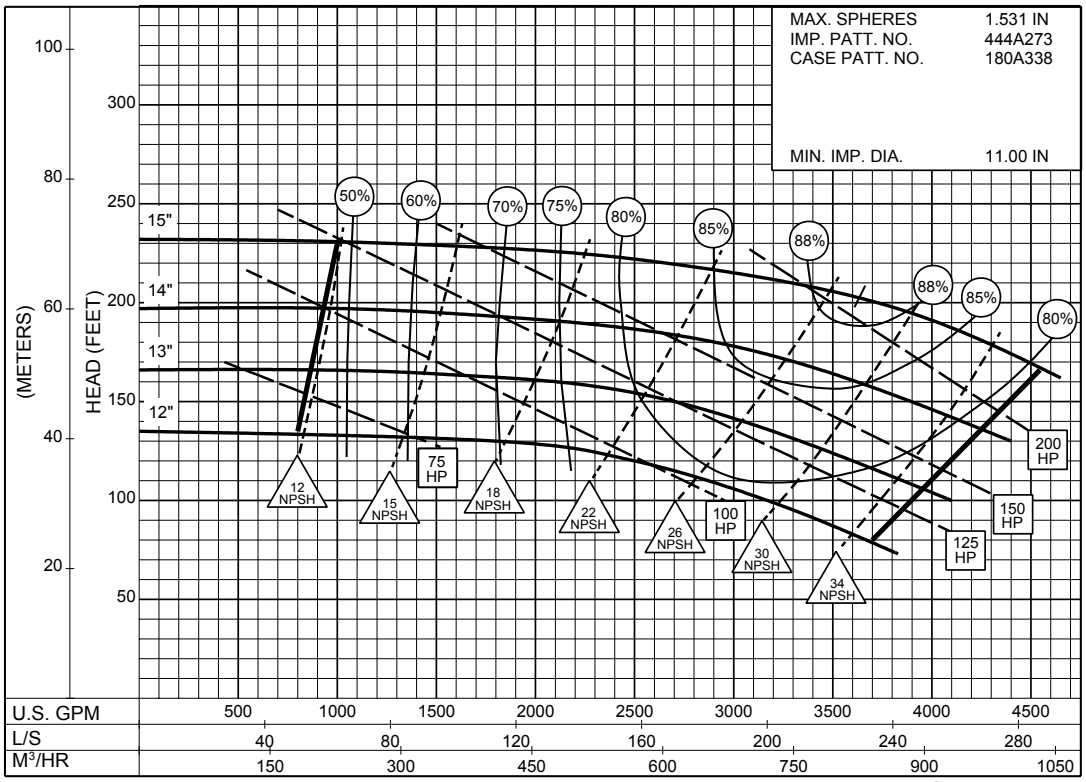

3PC-142656

# 8 x 10 x 15
# SERIES 360

ENCLOSED IMPELLER
AVAILABLE AS MODEL 364 ONLY

Supersedes Section 340/360 Page 437
Dated July 1998

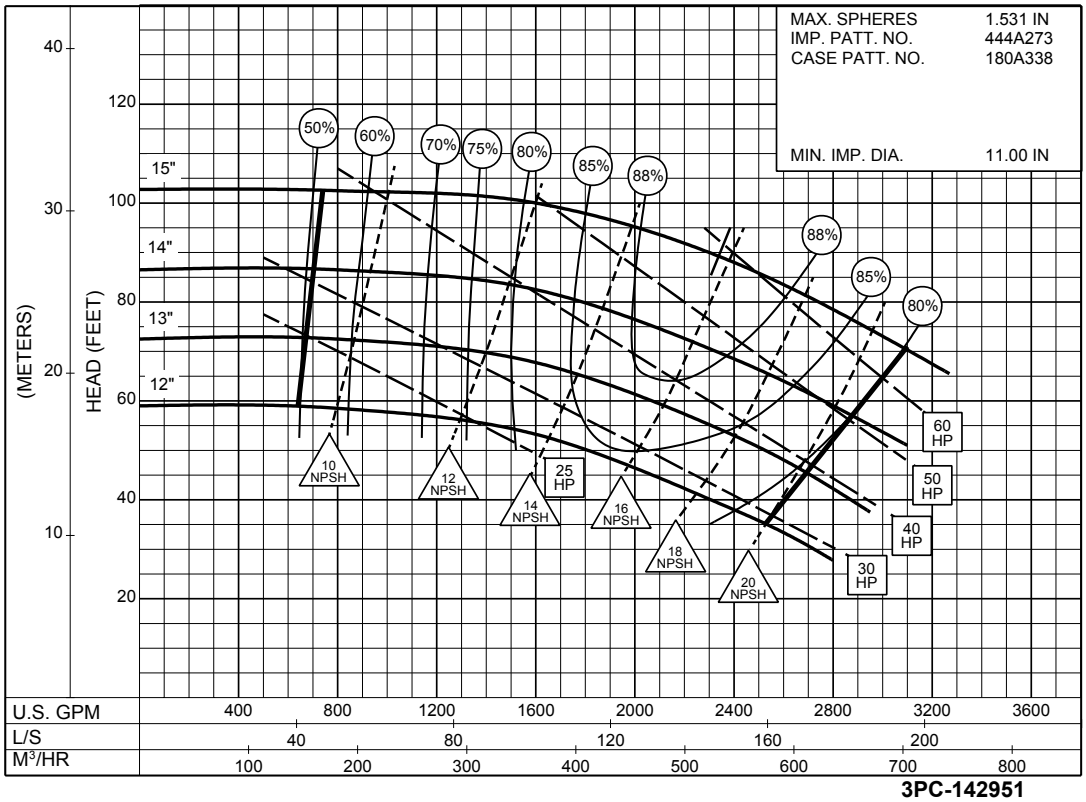
**SIZE : 8x10x15** **TYPE : 360** **IMPELLER : Enclosed** **R. P. M. : 1775**




**3PC-142950**

**1775** RPM

**SIZE : 8x10x15** **TYPE : 360** **IMPELLER : Enclosed** **R. P. M. : 1175**




**3PC-142951**

**1175** RPM

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Pentair Pump Group

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Dated June 1989

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AURORA PUMP
A member of PENTAIR PUMP GROUP

# INSTRUCTION MANUAL
## INSTALLATION
## CLOSE COUPLED PUMP

2

GENERAL. The life of your Aurora pump can be extended considerably by carefully following the installation instructions contained herein. Each step of the pump installation instructions plays a vital part in assuring long life, efficient operation, and reduced maintenance, from the initial location of the pump through prestarting directions.

UNPACKING YOUR PUMP. The crate containing your pump should be opened immediately upon receipt from the factory, and the pump generally inspected for damage and shortage of parts. Particular attention should be given to the discharge and suction nozzle threads or flanges. Any damage or shortage of parts should be reported to the carrier immediately.

CLEANING. If your pump is to be installed immediately, it will be necessary to remove the protective covers from all openings, and to clean the exposed metal parts thoroughly with a cleaning solvent to remove the preservative coating.

STORAGE. If your pump is not to be put in service immediately it should be covered and stored in a clean dry area. The protective covers and preservative should be left intact until the pump is put into service. For extended storage, the pump should be dried internally with hot air or some other suitable means, and once free of moisture, filled with a protective fluid such as light oil or kerosene. Accordingly, at time of installation, the pump will have to be completely dismantled and thoroughly cleaned.

PLANNING THE PUMP LOCATION. You probably have spent considerable time planning where your pump will be located. However you may have overlooked some factor which may affect pump operation or efficiency.

The pump should be located as close to the liquid source as possible so that the suction line can be short and direct. It should be located in a clean, open area, where it is easily accessible for inspection, disassembly and repair. Pumps installed in dark, dirty areas or in cramped locations are often neglected which can result in premature failure of both the pump and the driver.

Your pump should be located so that a hoist or crane can be used to move it without interference from piping. This factor is often overlooked in the advance planning stage.

Protect your pump against the possibility of flooding. Although water will not seriously damage the pump, the drive motor can be damaged.

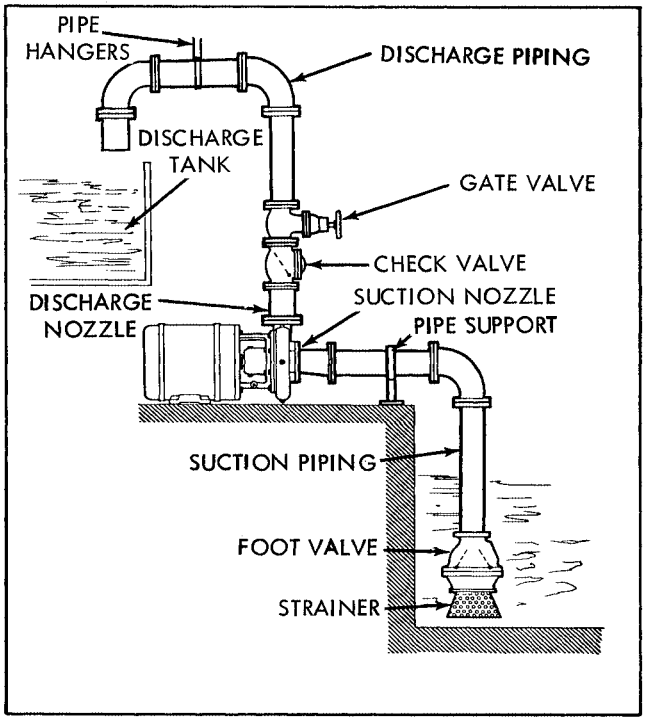



FIGURE 1. RECOMMENDED LOCATION - SHORT DIRECT SUCTION

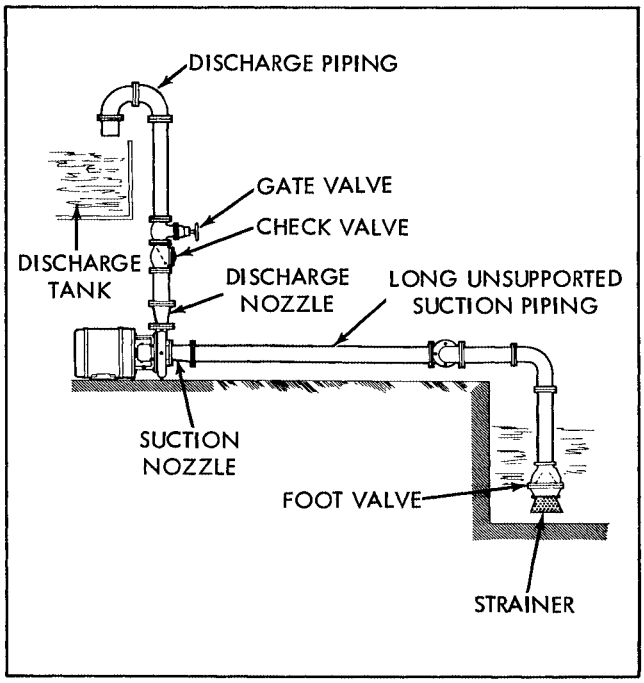



FIGURE 2. UNSATISFACTORY LOCATION - LONG INDIRECT SUCTION WITH NO SUPPORT

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AURORA, ILLINOIS

## CLOSE COUPLED PUMP INSTALLATION

The pump should be located in an area where moisture, either from leakage through the packing or from condensation, can be adequately drained off. Moisture dripping on exposed metal or wood can cause rapid deterioration of the area. Also, wet floors produce safety hazards.

Adequate provisions should be made for electrical wiring to the pump motor. A switch and overload protection should be installed near the pump unless it is impractical. The electrical conduit should be positioned in such a way as to preclude the possibility of moisture entering the conduit or the motor and causing short circuits.

Outdoor installation will normally provide all of the above mentioned conditions. However it is advisable to provide a weather shelter for your pump.

FOUNDATION. The foundation for your pump must be sufficiently rigid to absorb any vibration and stress encountered during pump operation. A raised foundation of concrete is preferable for most floor mounted pumps. The raised foundation assures a satisfactory base, protects against flooding, simplifies moisture drainage, and facilitates keeping the area clean.

Your pump should be firmly bolted to the foundation, whether it is a raised concrete base, steelwork wall, or structural member. The mounting bolts or lag-screws should be accurately located per the applicable Aurora dimension sheet.

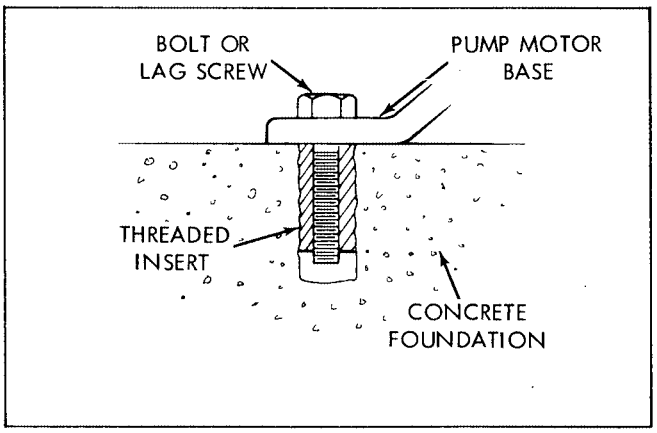



FIGURE 3. TYPICAL CLOSE COUPLED PUMP MOUNTING

Lag screws or bolts screwed into threaded inserts in the concrete are recommended for mounting close coupled pumps, rather than studs set into concrete. This permits removal of the drive motor without disturbing the pump liquid end or the piping.

If a large pump is to be mounted on steelwork or other structure, adequate support should be provided to prevent deflection of the structure which could produce excessive strain on the pump casing and piping.

SETTING THE PUMP. Check the mounting surfaces of the pump unit and the foundation to make sure they are clean and free of obstructions.

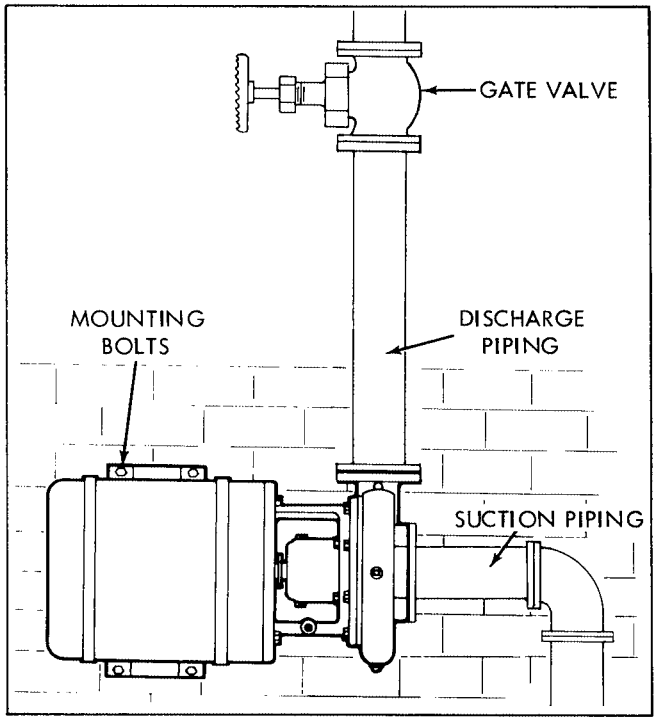



FIGURE 4. WALL MOUNTED PUMP

Set the pump on the foundation, being careful not to damage the foundation bolts or studs, if used.

Tighten the nuts or bolts finger tight.

LEVELING THE PUMP. Level the pump unit using the suction and discharge nozzles or flanges as reference points. Insertion of a short piece of pipe in the threaded nozzles will facilitate use of a spirit level to determine whether or not the pump unit is level in all directions. A spirit level also can be used on the machined faces of the suction and discharge flanges. Insert shims under the mounting feet as required until the pump is level. Firmly tighten the nuts or bolts securing the pump to the foundation.

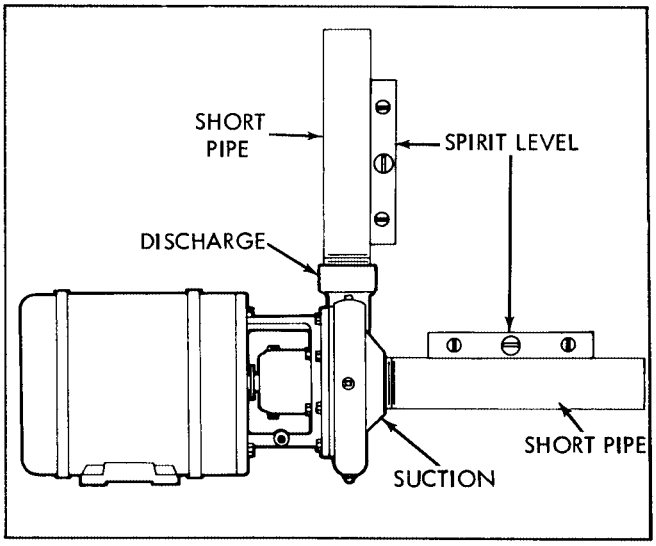



FIGURE 5. LEVELING PUMP WITH SPIRIT LEVEL AND SHORT LENGTHS OF PIPE

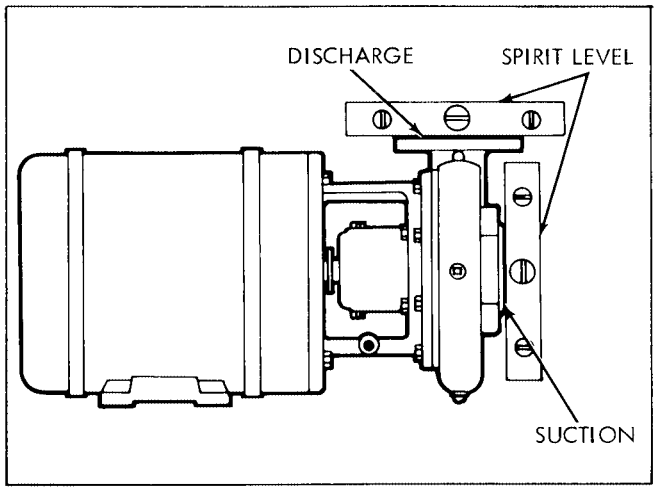



FIGURE 6. LEVELING WITH SPIRIT LEVEL ON PUMP FLANGES

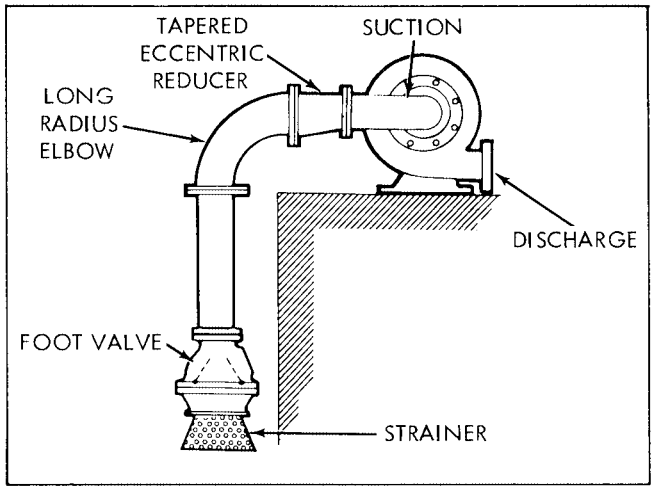



FIGURE 8. RECOMMENDED SUCTION LIFT PIPING - SHORT AND DIRECT

PIPING. Your pump unit is now ready to be piped. The piping practices you follow will directly affect the efficiency and power consumption of your pump. Pay particular attention to the seemingly insignificant details involved in piping your pump for they make the difference between a good and bad installation.

SUPPORTING THE PIPE. Both the suction and the discharge piping should be independently supported near the pump. Liberal use of pipe hangers and support blocks will prevent excessive strain on the pump casing and on the pipe joints.

SUCTION PIPING. The suction piping should be short, but no less than ten pipe diameters in length, and direct with as few elbows and fittings as possible to keep head loss, from friction, at a minimum. However, the suction pipe should provide a minimum uninterrupted length, equal to ten pipe diameters, to the pump suction flange. A horizontal suction line should have a gradual rise to the pump, and pass under any interfering piping.

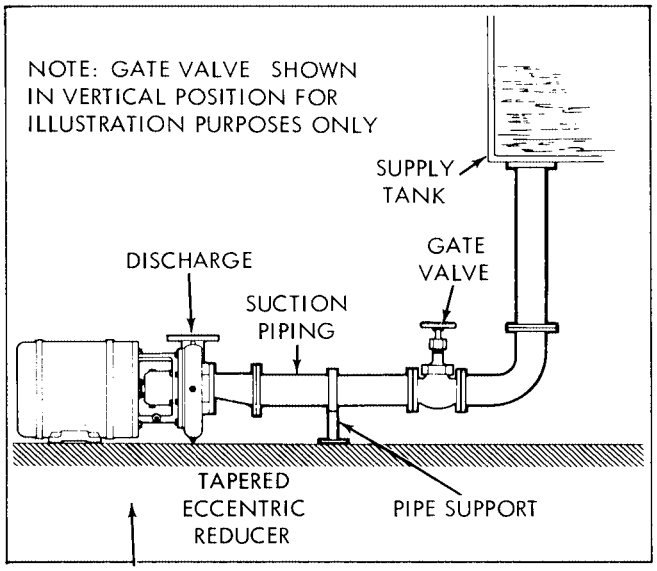



FIGURE 9. RECOMMENDED FLOODED SUCTION PIPING - SHORT AND DIRECT

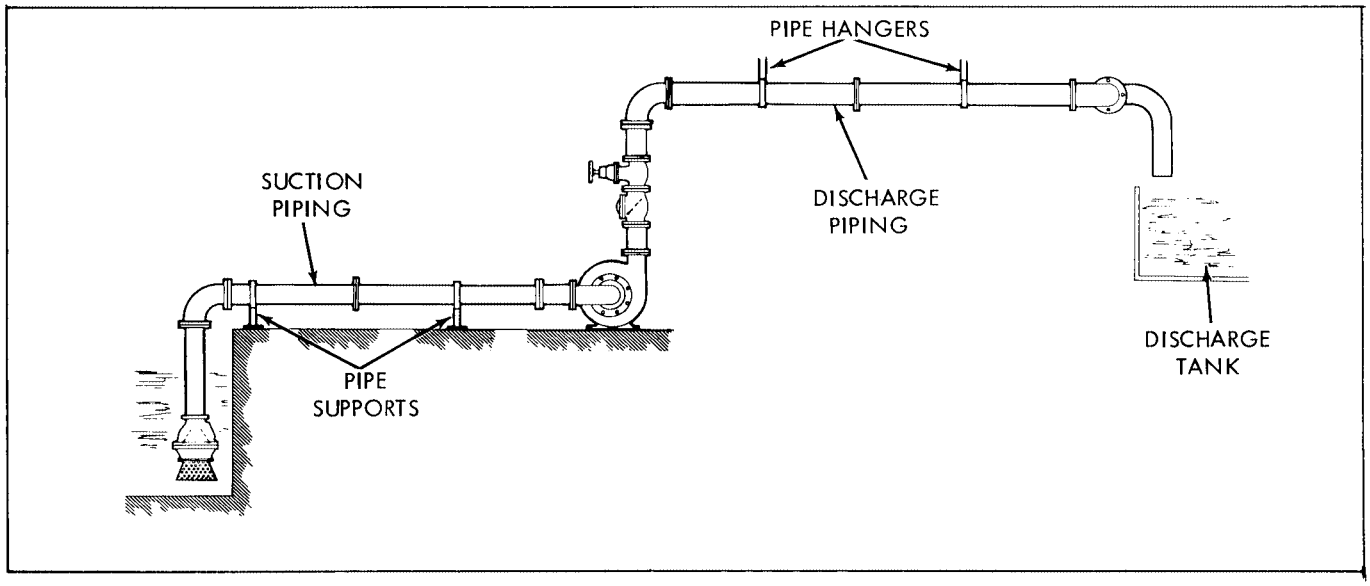



FIGURE 7. SUPPORTING PIPING

PIPE. The suction pipe diameter should be at least the same diameter as the suction nozzle on the pump, and preferably larger. Use of a smaller diameter pipe will result in loss of head due to friction. All joints must be tight to maintain prime on the pump.

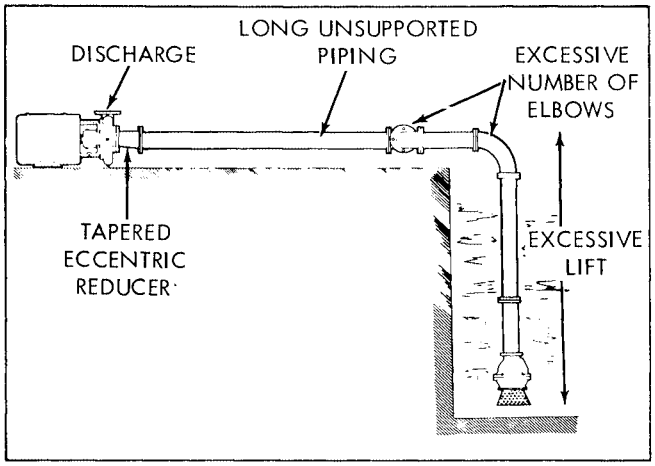



FIGURE 10. UNSATISFACTORY SUCTION LIFT PIPING - LONG AND INDIRECT WITH NO SUPPORT

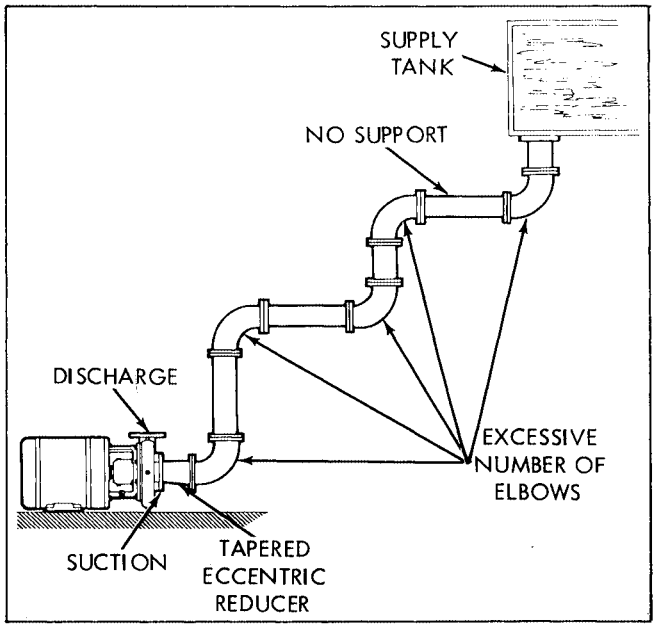



FIGURE 11. UNSATISFACTORY FLOODED SUCTION PIPING - LONG AND INDIRECT WITH NO SUPPORT

ELBOWS. Long radius elbows should be used in place of standard elbows wherever possible, because of their superior flow characteristics. For instance, head loss in a standard four inch elbow is equivalent to the head loss in a piece of pipe 11 feet long, while the head loss in a long radius elbow is approximately half as much. Elbows should not be used at the suction nozzle, but if it is unavoidable, they should be installed in a vertical position. Elbows installed in any position at the suction nozzle have a tendency to distribute the liquid unevenly in the impeller chamber, causing a reduction in capacity, and creating an undersirable thrust condition.

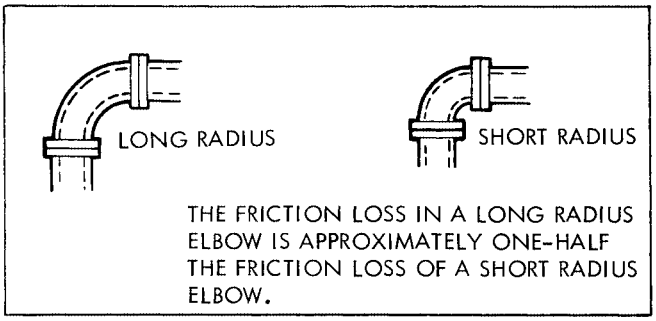



FIGURE 12. LONG VERSUS SHORT RADIUS ELBOWS

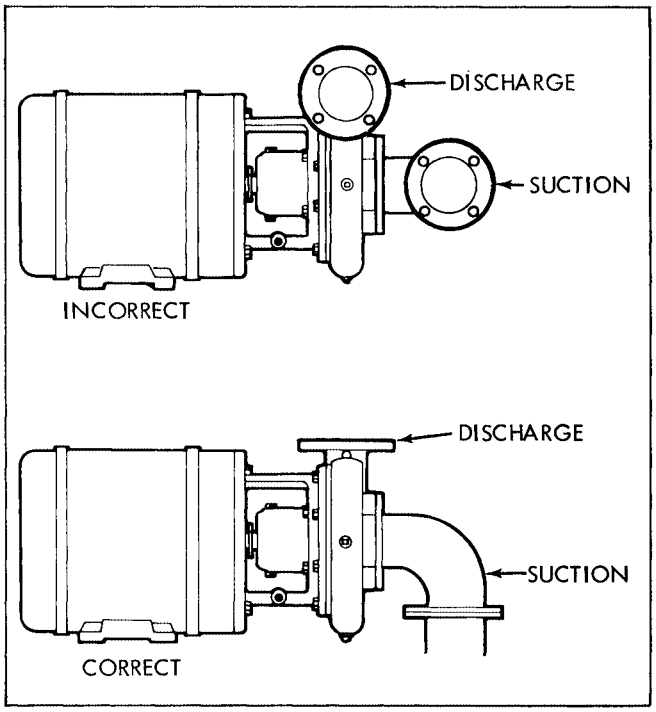



FIGURE 13. ELBOW INSTALLATION ON SUCTION NOZZLE

REDUCERS. Eccentric reducers should be installed directly at the suction nozzle, with the taper at the bottom to prevent air pockets from forming. Straight taper reducers should never be used in a horizontal suction line because of the air pocket that is formed at the leg of the reducer and the pipe.

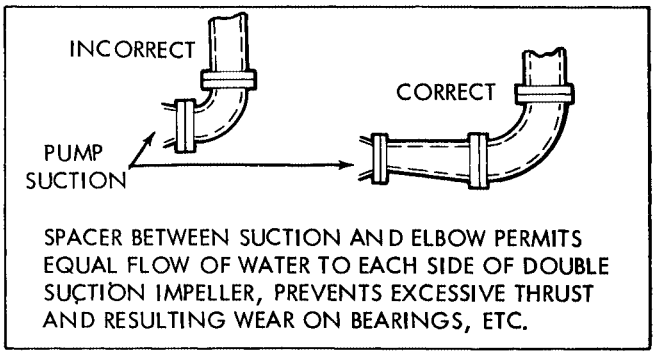
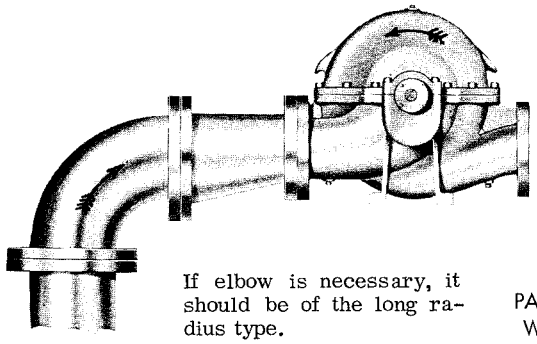


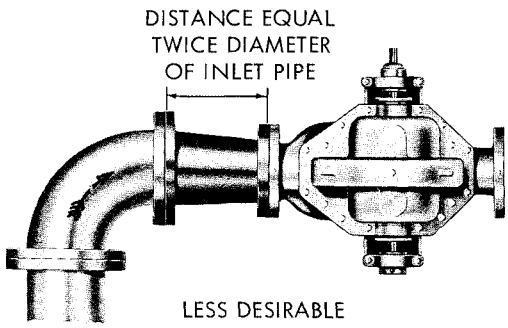

FIGURE 14. REDUCER BETWEEN ELBOW AND PUMP SUCTION NOZZLE

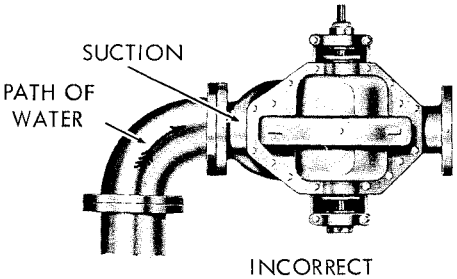
SPECIAL SUCTION PIPING SPECIFICATIONS FOR HORIZONTAL DOUBLE SUCTION PUMPS



If elbow is necessary, it should be of the long radius type.

CORRECT



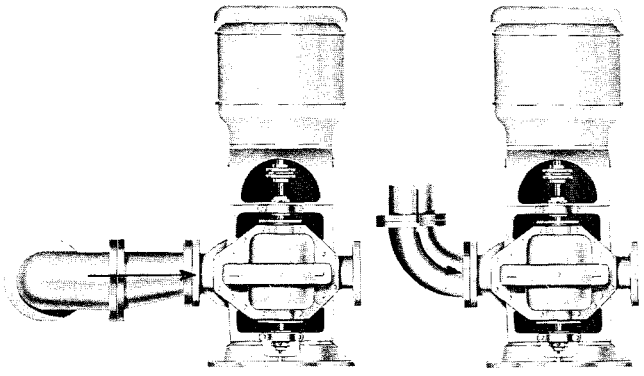




Discharge piping and suction piping should be supported close to the pump flange to prevent vibration and strain on pump casing.

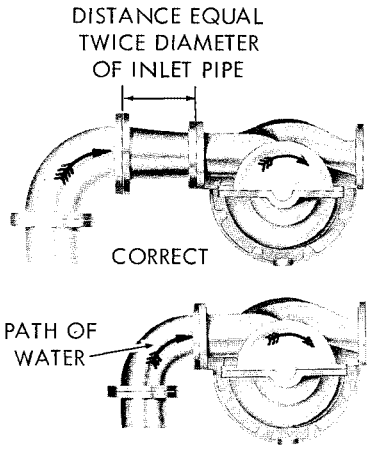
The suction pipe on horizontal double suction pumps, should not be installed so that there is an elbow close to the suction nozzle unless the elbow is mounted vertically. There is always an uneven flow of liquid through an elbow and when the elbow is installed at any angle other than vertical more water will enter one side of the impeller than enters the other side. This causes a reduction in capacity and efficiency and creates an axial thrust load which may over heat and possibly cause rapid wear of the thrust bearing.

FIGURE 15

SPECIAL SUCTION PIPING SPECIFICATIONS FOR VERTICAL DOUBLE SUCTION PUMPS



CORRECT INCORRECT




Suction connections for vertical mounted double suction pumps should be installed the opposite of horizontal pumps. That is, if an elbow is installed close to the suction nozzle it should only be mounted horizontally. Any angle other than horizontal will cause more water to enter one side of the impeller than enters the other side. This causes a reduction in capacity and efficiency and creates an axial thrust load which may over heat and possibly cause rapid wear of the thrust bearing.

FIGURE 16

TYPICAL PIPING FOR DOUBLE SUCTION PUMPS

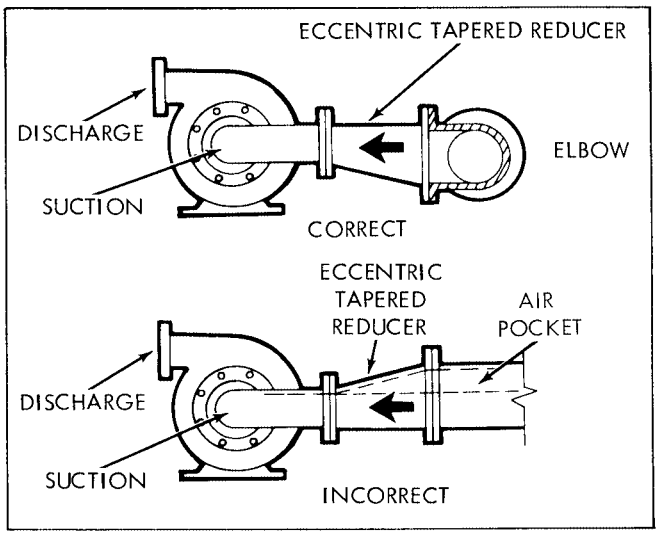



FIGURE 17. INSTALLATION OF TAPERED REDUCERS

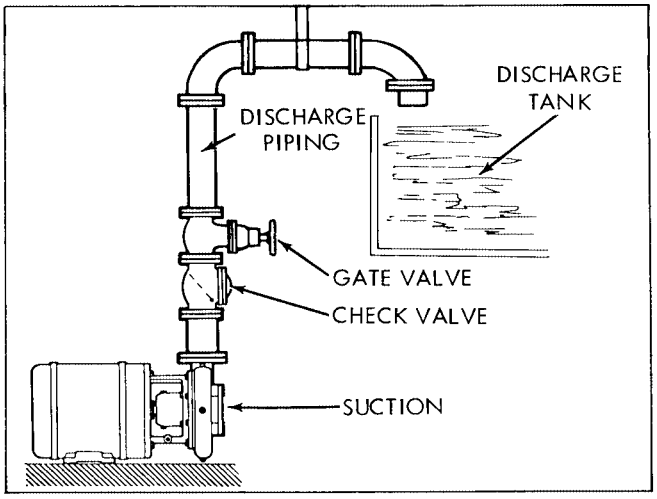



FIGURE 18. RECOMMENDED DISCHARGE PIPING - SHORT AND DIRECT

DISCHARGE PIPING. Discharge piping should also be short and direct as possible, with few elbows and fittings, to reduce head loss from friction.

PIPE. The discharge pipe diameter should be the same as, or larger than, the discharge nozzle diameter. The size of discharge pipe to be used is dependent upon the application. The recommended pipe diameter can be obtained from your nearest Aurora Pump Sales Office.

ELBOWS. Long radius elbows should be used in the discharge piping as well as in the suction piping, to prevent excessive head loss due to friction. Whenever possible, elbows should not be installed directly at the discharge nozzle as the turbulence created by the elbow will affect pressure gauge readings.

REDUCERS AND INCREASERS. An increaser should be installed at the discharge nozzle if larger diameter discharge piping is used. Straight taper increasers and/or reducers are satisfactory in discharge piping, because air pockets on the discharge side do not affect pump efficiency.

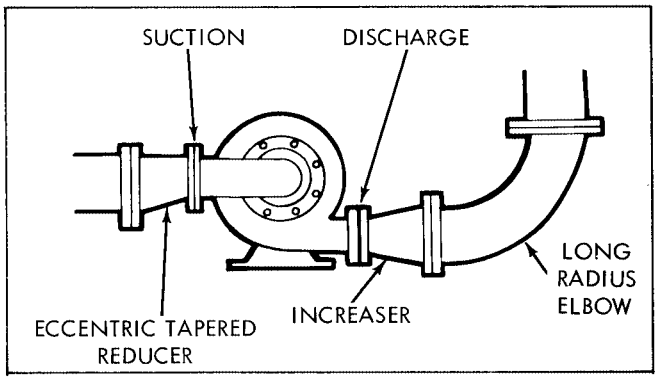



FIGURE 20. REDUCER INCREASER INSTALLATION

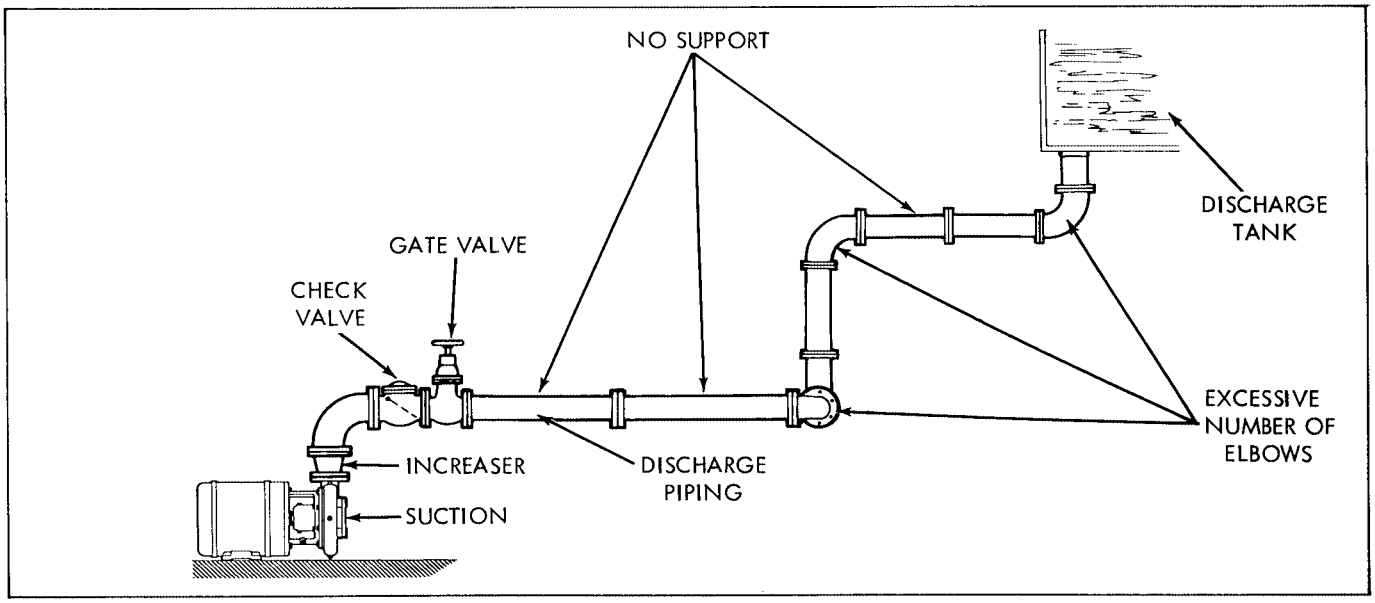



FIGURE 19. UNSATISFACTORY DISCHARGE PIPING - LONG WITH EXCESSIVE ELBOWS AND JOINTS

EXPANSION JOINTS. Expansion joints are used primarily to prevent transmission of piping strain, caused by thermal expansion and contraction, piping misalignment, pressure changes, or other causes, to the pump casing. They are also used to suppress any noise that may be transmitted through the piping. It is recommended that the flexible metal type of expansion joint be used because rubber expansion joints, while costing less, have a tendency to deteriorate, making frequent replacement necessary.

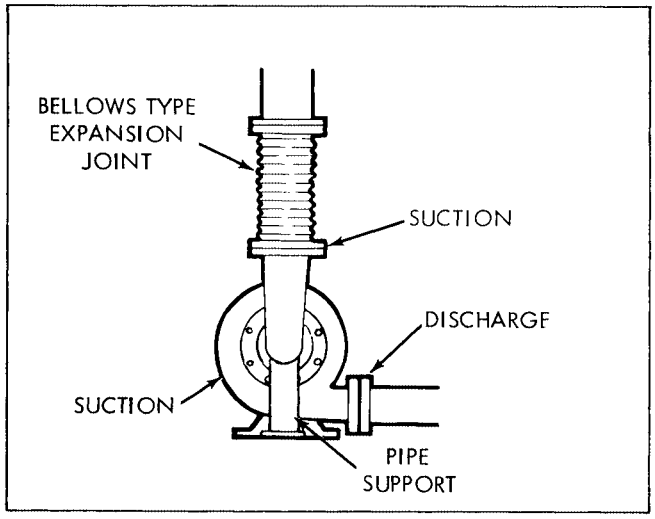



FIGURE 21. EXPANSION JOINT IN SUCTION LINE

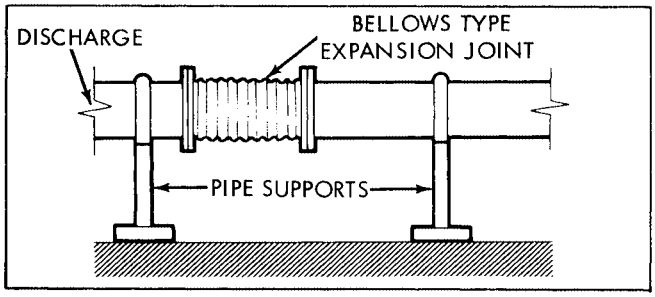



FIGURE 22. EXPANSION JOINT IN DISCHARGE PIPING

If an expansion joint must be used, an anchor or restraining device should be installed between the joint and the pump to prevent objectionable forces from being transmitted to the pump. If an anchor is not installed at this point, a force equal to the area of the expansion joint times the pressure in the pipe is developed and transmitted to the pump. This force may exceed the allowable flange loading and could result in damage to the pump or piping.

PIPE ALIGNMENT. Proper piping alignment is essential before connection is made. Piping alignment should never be achieved by force, as this could produce strain on the piping and the pump casing. Proper supports should be installed for the piping to keep its weight off the pump casing.

When flange bolts are used, line up the piping first, then loosely install flange bolts. Check the piping alignment, and tighten the flange bolts until all bolts are tightened securely.

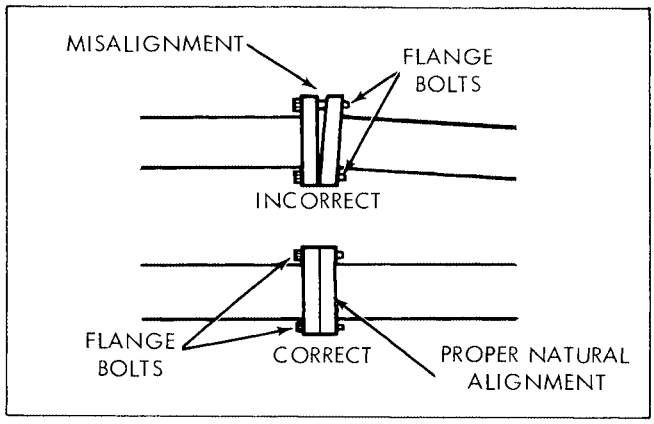



FIGURE 23. PIPE ALIGNMENT

AIR IN PIPING. One of the most common conditions affecting pump efficiency is the formation of air pockets in the suction line. The air pockets are a result of high points and improper installation of elbows, reducers, and valves in the suction piping.

For suction lift applications, lantern rings are required to prevent air from leaking into the pump through the stuffing box.

The pump seals or packings depend on the liquid being pumped for lubrication. Excessive air can prevent proper lubrication with resultant damage to them.

In suction lift applications, the suction pipe in the liquid well must be sufficiently submerged to prevent exposure of the end of the pipe when the well is at its minimum level and to prevent vortexing action (whirlpool effect) of the liquid at the suction pipe, which will draw air into the pipe. Also, care should be taken to keep the suction pipe located away from the well inlet since the incoming liquid may be carrying air bubbles. Another cause of air in the liquid is dropping of the liquid from too high a point into the well.

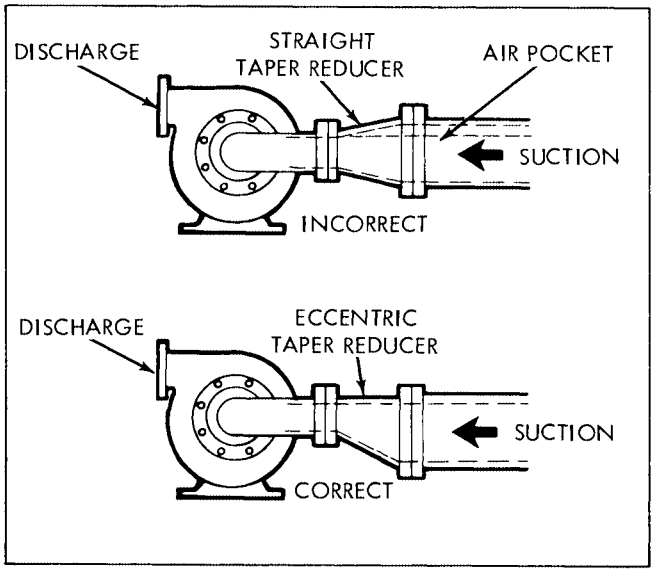



FIGURE 24. AIR POCKET IN REDUCER

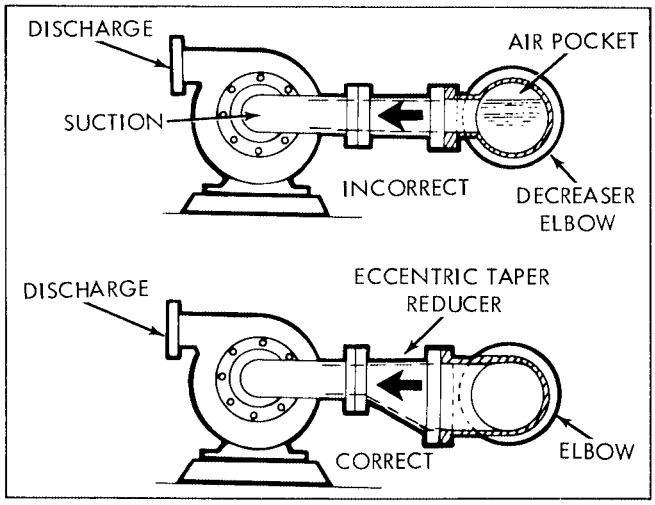



FIGURE 25. AIR POCKET IN ELBOW

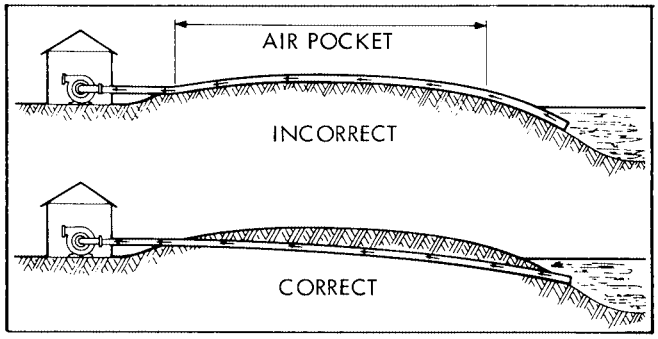



FIGURE 26. AIR POCKET IN HORIZONTAL SUCTION PIPING

VALVES. Valves are an important part of your installation, for they facilitate priming of the pump, and control the volume of the pumped liquid.

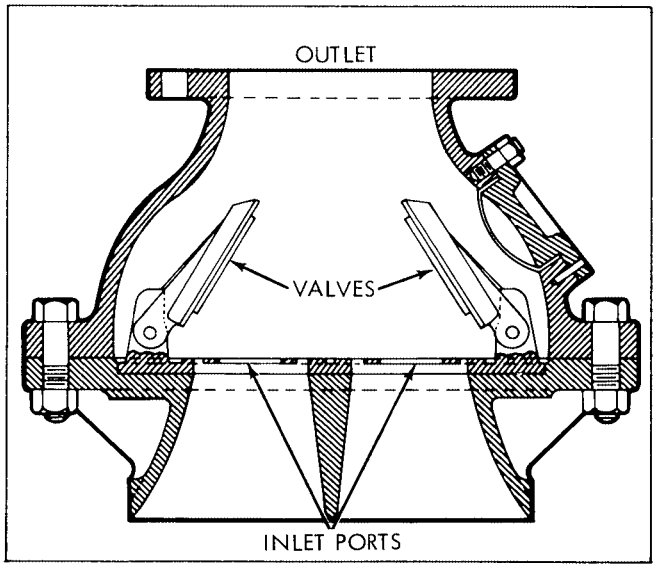



FIGURE 27. FOOT VALVE

SUCTION LIFT. In suction lift applications where the suction lift is low a foot valve can be installed, to maintain the prime on the pump. A foot valve is essentially a check valve, allowing flow in one direction only, toward the pump. When the pump is shut down, the pressure of the liquid returning to the well, causes the valve to close, retaining the liquid in the suction line.

A slow closing check valve should be installed when the static discharge head is high. A foot valve should not be used under these conditions, as failure of the driver would allow the water to rush back rapidly thus causing a heavy water hammer.

Foot valves, when used, should be of the flat type rather than multiple spring type. The valve should have a large inlet area, because the friction loss in a foot valve is high. Install check and foot valves as indicated by arrow to ensure proper installation.

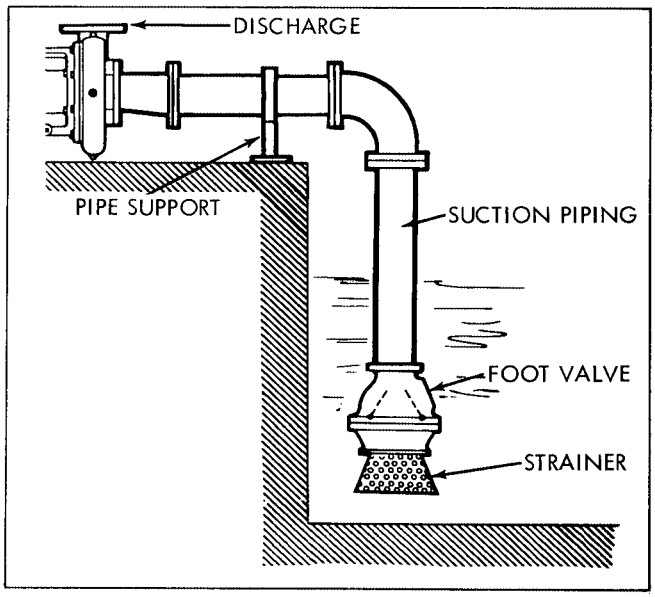



FIGURE 28. FOOT VALVE INSTALLED WITH SCREEN

FLOODED SUCTION. When the liquid source is above the pump centerline, a flooded suction condition exists, and a gate valve is required to shut off the liquid supply for pump inspection and maintenance. The gate valve should be installed with the stem in a horizontal or downward position to prevent formation of an air pocket in the valve.

DISCHARGE VALVES. The discharge piping should include a check valve and a gate valve. The check

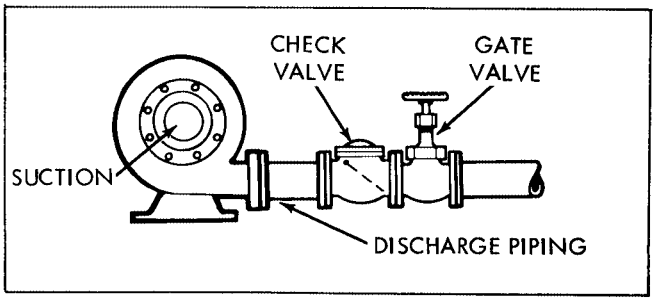



FIGURE 29. GATE VALVE AND CHECK VALVE

valve should be located between the gate valve and the pump. If an increaser is used in the discharge piping, the increaser should be installed between the pump nozzle and the check valve. The check valve protects against a reverse flow of the liquid if the driver fails.

The gate valve is used in the priming operation, as a throttling valve to control pump volume, and to shut down the pump for inspection and maintenance.

AIR VENT VALVE. Vent valves are installed at the high points in the pump casing to allow air or vapor to escape. These valves are used to release trapped air from the pump casing during priming and when pump becomes air bound.

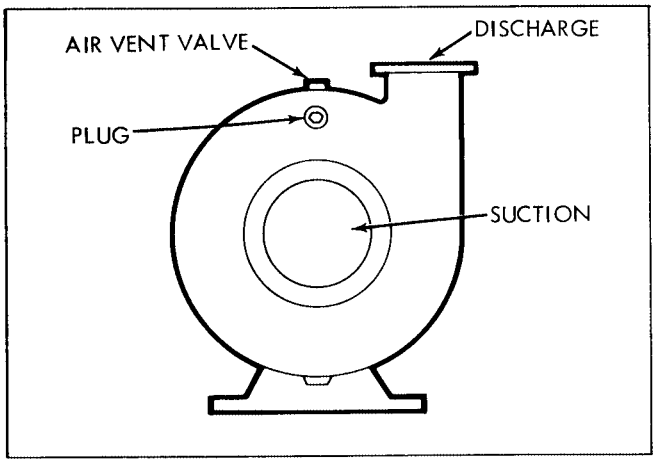



FIGURE 30. AIR VENT VALVE OR PLUG

STRAINERS AND SCREENS. It is important to remove foreign matter that can clog the pump and impair its capacity, or stop it completely. Small particles such as sand, dirt, scale from inside pipe and other extraneous materials can get into the close clearance parts of the pump and cause considerable damage to the parts.

Strainers should be selected so as to have a total area of holes equal to at least four times the suction pipe area.

In applications where sticks, twigs, leaves and other large debris are present, a larger outside screen should be placed around the suction inlet to prevent choking of the strainer. This screen should have sufficient openings so that flow velocity does not exceed two feet per second.

PRIMING THE PUMP. Your pump will not operate satisfactorily until it is primed. All air must be expelled from the suction piping and pump casing, and replaced by the liquid to be pumped. There are several methods of priming pumps. The one you select will depend on your specific requirements.

FLOODED SUCTION PRIMING. This method of priming a pump is relatively simple. The liquid source is located above the pump, and all that is necessary to prime the pump is to open the air vent

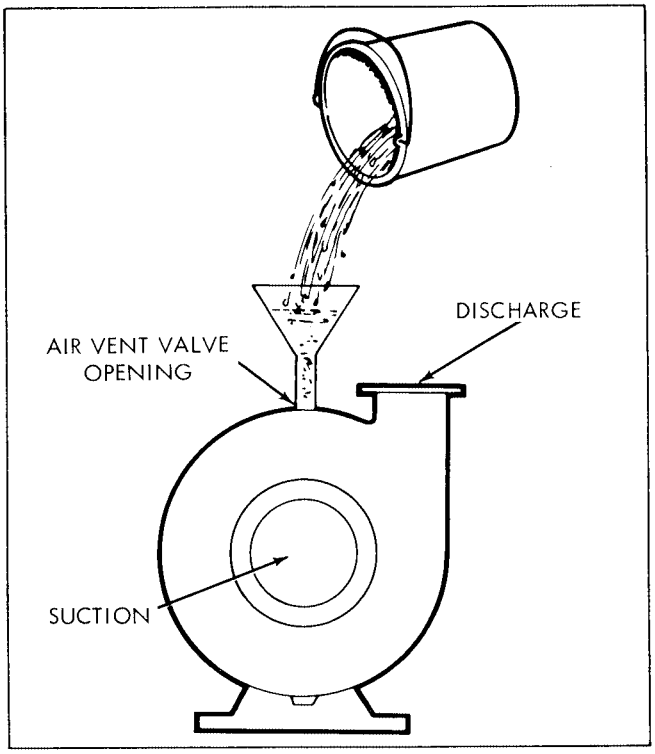



FIGURE 31. PRIMING BY HAND

valve or plug in the pump casing, and to crack the gate valve in the suction line. The suction line and pump should be filled slowly until a steady stream of liquid is observed flowing from the air vent. After your pump is operating, it is recommended that the air vent valve or plug be opened again to insure that all air has been expelled from the pump casing.

FOOT VALVE PRIMING. A foot valve can be used for priming on suction lift applications. The foot valve, located at the bottom end or foot of the suction piping, functions as a check valve which allows flow in one direction only, toward the pump.

Initial priming is accomplished by completely filling the suction piping and pump casing with the liquid to be pumped. This can be done by removing the air vent valve or plug at the top of the pump casing and inserting a pipe nipple in the orifice, with an appropriate increaser to accommodate a hose connection. A priming line can also be inserted in the discharge piping between the check valve and the pump or the priming can be done with a bucket and funnel. The important thing is to completely fill the suction pipe and pump casing with liquid.

When the pump is started, the vacuum created by pumping the priming fluid, combined with atmospheric pressure in the liquid well, forces liquid into the suction piping, thus opening the valve and keeping it open until the pump is shut down. When the pump is shut down, the liquid being pumped reverses its flow, causing the valve to close, trapping the liquid in the suction piping and pump casing, thus maintaining a prime on the pump.

VACUUM PRIMING. Vacuum priming consists of removing air from the pump casing and suction

piping and drawing liquid into them by means of a vacuum creating device. The types of vacuum equipment range from a simple hand pump to complex central priming systems. Your specific priming requirements will govern what type of vacuum primer you use.

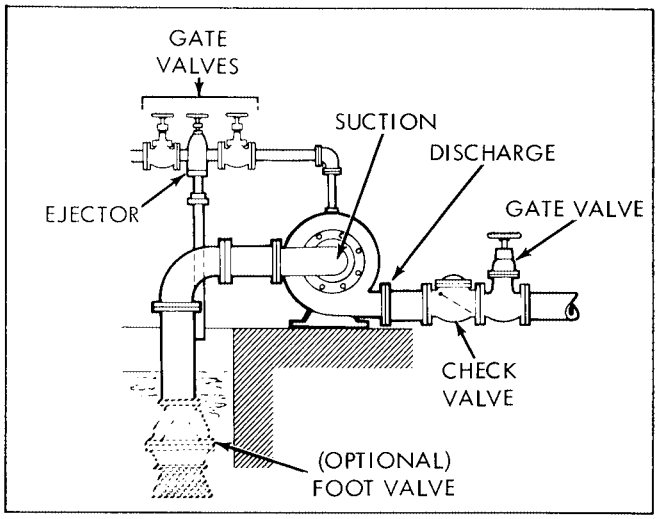



FIGURE 32. PRIMING BY EJECTOR

AIR EJECTOR. One type of vacuum primer is the air ejector. If liquid under pressure or steam is available, an ejector can be used. The ejector is connected to the air vent orifice. A stream of the ejecting medium is passed through the ejector creating a vacuum in the ejector, and drawing air from the pump casing and suction piping. When liquid flows steadily from the ejector discharge pipe, the pump is primed.

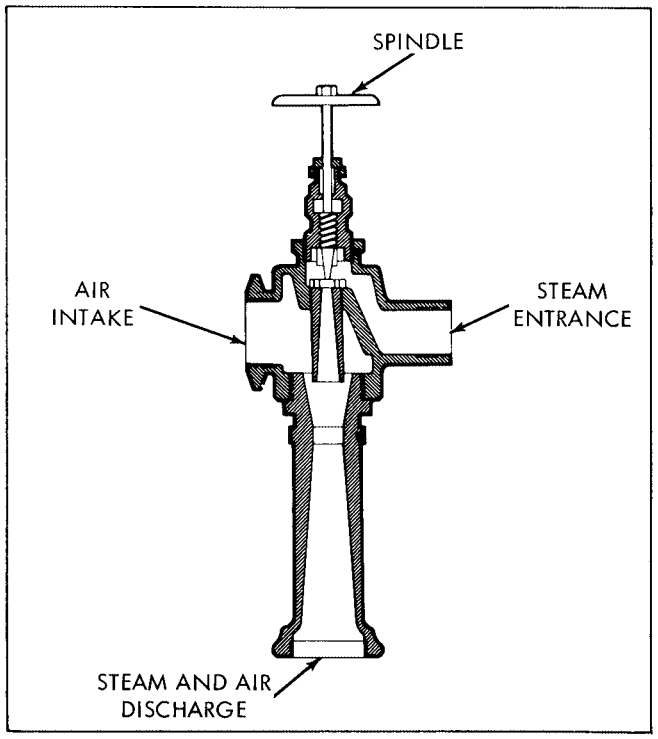



FIGURE 33. EJECTOR CUTAWAY

VACUUM PUMPS. Rotary or reciprocating pumps are frequently used as vacuum pumps. They fall into two categories, wet-vacuum and dry-vacuum. The principle of operation is essentially the same, however, the dry-vacuum pump cannot accommodate a liquid and air mixture while the wet-vacuum pump can accommodate liquid, air or a combination of both.

Vacuum pumps can be installed as part of a central priming system servicing many pumps, as an automatic priming system, or as a manually controlled independently driven pump.

The suction piping of the vacuum pump is connected to the air vent orifice on the pump to be primed. The vacuum produced by the vacuum pump removes air from the centrifugal pump suction piping and casing, and draws liquid from the liquid well into the centrifugal pump. Dry-vacuum pumps must be installed so that no liquid is taken into the air pump. Installation of a water trap, or use of a vacuum tank are recommended for dry vacuum pumps.

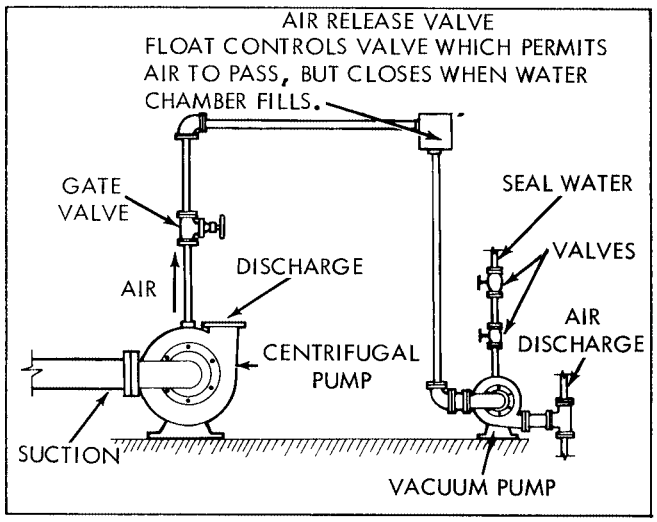



FIGURE 34. PRIMING BY VACUUM PUMP

INDUCTOR PRIMING. On suction lift applications it may be desirable to prime your pump with a priming inductor. This type of primer is comprised of a liquid nozzle and an inductor at the foot end of the suction piping. The nozzle and inductor are connected to a high pressure liquid supply such as a city water service.

The pump is primed by opening the valve in the pressure line, which allows the liquid to flow through the nozzle into the inductor. The velocity of the high pressure liquid drives the liquid into the suction piping and up to the pump, priming it.

ELECTRICAL WIRING. Normally, your pump will be supplied with an attached drive motor. The motor should be wired in accordance with the wiring diagram found on the motor name plate. Be sure the voltage, frequency, and phase of your power supply corresponds with the name plate data. It is advisable to provide a separate switch and overload protection for your pump motor to protect against power

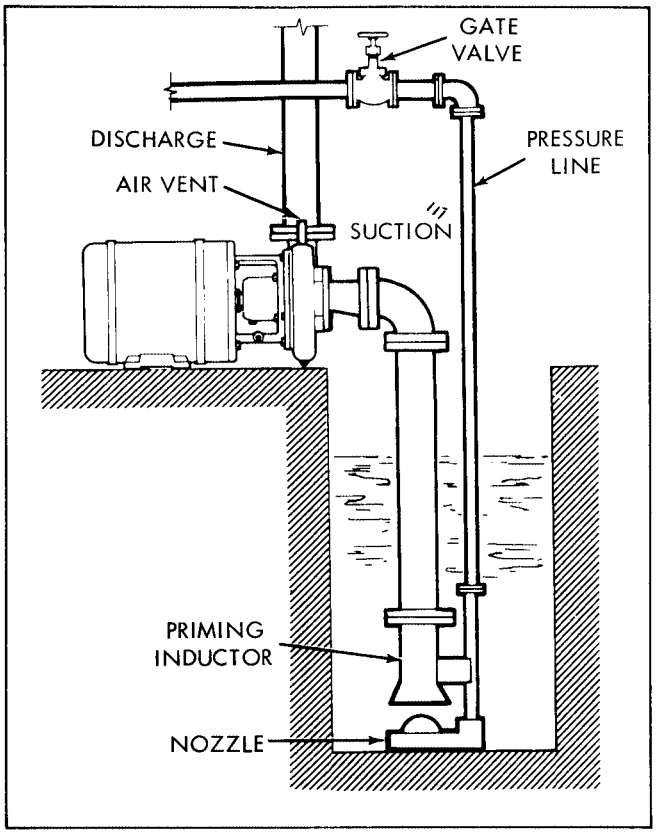



FIGURE 35. PRIMING BY INDUCTOR

failure in some other area. Conversely, if the pump motor develops electrical problems, it will be isolated from other equipment.

PRESTARTING INSTRUCTION. Before starting the pump, check the direction of rotation. Make sure that the rotation is the same as the arrow on the casing, or as otherwise indicated.

**CAUTION**

Do not operate the pump without liquid. Pump seals or packing depend on the liquid being pumped for lubrication.

Be sure the pump is primed and that no air exists in the suction pipe and pump casing.

Check the various valves to make sure they are open or closed as required by your specific application.

AURORA PUMP
A member of PENTAIR PUMP GROUP

# INSTRUCTION MANUAL 2
## INSTALLATION
## FRAME MOUNTED

GENERAL. The life of your Aurora pump can be extended considerably by carefully following the installation instructions contained herein. Each step of the pump installation instructions plays a vital part in assuring long life, efficient operation, and reduced maintenance, from the initial location of the pump through prestarting directions.

UNPACKING YOUR PUMP. The crate containing your pump should be opened immediately upon receipt from the factory, and the pump generally inspected for damage and shortage of parts. Particular attention should be given to the discharge and suction nozzle threads or flanges. Any damage or shortage of parts should be reported to the carrier immediately.

CLEANING. If your pump is to be installed immediately, it will be necessary to remove the protective covers from all openings, and to clean the exposed metal parts thoroughly with white gasoline or other suitable solvent to remove the preservative coating.

STORAGE. If your pump is not to be put in service immediately it should be covered and stored in a clean dry area. The protective covers and preservative should be left intact until the pump is put into service. For extended storage, the pump should be dried internally with hot air or some other suitable means, and once free of moisture, filled with a protective fluid such as light oil or kerosene. Accordingly, at time of installation, the pump will have to be completely dismantled and thoroughly cleaned.

PLANNING THE PUMP LOCATION. You probably have spent considerable time planning where your pump will be located. However you may have overlooked some factor which may affect your pump operation or efficiency.

The pump should be located as close to the liquid source as possible so that the suction line can be

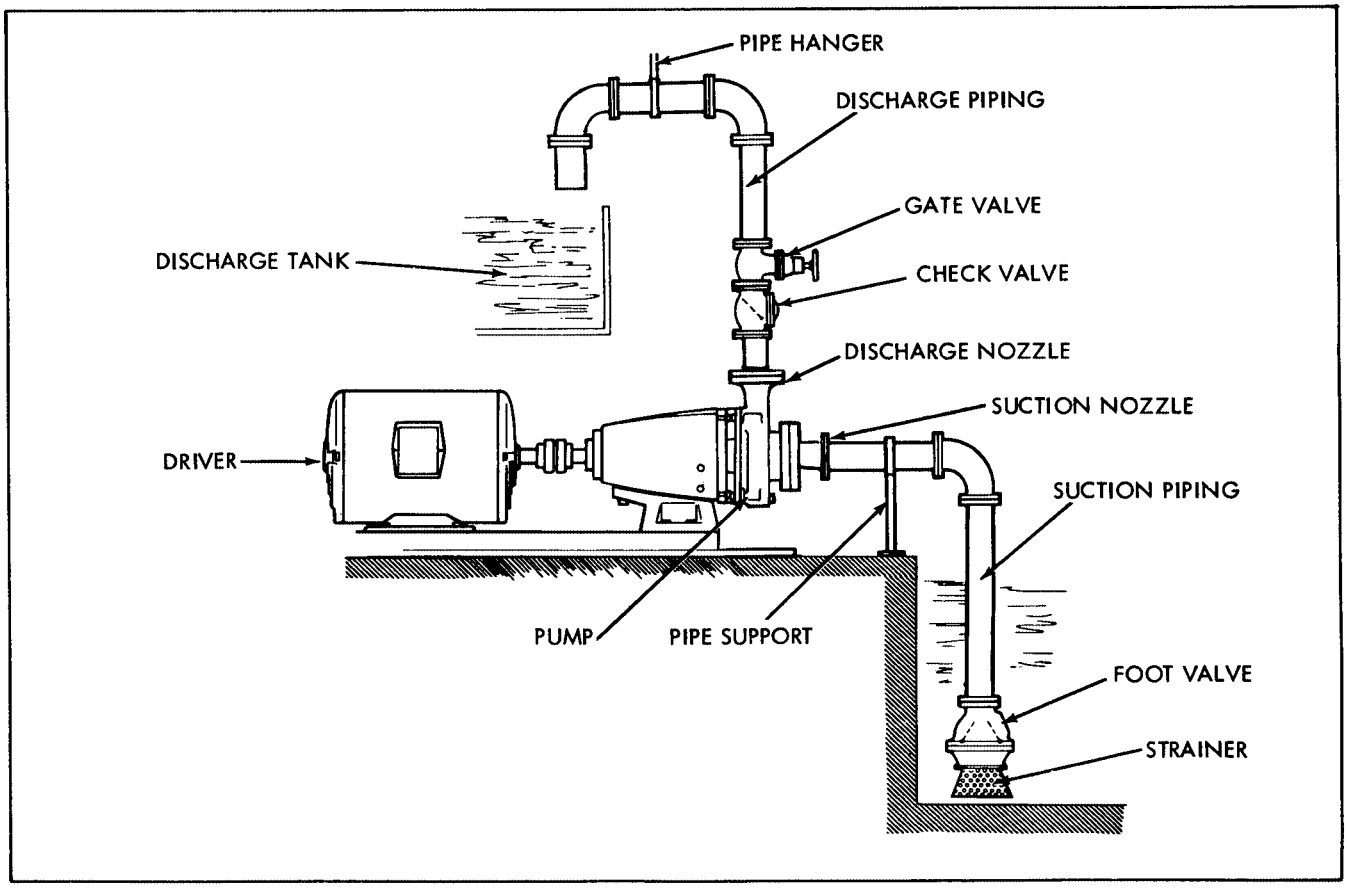



FIGURE 1. RECOMMENDED LOCATION - SHORT DIRECT SUCTION

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short and direct. It should be located in a clean, open area, where it is easily accessible for inspection, lubrication, and repair. Pumps installed in dark, dirty areas or in cramped locations are often neglected which can result in premature failure of both the pump and the driver.

Your pump should be located so that a hoist or crane can be used to move it without interference from piping. This factor is often overlooked in the advance planning stage.

Protect your pump against the possibility of flooding. Although water will not seriously damage the pump, the drive motor can be damaged.

The pump should be located in an area where moisture, either from leakage through the packing or from condensation, can be adequately drained off. Moisture dripping on exposed metal or wood can cause rapid deterioration of the area. Also, wet floors produce safety hazards.

Adequate provisions should be made for electrical wiring to the pump motor. A switch and overload protection should be installed near the pump unless it is impractical. The electrical conduit should be positioned in such a way as to preclude the possibility of moisture entering the conduit or the motor and causing short circuits.

Outdoor installation will normally provide all of the above mentioned conditions. However it is advisable to provide a weather shelter for your pump.

FOUNDATION. The foundation for your pump must be sufficiently rigid to absorb any vibration and stress encountered during pump operation. A raised foundation of concrete is preferable for most floor mounted pumps. The raised foundation assures a satisfactory base, protects against flooding, simplifies moisture drainage, and facilitates keeping the area clean.

Your pump should be firmly bolted to the foundation, whether it is a raised concrete base, steelwork wall, or structural member. The mounting bolts or studs should be accurately located per the applicable Aurora dimension sheet. Foundation bolts should be enclosed by a sleeve 2 to 4 diameters larger than the bolt to allow movement for proper alignment with the pump mounting holes. Refer to figure 3.

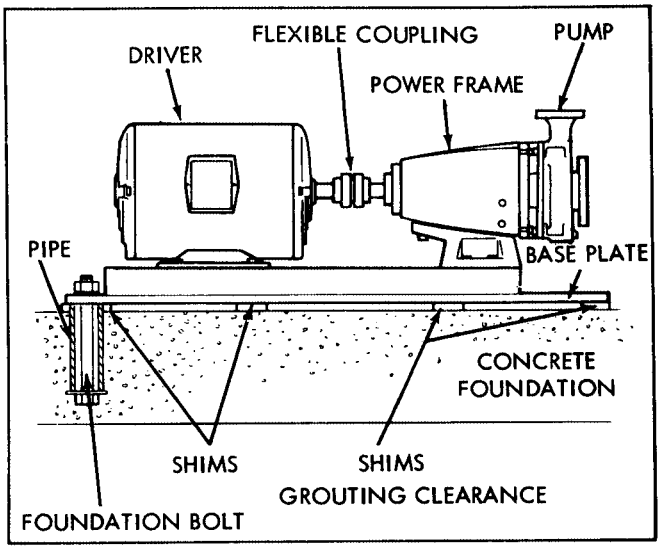



FIGURE 3. FOUNDATION FOR FRAME MOUNTED PUMPS

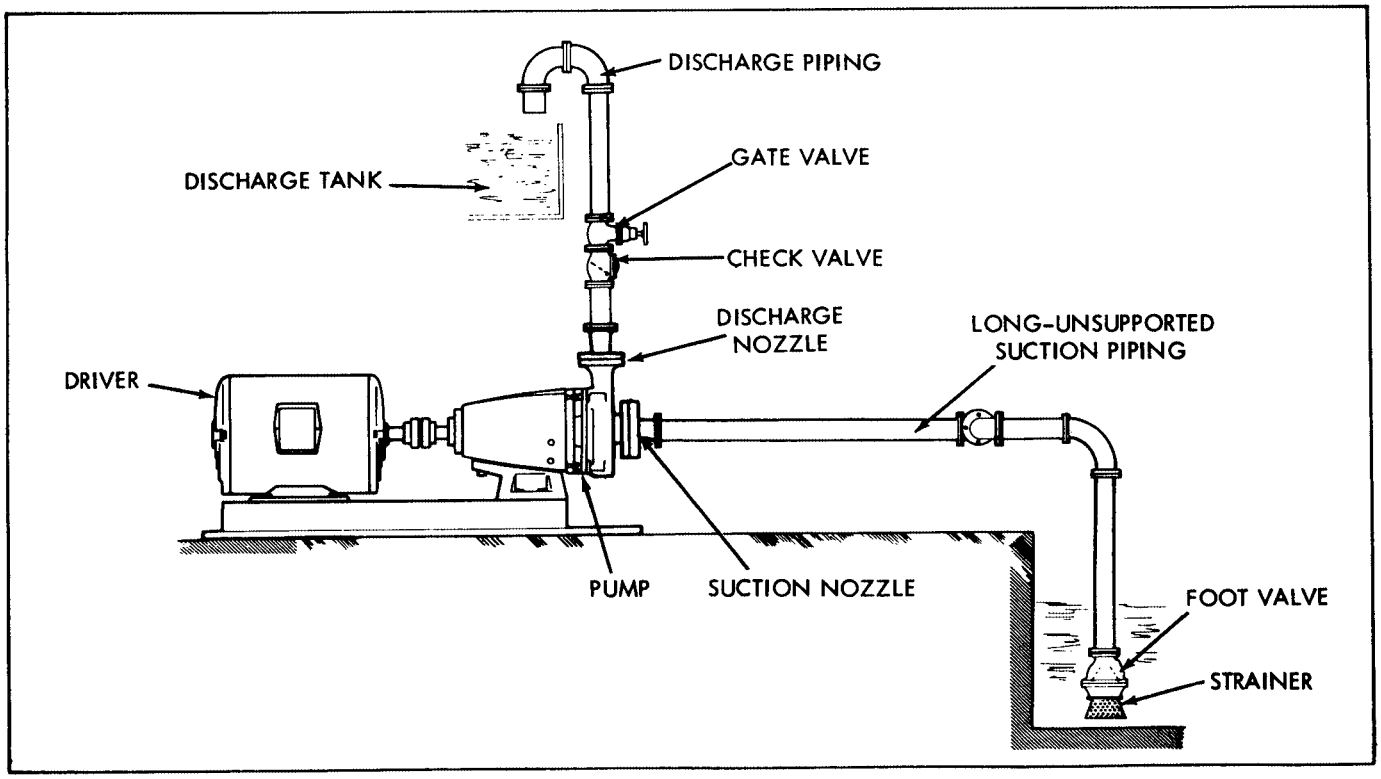



FIGURE 2. UNSATISFACTORY LOCATION - LONG INDIRECT SUCTION WITH NO SUPPORT

## FRAME MOUNTED INSTALLATION

If the pump is to be mounted on steelwork or other structure, adequate support should be provided to prevent distortion of the base plate or the structure, which could produce excessive strain on the pump casing and piping, and seriously affect alignment of the pump and driver.

PREPARING TO INSTALL YOUR PUMP. Your pump and driver unit will normally be mounted on a common base plate. The unit has been accurately aligned and securely mounted to the base plate at the factory. However, the alignment cannot be maintained during shipping and the complete unit must be leveled and realigned at the time of installation.

LEVELING THE PUMP. Leveling the pump will require enough shims to support the base plate near the foundation bolts, and at any points of the base plate carrying a substantial weight load. The shims should be large enough to allow a gap of 3/4" to 1-1/2" between the base plate and foundation for grouting.

The pump unit should be set on the foundation, being careful not to damage the threads on the foundation bolts. The flexible coupling halves should then be disconnected. The shims should be inserted and the pump leveled. A spirit level should be used on the faces of the flexible coupling halves, and on the suction and discharge flanges. If your pump has threaded nozzles, a short piece of pipe inserted in the nozzles will serve as a smooth surface for a leveling reference point. The shims should be adjusted until the pump is leveled horizontally and vertically. Tighten the foundation bolts finger tight.

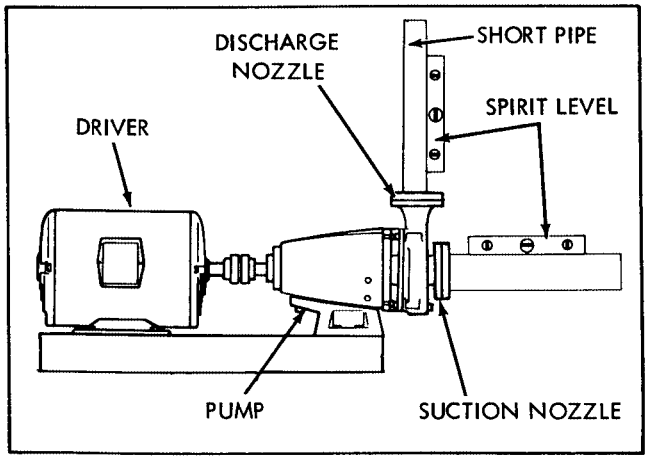



FIGURE 4. LEVELING PUMP UNIT WITH SPIRIT LEVEL AND SHORT LENGTHS OF PIPE

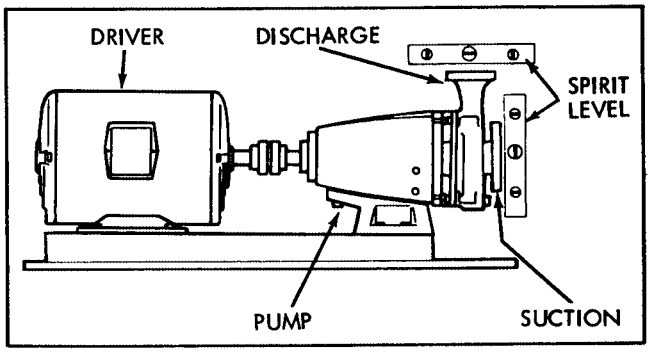



FIGURE 5. LEVELING PUMP UNIT WITH SPIRIT LEVEL ON PUMP FLANGES

INITIAL ALIGNMENT OF THE FLEXIBLE COUPLING. The pump and driver were accurately aligned at the factory. However, it is impossible to maintain this alignment during shipping and handling. Therefore it will be necessary for you to realign the pump and driver. Flexible couplings are not universal joints. They should not be used to compensate for misalignment of the pump and motor shafts. Their function is to transmit power from the driver to the pump while compensating for thermal expansion and shaft end movement. The coupling faces should be far enough apart so that they do not make contact when the motor shaft is forced to the limit of the bearing clearance toward the pump shaft.

In order to properly align the coupling, you will need a taper gauge or set of feeler gauges, and a straight edge, or if available, a dial indicator.

There are two types of misalignment encountered with flexible couplings: angular misalignment, in which the shafts are not parallel, and parallel misalignment where the shafts are parallel but not on the same axis.

To check angular alignment, insert a feeler gauge or taper gage at any four places 90° apart around the

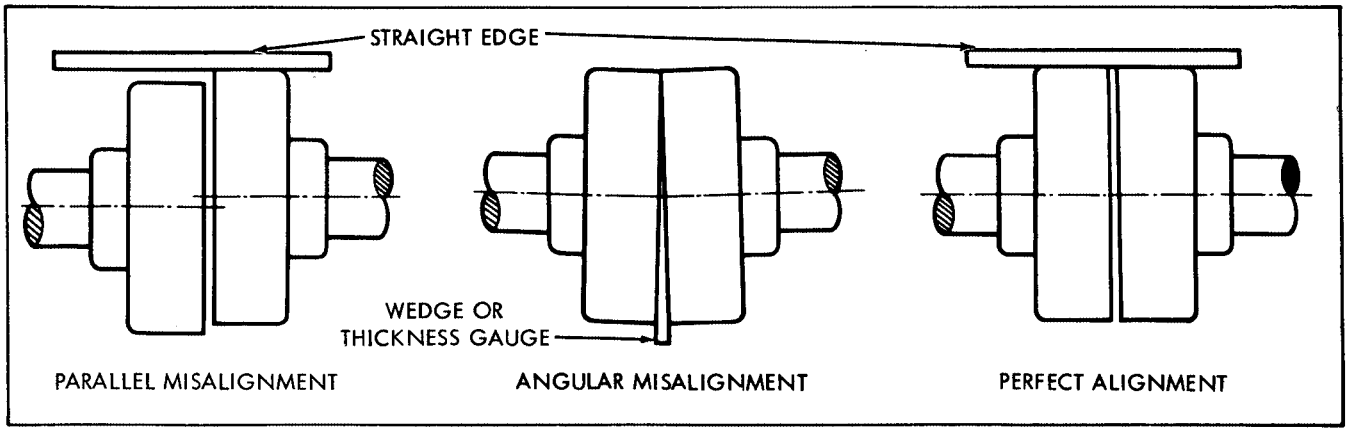



FIGURE 6. FLEXIBLE COUPLING ALIGNMENT

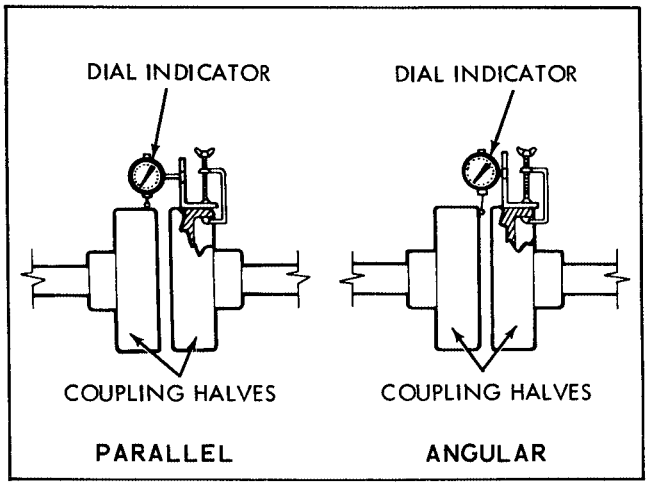



FIGURE 7. CHECKING ALIGNMENT WITH DIAL INDICATOR

coupling halves. Insert shims under the driver feet until the same reading is obtained at all four check points. The pump and driver will then be in angular alignment.

To check angular alignment with a dial indicator, clamp the dial indicator to the pump coupling half so that ball on the indicator just rests on the face of the motor coupling half. A chalk mark should be made at the point where the ball contacts the coupling half. Both the pump shaft and the motor shaft should be rotated an equal amount so that the reading is taken at all check points with the ball on the chalk mark. Insert shims as required.

To check parallel alignment, a straight edge should be held against the edges of the coupling halves at any four places 90° apart around the coupling. The straight edge should be parallel to the pump and driver shafts at all times. Insert shims until the straight edge lies flat against both coupling halves at all four check points. The pump and driver will then be in proper parallel alignment.

To check parallel alignment with the dial indicator, the ball should rest on periphery of the motor coupling half. A chalk mark should be made at the point of contact, and the shafts rotated equally so that the reading is taken with the ball on the chalk mark at all check points. Insert shims as required.

NOTE

Any adjustment to correct one direction of alignment may affect the other direction. Therefore, it is necessary to recheck both angular and parallel alignment after each adjustment.

When the unit is properly aligned, the foundation bolts should be tightened, but not too firmly. Waste material should be stuffed into the sleeves around the foundation bolts, to prevent grout from filling the sleeves during grouting.

GROUTING THE INSTALLATION. Grouting the base plate prevents lateral movement of the base plate, and improves the vibration absorbing characteristics of the foundation by increasing its mass. A wooden dam should be constructed around the base plate to contain the grout while it is being poured. The dam can be built tight against the base plate, or slightly removed from it as desired.

The entire base plate should be completely filled with grout. A non-shrinkable type grout, such as manufactured by EMBCO is recommended. The grout should be puddled frequently to remove any air bubbles from the grout.

The leveling shims can be grouted in place, or they can be removed after the grout has set usually from 48 to 72 hours after pouring.

After the grout has set, alignment of the unit should be checked and the foundation bolts firmly tightened down.

PIPING. Your pump unit is now ready to be piped. The piping practices you follow will directly affect the efficiency and power consumption of your pump.

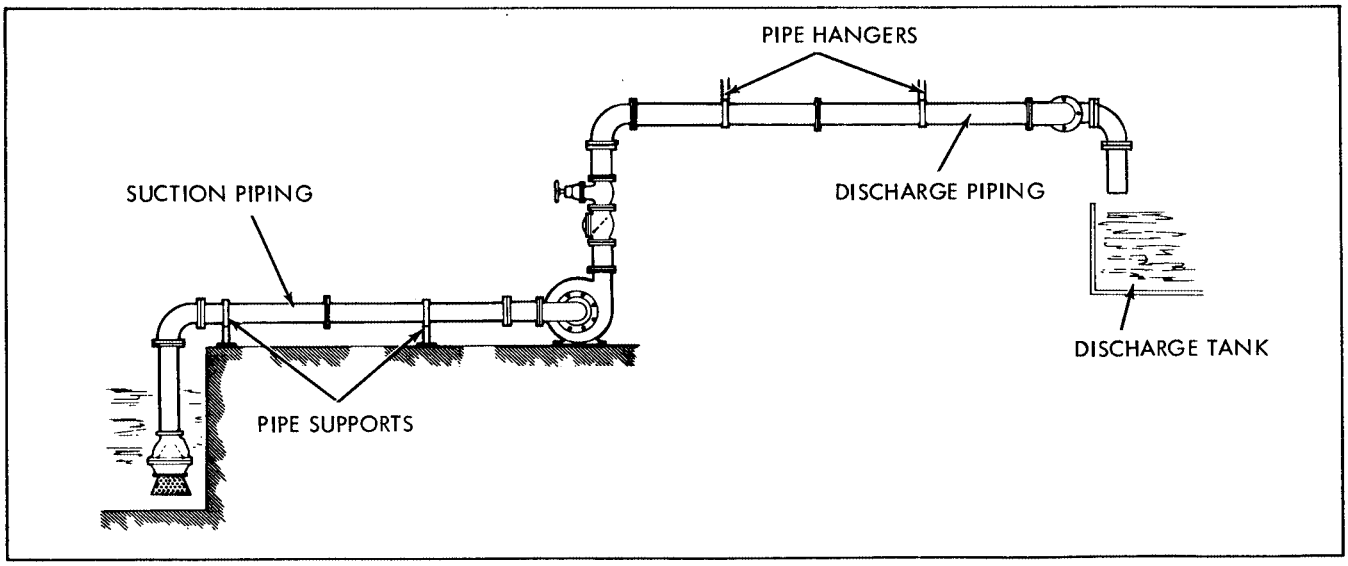



FIGURE 8. SUPPORTING PIPING

Pay particular attention to the seemingly insignificant details involved in piping your pump for they make the difference between a good and bad installation.

SUPPORTING THE PIPE. Both the suction and the discharge piping should be independently supported near the pump. Liberal use of pipe hangers and support blocks will prevent excessive strain on the pump casing and on the pipe joints.

SUCTION PIPING. The suction piping should be short, but no less than ten pipe diameters in length, and direct with as few elbows and fittings as possible, to keep head loss from friction at a minimum. However, the suction pipe should provide a minimum uninterrupted length, equal to ten pipe diameters, to the pump suction flange. A horizontal suction line should have a gradual rise to the pump, and pass under any interfering piping.

PIPE. The suction pipe diameter should be at least the same diameter as the suction nozzle on the pump, and preferably larger. Use of a smaller diameter pipe will result in loss of head due to friction. All joints must be tight to maintain prime on the pump.

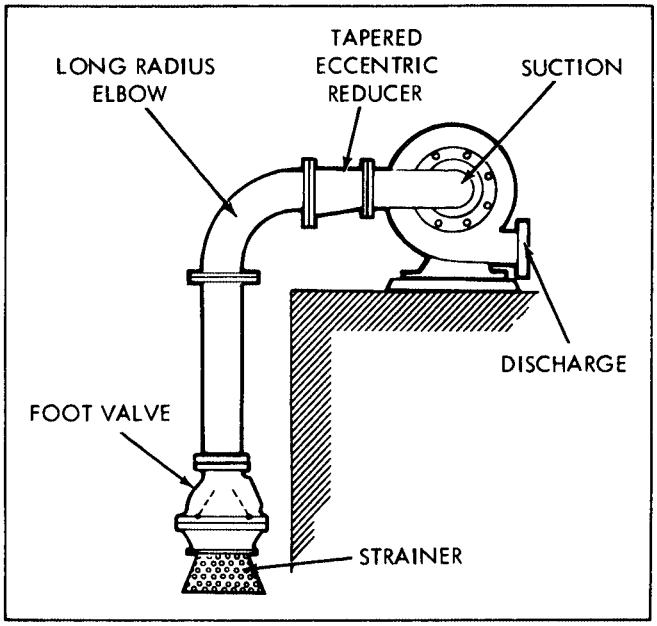



FIGURE 9. RECOMMENDED SUCTION LIFT PIPING - SHORT AND DIRECT

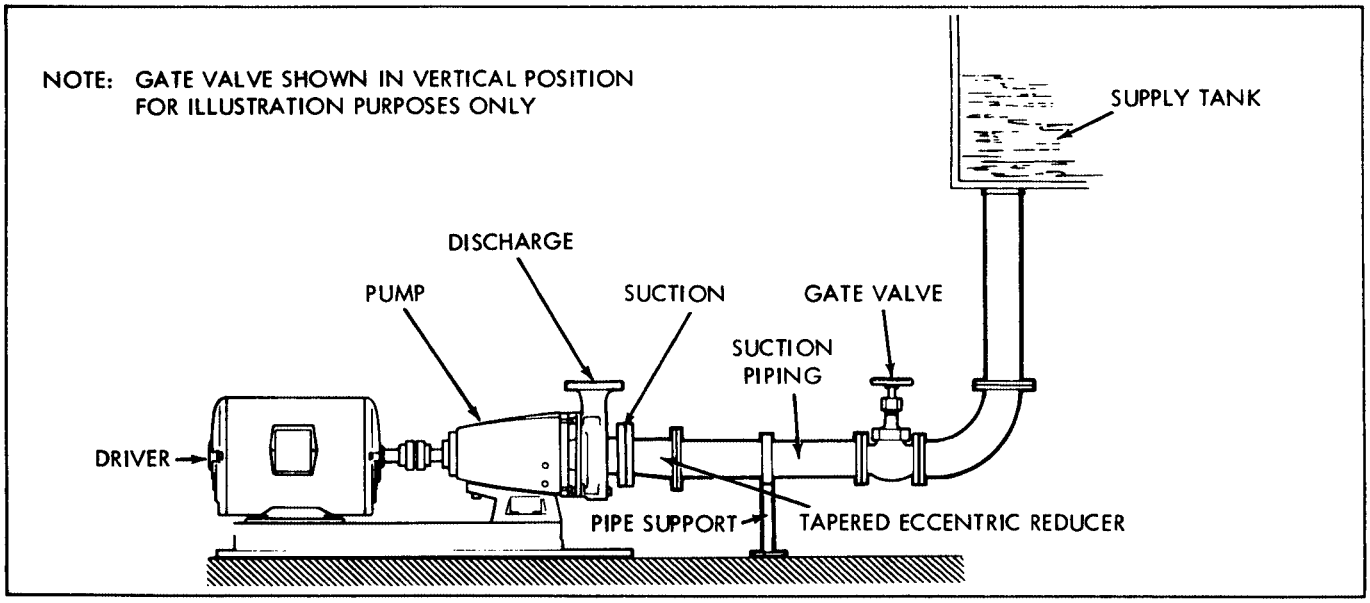



FIGURE 10. RECOMMENDED FLOODED SUCTION PIPING - SHORT AND DIRECT

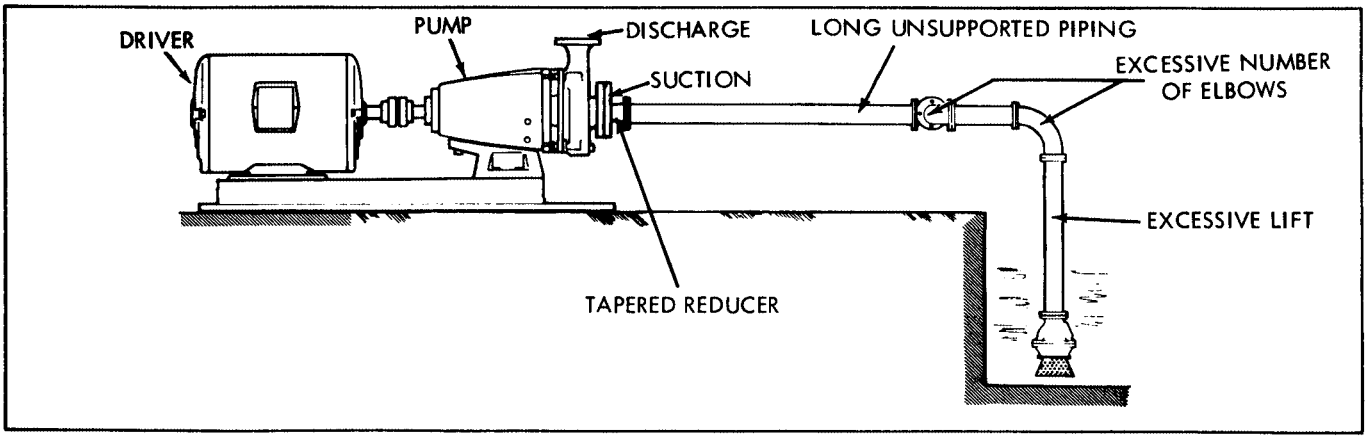



FIGURE 11. UNSATISFACTORY SUCTION LIFT PIPING - LONG AND INDIRECT WITH NO SUPPORT

FRAME MOUNTED INSTALLATION

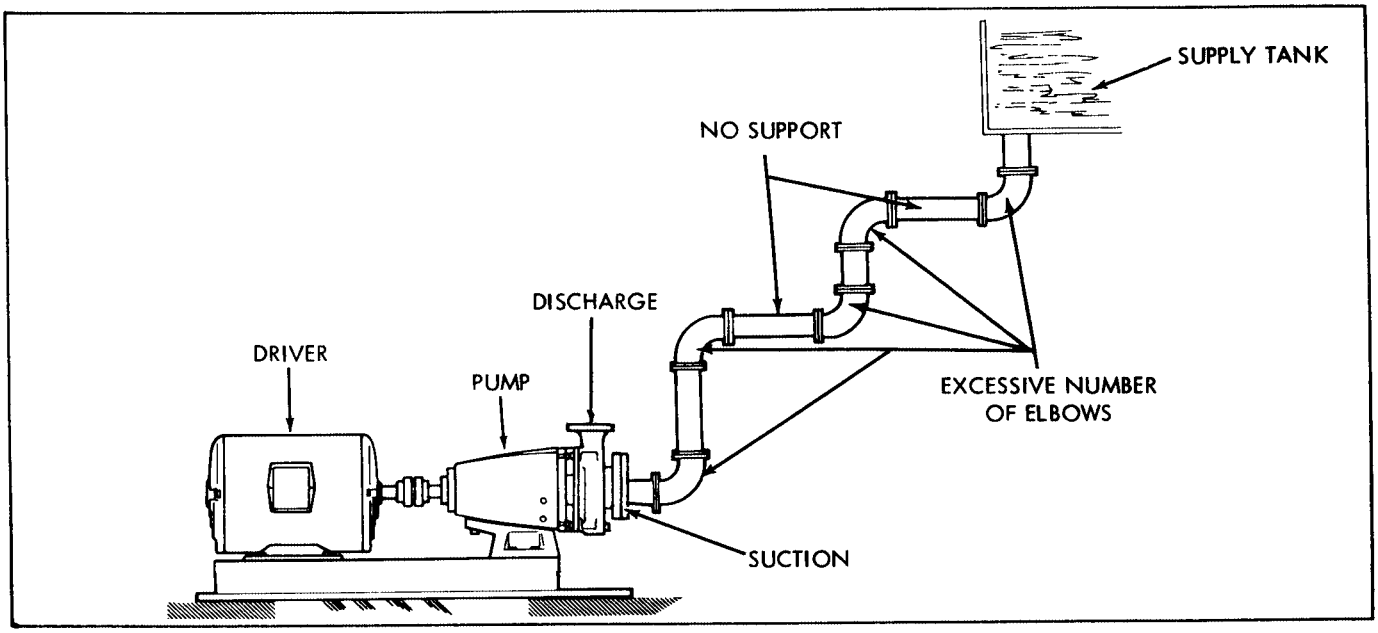



FIGURE 12. UNSATISFACTORY FLOODED SUCTION PIPING - LONG AND INDIRECT WITH NO SUPPORT

ELBOWS. Long radius elbows should be used in place of standard elbows wherever possible, because of their superior flow characteristics. For instance, head loss in a standard four inch elbow is equivalent to the head loss in a piece of pipe 11 feet long, while the head loss in a long radius elbow is approximately half as much. Elbows should not be used at the suction nozzle, but if it is unavoidable, they should be installed in a vertical position. Elbows installed in any position at the suction nozzle have a tendency to distribute the liquid unevenly in the impeller chamber, causing a reduction in capacity, and creating an undesirable thrust condition.

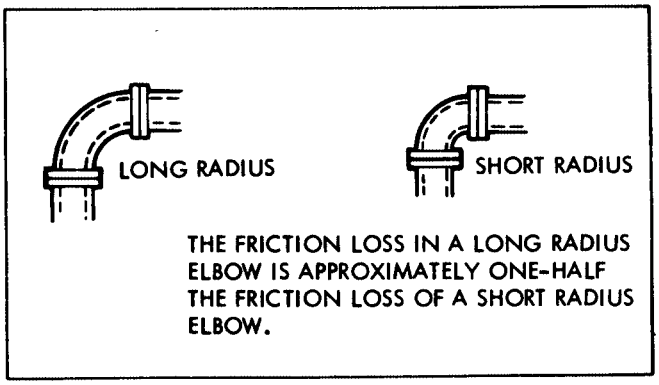



FIGURE 13. LONG VERSUS SHORT RADIUS ELBOWS

REDUCERS. Eccentric reducers should be installed directly at the suction nozzle, with the taper at the bottom to prevent air pockets from forming. Straight taper reducers should never be used in a horizontal suction line because of the air pocket that is formed at the leg of the reducer and the pipe.

DISCHARGE PIPING. Discharge piping should also be short and direct as possible, with few elbows and fittings, to reduce head loss from friction.

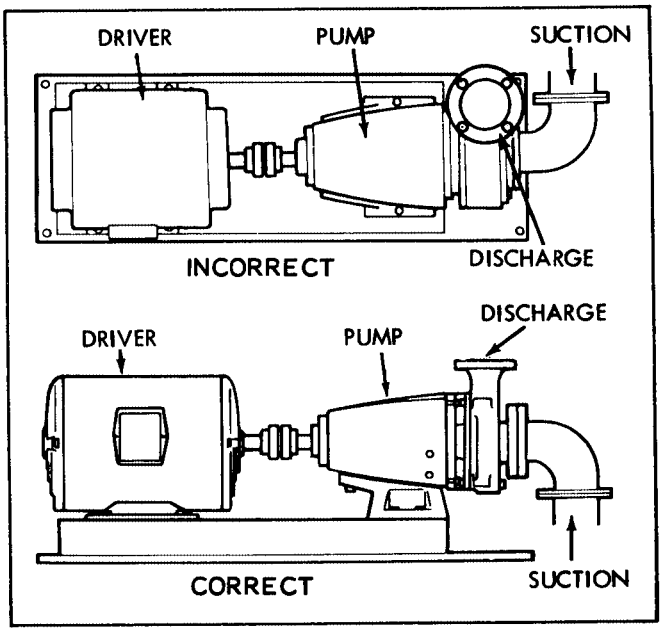



FIGURE 14. ELBOW INSTALLATION IN SUCTION NOZZLE

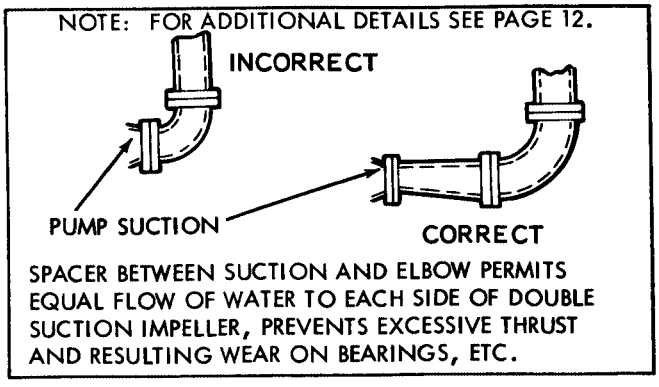



FIGURE 15. REDUCER BETWEEN ELBOW AND PUMP SUCTION NOZZLE

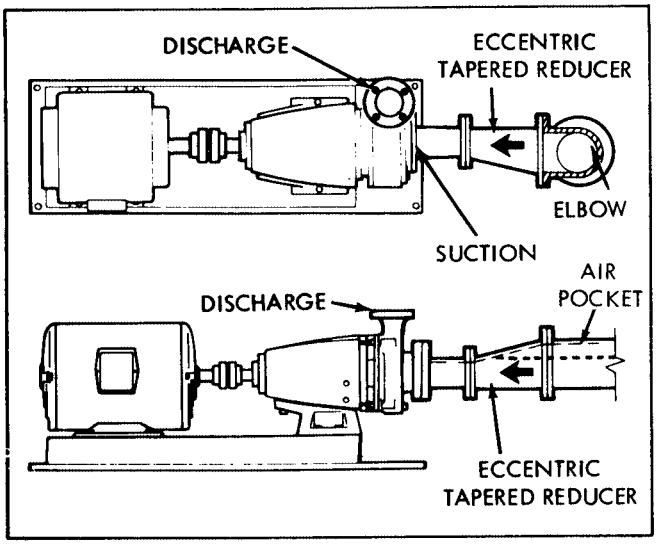



FIGURE 16. UNSATISFACTORY INSTALLATION OF TAPERED REDUCER

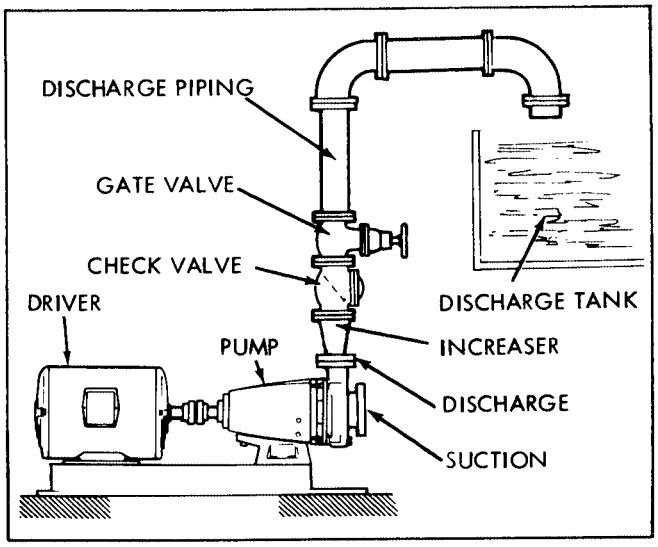



FIGURE 17. RECOMMENDED DISCHARGE PIPING - SHORT AND DIRECT

**PIPE.** The discharge pipe diameter should be the same as, or larger than, the discharge nozzle diameter. The size of discharge pipe to be used is dependent upon its application.

The recommended pipe diameter can be obtained from your nearest Aurora Pump Sales Office.

**ELBOWS.** Long radius elbows should be used in the discharge piping as well as in the suction piping to prevent excessive head loss due to friction. Whenever possible, elbows should not be installed directly at the discharge nozzle as the turbulence created by the elbow will affect pressure gauge readings.

**REDUCERS AND INCREASERS.** An increaser should be installed at the discharge nozzle if larger diameter

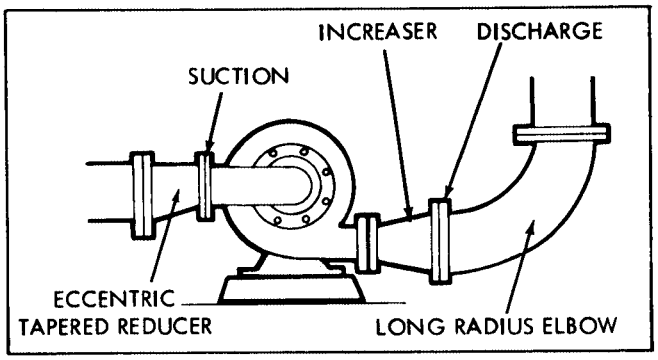



FIGURE 19. REDUCER AND INCREASER INSTALLATION

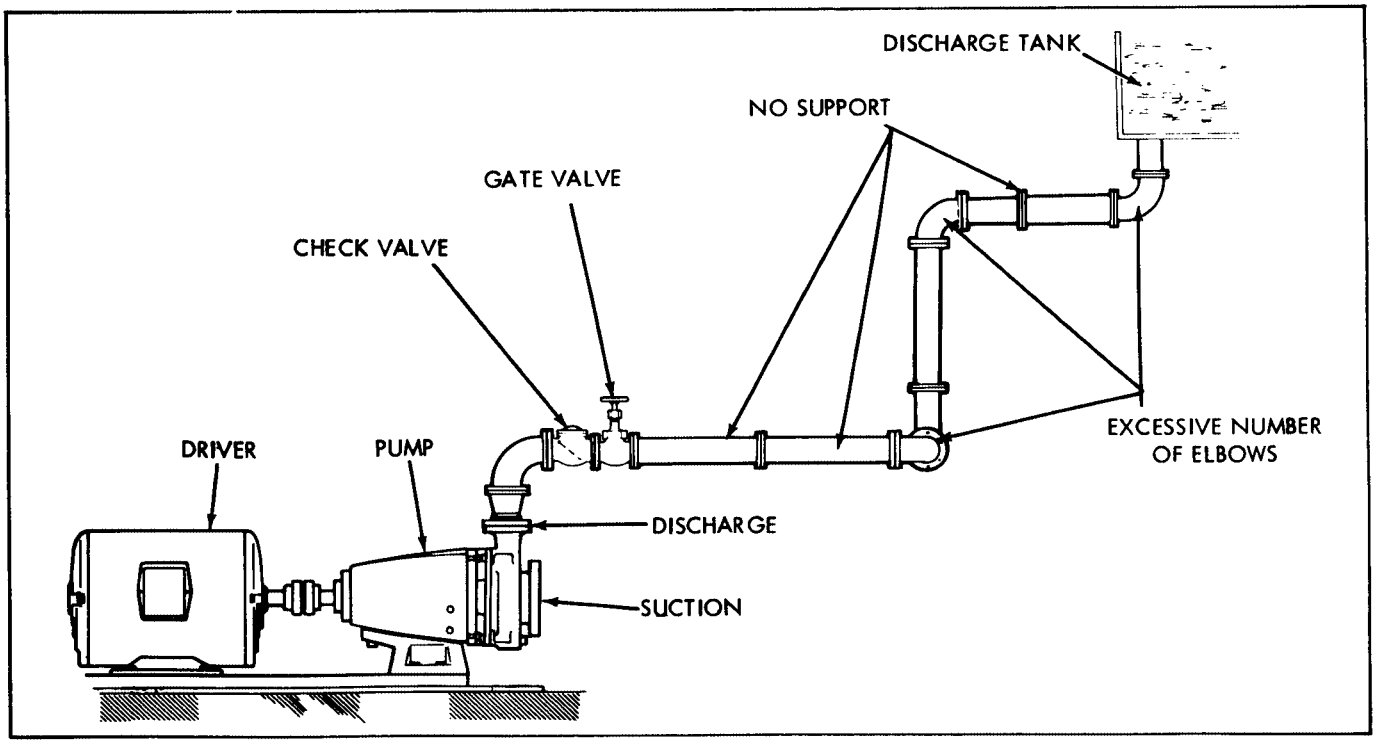



FIGURE 18. UNSATISFACTORY DISCHARGE PIPING - LONG WITH EXCESSIVE ELBOWS AND JOINTS AND NO SUPPORT

discharge piping is used. Straight taper increasers and/or reducers are satisfactory in discharge applications.

EXPANSION JOINTS. Expansion joints are used primarily to prevent the transmission of piping strain, caused by thermal expansion and contraction, piping misalignment, pressure changes, or other causes, to the pump casing. They are also used to suppress any noise that may be transmitted through the piping.

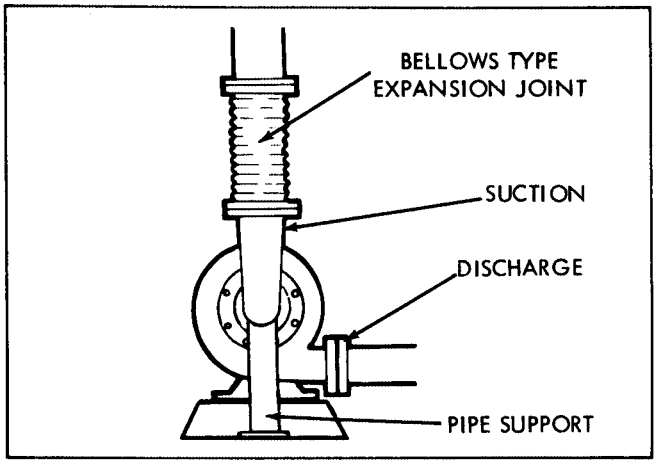



FIGURE 20. EXPANSION JOINT IN SUCTION LINE

It is recommended that the flexible metal type of expansion joint be used, because rubber expansion joints, while costing less, have a tendency to deteriorate, making frequent replacement necessary.

If an expansion joint must be used, an anchor or restraining device should be installed between the joint and the pump to prevent objectional forces from being transmitted to the pump. If an anchor is not installed at this point, a force equal to the area of the joint times the pressure in the pipe is developed and transmitted to the pump. This force may exceed the allowable flange loading, and could result in damage to the pump or piping.

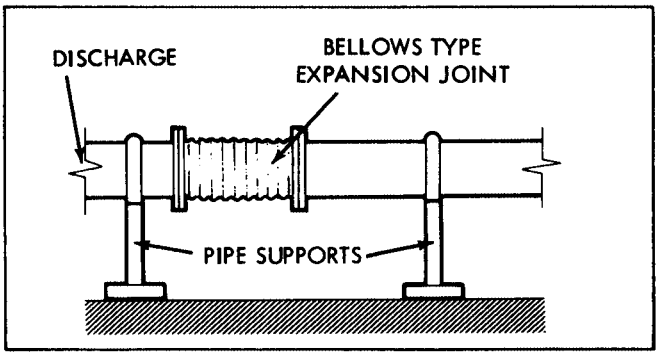



FIGURE 21. EXPANSION JOINT IN DISCHARGE PIPING

PIPE ALIGNMENT. Proper piping alignment is essential before connection is made. Piping alignment should never be achieved by force, this could produce strain on the piping and the pump casing. Proper supports should be installed for the piping to keep its weight off the pump casing.

When flange bolts are used, line up the piping first, then loosely install flange bolts. Check the piping alignment, and tighten the flange bolts until all bolts are tightened securely.

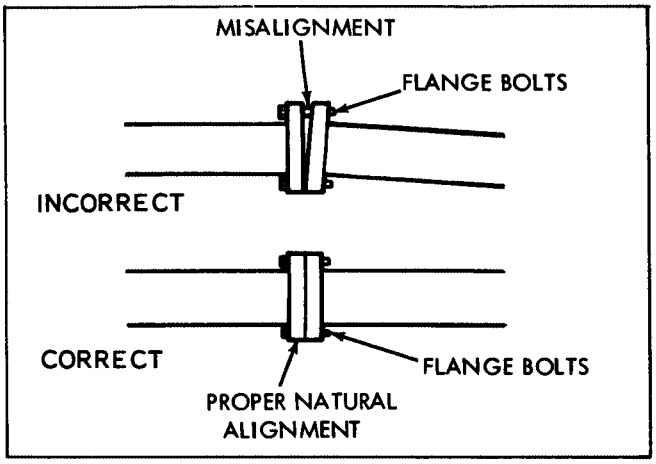



FIGURE 22. PIPE ALIGNMENT

AIR IN PIPING. One of the most common conditions affecting pump efficiency is the formation of air pockets in the suction line. The air pockets are a result of high points and improper installation of elbows, reducers, and valves in the suction piping.

For suction lift applications, lantern rings are required to prevent air from leaking into the pump through the stuffing box, or at the joints.

The pump packings or seal depend on the liquid being pumped for lubrication. Excessive air can prevent proper lubrication with resultant damage to them.

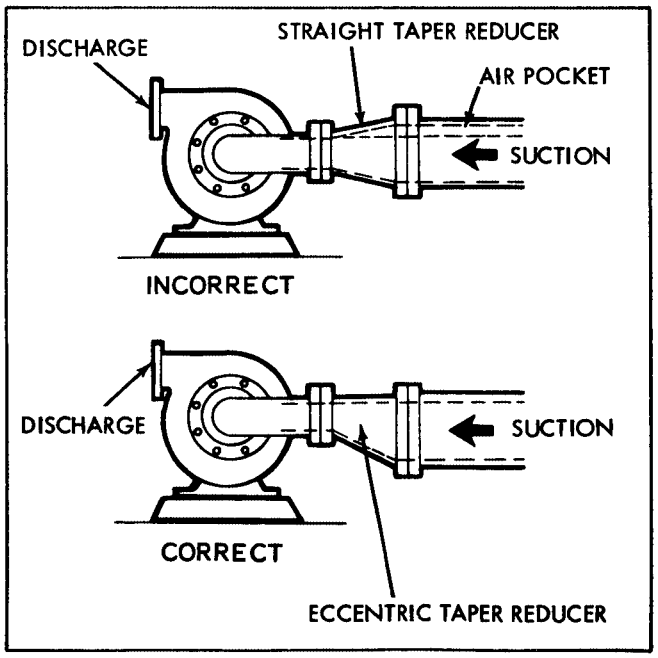



FIGURE 23. AIR POCKETS IN REDUCER

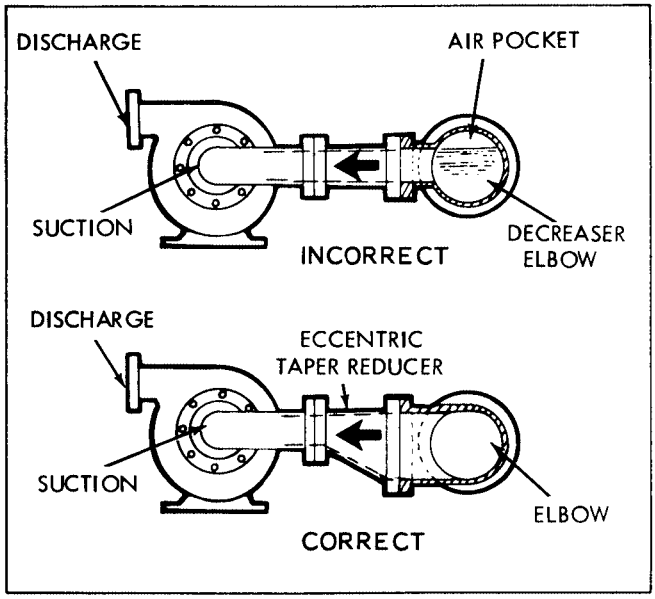



FIGURE 24. AIR POCKET IN ELBOW

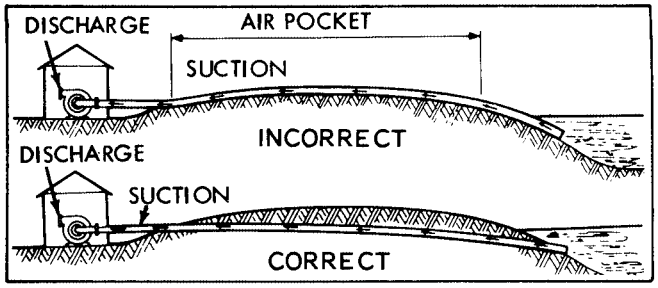



FIGURE 25. AIR POCKET IN HORIZONTAL SUCTION PIPING

In suction lift applications the suction pipe in the liquid well must be sufficiently submerged to prevent exposure of the end of the pipe when the well is at its minimum level and to prevent vortexing action (whirlpool effect) of the liquid at the suction pipe, which will draw air into the pipe. Also, care should be taken to keep the suction pipe located away from the well inlet since the incoming liquid may be carrying air bubbles. Another cause of air in the liquid is dropping of the liquid from too high a point into the well.

VALVES. Valves are an important part of your installation, for they facilitate priming of the pump, and control the volume of the pumped liquid.

SUCTION LIFT. In suction lift applications where the suction lift is low a foot valve can be installed, to maintain the prime on the pump. A foot valve is essentially a check valve, allowing flow in one direction only toward the pump. When the pump is shut down, the pressure of the liquid returning to the well, causes the valve to close, retaining the liquid in the suction line.

A slow closing check valve should be installed when the static discharge head is high. A foot valve should not be used under these conditions, as failure of the driver would allow the water to rush back rapidly thus causing a heavy water hammer.

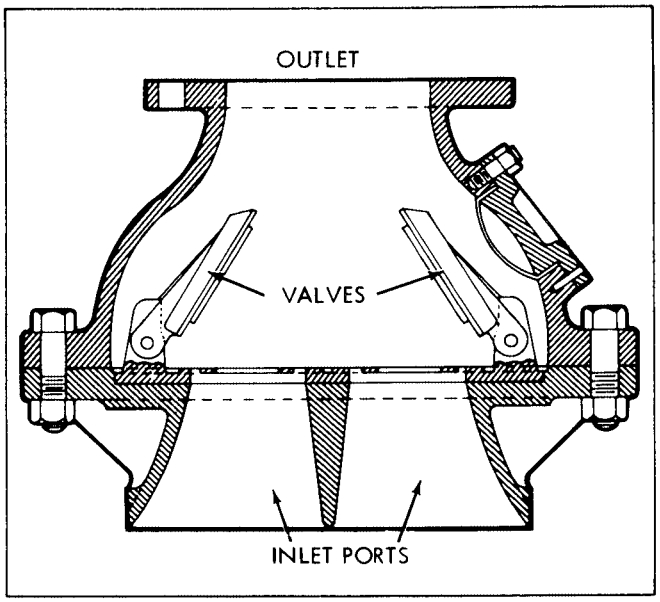



FIGURE 26. FOOT VALVE

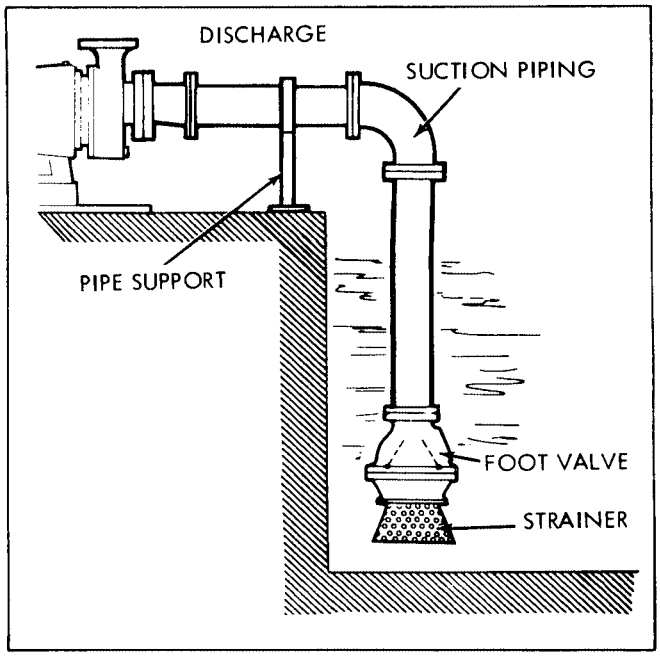



FIGURE 27. FOOT VALVE INSTALLED WITH SCREEN

Foot valves, when used, should be of the flat type rather than multiple spring type. The valve should have a large inlet area, because the friction loss in a foot valve is high. Install check and foot valves as indicated by arrow to ensure proper installation.

FLOODED SUCTION. When the liquid source is above the pump centerline, a flooded suction condition exists, and a gate valve is required to shut off the liquid supply for pump inspection and maintenance. The gate valve should be installed with the stem in a horizontal or downward position to prevent formation of an air pocket in the valve.

DISCHARGE VALVES. Tne discharge piping should include a check valve and a gate valve. The check

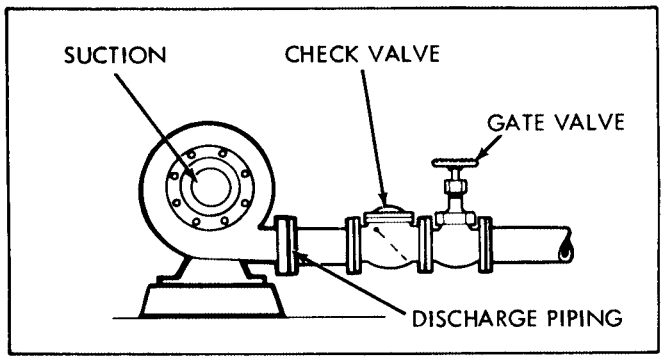



FIGURE 28. GATE VALVE AND CHECK VALVE

valve should be located between the gate valve and the pump. If an increaser is used in the discharge piping, the increaser should be installed between the pump nozzle and the check valve. The check valve protects against a reverse flow of the liquid if the driver fails.

The gate valve is used in the priming operation, as a throttling valve to control pump volume, and to shut down the pump for inspection and maintenance.

AIR VENT VALVE. Vent valves are installed at the high points in the pump casing to allow air or vapor to escape. These valves are used to release trapped air from the pump casing during priming and when pump becomes air bound.

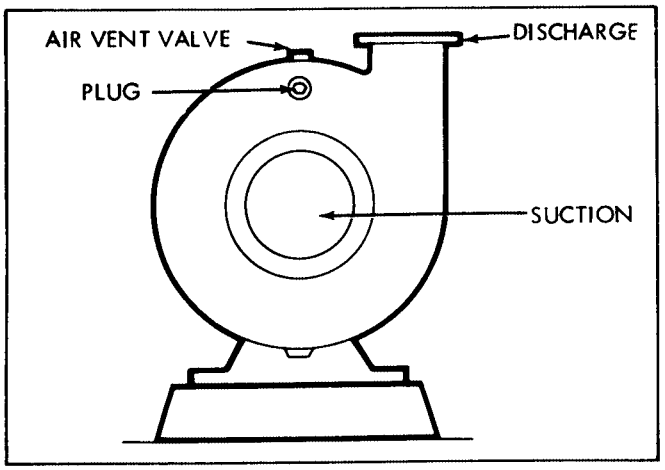



FIGURE 29. AIR VENT VALVE OR PLUG

STRAINERS AND SCREENS. It is important to screen the suction piping to remove foreign matter that can clog the pump and impair its capacity, or stop it completely. Small particles such as sand, dirt, scale from inside pipe and other extraneous materials can get into the close clearance parts of the pump and cause considerable damage to the parts.

Strainers should be selected so as to have a total area of holes equal to at least four times the suction pipe area.

In applications where sticks, twigs, leaves and other large debris are present, a larger outside screen should be placed around the suction inlet to prevent choking of the strainer. This screen should have sufficient openings so that flow velocity does not exceed two feet per second.

PRIMING THE PUMP. Your pump will not operate satisfactorily until it is primed. All air must be expelled from the suction piping and pump casing, and replaced by the liquid to be pumped. There are several methods of priming pumps. The one you select will depend on your specific requirements.

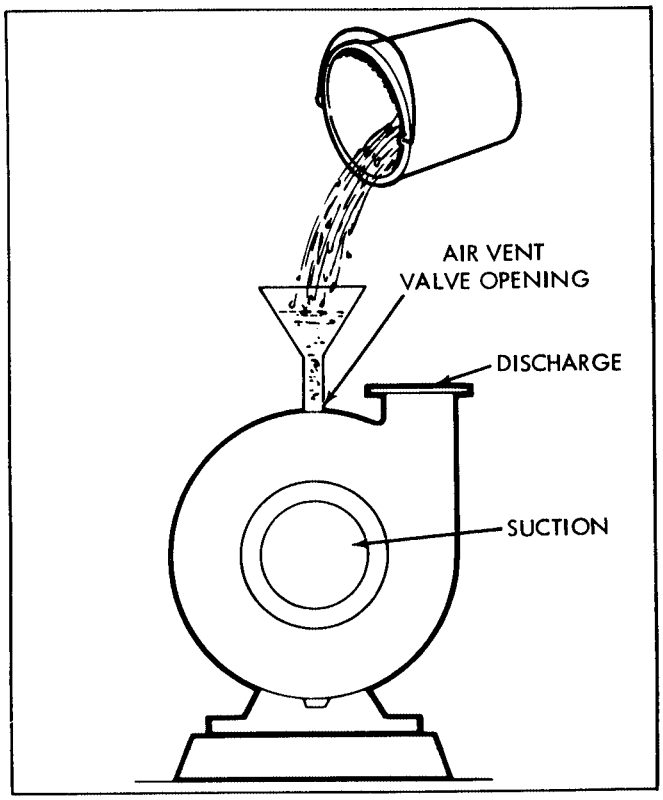



FIGURE 30. PRIMING BY HAND

FLOODED SUCTION PRIMING. This method of priming a pump is relatively simple. The liquid source is located above the pump, and all that is necessary to prime the pump is to open the air vent valve or plug in the pump casing, and to crack the gate valve in the suction line. The suction line and pump should be filled slowly until a steady stream of liquid is observed flowing from the air vent. After your pump is operating, it is recommended that the air vent valve or plug be opened again to insure that all air has been expelled from the pump casing.

FOOT VALVE PRIMING. A foot valve can be used for priming on suction lift applications. The foot valve located at the bottom end or foot of the suction piping, functions as a check valve which allows flow in one direction only, toward the pump.

Initial priming is accomplished by completely filling the suction piping and pump casing with the liquid to be pumped. This can be done by removing the air vent valve or plug at the top of the pump casing and inserting a pipe nipple in the orifice, with an appropriate increaser to accommodate a hose connection.

A priming line can also be inserted in the discharge piping between the check valve and the pump or the priming can be done with a bucket and funnel. The important thing is to completely fill the suction pipe and pump casing with liquid.

When the pump is started, the vacuum created by pumping the priming fluid, combined with atmospheric pressure in the liquid well, forces liquid into the suction piping, thus opening the foot valve and keeping it open until the pump is shut down. When the pump is shut down, the liquid being pumped reverses its flow, causing the foot valve to close, trapping the liquid in the suction piping and pump casing, thus maintaining a prime on the pump.

VACUUM PRIMING. Vacuum priming consists of removing air from the pump casing and suction piping and drawing liquid into them by means of a vacuum creating device. The types of vacuum equipment range from a simple hand pump to complex central priming systems. Your specific priming requirements will govern what type of vacuum primer to use.

AIR EJECTOR. One type of vacuum primer is the air ejector. If liquid under pressure or steam is available, an ejector can be used. The ejector is connected to the air vent orifice. A stream of the ejecting medium is passed through the ejector creating a vacuum in the ejector, and drawing air from the pump casing and suction piping. When liquid flows steadily from the ejector discharge pipe, the pump is primed.

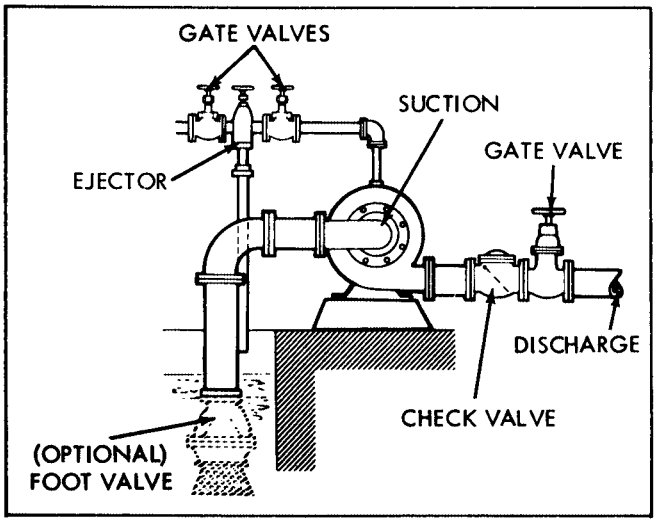



FIGURE 31. PRIMING BY EJECTOR

VACUUM PUMPS. Rotary or reciprocating pumps are frequently used as vacuum pumps. They fall into two categories, wet-vacuum and dry-vacuum. The principle of operation is essentially the same, however, the dry-vacuum pump cannot accommodate a liquid and air mixture while the wet-vacuum pump can accommodate liquid, air or a combination of both.

Vacuum pumps can be installed as part of a central priming system servicing many pumps, as an automatic priming system, or as a manually controlled independently driven pump.

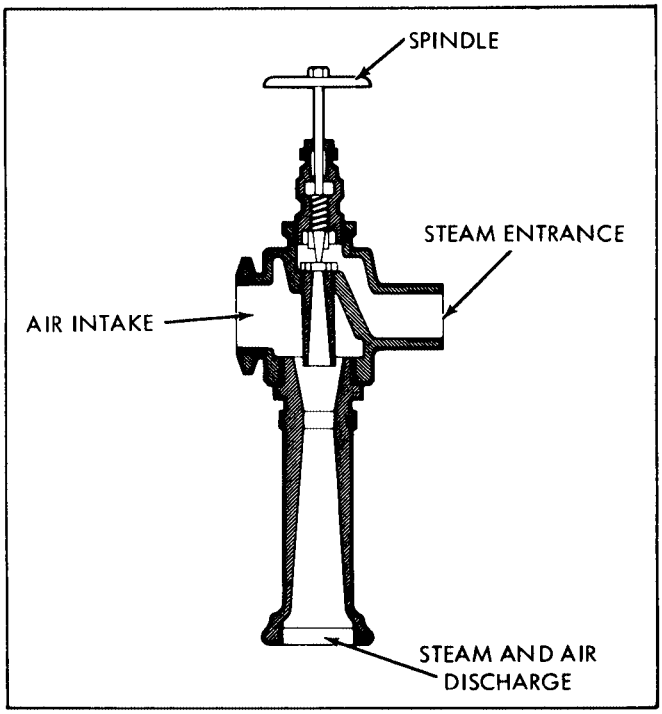



FIGURE 32. EJECTOR CUTAWAY

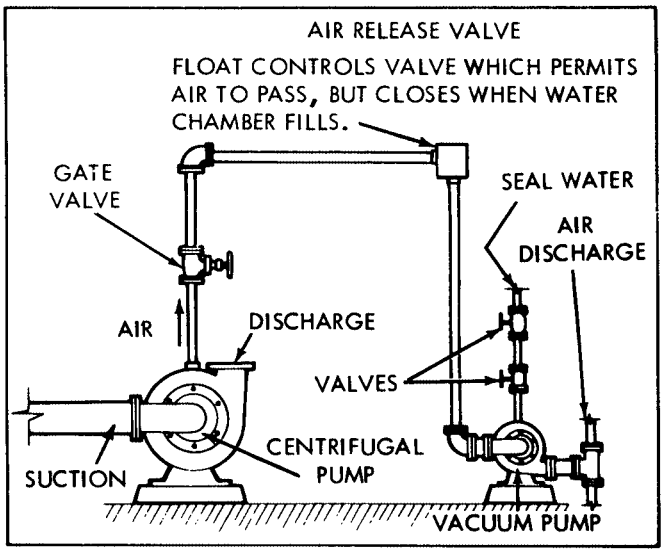



FIGURE 33. PRIMING BY VACUUM PUMP

The suction piping of the vacuum pump is connected to the air vent orifice on the pump to be primed. The vacuum produced by the vacuum pump removes air from the centrifugal pump suction piping and casing, and draws liquid from the liquid well into the centrifugal pump. Dry-vacuum pumps must be installed so that no liquid is taken into the air pump. Installation of a water trap, or use of a vacuum tank are recommended for dry vacuum pumps.

INDUCTOR PRIMING. On suction lift applications it may be desirable to prime your pump with a priming inductor. This type of primer is comprised of a liquid nozzle and an inductor at the foot end of the

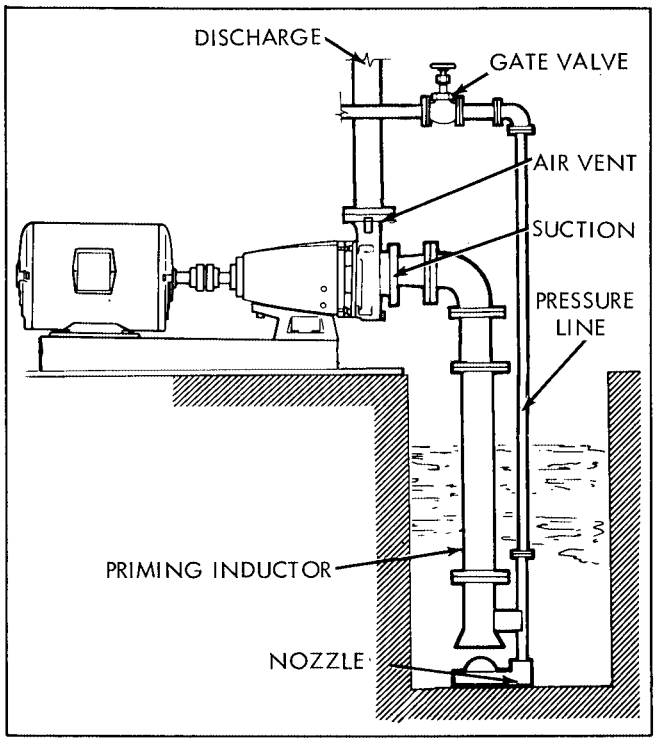



FIGURE 34. PRIMING BY INDUCTOR

suction piping. The nozzle and inductor are connected to a high pressure liquid supply such as a city water service.

The pump is primed by opening the valve in the pressure line, which allows the liquid to flow through the nozzle into the inductor. The velocity of the high pressure liquid drives the liquid into the suction piping and up to the pump, priming it.

ELECTRICAL WIRING. Normally, your pump will be supplied with an attached drive motor. The motor should be wired in accordance with the wiring diagram found on the motor name plate. Be sure the voltage, frequency, and phase of your power supply corresponds with the name plate data. It is advisable to provide a separate switch and overload protection for your pump motor to protect against power failure in some other area. Conversely, if the pump motor develops electrical problems, it will be isolated from other equipment.

PRESTARTING INSTRUCTION. The coupling halves should be connected. Prior to connection however, the drive motor should be started to make sure the direction of roatation is the same as the direction indicated by the arrow on the pump casing.

**WARNING:** On all 350 series pumps and the 364A with a 15" impeller on a #21 power frame, reverse rotation will destroy the pump.

After you are sure the motor is rotating clockwise you can couple the motor to the pump. Again, after coupling but BEFORE starting it is important to check coupling and shaft alignment. Use a standard dial indicator to align the motor shaft and pump shaft to within .003"-.005".

The suction and discharge piping should now be connected to the pump, and the pump primed.

**CAUTION**

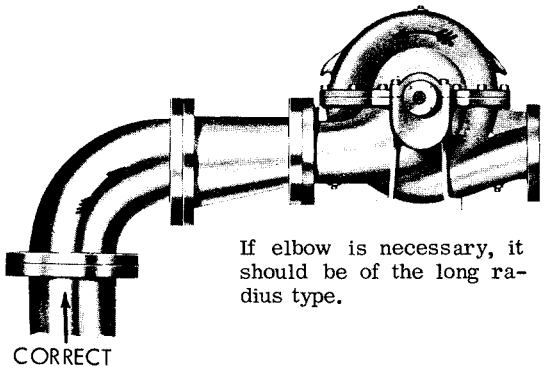
Do not operate the pump without liquid. Pump seals or packing depend on the liquid being pumped for lubrication.

Open or close the various valves as required by your specific application. Start the pump and bring it up to operating temperature. After the temperature has stabilized, the pump should be shut down and the alignment rechecked. It will be necessary to check the alignment with the coupling halves both connected and disconnected.

Remember, any alignment adjustment made in one direction may affect the other direction so extreme care should be taken when final adjustment is made.

Make sure all pump, motor and base plate mounting bolts are firmly tightened down.

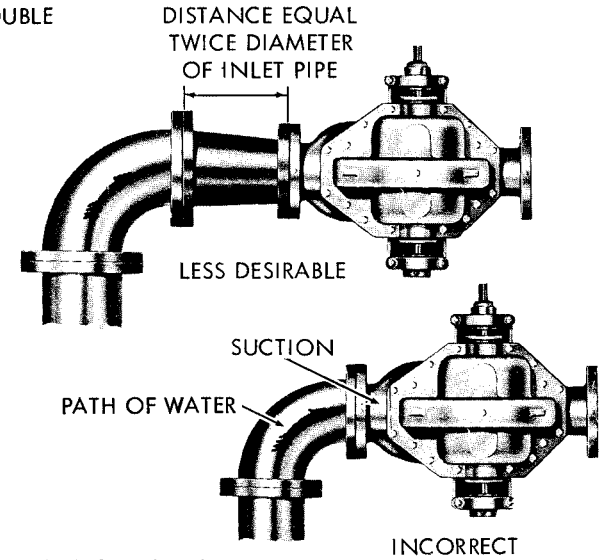
SPECIAL SUCTION PIPING SPECIFICATIONS FOR HORIZONTAL DOUBLE SUCTION PUMPS FOR ADDITIONAL DETAILS SEE PAGE 6



If elbow is necessary, it should be of the long radius type.

CORRECT

Discharge piping and suction piping should be supported close to the pump flange to prevent vibration and strain on pump casing.




The suction pipe on horizontal double suction pumps, should not be installed so that there is an elbow close to the suction nozzle unless the elbow is mounted vertically. There is always an uneven flow of liquid through an elbow and when the elbow is installed at any angle other than vertical more water will enter one side of the impeller than enters the other side. This causes a reduction in capacity and efficiency and creates an axial thrust load which may over heat and possibly cause rapid wear of the thrust bearing.

SECTION **6** ITEM **340**
DATED **JUNE 1998**

SUPERSEDES ITEMS 341, 342, 344
DATED MARCH 1992

# INSTRUCTION AND REPAIR MANUAL

## MODELS 341A, 342A AND 344A

**6**

NOTE

This repair manual is applicable to pump Models 341A, 342A and 344A. All photos illustrate Model 344A.

**ATTENTION: SAFETY WARNINGS:**

Read and understand all warnings before installation or servicing pump.

**OPERATIONAL LIMITS**: *

| | |
|---|---|
| Maximum Operating Pressure: | 175 psi at Temperatures to 150°F (65.6°C) |
| Maximum Operating Temperature: | 225°F (107°C) |

* See ASTM A126/ANSI B16.1 for pressure/temperature ratings of flanges.

**ELECTRICAL SAFETY:**

**Warning:** Electrical Shock Hazard

All electrical connections are to be made by a qualified electrician in accordance with all codes and ordinances. Failure to follow these instructions could result in serious personal injury, death or property damage.

**Warning:** Electrical Overload Hazard

Insure all motors have properly sized overload protection. Failure to follow these instructions could result in serious personal injury, death or property damage.

**Warning:** Sudden Start-Up Hazard

Disconnect and lockout power source before servicing. Failure to follow these instructions could result in serious personal injury, death or property damage.

**HIGH TEMPERATURE SAFETY:**

**Warning:** Hot Surface Hazard

If pumping hot water, insure guards or proper insulation is installed to protect against skin contact to hot piping or pump components. Failure to follow these instructions could result in serious personal injury, death or property damage.

**Warning:** Spraying Water Hazard

When servicing pump replace all gaskets and seals. Do not re-use old gaskets or seals. Failure to follow these instructions could result in serious personal injury, death or property damage.

**HIGH PRESSURE SAFETY:**

**Warning:** High Pressure Hazard

The pump is rated at a maximum of 175 psi at 150°F. Do not exceed this pressure. Install properly sized pressure relief valves in system. Failure to follow these instructions could result in serious personal injury, death or property damage.

**Warning:** Expansion Hazard

Water expands when heated. Install properly sized thermal expansion tanks and relief valves. Failure to follow these instructions could result in serious personal injury, death or property damage.

SERVICE

Your Aurora pump requires no maintenance other than periodic inspection, occasional cleaning and lubrication of bearings (MODEL 344A only). The intent of inspection is to prevent breakdown, thus obtaining optimum service life. The liquid end of the pump is lubricated by the fluid being pumped and therefore does not require periodic lubrication. The motor, however may require lubrication, in which case, the motor manufacturer's recommendation should be followed.

LUBRICATION OF IMPELLER SHAFT BEARINGS

The MODEL 344A pump is available with three options for lubricating the shaft bearings. They are:

1. Regreasable (standard)
2. Oil Lubrication
3. Sealed Bearings, Permanent Lubrication

Regreasable bearings will require periodic lubrication and can be accomplished by using the zerk or lubrication fittings in the cartridge cap and power frame. Lubricate the bearings at regular intervals using a grease of high quality. Polyurea base

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grease is recommended as lubricants for pumps operating in both wet and dry locations. Mixing of different brands of grease should be avoided due to possible chemical reactions between the brands which could damage the bearings. Accordingly, avoid grease of vegetable or animal base which can develop acids, as well as grease containing rosin, graphite, talc and other impurities. Under no circumstances should used grease be reused.

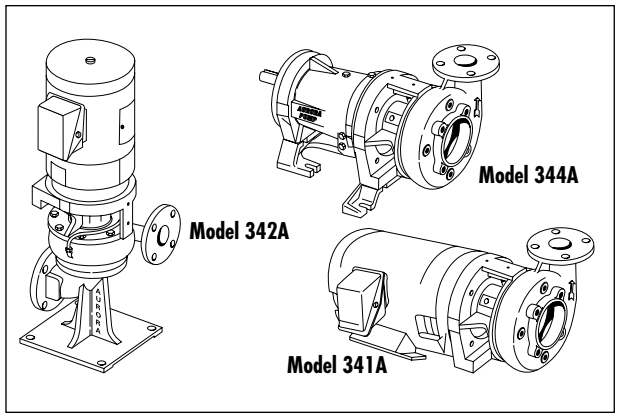
Over lubrication should be avoided as it may result in overheating and possible bearing failure. Under normal application, adequate lubrication is assured if the amount of grease is maintained at 1/3 to 1/2 the capacity of the bearing and adjacent space surrounding it.

In dry locations, each bearing will need lubrication at least every 600 hours of running time or every 6 to 12 months, whichever is more frequent. In wet locations the bearings should be lubricated at least after every 300 hours of running time or every 4 to 6 months, whichever is more frequent. A unit is considered to be installed in a wet location if the pump and motor are exposed to dripping water, to the weather, or to heavy condensation such as is found in unheated and poorly ventilated underground locations.

Oil lubricated bearings are optional on MODEL 344 pumps. A fixed oil level is maintained with the power frame by an oiler which allows visual indications of reserve oil.

At initial installation and before starting a unit that has been shut down for repairs or for any extended length of time, run enough 10W-30 weight motor oil through the oiler to maintain a constant oil level to insure that the bearing will never be without an oil supply. Oil will have to be added at intervals to maintain a constant level in the oiler. This interval can only be determined by experience.

Under working conditions, oil will breakdown and need to be replaced at regular intervals. The length of these intervals will depend on many factors. Under normal operation, in clean and dry locations, the oil should be changed about once a year. However, when the pump is exposed to dirt contamination, high temperatures (200°F. or above) or a wet location, the oil may have to be changed every 2 to 3 months.




A. Assembled Units.

**CAUTION**

Use normal fire caution procedures when using any petroleum cleaner.

REPAIRS

Before starting any work, insure the electrical power is locked out, the system pressure has been lowered to 0 psi and temperature of the unit is at a safe level.

The pump may be disassembled using the illustrations and text provided. Although complete disassembly is covered, it will seldom be necessary to completely disassemble your Aurora pump.

The illustrations accompanying the disassembly instructions show the pump at various stages of disassembly. The illustrations are intended to aid in the correct identification of the parts mentioned in the text.

Inspect removed parts at disassembly to determine if they can be reused. Ball bearings that turn roughly or show wear should be replaced. Cracked castings should never be reused. Scored or worn pump shafts should be replaced. Gaskets should be replaced at reassembly simply as a matter of economy. They are much less expensive to replace routinely than to replace singly as the need arises.

**⚠ Warning:** Sudden Start-Up Hazard

Disconnect and lockout power source before servicing. Failure to follow these instructions could result in serious personal injury, death or property damage.

**⚠ Warning:** Hot Surface Hazard

If pumping hot water, insure guards or proper insulation is installed to protect against skin contact to hot piping or pump components. Failure to follow these instructions could result in serious personal injury, death or property damage.

**⚠ Warning:** High Pressure Hazard

The pump is rated at a maximum of 175 psi at 150°F. Do not exceed this pressure. Install properly sized pressure relief valves in system. Failure to follow these instructions could result in serious personal injury, death or property damage.

**⚠ Warning:** Spraying Water Hazard

When servicing pump replace all gaskets and seals. Do not re-use old gaskets or seals. Failure to follow these instructions could result in serious personal injury, death or property damage.

DISASSEMBLY

Disassemble only what is needed to make repairs or accomplish inspection. (See Figure 2 for Model 341A, Figure 3 for Model 342A and Figure 3 for Model 344A.)

1. Disconnect and lockout power source to prevent drive unit from being energized during disassembly.

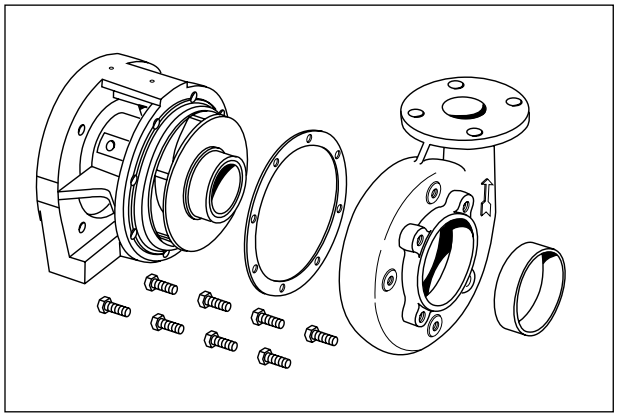
2. Unscrew the two drain plugs (4) from the casing (6). On Model 342A pumps, remove plugs (74 and 75) to drain pump. Also unscrew the two plugs (4) from casing (6).

3. Remove all relief, cooling, flushing or drain lines from pump, including compression connections (1 and 2) and tubing (3). Break suction and discharge connections unless it is intended to remove the power frame or motor assembly and leave casing (6) in the line. On Model 342A pumps, break discharge connections only, unless it is desired to remove base (73). Remove capscrews (39) and lift pump assembly from base (73). Remove gasket (72).

4. On Model 344A pumps, remove the flexible coupling from between the pump and motor. Next unscrew the bolts that hold support(s) (41 and 64) to the base and slide the pump out to be worked on.

5. Remove capscrews (5) and pull casing (6) from bracket (35). Remove gasket (8).

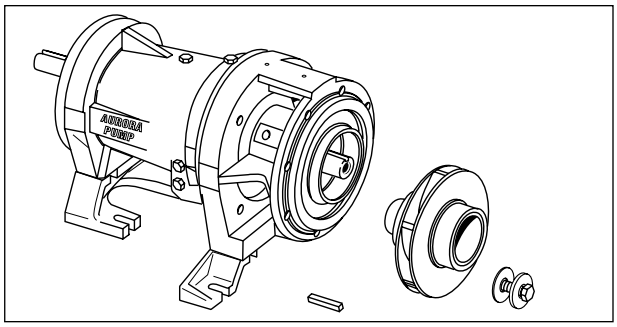
6. Unscrew impeller screw (9) and remove washer (9A), taking care not to damage gasket (9B) or capscrew seal (9C).



B. Casing, Gasket, and Wearing Ring Removed.

7. Slide impeller (11) and impeller key (12) from the shaft, again taking care not to damage gasket (10) located behind impeller. Remove gasket (10).

8. Wearing ring(s) (7 and 16) are pressed into their housings with an interface fit and must be removed with a puller. New ring(s) should be used for reassembly since it is likely that during removal this fit will be lost. Do not remove wearing rings if not being replaced.



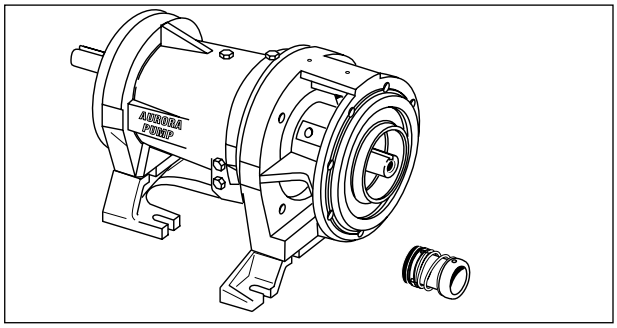

C. Impeller and Key Removed.

9. Impeller wearing rings (optional - 14 and 15) are pressed on and must be cut off if replacement is necessary. If they are turned off in a lathe, take care not to cut into the impeller.

10. Slide sleeve (25) with rotating parts of mechanical seal (27) from the shaft. The sleeve should be carefully cleaned to remove any residue that may be remaining in the seal area. The rubber in seal (27) may have become partially adhered to the sleeve. The sleeve must also be checked for abrasion or corrosion that can occur when fluid residue penetrates between the seal (27) and sleeve (25). The sleeve under the seal may be polished lightly to a 32 RMS finish before reassembly. Do not reuse a pitted sleeve. Pin (61) may be removed if necessary.

**CAUTION**

The mechanical seal (see Figure 1) is a precision product and must be treated as such. During removal, great care must be taken to avoid dropping any part of the seal. Take particular care not to scratch the lapped faces on the washer or the sealing seat. If any wear of the seal faces is noted, it is recommended to replace with a new seal during reassembly.

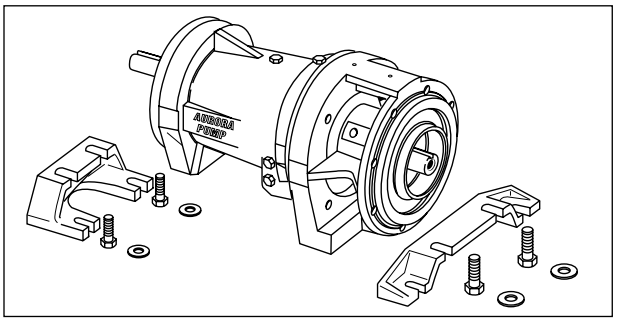



D. Mechanical Seal Removed.

11. On Model 344A pumps, remove capscrews (39 and 62) and washers (40 and 63) to take off support feet (41 and 64). On Model 341A frame size 143 thru 184-JM only, unscrew capscrews (39) washers (40) and remove support (41) from bracket (35).

12. Unscrew capscrews (32) to remove bracket (35) from frame (57) or motor on Models 341A and 342A.

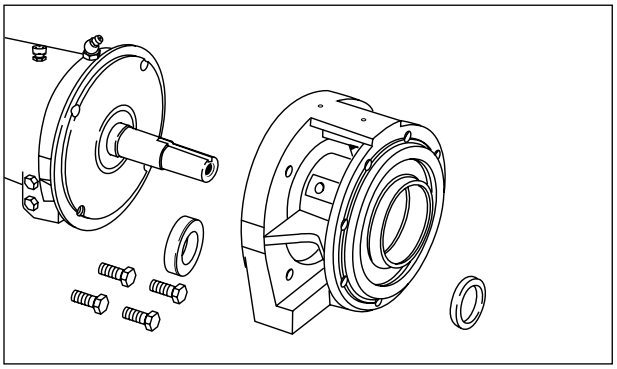
13. The seal flexible cup and stationary seat should be pressed out of the bracket (35) and the cavity cleaned of all residue. Make sure that the 1/32 inch radius in the seal seat cavity is not damaged during disassembly since a sharp edge can easily cut the flexible cup during reassembly.



E. Support Feet Removed.

14. On Model 344A pumps, remove key (42) from the shaft and remove slingers (47 and 47A).

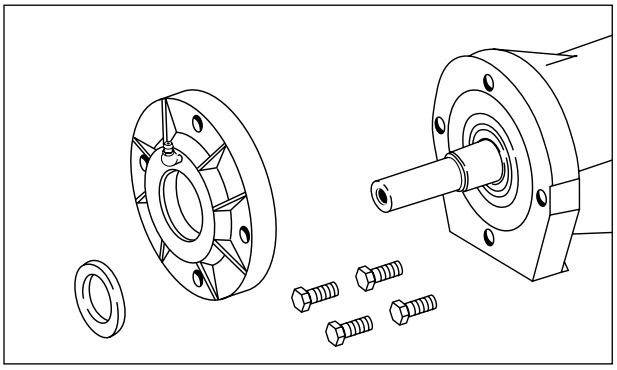
15. Unscrew capscrews (48) and remove bearing cap (49). Remove "O" ring (oil lubed only) (50) and retainer ring (52).



F. Bracket and Slinger Seal Flexible Cup and Stationary Seat Removed.

16. Slide out shaft (55) and bearings (53 and 54). Since bearings (53 and 54) are press fitted on the shaft, they will have to be pulled or pressed off the shaft. Remove grease seals (51) from frame (57), and bearing cap (49).

17. Remove nameplate (34) and screws (33) only if replacement is needed.



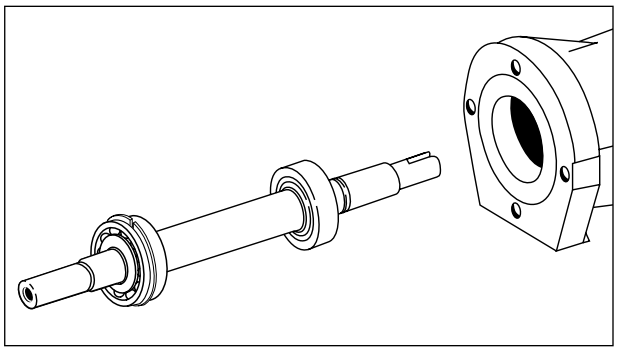
G. Bearing Cap and Slinger Removed.

REASSEMBLY

Reassembly will generally be in reverse order of disassembly. If disassembly was not complete, use only those steps related to your particular repair program.

1. Press grease seals (51) into frame (57). (344A)

2. Press bearings (53 and 54) onto shaft (55). Snap retainer ring (52) into place. (344A)



H. Shaft Assembly Removed.

3. Slide shaft (55) and bearings (53 and 54) into frame (57) until retainer ring on bearing (54) comes in contact with frame (57). Place "O" ring (oil lubed only) (50) in place. (344A)

4. Fasten bearing cap (49) in position with capscrews (48). Insert grease seals (51A) and position slingers (47 and 47A) on the shaft. (344A)

5. The mechanical seal (27) (see Figure 1) cannot be installed as an assembly. It is necessary to have the seal seat properly in place in bracket (35) before the balance of parts can be added.

   Thoroughly inspect the seal cavity in seal bracket, checking for burrs or nicks which could damage flexible cup of mechanical seal. Apply a film of liquid dishwashing detergent (do not use oil or grease) to the flexible cup and seal seat. Insert seat in cup and install in seal bracket, taking care to seat it evenly and squarely.

   NOTE

   If it is not possible to insert seat with fingers, place the cardboard protecting ring furnished with seal over lapped face of seat and press into place with a piece of tubing having end cut square. Tubing should be slightly larger than the diameter of the shaft. Remove cardboard after seat is firmly seated.

6. On Model 344A pumps, mount bracket (35) by screwing capscrews (32) evenly into frame (57) to assure proper alignment. Turn all capscrews in an even amount. Fasten the bracket and frame to supports (41 and 64) by placing washers (40 and 63) over capscrews (39 and 62) and screwing them into position.

   On Model 341A and 342A pumps position bracket (35) on the motor and secure with capscrews (32). Tighten screws evenly to assure proper alignment.

Secure support (41) to bracket (35) with capscrews (39) and washers (40). Frame sizes 143 thru 184-JM Model 341A only.

7. If nameplate (34) was removed, install and attach with screws (33).

8. Wipe the sealing faces of the seat and seal washer clean. Replace pin (61) in sleeve if it was removed during disassembly. Apply a film of liquid dishwashing detergent to the washer and bellows of the seal and slide the remaining seal parts onto the sleeve making sure the washer is seated against the seal seat. Check the proper sequence of assembly as indicated in Figure 1. The shaft sleeve with the seal rotating assembly on it may now be replaced onto the motor shaft. Spring tension will probably prevent the sleeve from remaining in position axially until the impeller is locked against it.

9. Press wearing ring(s) (7 and 16) in casing (6) and bracket (35). Rings should not be hammered into place. Use a press, or clamp the parts in a bench vise, using wooden blocks to protect the rings. It may be necessary to pin or dowel the rings after assembly if the insert or casing has had rings replaced before, since each reassembly can stretch or tear metal and thereby loosen the fits. If the facilities are available, it is good practice to take a very light finish cut or to ream the inside diameter of the casing rings after pressing to restore roundness. When rings are pressed, they may get squeezed out of shape.

10. Coat the mating surfaces of impeller wear ring(s) (optional - 14 and 15) and impeller (11) with Locktite sealant grade 271. Replace wear rings, using the same care as for the case wear ring(s). If the rings are to be trued on a lathe, do not clamp the impeller so tightly that it is permanently distorted.

11. Carefully replace gasket (10) on motor end of impeller. Assembly key (12) and impeller (11) to motor shaft. Secure impeller with gasket (9B), washer (9A), capscrew seal (9C) and impeller screw (9).

12. Install the two pipe plugs (4) in the pump casing. Position the gasket (8) and casing (6) against the motor bracket and secure with screws (5). On Model 342A pumps position gasket (72) and set pump assembly in place. Tighten pump to base (73) with capscrews (39).

13. Replace all relief, cooling, flushings, or drain lines from the pump including compression connections (1 and 2) and tubing (3). Replace all grease fittings pipe plugs, tube vents and oiler assembly for oil lubricated units. Connect discharge piping and suction piping, if required. Make sure to install gaskets on the flanged connections. On Model 342A pumps replace plugs (74 and 75) in base elbow (73).

14. Read carefully the section of the manual titled INSTALLATION, especially those paragraphs referring to pump and coupling alignment.

15. Connect electricity to the motor.

STARTING PUMP AFTER REASSEMBLY

Do not start pump until all air and vapor has been bled and until making sure that there is liquid in the pump to provide the necessary lubrication. Without the fluid around it, the seal may be ruined in a few seconds of operation. It is possible that the mechanical seal may drip during the first few minutes to one hour of operation.

**Warning:** Hot Surface Hazard

If pumping hot water, insure guards or proper insulation is installed to protect against skin contact to hot piping or pump components. Failure to follow these instructions could result in serious personal injury, death or property damage.

**Warning:** Spraying Water Hazard

When servicing pump replace all gaskets and seals. Do not re-use old gaskets or seals. Failure to follow these instructions could result in serious personal injury, death or property damage.

**Warning:** Electrical Shock Hazard

All electrical connections are to be made by a qualified electrician in accordance with all codes and ordinances. Failure to follow these instructions could result in serious personal injury, death or property damage.

**Warning:** Electrical Overload Hazard

Insure all motors have properly sized overload protection. Failure to follow these instructions could result in serious personal injury, death or property damage.

**Warning:** Sudden Start-Up Hazard

Disconnect and lockout power source before servicing. Failure to follow these instructions could result in serious personal injury, death or property damage.

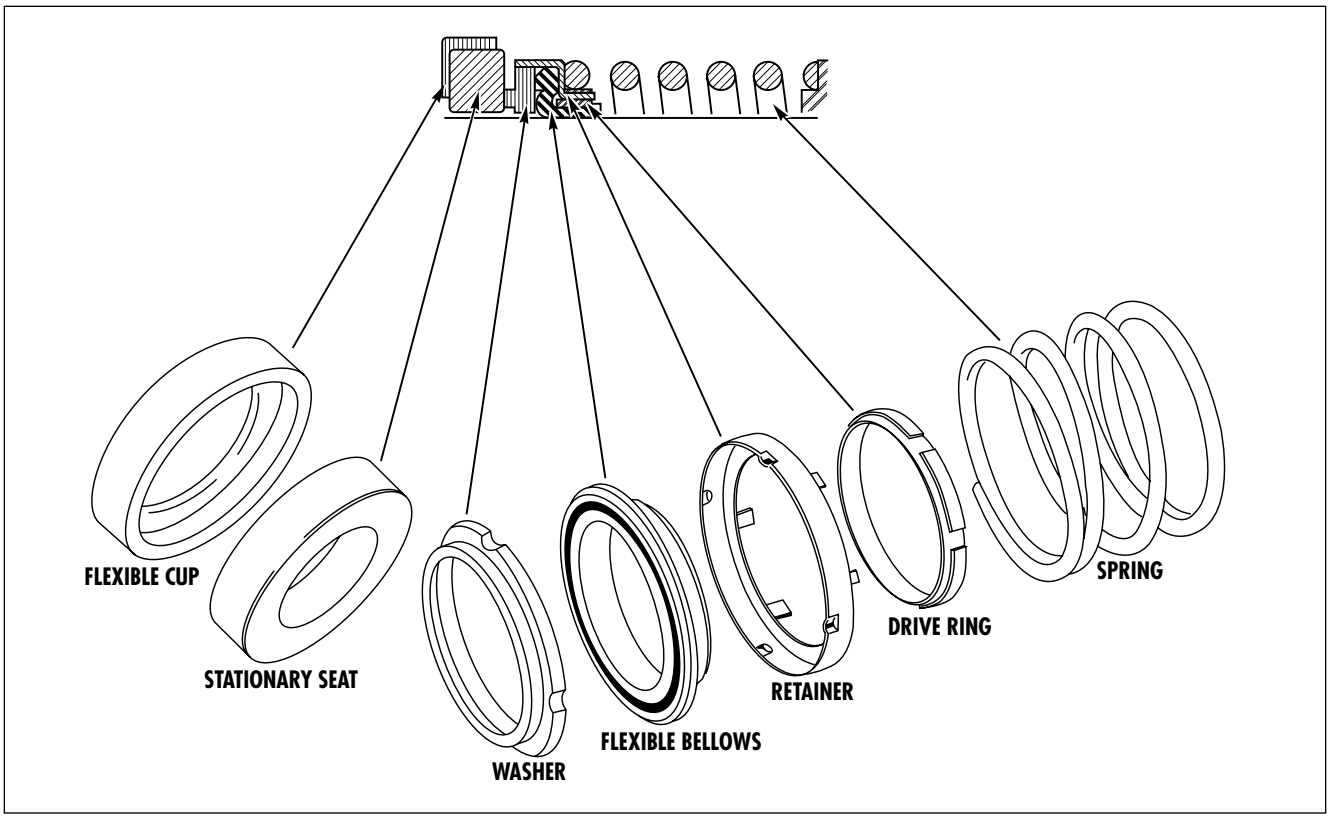



Figure 1. Mechanical Seal

MODEL 341A LIST OF PARTS

1. Elbow
2. Connector
3. Tubing
4. Plug, Pipe
5. Capscrew
6. Casing
7. Wear Ring
8. Gasket
9. Impeller Screw
9A. Washer
9B. Gasket
9C. Capscrew Seal
10. Gasket
11. Impeller
12. Impeller Key
14. Wear Ring
15. Wear Ring
16. Wear Ring
25. Sleeve
27. Seal
32. Capscrew
33. Screw
34. Nameplate
35. Bracket
39. Capscrew
40. Washer
41. Support
61. Pin

MODEL 342A LIST OF PARTS

1. Elbow
2. Connector
3. Tubing
4. Plug, Pipe
5. Capscrew
6. Casing
7. Wear Ring
8. Gasket
9. Impeller Screw
9A. Washer
9B. Gasket
9C. Capscrew Seal
10. Gasket
11. Impeller
12. Impeller Key
14. Wear Ring
15. Wear Ring
16. Wear Ring
25. Sleeve
27. Seal
32. Capscrew
33. Screw
34. Nameplate
35. Bracket
39. Capscrew
61. Pin
72. Gasket
73. Base
74. Plug, Pipe
75. Plug, Pipe

MODEL 344A LIST OF PARTS

1. Elbow
2. Connector
3. Tubing
4. Plug, Pipe
5. Capscrew
6. Casing
7. Wear Ring
8. Gasket
9. Impeller Screw
9A. Washer
9B. Gasket
9C. Capscrew Seal
10. Gasket
11. Impeller
12. Impeller Key
14. Wear Ring
15. Wear Ring
16. Wear Ring
25. Sleeve
27. Seal
32. Capscrew
33. Screw
34. Nameplate
35. Bracket
39. Capscrew
40. Washer
41. Support
42. Key
43. Grease Fitting
44. Tube, Vent
46. Plug, Pipe
47. Slinger
47A. Slinger
48. Capscrew
49. Bearing Cap
50. O-Ring
51. Seal
51A. Seal
52. Retaining Ring
53. Bearing
54. Bearing
55. Shaft
56. Plug, Pipe
57. Frame
58. Grease Fitting
59. Plug, Pipe
60. Oiler Assembly
61. Pin
62. Capscrew
63. Washer
64. Support

NOTES:

1. BRONZE FITTED CONSTRUCTION WILL BE FURNISHED AS STANDARD UNLESS SPECIFIED.
2. REFER TO FACTORY FOR SPECIAL ALLOYS.
3. AURORA PUMP RESERVES THE RIGHT TO SUBSTITUTE MATERIALS WITHOUT NOTICE
4. PIECE NUMBERS 14 AND 15 ARE NOT FURNISHED AS STANDARD, WHEN FURNISHED, IMPELLER MUST BE MODIFIED.
5. PIECE NUMBERS 39, 40, 41 USED ONLY WITH MOTOR FRAMES 143 THRU 184-JM ON MODEL 341A PUMPS.

**NOTE**

**WHEN ORDERING SPARE PARTS ALWAYS INCLUDE THE PUMP TYPE, SIZE, SERIAL NUMBER, AND THE PIECE NUMBER FROM THE EXPLODED VIEW IN THIS MANUAL.**

**ORDER ALL PARTS FROM YOUR LOCAL AUTHORIZED DISTRIBUTOR, FACTORY BRANCH SALES OFFICE OR THE FACTORY AT NORTH AURORA, ILLINOIS.**

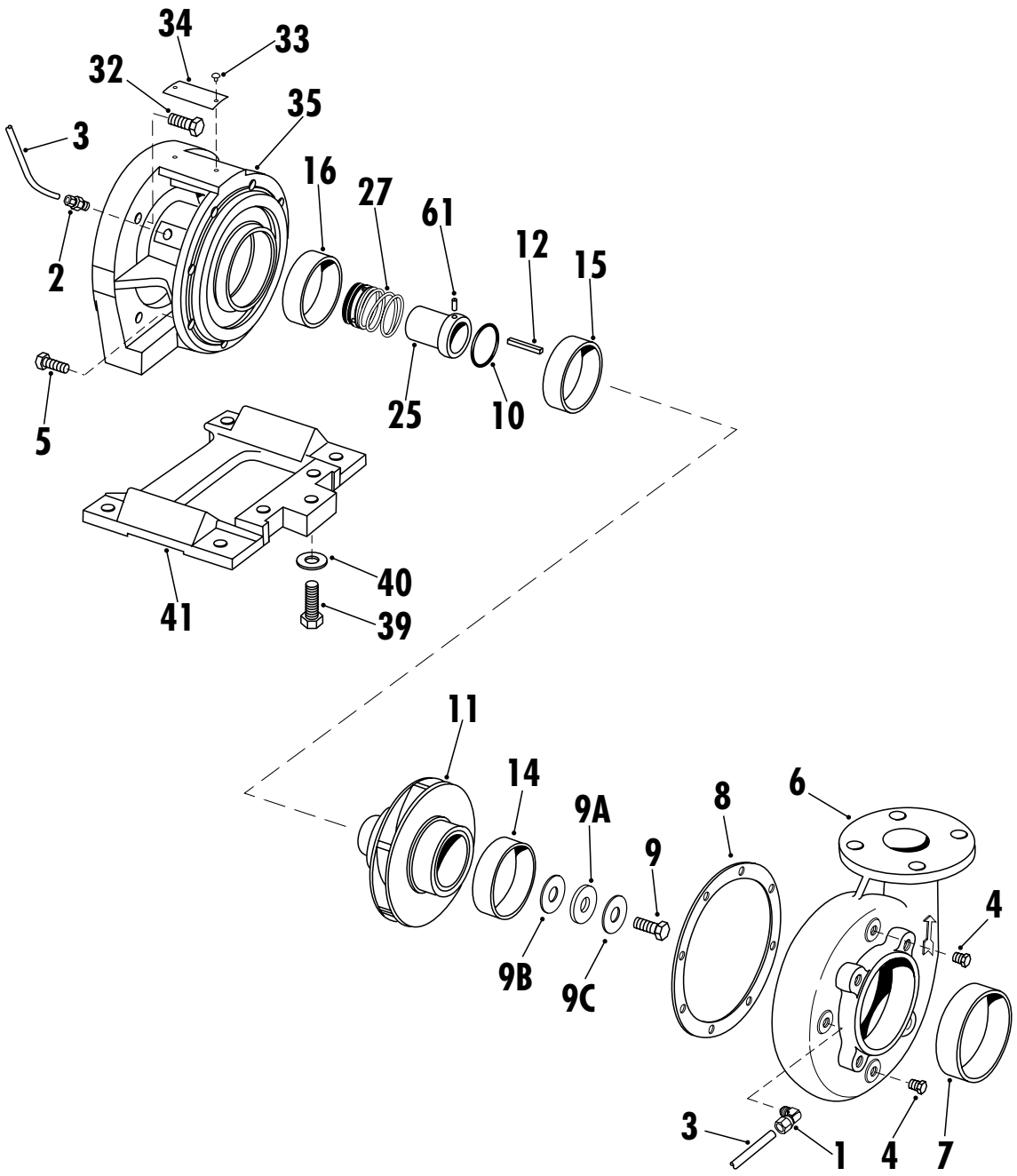



Figure 2. Model 341A Exploded View

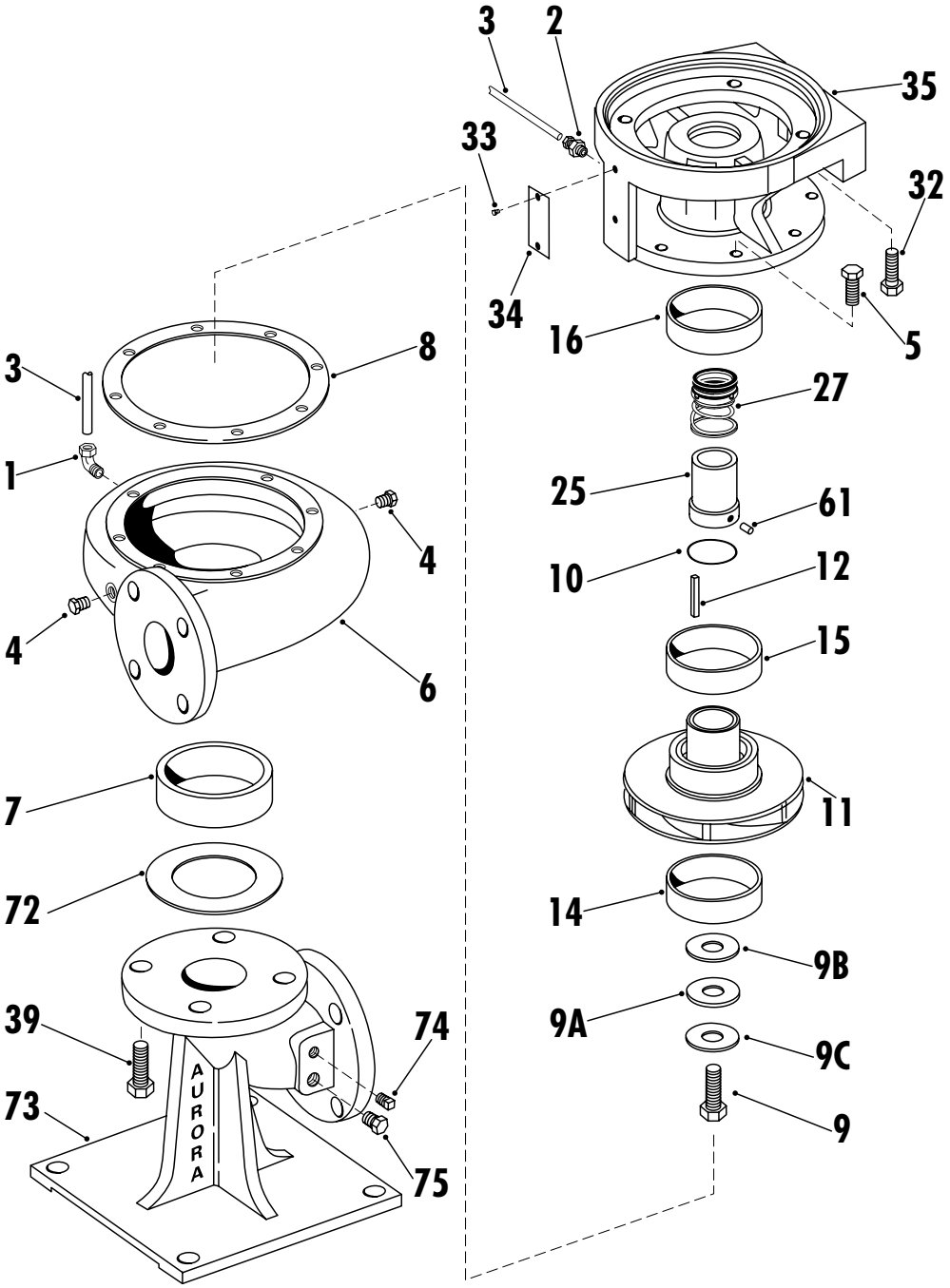



Figure 3. Model 342A Exploded View

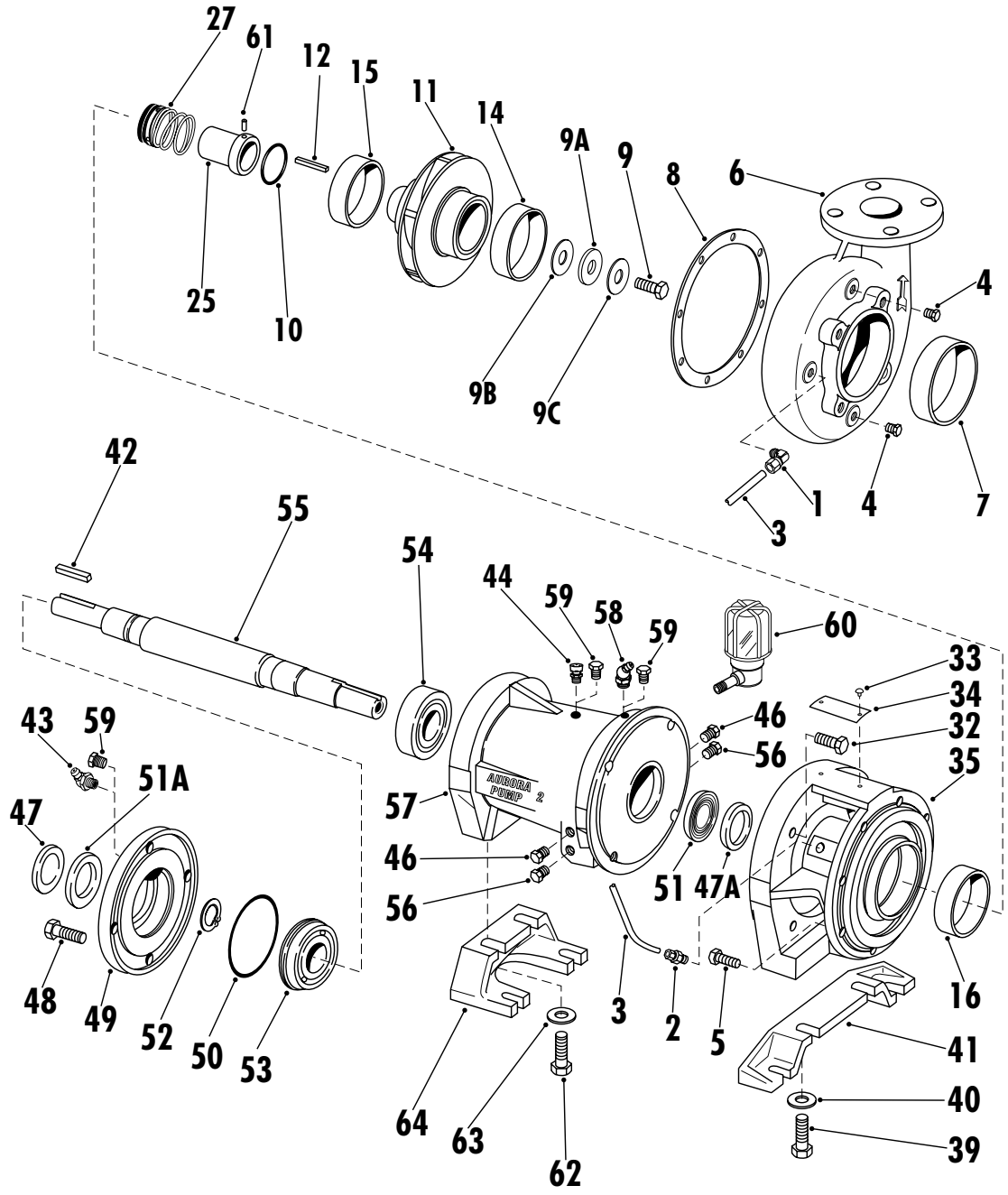



Figure 4. Model 344A Exploded View

SECTION **6** ITEM **360**
DATED **SEPTEMBER 1998**
SUPERSEDES ITEMS 361, 362, 364
DATED NOVEMBER 1970

# INSTRUCTION AND REPAIR MANUAL

## MODELS 361A, 362A AND 364A

**6**

NOTE

This repair manual is applicable to pump Models 361A, 362A and 364A. All photos illustrate Model 364A.

**ATTENTION: SAFETY WARNINGS:**

Read and understand all warnings before installation or servicing pump.

**OPERATIONAL LIMITS**: *

| | |
|---|---|
| Maximum Operating Pressure: | 175 psi at Temperatures to 150°F (65.6°C) |
| Maximum Operating Temperature: | 225°F (107°C) |

* See ASTM A126/ANSI B16.1 for pressure/temperature ratings of flanges.

**ELECTRICAL SAFETY:**

**Warning:** Electrical Shock Hazard

All electrical connections are to be made by a qualified electrician in accordance with all codes and ordinances. Failure to follow these instructions could result in serious personal injury, death or property damage.

**Warning:** Electrical Overload Hazard

Insure all motors have properly sized overload protection. Failure to follow these instructions could result in serious personal injury, death or property damage.

**Warning:** Sudden Start-Up Hazard

Disconnect and lockout power source before servicing. Failure to follow these instructions could result in serious personal injury, death or property damage.

**HIGH TEMPERATURE SAFETY:**

**Warning:** Hot Surface Hazard

If pumping hot water, insure guards or proper insulation is installed to protect against skin contact to hot piping or pump components. Failure to follow these instructions could result in serious personal injury, death or property damage.

**Warning:** Spraying Water Hazard

When servicing pump replace all gaskets and seals. Do not re-use old gaskets or seals. Failure to follow these instructions could result in serious personal injury, death or property damage.

**HIGH PRESSURE SAFETY:**

**Warning:** High Pressure Hazard

The pump is rated at a maximum of 175 psi at 150°F. Do not exceed this pressure. Install properly sized pressure relief valves in system. Failure to follow these instructions could result in serious personal injury, death or property damage.

**Warning:** Expansion Hazard

Water expands when heated. Install properly sized thermal expansion tanks and relief valves. Failure to follow these instructions could result in serious personal injury, death or property damage.

SERVICE

Your Aurora pump requires no maintenance other than periodic inspection, occasional cleaning and lubrication of bearings (Model 364A only). The intent of inspection is to prevent breakdown, thus obtaining optimum service life. The liquid end of the pump is lubricated by the fluid being pumped and therefore does not require periodic lubrication. The motor, however may require lubrication, in which case, the motor manufacturer's recommendation should be followed.

LUBRICATION OF IMPELLER SHAFT BEARINGS

The Model 364A pump is available with three options for lubricating the shaft bearings. They are:

1. Regreasable (standard)
2. Oil Lubrication
3. Sealed Bearings, Permanent Lubrication

Regreasable bearings will require periodic lubrication and can be accomplished by using the zerk or lubrication fittings in the cartridge cap and power frame. Lubricate the bearings at regular intervals using a grease of high quality. Polyurea base

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grease is recommended as lubricants for pumps operating in both wet and dry locations. Mixing of different brands of grease should be avoided due to possible chemical reactions between the brands which could damage the bearings. Accordingly, avoid grease of vegetable or animal base which can develop acids, as well as grease containing rosin, graphite, talc and other impurities. Under no circumstances should used grease be reused.

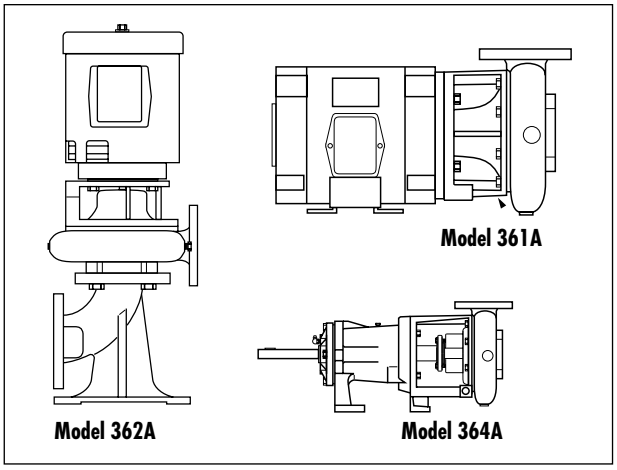
Over lubrication should be avoided as it may result in overheating and possible bearing failure. Under normal application, adequate lubrication is assured if the amount of grease is maintained at 1/3 to 1/2 the capacity of the bearing and adjacent space surrounding it.

In dry locations, each bearing will need lubrication at least every 600 hours of running time or every 6 to 12 months, whichever is more frequent. In wet locations the bearings should be lubricated at least after every 300 hours of running time or every 4 to 6 months, whichever is more frequent. A unit is considered to be installed in a wet location if the pump and motor are exposed to dripping water, to the weather, or to heavy condensation such as is found in unheated and poorly ventilated underground locations.

Oil lubricated bearings are optional on Model 364A pumps. A fixed oil level is maintained with the power frame by an oiler which allows visual indications of reserve oil.

At initial installation and before starting a unit that has been shut down for repairs or for any extended length of time, run enough 10W-30 weight motor oil through the oiler to maintain a constant oil level to insure that the bearing will never be without an oil supply. Oil will have to be added at intervals to maintain a constant level in the oiler. This interval can only be determined by experience.

Under working conditions, oil will breakdown and need to be replaced at regular intervals. The length of these intervals will depend on many factors. Under normal operation, in clean and dry locations, the oil should be changed about once a year. However, when the pump is exposed to dirt contamination, high temperatures (200°F or above) or a wet location, the oil may have to be changed every 2 to 3 months.




A. Assembled Units.

**CAUTION**

Use normal fire caution procedures when using any petroleum cleaner.

The motor which drives your Aurora pump may or may not require lubrication. Consult the manufacturer's recommendations for proper maintenance instructions.

REPAIRS

Before starting any work, insure the electrical power is locked out, the system pressure has been lowered to 0 psi and temperature of the unit is at a safe level.

The pump may be disassembled using the illustrations and text provided. Although complete disassembly is covered, it will seldom be necessary to completely disassemble your Aurora pump.

The illustrations accompanying the disassembly instructions show the pump at various stages of disassembly. The illustrations are intended to aid in the correct identification of the parts mentioned in the text.

Inspect removed parts at disassembly to determine if they can be reused. Ball bearings that turn roughly or show wear should be replaced. Cracked castings should never be reused. Scored or worn pump shafts should be replaced. Gaskets should be replaced at reassembly simply as a matter of economy. They are much less expensive to replace routinely than to replace singly as the need arises.

**Warning:** Sudden Start-Up Hazard

Disconnect and lockout power source before servicing. Failure to follow these instructions could result in serious personal injury, death or property damage.

**Warning:** Hot Surface Hazard

If pumping hot water, insure guards or proper insulation is installed to protect against skin contact to hot piping or pump components. Failure to follow these instructions could result in serious personal injury, death or property damage.

**Warning:** High Pressure Hazard

The pump is rated at a maximum of 175 psi at 150°F. Do not exceed this pressure. Install properly sized pressure relief valves in system. Failure to follow these instructions could result in serious personal injury, death or property damage.

**Warning:** Spraying Water Hazard

When servicing pump replace all gaskets and seals. Do not re-use old gaskets or seals. Failure to follow these instructions could result in serious personal injury, death or property damage.

DISASSEMBLY

Disassemble only what is needed to make repairs or accomplish inspection. (See Figure 2 for Model 361A, Figure 3 for Model 362A and Figure 3 for Model 364A.)

1. Disconnect and lockout power source to prevent drive unit from being energized during disassembly.

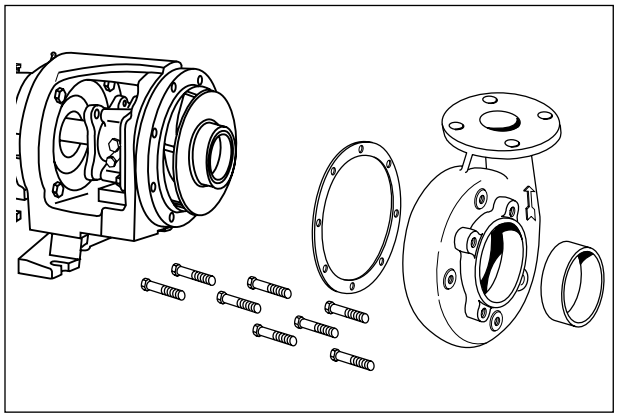
2. Unscrew the two drain plugs (4) from the casing (6). On Model 362A pumps, remove plugs (74 and 75) to drain pump. Also unscrew the two plugs (4) from casing (6).

3. Remove all relief, cooling, flushing or drain lines from pump, including compression connections (1 and 2) and tubing (3). The sealing tube assembly (optional 69, 70, 71 and 76) should be removed at this time. Break suction and discharge connections unless it is intended to remove the power frame or motor assembly and leave casing (6) in the line. On Model 362A pumps, break discharge connections only, unless it is desired to remove base (73). Remove capscrews (39) and lift pump assembly from base (73). Remove gasket (72).

4. On Model 364A pumps, remove the flexible coupling from between the pump and motor. Next unscrew the bolts that hold support(s) (41 and 64) to the base and slide the pump out to be worked on.

5. Remove capscrews (5) and pull casing (6) from bracket (35) and cover (26). Remove gasket (8).

6. Unscrew impeller screw (9) and remove washer (9A), taking care not to damage gasket (9B) or capscrew seal (9C).



B. Casing, Gasket, and Wear Ring Removed.

7. Slide impeller (11) and impeller key (12) from the shaft, again taking care not to damage gasket (10) located behind impeller. Remove gasket (10).

8. Wear ring(s) (7 and 16) are pressed into their housings with an interface fit and must be removed with a puller. New ring(s) should be used for reassembly since it is likely that during removal this fit will be lost. Do not remove wear rings if not being replaced.

9. Impeller wear rings (optional - 14 and 15) are pressed on and must be cut off if replacement is necessary. If they are turned off in a lathe, take care not to cut into the impeller.

10. The various types of stuffing boxes may be disassembled as follows:

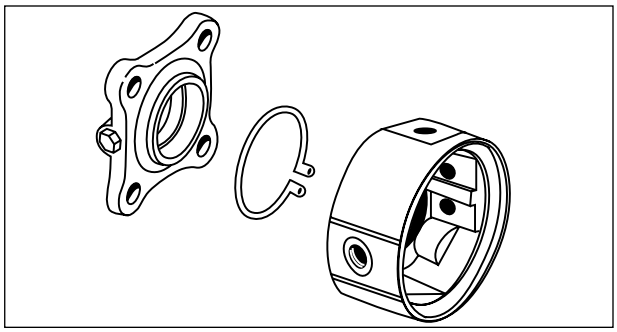
    PACKING (STANDARD, WATER COOLED, AND WITH LANTERN RING)

    A. Remove adjusting nuts (21), gland clamps (22), gland halves (23) and studs (24), if used. For standard pumps remove capscrews (65).

    B. Unscrew capscrews (20), (Not required on 7" bore pumps), or (5) and remove cover assembly (26). The throat of cover (26) should be checked for excessive wear.

    C. Shaft sleeve (25) is a slip fit on the shaft and should be easily removed unless the pump has been in service for a long time. In this case it may be necessary to use a puller. Take care to prevent damaging the surface of the sleeve. Replace the sleeve if it is grooved from wear. Pin (61) may be removed from sleeve (25) if necessary.

    D. All packing (28) and lantern ring (29), (If used), must now be removed from the packing box, and the cavity thoroughly cleaned to allow new packing to fit properly.

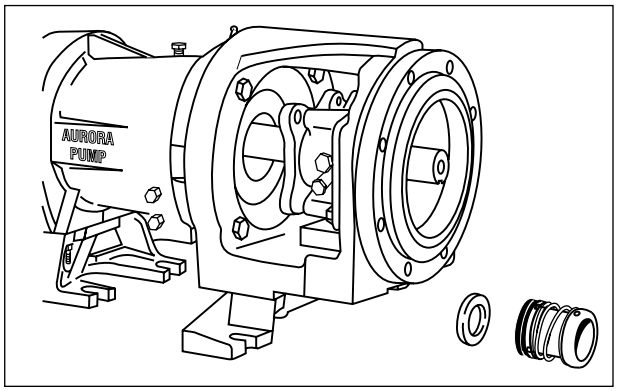


C. Water Jacket Removed.

MECHANICAL SEAL (OPTIONAL)

**CAUTION**

The mechanical seal (see Figure 1) is a precision product and must be treated as such. During removal, great care must be taken to avoid dropping any part of the seal. Take particular care not to scratch the lapped faces on the washer or the sealing seat. If any wear of the seal faces is noted, it is recommended to replace with a new seal during reassembly.




D. Mechanical Seal Removed.

A. Remove capscrews (65) and slide gland (23), (Including the seal flexible cup and stationary seat), from either cover assembly (26) or water jacket (18). Take care in moving gland (23) not to damage gasket (66).

B. Unscrew capscrews (20), (Not required on 7" bore pumps), or (5) and remove cover assembly (26). The throat of cover (26) should be checked for excessive wear.

C. Slide sleeve (25) with rotating parts of mechanical seal (27) from the shaft. The sleeve should be carefully cleaned to remove any residue that may be remaining in the seal area. The rubber in the seal may have become partially adhered to the sleeve. The sleeve must also be checked for abrasion or corrosion that can occur when fluid residue penetrates between the seal (27) and sleeve (25). The sleeve under the seal may be polished lightly to a 32RMS finish before reassembly. Do not reuse a pitted sleeve. Pin (61) may be removed from the sleeve (25) if necessary.

D. Remove gland (23) and gasket (66).

E. The seal flexible cup and stationary seat should be pressed out of the gland (23) and the cavity cleaned of all residue. Make sure that the 1/32 inch radius in the seal seat cavity is not damaged during disassembly since a sharp edge can easily cut the flexible cup during reassembly.

11. The water jacket (optional - 18) may now be removed by snapping retaining ring (17) off cover (26). Note position of water jacket to assure proper alignment during reassembly. (See illustration C.) Slide water jacket (18) off cover (26) taking care not to damage gaskets (19 and 19A). Remove gaskets (19 and 19A).

12. On Model 364A pumps, remove capscrews (39 and 62) and washers (40 and 63) to take off supports (41 and 64). On Model 361A pumps frame sizes 143 thru 184 JP only. Unscrew capscrews (39) and remove washers (40), and support (41) from bracket (35).

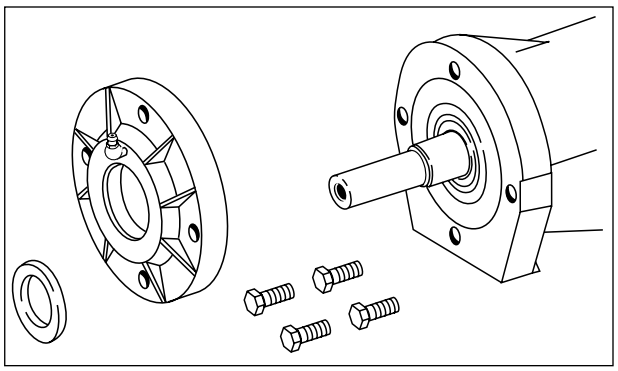
13. Unscrew capscrews (32) to remove bracket (35) from frame (57) on Model 364A or motor on Models 361A and 362A.

14. On Model 364A pumps, remove key (42) from the shaft and remove slingers (47).

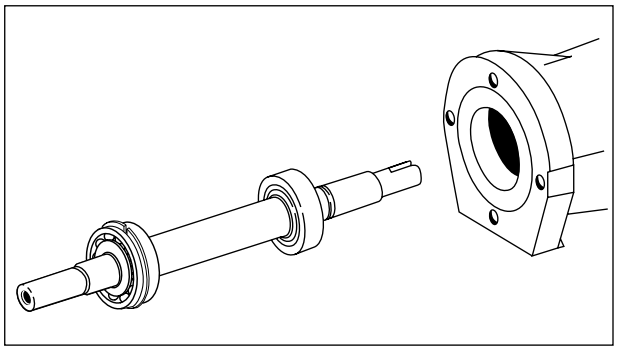
15. Unscrew capscrews (48) and remove bearing cap (49). Remove gasket (50) and retainer ring (52).

    Slide out shaft (55) and bearings (53 and 54). Since bearings (53 and 54) are press fitted on the shaft, they will have to be pulled or pressed off the shaft. Remove grease seals (51) from frame (57), and bearing cap (49).

16. Remove screws (33) and nameplate (34) only if replacement is necessary.



E. Bearing Cap and Slinger Removed.



F. Shaft Assembly Removed.

REASSEMBLY

Reassembly will generally be in reverse order of disassembly. If disassembly was not complete, use only those steps related to your particular repair program.

1. Press grease seals (51) into frame (57), and bearing cap (49). (364A)

2. Press bearings (53 and 54) onto shaft (55). Snap retainer ring (52) into place. (364A)

3. Slide shaft (55) and bearings (53 and 54) into frame (57) and place gasket (50) in place. (364A)

4. Fasten bearing cap (49) in position with capscrews (48). Position slingers (47) on the shaft. (364A)

5. On Model 364A pumps, position bracket (35) on the frame (57) and secure with capscrews (32). Tighten screws evenly to assure proper alignment. On Model 361A and 362A, position bracket (35) on the motor and secure with capscrews (32). Tighten screws evenly to assure proper alignment. On Model 361A, frame sizes 143 to 184 JP only. Fasten support (41) to bracket (35) with washers (40) and capscrews (39).

6. If nameplate (34) was removed, install and attach with screws (33).

7. Replace wear ring(s) (7 and 16), in casing (6) and cover (26). Rings should not be hammered into place. Use a press, or clamp the parts in a bench vise, using wooden blocks to protect the rings. It may be necessary to pin or dowel the rings after assembly if the cover or casing has had rings replaced before, since each reassembly can stretch or tear metal and thereby loosen the fits. If the facilities are available, it is good practice to take a very light finish cut or to ream the inside diameter of the casing rings after pressing to restore roundness. When rings are pressed, they may get squeezed out of shape.

8. Coat the mating surfaces of impeller wear ring(s) (optional - 14 and 15) and impeller (11) with Locktite sealant grade 271. Replace wear rings, using the same care as for the case wear ring(s). If the rings are to be trued on a lathe, do not clamp the impeller so tightly that it is permanently distorted.

9. If water jacket (optional - 18) was removed it may be replaced at this time. Replace gaskets (19 and 19A) on cover (26) and carefully slide on water jacket making sure desired alignment is achieved. (See illustration C.) Snap retaining ring (17) behind water jacket (18) in groove provided on cover (26).

10. Reassemble the various types of stuffing boxes as follows:

    PACKING (STANDARD, WATER COOLED AND WITH LANTERN RING)

    A. If gland studs (24) are used, thread and tighten into either cover (26) or water jacket (18). Place one ring of packing (28) into the cover (26). On successive rings of packing stagger the packing joints to prevent excessive leakage through the packing box. If a lantern ring (29) is used, place a second ring of packing (28) into the cover before installing lantern ring.

    **CAUTION**

    There must be two (2) rings of packing in front of lantern ring (29) to assure proper alignment between the lantern ring and the sealing tube connection (69) in the cover (26). Install remaining packing rings (28). Each ring should be tapped firmly into place with a wood or metal bushing.

    B. Replace pin (61) into the shaft sleeve (25) and slide the sleeve (25) through the packing making sure the pin (61) end of the sleeve (25) is in the cover side opposite the gland halves (23).

    C. Replace gland halves (23) and gland clamps (22) on studs (24). Tighten nuts (21) down finger tight. For standard pumps replace gland halves (23) and place gland clamps (22) over capscrews (65). Tighten capscrews (65) finger tight into either cover assembly (26) or water jacket (18).

    NOTE

    The slots in gland halves (23) should be diagonal to pump horizontal center line.

    D. The cover assembly (26) as a unit may be replaced onto the motor shaft. Align key groove to facilitate impeller reassembly. The cover is held to motor bracket (35) by either capscrews (5) or (20). These should be installed and tightened at this time.

11. When the pump is returned to service, additional care must be given to packing box to insure proper packing life. It is necessary to allow 60 to 120 drops leakage per minute through the packing for lubrication purposes. If the flow rate is other than this, the gland nuts or capscrews should be either loosened or tightened one quarter turn at a time to acquire the correct leakage (both nuts or capscrews must be turned equally to prevent cocking of the gland). It will take approximately ten minutes at any one gland setting before the leakage rate will stabilize. When in doubt, choose the greater leakage rate since overly tight packing will ruin not only the packing, but the sleeve as well.

    MECHANICAL SEAL (OPTIONAL)

    The mechanical seal (27), (see Figure 1), should not be installed as an assembly. It is necessary to have the seal seat properly in place before the balance of parts can be added.

    A. Wipe the sealing faces of the seat and seal washer clean. Apply a film of liquid dishwashing detergent (do not use oil or grease) to the flexible bellows in the rotating assembly and shaft sleeve (25). Slide the entire rotating assembly onto the sleeve making sure that the carbon washer faces away from the step in the sleeve.

    B. Thoroughly inspect the gland (23), checking for burrs or nicks which could damage flexible cup of mechanical seal. Apply a film of liquid dishwashing detergent (do not use oil or grease) to the flexible cup. Insert seat in cup and install in gland (23).

    NOTE

    If it is not possible to insert seat with fingers, place cardboard protecting ring furnished with seal over lapped face of seat and press into place with a piece of tubing having end cut square. The tubing should be slightly larger than the diameter of the shaft. Remove cardboard after seat is firmly in place.

    Carefully slip the seal gland assembly (23) over the shaft with the stationary seat facing away from the motor. Insert gasket (66) over shaft.

    C. The shaft sleeve with the seal rotating assembly on it may now be replaced on the shaft. Carefully slide the seal gland (23) and gasket (66) onto the sleeve before seating the sleeve (25) against the shaft shoulder.

    D. Carefully slip cover assembly (26) over the shaft into its original position and secure with either capscrews (20 or 5).

    E. Position seal gland (23) and gasket (66) onto the cover (26) taking care to seat it evenly and squarely. Secure by tightening capscrews (65) evenly. Spring tension will probably prevent the sleeve from remaining in position axially until impeller is locked against it.

12. Carefully place gasket (10) on motor end of impeller. Assemble key (12) and impeller (11) to motor shaft. Secure impeller with gasket (9B), washer (9A), capscrew seal (9C) and impeller screw (9).

13. On Model 364A pumps, fasten the supports (41 and 64) to bracket (35) and frame (57) with washers (40 and 63) and capscrews (39 and 62).

14. Install the pipe plugs (4) in the pump casing (6). Position gasket (8) and casing (6) against the cover (26) and secure with capscrews (20 or 5).

15. Reassemble sealing tube assembly (optional - 69, 70, 71, and 76) in water jacket (optional - 18) as shown in illustration "C". Replace all relief, cooling, flushings, or drain lines from the pump including compression connections (1 and 2) and tubing (3). On Model 362A pumps, position gasket (72) and set pump assembly in place. Tighten pump to base (73) with capscrews (39).

    Replace plugs (74 and 75). Replace all grease fittings, pipe plugs, tube vents and oiler assembly for oil lubricated units.

16. Secure suction and discharge piping to the pump. Make sure to install gaskets on flanged connections.

17. Connect electricity to the motor.

18. Read carefully the section of the manual titled INSTALLATION, especially those paragraphs referring to pump and coupling alignment.

STARTING PUMP AFTER REASSEMBLY

Do not start pump until all air and vapor has been bled and until making sure that there is liquid in the pump to provide the necessary lubrication. Without the fluid around it, the seal may be ruined in a few seconds of operation. It is possible that the mechanical seal may drip during the first few minutes to one hour of operation.

**Warning:** Hot Surface Hazard

If pumping hot water, insure guards or proper insulation is installed to protect against skin contact to hot piping or pump components. Failure to follow these instructions could result in serious personal injury, death or property damage.

**Warning:** Spraying Water Hazard

When servicing pump replace all gaskets and seals. Do not re-use old gaskets or seals. Failure to follow these instructions could result in serious personal injury, death or property damage.

**Warning:** Electrical Shock Hazard

All electrical connections are to be made by a qualified electrician in accordance with all codes and ordinances. Failure to follow these instructions could result in serious personal injury, death or property damage.

**Warning:** Electrical Overload Hazard

Insure all motors have properly sized overload protection. Failure to follow these instructions could result in serious personal injury, death or property damage.

**Warning:** Sudden Start-Up Hazard

Disconnect and lockout power source before servicing. Failure to follow these instructions could result in serious personal injury, death or property damage.

# READ BEFORE INITIAL STARTING OR STARTING AFTER REASSEMBLY

## WARNING:

On the 364A with a 15" impeller on a #21 power frame, reverse rotation will destroy the pump.

You must make sure that the motor rotates in the proper direction BEFORE coupling the motor to the pump. Start the drive motor to make sure the direction of rotation is the same as the direction indicated by the arrow on the pump casing.

The arrow on the casing always points clockwise when the pump is viewed from the motor end.

On 3 phase motors, you can reverse one of the power leads if the motor is not rotating clockwise.

## WARNING:

Reverse rotation will quickly destroy the pump.

After you are sure the motor is rotating clockwise you can couple the motor to the pump. Again, after coupling but BEFORE starting it is important to check coupling and shaft alignment. Use a standard dial indicator to align the motor shaft and pump shaft to within 0.003"-0.005".

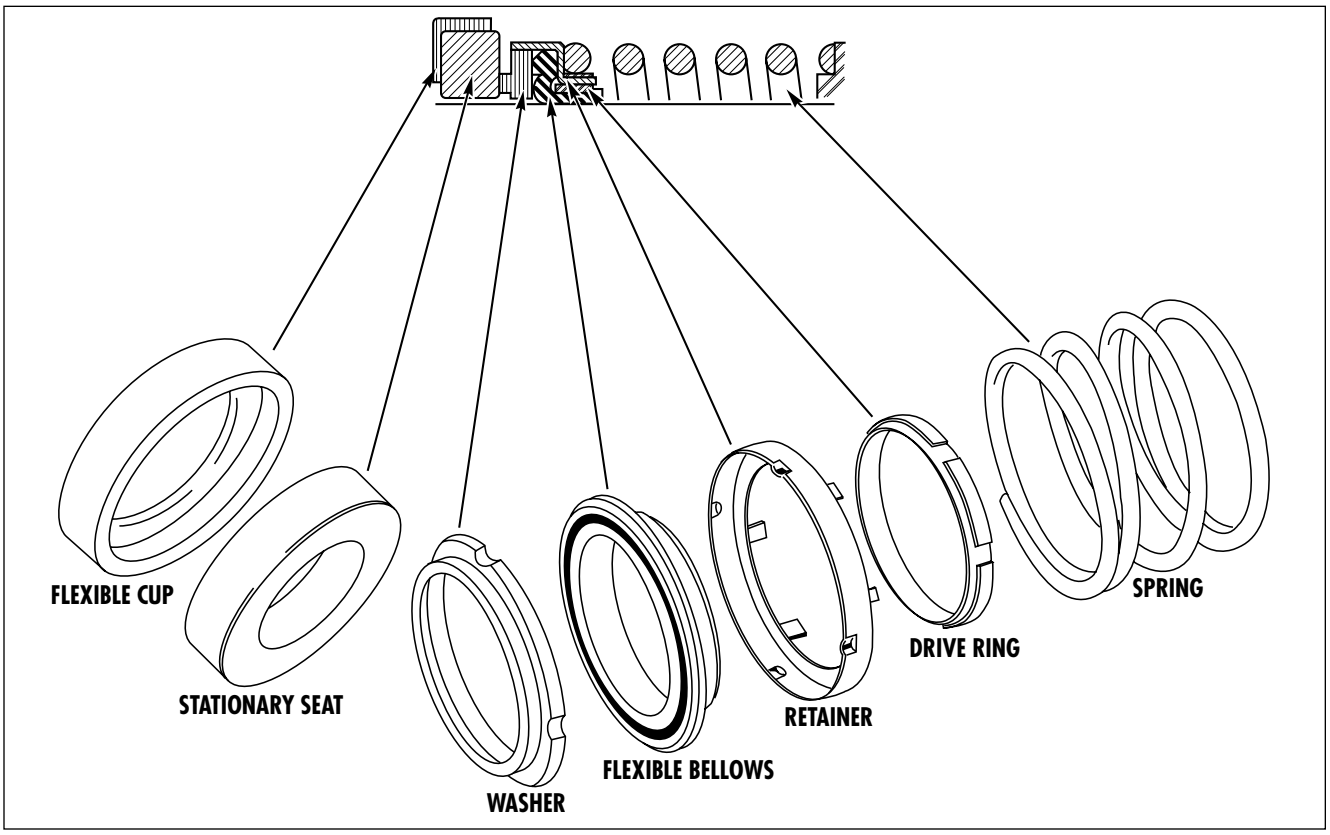



Figure 1. Mechanical Seal (optional)

MODEL 361A LIST OF PARTS

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 1. | Elbow | 9B. | Gasket | 19. | Gasket | 26. | Cover |
| 2. | Connector | 9C. | Capscrew Seal | 19A. | Gasket | 27. | Seal |
| 3. | Tubing | 10. | Gasket | 20. | Capscrew | 28. | Packing |
| 4. | Plug, Pipe | 11. | Impeller | | (not shown) | 29. | Lantern Ring |
| 5. | Capscrew | 12. | Impeller Key | 21. | Nut | 32. | Capscrew |
| 6. | Casing | 14. | Wear Ring | 22. | Clamp | 33. | Screw |
| 7. | Wear Ring | 15. | Wear Ring | 23. | Gland | 34. | Nameplate |
| 8. | Gasket | 16. | Wear Ring | 24. | Stud | 35. | Bracket |
| 9. | Impeller Screw | 17. | Retaining Ring | 25. | Sleeve | 39. | Capscrew |
| 9A. | Washer | 18. | Jacket | | | | |

MODEL 362A LIST OF PARTS

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 1. | Elbow | 11. | Impeller | 23. | Gland | 65. | Capscrew |
| 2. | Connector | 12. | Impeller Key | 24. | Stud | 66. | Gasket |
| 3. | Tubing | 14. | Wear Ring | 25. | Sleeve | 67. | Plug, Pipe |
| 4. | Plug, Pipe | 15. | Wear Ring | 26. | Cover | 68. | Plug, Pipe |
| 5. | Capscrew | 16. | Wear Ring | 27. | Seal | 69. | Nipple |
| 6. | Casing | 17. | Retaining Ring | 28. | Packing | 70. | Gasket |
| 7. | Wear Ring | 18. | Jacket | 29. | Lantern Ring | 71. | Locknut |
| 8. | Gasket | 19. | Gasket | 32. | Capscrew | 72. | Gasket |
| 9. | Impeller Screw | 19A. | Gasket | 33. | Screw | 73. | Base |
| 9A. | Washer | 20. | Capscrew | 34. | Nameplate | 74. | Plug, Pipe |
| 9B. | Gasket | | (not shown) | 35. | Bracket | 75. | Plug, Pipe |
| 9C. | Capscrew Seal | 21. | Nut | 39. | Capscrew | 76. | Coupling, Pipe |
| 10. | Gasket | 22. | Clamp | 61. | Pin | | |

MODEL 364A LIST OF PARTS

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 1. | Elbow | 17. | Retaining Ring | 35. | Bracket | 55. | Shaft |
| 2. | Connector | 18. | Jacket | 39. | Capscrew | 56. | Plug, Pipe |
| 3. | Tubing | 19. | Gasket | 40. | Washer | 57. | Frame |
| 4. | Plug, Pipe | 19A. | Gasket | 41. | Support | 58. | Grease Fitting |
| 5. | Capscrew | 20. | Capscrew | 42. | Key | 59. | Plug, Pipe |
| 6. | Casing | | (not shown) | 43. | Grease Fitting | 60. | Oiler Assembly |
| 7. | Wear Ring | 21. | Nut | 44. | Tube, Vent | 61. | Pin |
| 8. | Gasket | 22. | Clamp | 46. | Plug, Pipe | 62. | Capscrew |
| 9. | Impeller Screw | 23. | Gland | 47. | Slinger | 63. | Washer |
| 9A. | Washer | 24. | Stud | 47A. | Slinger | 64. | Support |
| 9B. | Gasket | 25. | Sleeve | 48. | Capscrew | 65. | Capscrew |
| 9C. | Capscrew Seal | 26. | Cover | 49. | Bearing Cap | 66. | Gasket |
| 10. | Gasket | 27. | Seal | 50. | Gasket | 67. | Plug, Pipe |
| 11. | Impeller | 28. | Packing | 51. | Seal | 68. | Plug, Pipe |
| 12. | Impeller Key | 29. | Lantern Ring | 51A. | Seal | 69. | Nipple |
| 14. | Wear Ring | 32. | Capscrew | 52. | Retaining Ring | 70. | Gasket |
| 15. | Wear Ring | 33. | Screw | 53. | Bearing | 71. | Locknut |
| 16. | Wear Ring | 34. | Nameplate | 54. | Bearing | 76. | Coupling, Pipe |

NOTES:

1. BRONZE FITTED CONSTRUCTION WILL BE FURNISHED AS STANDARD UNLESS SPECIFIED.
2. REFER TO FACTORY FOR SPECIAL ALLOYS.
3. AURORA PUMP RESERVES THE RIGHT TO SUBSTITUTE MATERIALS WITHOUT NOTICE
4. PIECE NUMBERS 14 AND 15 ARE NOT FURNISHED AS STANDARD, WHEN FURNISHED, IMPELLER MUST BE MODIFIED.
5. PIECE NUMBERS 39, 40, 41 USED ONLY WITH MOTOR FRAMES 143 THRU 184-JM ON MODEL 361A PUMPS.

**NOTE**

**WHEN ORDERING SPARE PARTS ALWAYS INCLUDE THE PUMP TYPE, SIZE, SERIAL NUMBER, AND THE PIECE NUMBER FROM THE EXPLODED VIEW IN THIS MANUAL.**

**ORDER ALL PARTS FROM YOUR LOCAL AUTHORIZED DISTRIBUTOR, FACTORY BRANCH SALES OFFICE OR THE FACTORY AT NORTH AURORA, ILLINOIS.**

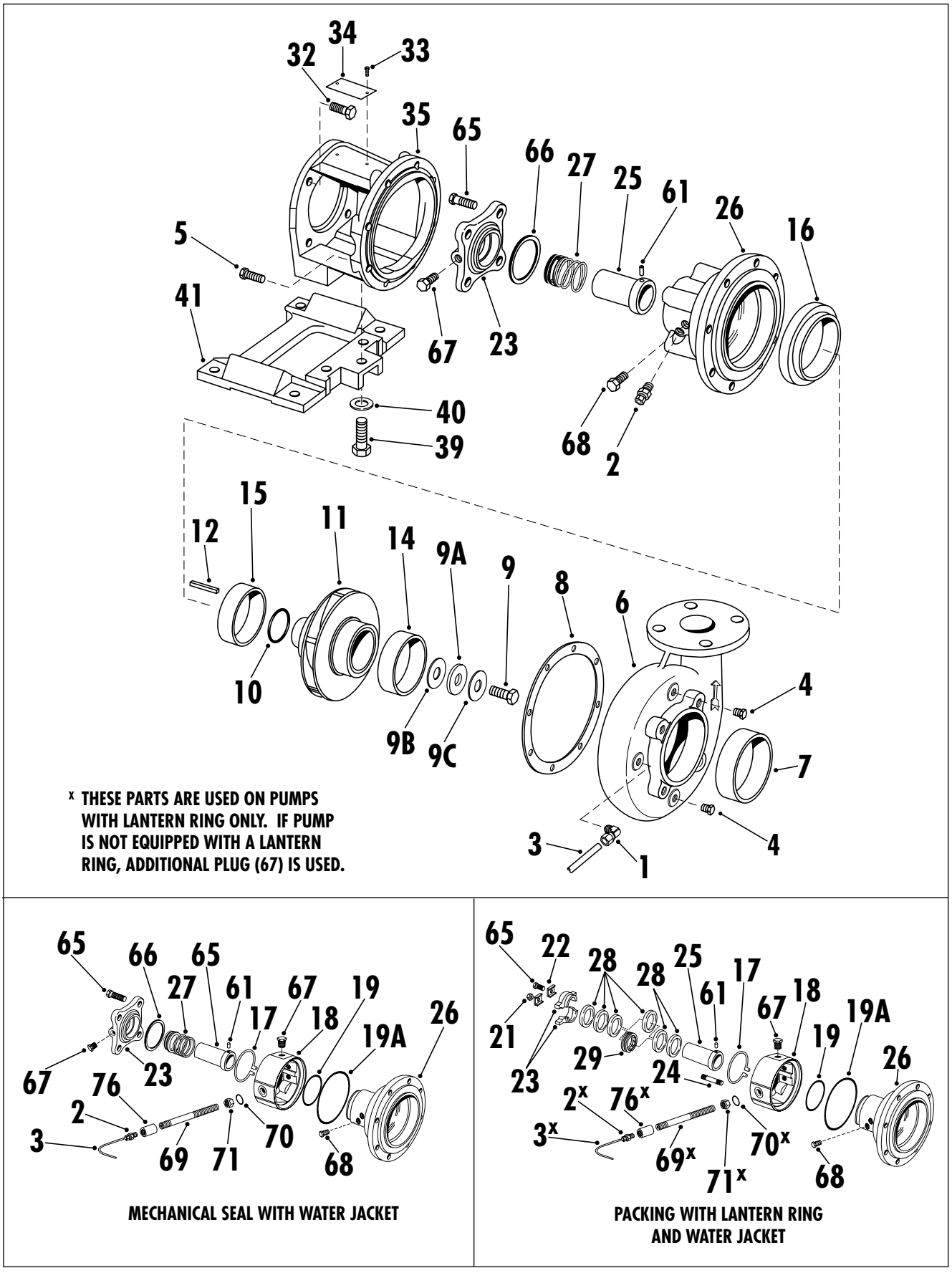
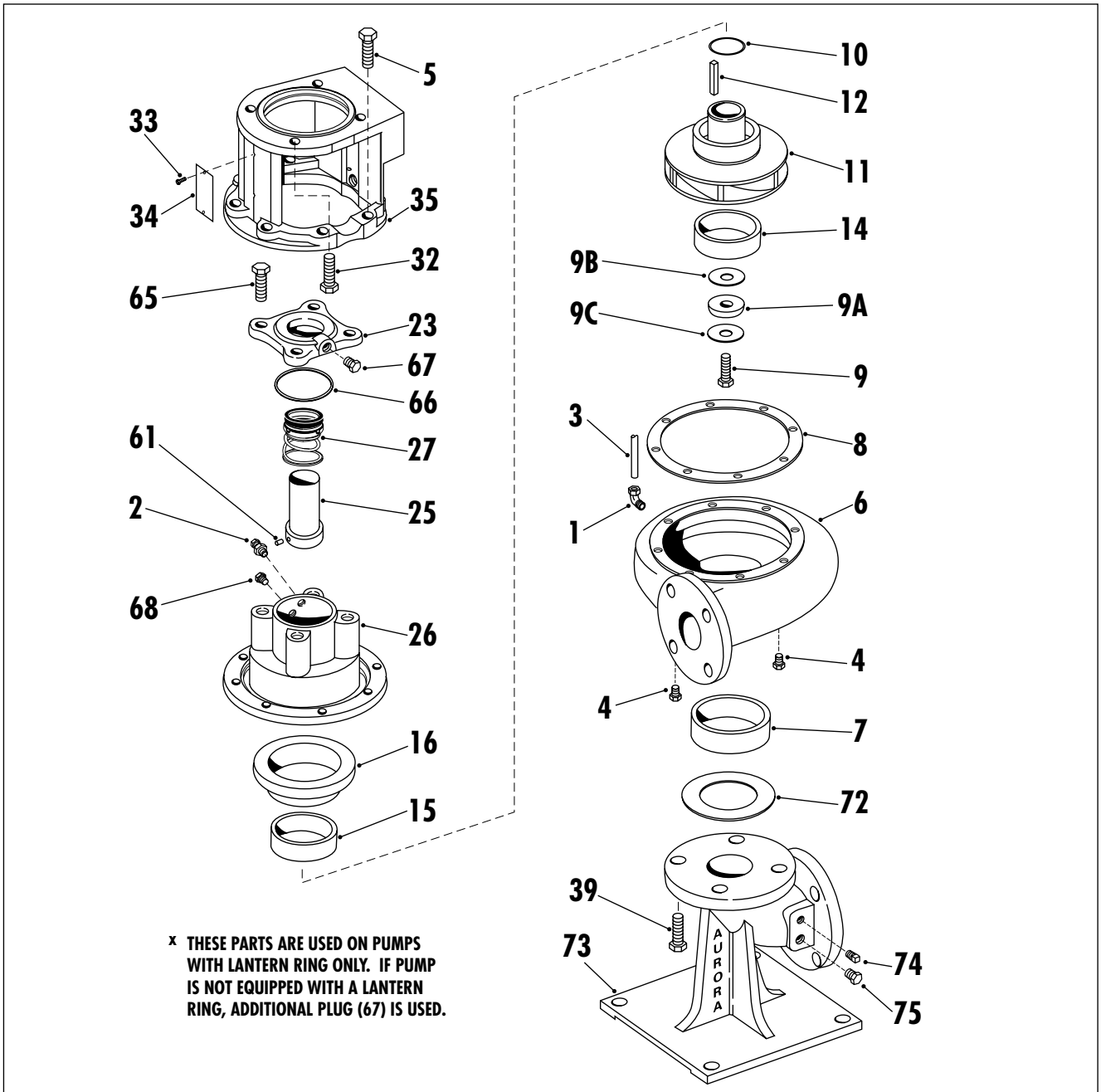
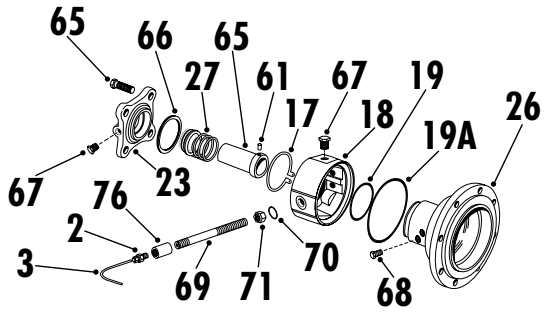
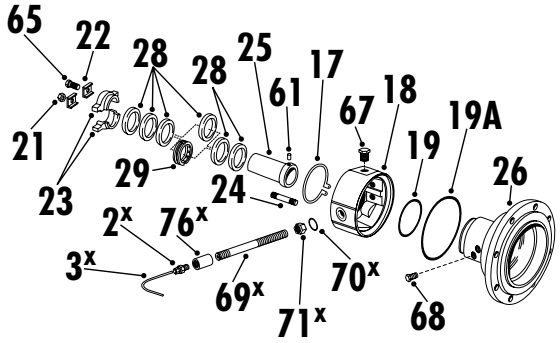



Figure 2. Exploded View



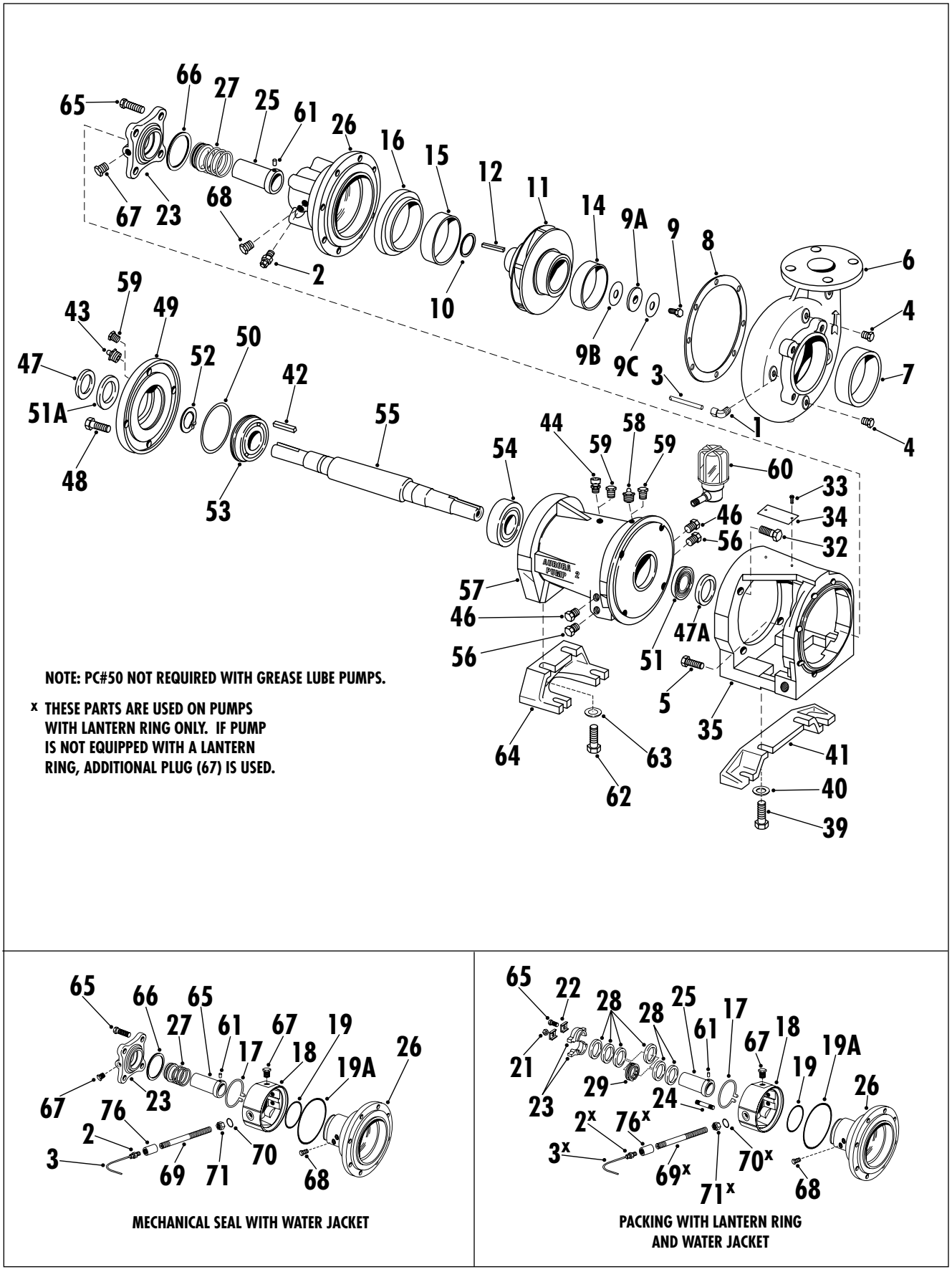




MECHANICAL SEAL WITH WATER JACKET




PACKING WITH LANTERN RING AND WATER JACKET

Figure 3. Exploded View







MECHANICAL SEAL WITH WATER JACKET




PACKING WITH LANTERN RING AND WATER JACKET

Figure 4. Exploded View

**NOTE:**
Aurora Pump reserves the right to make revisions to its products and their specifications, this bulletin and related information without notice

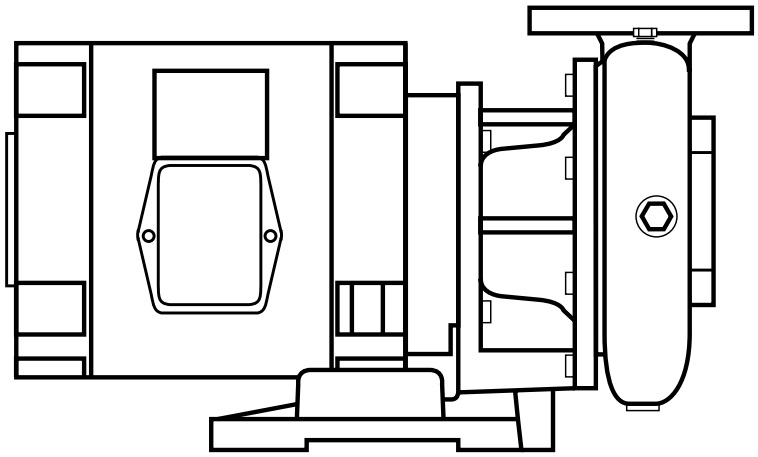
AURORA®

PENTAIR PUMP GROUP

**Aurora Pumps**
800 Airport Road
North Aurora, IL 60542
phone: 630-859-7000
fax: 630-859-7060

SUPERSEDES 360P PAGE 1
DATED JUNE 1998

# 340A SERIES
# REPAIR PARTS INDEX



READ AND UNDERSTAND THE PUMP AND MOTOR INSTRUCTIONS BEFORE ATTEMPTING TO INSTALL, DISASSEMBLE OR REPAIR THE PUMP

AURORA®
Pentair Pump Group

# 340A SERIES
# REPAIR PARTS INDEX

## TABLE OF CONTENTS


| PUMP MODEL | DESCRIPTION | PAGE |
|---|---|---|
| 341A | Horizontal Close Coupled | |
| | Exploded view and piece numbers | 3 |
| 342A | Vertical Close Coupled | |
| | Exploded view and piece numbers | 4 |
| 344A | Horizontal Power Frame Mounted | |
| | Exploded view and piece numbers | 5 |

| PUMP SIZE | PAGE |
|---|---|
| 1-1/4 x 1-1/2 x 7 thru 4 x 4 x 7B | |
| Part Numbers | 6 - 8 |
| 1-1/4 x 1-1/2 x 9B thru 6 x 6 x 9 | |
| Part numbers | 9 - 11 |
| 1-1/2 x 2 x 11 thru 6 x 6 x 11A | |
| Part numbers | 12 - 14 |
| 1-1/2 x 2 x 12 thru 6 x 6 x 12A | |
| Part numbers | 15- 17 |


THIS CHART FOR USE WITH **MODEL 344A PUMPS ONLY** TO DETERMINE POWER FRAME SIZE BASED ON THE PUMP SIZE AND OPERATING SPEED.

| PUMP SIZE | 3500 | 1750 | 1150 |
|---|---|---|---|
| 1-1/4 x 1-1/2 x 7 | 1 | 1 | - |
| 1-1/4 x 1-1/2 x 9B | - | 1 | - |
| 1-1/2 x 2 x 7 | 1 | 1 | - |
| 1-1/2 x 2 x 9A | - | 1 | - |
| 1-1/2 x 2 x 9B | - | 1 | - |
| 1-1/2 x 2 x 9C | 2 | 1 | - |
| 1-1/2 x 2 x 11 | 3 | 2 | 2 |
| 1-1/2 x 2 x 12 | - | 2 | 2 |
| 2 x 2-1/2 x 7A | 2 | 1 | - |
| 2 x 2-1/2 x 7B | 1 | 1 | - |
| 2 x 2-1/2 x 9 | 3 | 1 | - |
| 2 x 2-1/2 x 12 | - | 2 | 2 |
| 2 x 3 x 11 | - | 2 | 2 |
| 2-1/2 x 3x 7A | 1 | 1 | - |
| 2-1/2 x 3 x 7B | 2 | 1 | - |
| 2-1/2 x 3 x 9 | 3 | 1 | - |
| 2-1/2 x 3 x 12 | - | 2 | 2 |
| 3 x 4 x 9A | 3 | 1 | - |
| 3 x 4 x 9B | 3 | 1 | - |
| 3 x 4 x 11 | - | 2 | 2 |
| 3 x 4 x 12 | - | 3 | 2 |
| 4 x 4 x 7A | 2 | 1 | - |
| 4 x 4 x 7B | 2 | 1 | - |
| 4 x 5 x 9A | 3 | 2 | - |
| 4 x 5 x 9B | - | 2 | - |
| 4 x 5 x 11 | - | 2 | 2 |
| 4 x 5 x 12 | - | 3 | 2 |
| 5 x 6 x 11 | - | 3 | 2 |
| 5 x 6 x 12 | - | 3 | 2 |
| 6 x6 x9 | - | 2 | 2 |
| 6 x 6 x 11 | - | 3 | 2 |
| 6 x 6 x 11A | - | 3 | 2 |
| 6 x 6 x 12 | - | 3 | 3 |
| 6 x 6 x 12A | - | 3 | - |

Power Frame #1 - use **(S)** parts.
Power Frame #2 - use **(L)** parts.
Power Frame #3 - use **(L)** parts.

REFER TO NOTES 1 AND 2 FOR **MODEL 341A AND 342A** CLOSE COUPLED PUMPS.

**NOTES:**

1) Part number 9, 10, 11, 12, 25 and 27 are listed with a letter **(S)** or **(L)** indicating the small or large shaft used to build the 340A series pumps.

2) To determine when to use **(S)** or **(L)** parts, in addition to the pump size, it is also necessary to have the close coupled motor frame number for 341A and 342A pumps. Motor frame 215JM and smaller use **(S)** parts. Motor frame 254JM and larger use **(L)** parts.

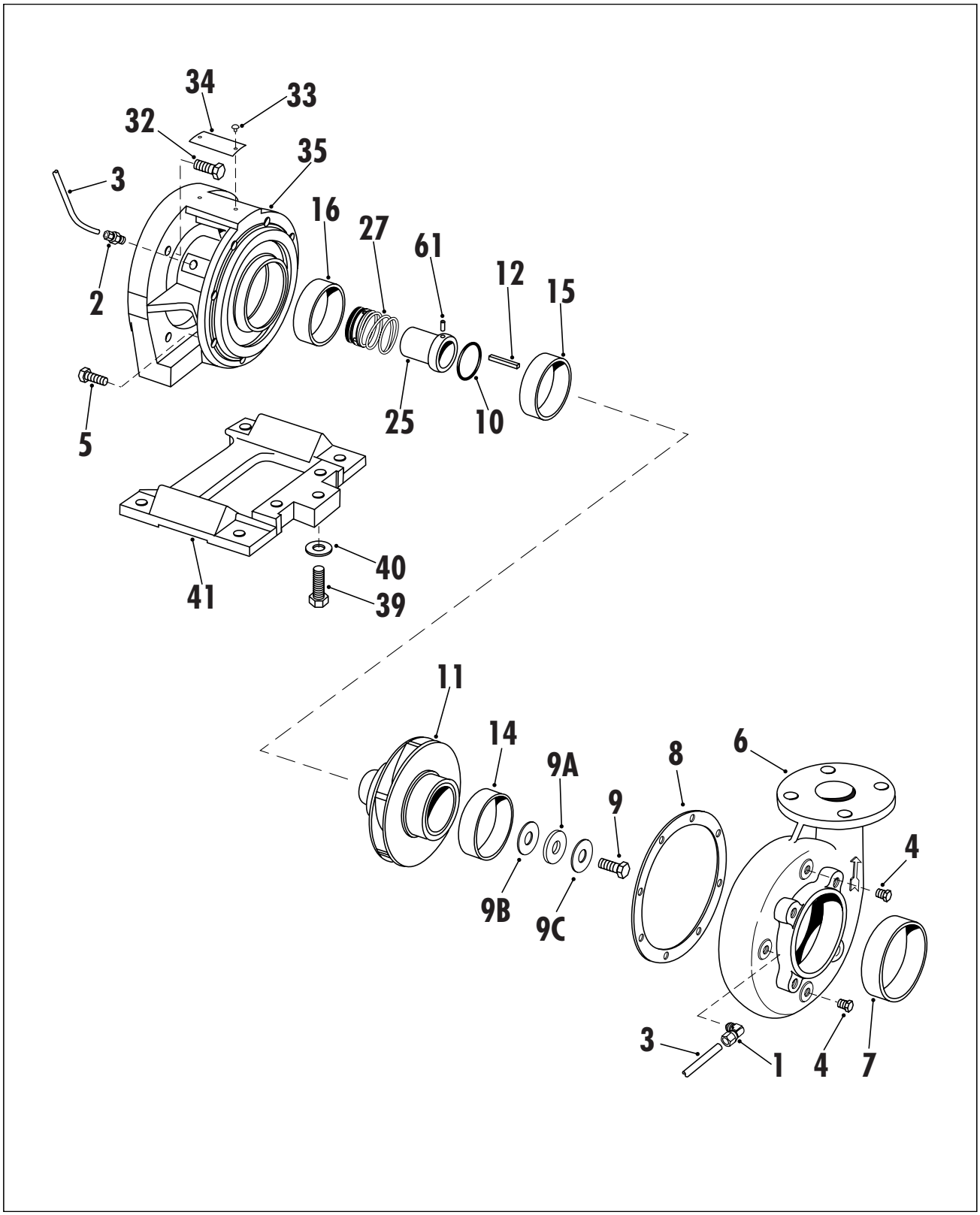
3) For 344A power frame assignment, refer to chart at left.

4) Liquid end maintenance kits may be found on pages 8, 11, 14 and 17 of this manual or in the current repair part kits manual.

5) Casings and brackets for pumps manufactured prior to 4/76 no longer available for models 341, 342 and 344. Both the current bracket and casing are required for these older pumps if a replacement is required.

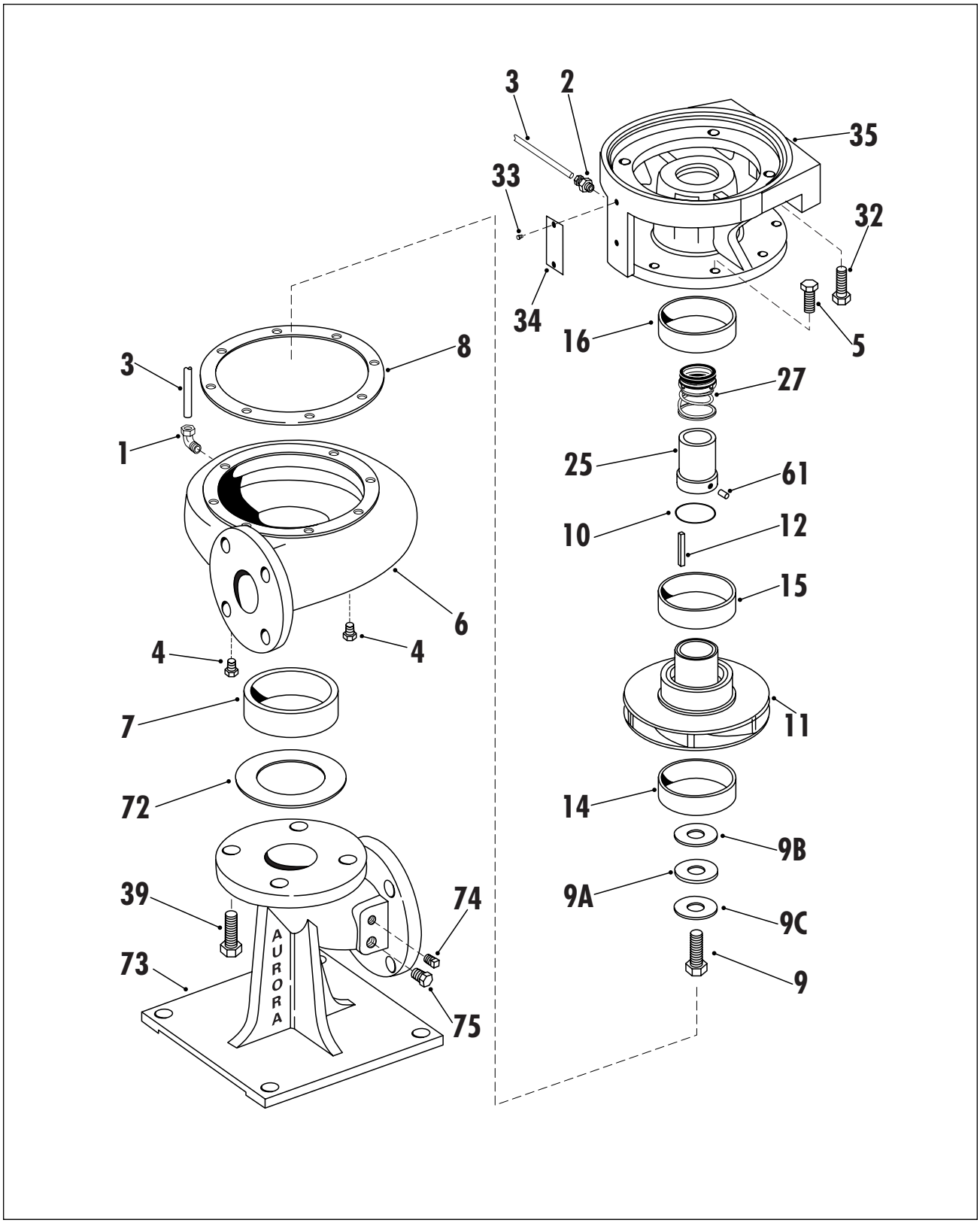
6) Part numbers are shown for bronze fitted and all iron pumps. Standard fitted pumps are the same as bronze fitted except that the impeller only is cast iron rather than bronze.

# MODEL 341A
# PIECE NUMBERS



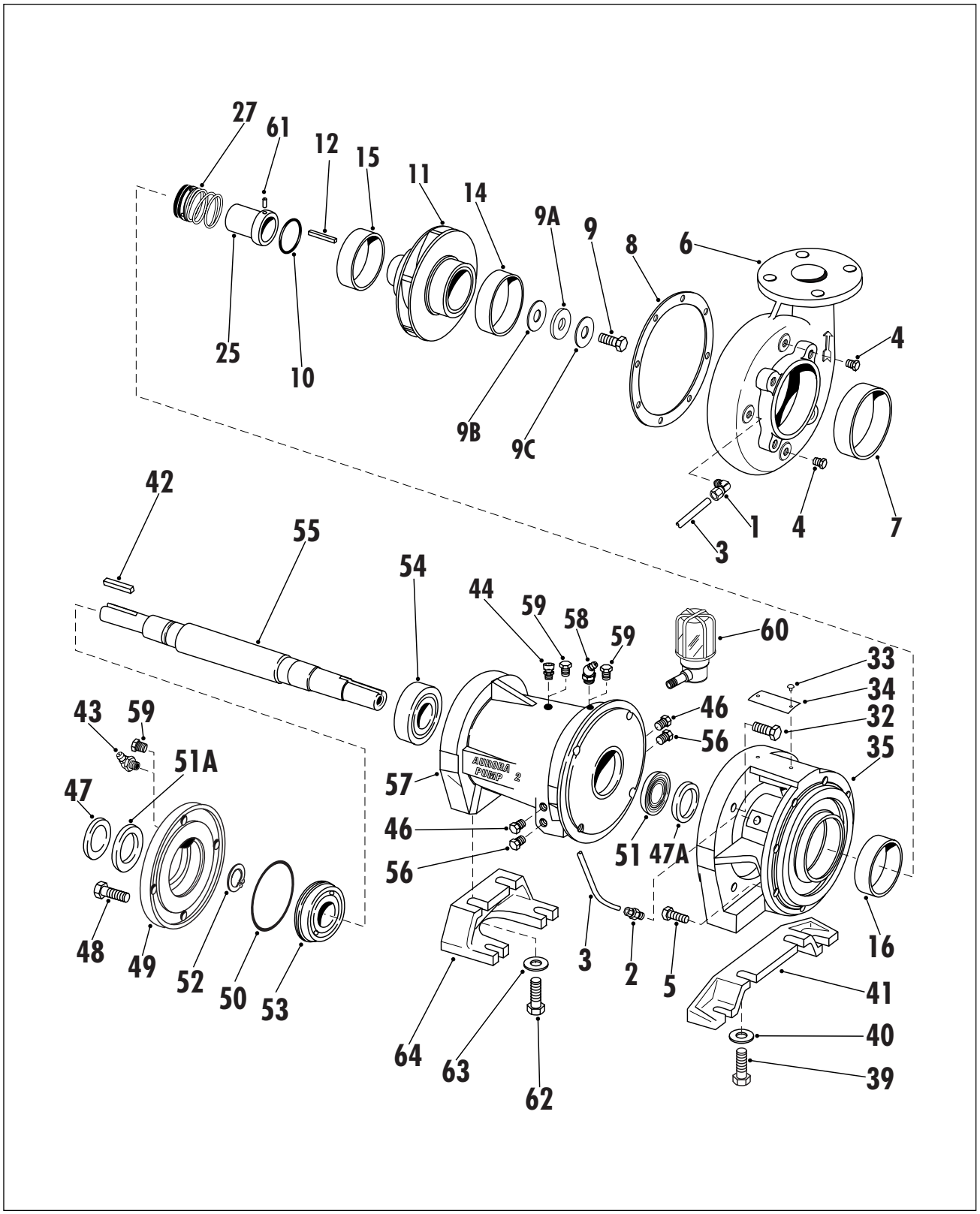
# 340A SERIES

## MODEL 342A
## PIECE NUMBERS



# MODEL 344A
# PIECE NUMBERS





# 340A SERIES
# MODELS 341A - 342A- 344A
# 1-1/4 x 1-1/2 x 7 - 4 x 4 x 7B

## PARTS LIST

| PC. NO. | DESCRIPTION | QTY | PART NO. | MATERIAL B.F. | | MATERIAL A.I. | |
|---|---|---|---|---|---|---|---|
| 1 | COMPRESSION ELBOW | 1 | 868-3360 | 190 | | 087 | |
| 2 | COMPRESSION CONNECTOR | 1 | 868-3359 | 190 | | 087 | |
| 3 | TUBING | 1 | 872-0124 | 175 | | 087 | |
| 4 | PIPE PLUG | 3 | 600-0002 | 087 | | 087 | |
| 5 | CAPSCREW | 8 | 168-0381 | 082 | | 082 | |
| 6 | CASING | | | | | | |
| | 1-1/4 x 1-1/2 x 7 | 1 | 180-2138 | 010 | | 010 | |
| | 1-1/2 x 2 x 7 | 1 | 180-2140 | 010 | | 010 | |
| | 2 x 2-1/2 x 7A & B | 1 | 180-2142 | 010 | | 010 | |
| | 2-1/2 x 3 x 7A & B | 1 | 180-2144 | 010 | | 010 | |
| | 4 x 4 x 7A & B | 1 | 180-2146 | 010 | | 010 | |
| | VERTICAL | | | | | | |
| | 1-1/4 x 1-1/2 x 7 | 1 | 180-2196 | 010 | | 010 | |
| | 1-1/2 x 2 x 7 | 1 | 180-2197 | 010 | | 010 | |
| 7 | CASE RING | | | | | | |
| | 1-1/4 x 1-1/2 x 7 | 1 | 676-1150 | 208 | | 010 | |
| | 1-1/2 x 2 x 7 | 1 | 676-1151 | 208 | | 010 | |
| | 2 x 2-1/2 x 7A & B | 1 | 676-1152 | 208 | | 010 | |
| | 2-1/2 x 3 x 7A & B | 1 | 676-1152 | 208 | | 010 | |
| | 4 x 4 x 7A & B | 1 | 676-1154 | 208 | | 010 | |
| 8 | GASKET | 1 | 364-1014 | 603 | | 603 | |
| 9 | CAPSCREW **(S)** | 1 | 168-0382 | 113 | | 113 | |
| | **(L)** | 1 | 168-0490 | 113 | | 113 | |
| 9A | WASHER **(S)** | 1 | 908-0603 | 087 | | 087 | |
| | **(L)** | 1 | 908-0604 | 087 | | 087 | |
| 9B | GASKET **(S)** | 1 | 364-2034 | 603 | | 603 | |
| | **(L)** | 1 | 364-2035 | 603 | | 603 | |
| 9C | CAPSCREW **(S)** | 1 | 908-1290 | 999 | | 999 | |
| | SEAL **(L)** | 1 | 908-1292 | 999 | | 999 | |
| 10 | O-RING **(S)** | 1 | 364-0409 | 457 | | 457 | |
| | **(L)** | 1 | 364-0414 | 457 | | 457 | |
| 11 | IMPELLER **(S)** | | | | | | |
| | 1-1/4 x 1-1/2 x 7 | 1 | 443-0407 | 225 | | 010 | |
| | 1-1/2 x 2 x 7 | 1 | 443-0409 | 225 | | 010 | |
| | 2 x 2-1/2 x 7A | 1 | 443-0411 | 225 | | 010 | |
| | 2 x 2-1/2 x 7B | 1 | 443-0415 | 225 | | 010 | |
| | 2-1/2 x 3 x 7A | 1 | 443-2034 | 225 | | 010 | |
| | 2-1/2 x 3 x 7B | 1 | 443-0417 | 225 | | 010 | |
| | 4 x 4 x 7A | 1 | 443-0425 | 225 | | 010 | |
| | 4 x 4 x 7B | 1 | 443-0423 | 225 | | 010 | |
| | IMPELLER **(L)** | | | | | | |
| | 2 x 2-1/2 x 7A | 1 | 443-0413 | 225 | | 010 | |
| | 2-1/2 x 3 x 7A | 1 | 443-2035 | 225 | | 010 | |
| | 2-1/2 x 3 x 7B | 1 | 443-0419 | 225 | | 010 | |
| | 4 x 4 x 7A | 1 | 443-0427 | 225 | | 010 | |
| | 4 x 4 x 7B | 1 | 443-0472 | 225 | | 010 | |
| 11A | IMPELLER **(S)*** | | | | | | |
| | 1-1/4 x 1-1/2 x 7 | 1 | 443-0408 | 225 | | 010 | |
| | 1-1/2 x 2 x 7 | 1 | 443-0410 | 225 | | 010 | |
| | 2 x 2-1/2 x 7A | 1 | 443-0412 | 225 | | 010 | |
| | 2 x 2-1/2 x 7B | 1 | 443-0416 | 225 | | 010 | |
| | 2-1/2 x 3 x 7A | 1 | 443-1775 | 225 | | 010 | |

| PC. NO. | DESCRIPTION | QTY | PART NO. | MATERIAL B.F. | | MATERIAL A.I. | |
|---|---|---|---|---|---|---|---|
| 11A | IMPELLER **(S)*** | | | | | | |
| | 2-1/2 x 3 x 7B | 1 | 443-0418 | 225 | | 010 | |
| | 4 x 4 x 7A | 1 | 443-0426 | 225 | | 010 | |
| | 4 x 4 x 7B | 1 | 443-0424 | 225 | | 010 | |
| 11A | IMPELLER **(L)*** | | | | | | |
| | 2 x 2-1/2 x 7A | 1 | 443-0414 | 225 | | 010 | |
| | 2-1/2 x 3 x 7A | 1 | 443-1776 | 225 | | 010 | |
| | 2-1/2 x 3 x 7B | 1 | 443-0420 | 225 | | 010 | |
| | 4 x 4 x 7A | 1 | 443-0428 | 225 | | 010 | |
| | 4 x 4 x 7B | 1 | 443-0471 | 225 | | 010 | |
| 12 | IMPELLER KEY **(S)** | 1 | 472-0201 | 087 | | 087 | |
| | **(L)** | 1 | 472-0247 | 087 | | 087 | |
| 14 | IMPELLER RING (OPTIONAL) | | | | | | |
| | 1-1/4 x 1-1/2 x 7 | 1 | 676-1145 | 208 | | 010 | |
| | 1-1/2 x 2 x 7 | 1 | 676-1146 | 208 | | 010 | |
| | 2 x 2-1/2 x 7A | 1 | 676-1133 | 208 | | 010 | |
| | 2 x 2-1/2 x 7B | 1 | 676-1133 | 208 | | 010 | |
| | 2-1/2 x 3 x 7A | 1 | 676-1133 | 208 | | 010 | |
| | 2-1/2 x 3 x 7B | 1 | 676-1133 | 208 | | 010 | |
| | 4 x 4 x 7A | 1 | 676-1140 | 208 | | 010 | |
| | 4 x 4 x 7B | 1 | 676-1140 | 208 | | 010 | |
| 15 | IMPELLER RING (OPTIONAL) | | | | | | |
| | 2 x 2-1/2 x 7A | 1 | 676-1133 | 208 | | 010 | |
| | 2 x 2-1/2 x 7B | 1 | 676-1133 | 208 | | 010 | |
| | 2-1/2 x 3 x 7A | 1 | 676-1133 | 208 | | 010 | |
| | 2-1/2 x 3 x 7B | 1 | 676-1133 | 208 | | 010 | |
| | 4 x 4 x 7A | 1 | 676-1133 | 208 | | 010 | |
| | 4 x 4 x 7B | 1 | 676-1133 | 208 | | 010 | |
| 16 | RING (NOT REQUIRED) | | | | | | |
| 25 | SLEEVE **(S)** | 1 | 756-0077 | 208 | | 104 | |
| | **(L)** | 1 | 756-0078 | 208 | | 104 | |
| 27 | SEAL **(S)** | 1 | 712-0907 | 749 | | 749 | |
| | **(L)** | 1 | 712-0910 | 749 | | 749 | |
| 32 | CAPSCREW MTR. FR. | | | | | | |
| | 143JM - 184JM | 4 | 168-0386 | 082 | | 082 | |
| | 213JM - 256JM | 4 | 168-0490 | 082 | | 082 | |
| 33 | U DRIVE SCREW | 2 | 708-0013 | 365 | | 365 | |
| 34 | NAMEPLATE | 1 | 532-0045 | 114 | | 114 | |
| 35 | BRACKET (341A) | | | | | | |
| | 143JM - 184JM | 1 | 116-0192 | 010 | | 010 | |
| | 213JM - 215JM | 1 | 116-0194 | 010 | | 010 | |
| | 254JM - 256JM | 1 | 116-0197 | 010 | | 010 | |
| | 284JM - 326JM | 1 | 116-0476 | 010 | | 010 | |
| | BRACKET (342A) | | | | | | |
| | 143JM - 184JM | 1 | 116-0192 | 010 | | 010 | |
| | 213JM - 215JM | 1 | 116-0194 | 010 | | 010 | |
| | 254JM - 256JM | 1 | 116-0197 | 010 | | 010 | |

*MACHINED FOR OPTIONAL RING NUMBER 14 & 15

# 340A SERIES
# MODELS 341A - 342A- 344A
# 1-1/4 x 1-1/2 x 7 - 4 x 4 x 7B

## PARTS LIST

| PC. NO. | DESCRIPTION | QTY | PART NO. | MATERIAL B.F. | MATERIAL A.I. | |
|---|---|---|---|---|---|---|
| 35 | BRACKET (342A) | | | | | |
| | 284JM - 326JM | 1 | 116-0476 | 010 | 010 | |
| | BRACKET (344A) | | | | | |
| | POWER FRAME #1 | 1 | 116-0192 | 010 | 010 | |
| | POWER FRAME #2 | 1 | 116-0197 | 010 | 010 | |
| 39 | CAPSCREW (341A) | | | | | |
| | 143JM - 184JM | 3 | 168-0488 | 082 | 082 | |
| | 213JM - 256JM | NOT REQUIRED | | | | |
| | CAPSCREW (342A) | | | | | |
| | 1-1/4 x 1-1/2 x 7 | 4 | 168-0490 | 082 | 082 | |
| | 1-1/2 x 2 x 7 | 4 | 168-0560 | 082 | 082 | |
| | 2 x 2-1/2 x 7A & B | 4 | 168-0562 | 082 | 082 | |
| | 2-1/2 x 3 X 7A & B | 4 | 168-0562 | 082 | 082 | |
| | 4 x 4 x 7A & B | 4 | 168-0564 | 082 | 082 | |
| | CAPSCREW (344A) | | | | | |
| | POWER FRAME #1 | 3 | 168-0488 | 082 | 082 | |
| | POWER FRAME #2 | 2 | 168-0490 | 082 | 082 | |
| 40 | WASHER (341A) | | | | | |
| | 143JM - 184JM | 3 | 908-0114 | 080 | 080 | |
| | 213JM - 256JM | NOT REQUIRED | | | | |
| | WASHER (342A) | NOT REQUIRED | | | | |
| | WASHER (344A) | | | | | |
| | POWER FRAME #1 | 3 | 908-0114 | 080 | 080 | |
| | POWER FRAME #2 | 2 | 908-0114 | 080 | 080 | |
| 41 | SUPPORT (341A) | | | | | |
| | 143JM - 184JM | 1 | 820-0184 | 010 | 010 | |
| | 213JM - 256JM | NOT REQUIRED | | | | |
| | SUPPORT (344A) | | | | | |
| | POWER FRAME #1 | 1 | 820-1441 | 087 | 087 | |
| | POWER FRAME #2 | 1 | 820-0186 | 010 | 010 | |
| 42 | DRIVE KEY (344A) | | | | | |
| | POWER FRAME #1 | 1 | 472-0206 | 087 | 087 | |
| | POWER FRAME #2 | 1 | 472-0247 | 087 | 087 | |
| 43 | GREASE FITTING | | | | | |
| | POWER FRAME #1 & #2 | 1 | 508-0005 | 651 | 651 | |
| 44 | VENT TUBE | | | | | |
| | POWER FRAME #1 & #2 | 1 | 864-0051 | 656 | 656 | |
| 46 | PROTECTOR | | | | | |
| | POWER FRAME #1 & #2 | 1 | 624-0010 | 503 | 503 | |
| 47 | SLINGER | | | | | |
| | POWER FRAME #1 | 1 | 764-1015 | 478 | 478 | |
| | POWER FRAME #2 | 1 | 764-1021 | 478 | 478 | |
| 47A | SLINGER | | | | | |
| | POWER FRAME #1 | 1 | 764-1015 | 478 | 478 | |
| | POWER FRAME #2 | 1 | 764-1021 | 478 | 478 | |
| 48 | CAPSCREW | | | | | |
| | POWER FRAME #1 | 4 | 168-0388 | 082 | 082 | |
| | POWER FRAME #2 | 4 | 168-0492 | 082 | 082 | |
| 49 | BEARING CAP | | | | | |
| | POWER FRAME #1 | 1 | 164-0470 | 010 | 010 | |
| | POWER FRAME #2 | 1 | 164-0471 | 010 | 010 | |

| PC. NO. | DESCRIPTION | QTY | PART NO. | MATERIAL B.F. | MATERIAL A.I. | |
|---|---|---|---|---|---|---|
| 50 | O-RING | | | | | |
| | POWER FRAME #1 | 1 | 364-0423 | 457 | 457 | |
| | POWER FRAME #2 | 1 | 364-0432 | 457 | 457 | |
| 51 | SEAL, GREASE LUBE | | | | | |
| | POWER FRAME #1 | 1 | 712-0231 | 653 | 653 | |
| | POWER FRAME #2 | 1 | 712-0233 | 653 | 653 | |
| | SEAL, OIL LUBE | | | | | |
| | POWER FRAME #1 | 1 | 712-0016 | 653 | 653 | |
| | POWER FRAME #2 | 1 | 712-0054 | 653 | 653 | |
| 51A | SEAL, GREASE LUBE | | | | | |
| | POWER FRAME #1 | 1 | 712-0231 | 653 | 653 | |
| | POWER FRAME #2 | 1 | 712-0233 | 653 | 653 | |
| | SEAL, OIL LUBE | | | | | |
| | POWER FRAME #1 | 1 | 712-0016 | 653 | 653 | |
| | POWER FRAME #2 | 1 | 712-0054 | 653 | 653 | |
| 52 | RET. RING | | | | | |
| | POWER FRAME #1 | 1 | 676-0929 | 088 | 088 | |
| | POWER FRAME #1 | 1 | 676-0938 | 088 | 088 | |
| 53 | O.B. BEARING | | | | | |
| | POWER FRAME #1 | | | | | |
| | STANDARD OPEN | 1 | 068-2206 | 647 | 647 | |
| | SEALED PERM LUBE | 1 | 068-2219 | 647 | 647 | |
| | POWER FRAME #2 | | | | | |
| | STANDARD OPEN | 1 | 068-2308 | 647 | 647 | |
| | SEALED PERM LUBE | 1 | 068-2220 | 647 | 647 | |
| 54 | I.B. BEARING | | | | | |
| | POWER FRAME #1 | | | | | |
| | STANDARD OPEN | 1 | 068-1907 | 647 | 647 | |
| | SEALED PERM LUBE | 1 | 068-0114 | 647 | 647 | |
| | POWER FRAME #2 | | | | | |
| | STANDARD OPEN | 1 | 068-0159 | 647 | 647 | |
| | SEALED PERM LUBE | 1 | 068-2018 | 647 | 647 | |
| 55 | SHAFT | | | | | |
| | POWER FRAME #1 | 1 | 728-0121 | 063 | 063 | |
| | POWER FRAME #2 | 1 | 728-0122 | 063 | 063 | |
| 56 | PROTECTOR | | | | | |
| | POWER FRAME #1 & #2 | 2 | 624-0010 | 503 | 503 | |
| 57 | FRAME | | | | | |
| | GREASE | | | | | |
| | POWER FRAME #1 | 1 | 356-0201 | 010 | 010 | |
| | OIL LUBE | | | | | |
| | POWER FRAME #1 | 1 | 356-0231 | 010 | 010 | |
| | OIL LUBE | | | | | |
| | POWER FRAME #2 | 1 | 356-0232 | 010 | 010 | |
| | GREASE | | | | | |
| | POWER FRAME #2 | 1 | 356-0202 | 010 | 010 | |
| 58 | GREASE FITTING | | | | | |
| | POWER FRAME #1 & #2 | 1 | 508-0001 | 651 | 651 | |

# 340A SERIES
# MODELS 341A - 342A- 344A
# 1-1/4 x 1-1/2 x 7 - 4 x 4 x 7B

## PARTS LIST

| PC. NO. | DESCRIPTION | QTY | PART NO. | MATERIAL B.F. | | MATERIAL A.I. | |
|---|---|---|---|---|---|---|---|
| 59 | PIPE PLUG | | | | | | |
| | POWER FRAME #1 & #2 | 2 | 600-0001 | 087 | | 087 | |
| 60 | OILER | | | | | | |
| | POWER FRAME #1 & #2 | 1 | 552-0029 | 652 | | 652 | |
| 61 | PIN | INCLUDED WITH NO. 25 | | | | | |
| 62 | CAPSCREW | | | | | | |
| | POWER FRAME #1 | 1 | 168-0490 | 080 | | 080 | |
| | POWER FRAME #2 | 2 | 168-0490 | 080 | | 080 | |
| 63 | WASHER | | | | | | |
| | POWER FRAME #1 | 1 | 908-0114 | 080 | | 080 | |
| | POWER FRAME #2 | 1 | 908-0114 | 080 | | 080 | |
| 64 | SUPPORT | | | | | | |
| | POWER FRAME #1 | 1 | 820-0187 | 010 | | 010 | |
| | POWER FRAME #2 | 1 | 820-0188 | 010 | | 010 | |
| 72 | GASKET | | | | | | |
| | 1-1/4 x 1-1/2 x 7 | 1 | 364-0602 | 603 | | 603 | |
| | 1-1/2 x 2 x 7 | 1 | 364-0603 | 603 | | 603 | |
| | 2 x 2-1/2 x 7A & 7B | 1 | 364-0604 | 603 | | 603 | |
| | 2-1/2 x 3 x 7A & 7B | 1 | 364-0605 | 603 | | 603 | |
| | 4 x 4 x 7A & 7B | 1 | 364-0607 | 603 | | 603 | |
| 73 | BASE | | | | | | |
| | 1-1/4 x 1-1/2 x 7 | 1 | 816-1102 | 010 | | 010 | |
| | 1-1/2 x 2 x 7 | 1 | 816-1103 | 010 | | 010 | |
| | 2 x 2-1/2 x 7A & B | 1 | 816-1104 | 010 | | 010 | |
| | 2-1/2 x 3 x 7A & B | 1 | 816-1105 | 010 | | 010 | |
| | 4 x 4 x 7A & B | 1 | 816-1106 | 010 | | 010 | |
| 74 | PIPE PLUG | 1 | 600-0002 | 087 | | 087 | |
| 75 | PIPE PLUG | | | | | | |
| | 1-1/4 x 1-1/2 x 7 | 1 | 600-0002 | 087 | | 087 | |
| | 1-1/2 x 2 x 7 | 1 | 600-0003 | 087 | | 087 | |
| | 2 x 2-1/2 x 7A & 7B | 1 | 600-0003 | 087 | | 087 | |
| | 2-1/2 x 3 x 7A & 7B | 1 | 600-0004 | 028 | | 028 | |
| | 4 x 4 x 7A & 7B | 1 | 600-0004 | 028 | | 028 | |
| | (NOT SHOWN) | | | | | | |
| | SEAL KIT **(S)** | 1 | 476-0250 | 644 | | | |
| | (INCLUDES PIECE NO'S 8, 9, 9A, 9B, 9C, 10, 12, 25, 27) | | | | | | |
| | SEAL KIT **(L)** | 1 | 476-0253 | 644 | | | |

# 340A SERIES
# MODELS 341A - 342A - 344A
# 1-1/4 x 1-1/2 x 9B - 6 x 6 x 9

## PARTS LIST

| PC. NO. | DESCRIPTION | QTY | PART NO. | MATERIAL B.F. | | MATERIAL A.I. | |
|---|---|---|---|---|---|---|---|
| 1 | COMPRESSION ELBOW | 1 | 868-3360 | 190 | | 087 | |
| 2 | COMPRESSION CONNECTOR | 1 | 868-3359 | 190 | | 087 | |
| 3 | TUBING | 1 | 872-0124 | 175 | | 087 | |
| 4 | PIPE PLUG | 3 | 600-0002 | 087 | | 087 | |
| 5 | CAPSCREW | 8 | 168-0487 | 082 | | 082 | |
| 6 | CASING | | | | | | |
| | 1-1/4 x 1-1/2 x 9B | 1 | 180-2148 | 010 | | 010 | |
| | 1-1/2 x 2 x 9A | 1 | 180-2149 | 010 | | 010 | |
| | 1-1/2 x 2 x 9B | 1 | 180-2149 | 010 | | 010 | |
| | 1-1/2 x 2 x 9C | 1 | 180-2151 | 010 | | 010 | |
| | 2 x 2-1/2 x 9 | 1 | 180-2152 | 010 | | 010 | |
| | 2-1/2 x 3 x 9 | 1 | 180-2153 | 010 | | 010 | |
| | 3 x 4 x 9A | 1 | 180-2351 | 010 | | 010 | |
| | 3 x 4 x 9B | 1 | 180-2351 | 010 | | 010 | |
| | 4 x 5 x 9A | 1 | 180-2156 | 010 | | 010 | |
| | 4 x 5 x 9B | 1 | 180-2157 | 010 | | 010 | |
| | 6 x 6 x 9 | 1 | 180-2159 | 010 | | 010 | |
| | VERTICAL | | | | | | |
| | 1-1/4 x 1-1/2 x 9B | 1 | 180-2198 | 010 | | 010 | |
| | 1-1/2 x 2 x 9A | 1 | 180-2199 | 010 | | 010 | |
| | 1-1/2 x 2 x 9B | 1 | 180-2199 | 010 | | 010 | |
| | 1-1/2 x 2 x 9C | 1 | 180-2200 | 010 | | 010 | |
| 7 | CASE RING | | | | | | |
| | 1-1/4 x 1-1/2 x 9B | 1 | 676-1150 | 208 | | 010 | |
| | 1-1/2 x 2 x 9A | 1 | 676-1151 | 208 | | 010 | |
| | 1-1/2 x 2 x 9B | 1 | 676-1151 | 208 | | 010 | |
| | 1-1/2 x 2 x 9C | 1 | 676-1151 | 208 | | 010 | |
| | 2 x 2-1/2 x 9 | 1 | 676-1152 | 208 | | 010 | |
| | 2-1/2 x 3 x 9 | 1 | 676-1152 | 208 | | 010 | |
| | 3 x 4 x 9A | 1 | 676-1154 | 208 | | 010 | |
| | 3 x 4 x 9B | 1 | 676-1154 | 208 | | 010 | |
| | 4 x 5 x 9A | 1 | 676-1154 | 208 | | 010 | |
| | 4 x 5 x 9B | 1 | 676-1155 | 208 | | 010 | |
| | 6 x 6 x 9 | 1 | 676-1155 | 208 | | 010 | |
| 8 | GASKET | 1 | 364-1015 | 603 | | 603 | |
| 9 | CAPSCREW **(S)** | 1 | 168-0382 | 113 | | 113 | |
| | **(L)** | 1 | 168-0490 | 113 | | 113 | |
| 9A | WASHER **(S)** | 1 | 908-0603 | 087 | | 087 | |
| | **(L)** | 1 | 908-0604 | 087 | | 087 | |
| 9B | GASKET **(S)** | 1 | 364-2034 | 603 | | 603 | |
| | **(L)** | 1 | 364-2035 | 603 | | 603 | |
| 9C | CAPSCREW **(S)** | 1 | 908-1290 | 999 | | 999 | |
| | SEAL **(L)** | 1 | 908-1292 | 999 | | 999 | |
| 10 | O-RING **(S)** | **1** | 364-0409 | 457 | | 457 | |
| | **(L)** | 1 | 364-0414 | 457 | | 457 | |
| 11 | IMPELLER **(S)** | | | | | | |
| | 1-1/4 x 1-1/2 x 9B | 1 | 443-0431 | 225 | | 010 | |
| | 1-1/2 x 2 x 9A | 1 | 443-0437 | 225 | | 010 | |
| | 1-1/2 x 2 x 9B | 1 | 443-0435 | 225 | | 010 | |
| | 1-1/2 x 2 x 9C | 1 | 443-0437 | 225 | | 010 | |
| | 2 x 2-1/2 x 9 | 1 | 443-0441 | 225 | | 010 | |
| | 2-1/2 x 3 x 9 | 1 | 443-0445 | 225 | | 010 | |

| PC. NO. | DESCRIPTION | QTY | PART NO. | MATERIAL B.F. | | MATERIAL A.I. | |
|---|---|---|---|---|---|---|---|
| 11 | IMPELLER **(S)** | | | | | | |
| | 3 x 4 x 9A | 1 | 443-1776 | 225 | | 010 | |
| | 3 x 4 x 9B | 1 | 443-1762 | 225 | | 010 | |
| | 4 x 5 x 9A | 1 | 443-1777 | 225 | | 010 | |
| | 4 x 5 x 9B | 1 | 443-0457 | 225 | | 010 | |
| | 6 x 6 x 9 | 1 | 443-0465 | 225 | | 010 | |
| 11 | IMPELLER **(L)** | | | | | | |
| | 1-1/2 x 2 x 9C | 1 | 443-0439 | 225 | | 010 | |
| | 2 x 2-1/2 x 9 | 1 | 443-0443 | 225 | | 010 | |
| | 2-1/2 x 3 x 9 | 1 | 443-0447 | 225 | | 010 | |
| | 3 x 4 x 9A | 1 | 443-1768 | 225 | | 010 | |
| | 3 x 4 x 9B | 1 | 443-1764 | 225 | | 010 | |
| | 4 x 5 x 9A | 1 | 443-1752 | 225 | | 010 | |
| | 4 x 5 x 9B | 1 | 443-0459 | 225 | | 010 | |
| | 6 x 6 x 9 | 1 | 443-0467 | 225 | | 010 | |
| 11A | IMPELLER **(S)*** | | | | | | |
| | 1-1/4 x 1-1/2 x 9B | 1 | 443-0432 | 225 | | 010 | |
| | 1-1/2 x 2 x 9A | 1 | 443-0438 | 225 | | 010 | |
| | 1-1/2 x 2 x 9B | 1 | 443-0436 | 225 | | 010 | |
| | 1-1/2 x 2 x 9C | 1 | 443-0438 | 225 | | 010 | |
| | 2 x 2-1/2 x 9 | 1 | 443-0442 | 225 | | 010 | |
| | 2-1/2 x 3 x 9 | 1 | 443-0446 | 225 | | 010 | |
| | 3 x 4 x 9A | 1 | 443-1767 | 225 | | 010 | |
| | 3 x 4 x 9B | 1 | 443-1763 | 225 | | 010 | |
| | 4 x 5 x 9A | 1 | 443-1778 | 225 | | 010 | |
| | 4 x 5 x 9B | 1 | 443-0458 | 225 | | 010 | |
| | 6 x 6 x 9 | 1 | 443-0466 | 225 | | 010 | |
| 11A | IMPELLER **(L)*** | | | | | | |
| | 1-1/2 x 2 x 9C | 1 | 443-0440 | 225 | | 010 | |
| | 2 x 2-1/2 x 9 | 1 | 443-0444 | 225 | | 010 | |
| | 2-1/2 x 3 x 9 | 1 | 443-0448 | 225 | | 010 | |
| | 3 x 4 x 9A | 1 | 443-1769 | 225 | | 010 | |
| | 3 x 4 x 9B | 1 | 443-1765 | 225 | | 010 | |
| | 4 x 5 x 9A | 1 | 443-1753 | 225 | | 010 | |
| | 4 x 5 x 9B | 1 | 443-0460 | 225 | | 010 | |
| | 6 x 6 x 9 | 1 | 443-0468 | 225 | | 010 | |
| 12 | IMPELLER KEY **(S)** | 1 | 472-0201 | 087 | | 087 | |
| | **(L)** | 1 | 472-0247 | 087 | | 087 | |
| 14 | IMPELLER RING (OPTIONAL) | | | | | | |
| | 1-1/4 x 1-1/2 x 9B | 1 | 676-1145 | 208 | | 010 | |
| | 1-1/2 x 2 x 9 | 1 | 676-1146 | 208 | | 010 | |
| | 2 x 2-1/2 x 9 | 1 | 676-1133 | 208 | | 010 | |
| | 2-1/2 x 3 x 9 | 1 | 676-1133 | 208 | | 010 | |
| | 3 x 4 x 9A & B | 1 | 676-1140 | 208 | | 010 | |
| | 4 x 5 x 9A | 1 | 676-1140 | 208 | | 010 | |
| | 4 x 5 x 9B | 1 | 676-1141 | 208 | | 010 | |
| | 6 x 6 x 9 | 1 | 676-1141 | 208 | | 010 | |

*MACHINED FOR OPTIONAL RING NUMBER 14 & 15

# 340A SERIES
# MODELS 341A - 342A - 344A
# 1-1/4 x 1-1/2 x 9B - 6 x 6 x 9

## PARTS LIST

| PC. NO. | DESCRIPTION | QTY | PART NO. | MATERIAL B.F. | | MATERIAL A.I. | |
|---|---|---|---|---|---|---|---|
| 15 | IMPELLER RING (OPTIONAL) | | | | | | |
| | 2 x 2-1/2 x 9 | 1 | 676-1133 | 208 | | 010 | |
| | 2-1/2 x 3 x 9 | 1 | 676-1133 | 208 | | 010 | |
| | 3 x 4 x 9A | 1 | 676-1156 | 208 | | 010 | |
| | 3 x 4 x 9B | 1 | 676-1156 | 208 | | 010 | |
| | 4 x 5 x 9A | 1 | 676-1156 | 208 | | 010 | |
| | 4 x 5 x 9B | 1 | 676-1156 | 208 | | 010 | |
| | 6 x 6 x 9 | 1 | 676-1156 | 208 | | 010 | |
| 16 | RING | | | | | | |
| | 2 x 2-1/2 x 9 | 1 | 676-0003 | 010 | | 010 | |
| | 2-1/2 x 3 x 9 | 1 | 676-0003 | 010 | | 010 | |
| 25 | SLEEVE **(S)** | 1 | 756-0077 | 208 | | 104 | |
| | **(L)** | 1 | 756-0078 | 208 | | 104 | |
| 27 | SEAL **(S)** | 1 | 712-0907 | 749 | | 749 | |
| | **(L)** | 1 | 712-0910 | 749 | | 749 | |
| 32 | CAPSCREW MTR. FR. | | | | | | |
| | 143JM - 184JM | 4 | 168-0386 | 082 | | 082 | |
| | 213JM - 256JM | 4 | 168-0490 | 082 | | 082 | |
| 33 | U DRIVE SCREW | 2 | 708-0013 | 365 | | 365 | |
| 34 | NAMEPLATE | 1 | 532-0045 | 114 | | 114 | |
| 35 | BRACKET (341A) | | | | | | |
| | 143JM - 184JM | 1 | 116-0193 | 010 | | 010 | |
| | 213JM - 215JM | 1 | 116-0195 | 010 | | 010 | |
| | 254JM - 256JM | 1 | 116-0198 | 010 | | 010 | |
| | 284JM - 326JM | 1 | 116-0477 | 010 | | 010 | |
| | BRACKET (342A) | | | | | | |
| | 143JM - 184JM | 1 | 116-0193 | 010 | | 010 | |
| | 213JM - 215JM | 1 | 116-0195 | 010 | | 010 | |
| | 254JM - 256JM | 1 | 116-0198 | 010 | | 010 | |
| | 284JM - 326JM | 1 | 116-0477 | 010 | | 010 | |
| | BRACKET (344A) | | | | | | |
| | POWER FRAME #1 | 1 | 116-0193 | 010 | | 010 | |
| | POWER FRAME #2 & #3 | 1 | 116-0198 | 010 | | 010 | |
| 39 | CAPSCREW (341A) | | | | | | |
| | 143JM - 184JM | 3 | 168-0488 | 082 | | 082 | |
| | 213JM - 256JM | NOT REQUIRED | | | | | |
| | CAPSCREW (342A) | | | | | | |
| | 1-1/4 x 1-1/2 x 9B | 4 | 168-0490 | 082 | | 082 | |
| | 1-1/2 x 2 x 9 | 4 | 168-0560 | 082 | | 082 | |
| | 2 x 2-1/2 x 9 | 4 | 168-0562 | 082 | | 082 | |
| | 2-1/2 x 3 x 9 | 4 | 168-0562 | 082 | | 082 | |
| | 3 x 4 x 9 | 4 | 168-0564 | 082 | | 082 | |
| | 4 x 5 x 9A & B | 4 | 168-0564 | 082 | | 082 | |
| | 6 x 6 x 9 | 4 | 168-0634 | 082 | | 082 | |
| | CAPSCREW (344A) | | | | | | |
| | POWER FRAME #1 | 3 | 168-0488 | 082 | | 082 | |
| | POWER FRAME #2 & #3 | 2 | 168-0490 | 082 | | 082 | |

| PC. NO. | DESCRIPTION | QTY | PART NO. | MATERIAL B.F. | MATERIAL A.I. |
|---|---|---|---|---|---|
| 40 | WASHER (341A) | | | | |
| | 143JM - 184JM | 3 | 908-0114 | 080 | 080 |
| | 213JM - 256JM | NOT REQUIRED | | | |
| | WASHER (342A) | NOT REQUIRED | | | |
| | WASHER (344A) | | | | |
| | POWER FRAME #1 | 3 | 908-0114 | 080 | 080 |
| | POWER FRAME #2 & #3 | 2 | 908-0114 | 080 | 080 |
| 41 | SUPPORT (341A) | | | | |
| | 143JM - 184JM | 1 | 820-0184 | 010 | 010 |
| | 213JM - 256JM | NOT REQUIRED | | | |
| | SUPPORT (344A) | | | | |
| | POWER FRAME #1 | 1 | 820-1441 | 087 | 087 |
| | POWER FRAME #2 & #3 | 1 | 820-0186 | 010 | 010 |
| 42 | DRIVE KEY (344A) | | | | |
| | POWER FRAME #1 | 1 | 472-0206 | 087 | 087 |
| | POWER FRAME #2 | 1 | 472-0247 | 087 | 087 |
| 43 | GREASE FITTING | | | | |
| | POWER FRAME #1, #2 & #3 | 1 | 508-0005 | 651 | 651 |
| 44 | VENT TUBE | 1 | 864-0051 | 656 | 656 |
| 46 | PROTECTOR | 2 | 624-0010 | 503 | 503 |
| 47 | SLINGER | | | | |
| | POWER FRAME #1 | 1 | 764-1015 | 478 | 478 |
| | POWER FRAME #2 & #3 | 1 | 764-1021 | 478 | 478 |
| 47A | SLINGER | | | | |
| | POWER FRAME #1 | 1 | 764-1015 | 478 | 478 |
| | POWER FRAME #2 | 1 | 764-1021 | 478 | 478 |
| | POWER FRAME #3 | 1 | 764-1026 | 478 | 478 |
| 48 | CAPSCREW | | | | |
| | POWER FRAME #1 | 4 | 168-0388 | 082 | 082 |
| | POWER FRAME #2 & #3 | 4 | 168-0492 | 082 | 082 |
| 49 | BEARING CAP | | | | |
| | POWER FRAME #1 | 1 | 164-0470 | 010 | 010 |
| | POWER FRAME #2 | 1 | 164-0471 | 010 | 010 |
| | POWER FRAME #3 | 1 | 164-0472 | 010 | 010 |
| 50 | O-RING | | | | |
| | POWER FRAME #1 | 1 | 364-0423 | 457 | 457 |
| | POWER FRAME #2 | 1 | 364-0432 | 457 | 457 |
| | POWER FRAME #3 | 1 | 364-0438 | 457 | 457 |
| 51 | SEAL | | | | |
| | POWER FRAME #1 | 1 | 712-0231 | 653 | 653 |
| | POWER FRAME #2 & #3 | 1 | 712-0233 | 653 | 653 |
| | OIL LUBE | | | | |
| | POWER FRAME #1 | 1 | 712-0016 | 653 | 653 |
| | POWER FRAME #2 & #3 | 1 | 712-0054 | 653 | 653 |

# 340A SERIES
# MODELS 341A - 342A - 344A
# 1-1/4 x 1-1/2 x 9B - 6 x 6 x 9

## PARTS LIST

| PC. NO. | DESCRIPTION | QTY | PART NO. | MATERIAL B.F. | | MATERIAL A.I. | |
|---|---|---|---|---|---|---|---|
| 51A | SEAL | | | | | | |
| | POWER FRAME #1 | 1 | 712-0231 | 653 | | 653 | |
| | POWER FRAME #2 | 1 | 712-0233 | 653 | | 653 | |
| | POWER FRAME #3 | 1 | 712-0234 | 653 | | 653 | |
| | OIL LUBE | | | | | | |
| | POWER FRAME #1 | 1 | 712-0016 | 653 | | 653 | |
| | POWER FRAME #2 | 1 | 712-0054 | 653 | | 653 | |
| | POWER FRAME #3 | 1 | 712-0056 | 653 | | 653 | |
| 52 | RET. RING | | | | | | |
| | POWER FRAME #1 | 1 | 676-0929 | 088 | | 088 | |
| | POWER FRAME #2 | 1 | 676-0938 | 088 | | 088 | |
| | POWER FRAME #3 | 1 | 676-0944 | 088 | | 088 | |
| 53 | O.B. BEARING | | | | | | |
| | POWER FRAME #1 | | | | | | |
| | STANDARD OPEN | 1 | 068-2206 | 647 | | 647 | |
| | SEALED PERM LUBE | 1 | 068-2219 | 647 | | 647 | |
| | POWER FRAME #2 | | | | | | |
| | STANDARD OPEN | 1 | 068-2308 | 647 | | 647 | |
| | SEALED PERM LUBE | 1 | 068-2220 | 647 | | 647 | |
| | POWER FRAME #3 | | | | | | |
| | STANDARD OPEN | 1 | 068-2310 | 647 | | 647 | |
| | SEALED PERM LUBE | 1 | 068-2221 | 647 | | 647 | |
| 54 | I.B. BEARING | | | | | | |
| | POWER FRAME #1 | | | | | | |
| | STANDARD OPEN | 1 | 068-1907 | 647 | | 647 | |
| | SEALED PERM LUBE | 1 | 068-0114 | 647 | | 647 | |
| | POWER FRAME #2 | | | | | | |
| | STANDARD OPEN | 1 | 068-0159 | 647 | | 647 | |
| | SEALED PERM LUBE | 1 | 068-2018 | 647 | | 647 | |
| | POWER FRAME #3 | | | | | | |
| | STANDARD OPEN | 1 | 068-0161 | 647 | | 647 | |
| | SEALED PERM LUBE | 1 | 068-2022 | 647 | | 647 | |
| 55 | SHAFT | | | | | | |
| | POWER FRAME #1 | 1 | 728-0121 | 063 | | 063 | |
| | POWER FRAME #2 | 1 | 728-0122 | 063 | | 063 | |
| | POWER FRAME #3 | 1 | 728-0123 | 063 | | 063 | |
| 56 | PROTECTOR | | | | | | |
| | POWER FRAME #1, #2 & #3 | 2 | 624-0010 | 503 | | 503 | |
| 57 | FRAME | | | | | | |
| | OIL LUBE | | | | | | |
| | POWER FRAME #1 | 1 | 356-0231 | 010 | | 010 | |
| | POWER FRAME #2 | 1 | 356-0232 | 010 | | 010 | |
| | POWER FRAME #3 | 1 | 356-0233 | 010 | | 010 | |
| | GREASE | | | | | | |
| | POWER FRAME #1 | 1 | 356-0201 | 010 | | 010 | |
| | POWER FRAME #2 | 1 | 356-0202 | 010 | | 010 | |
| | POWER FRAME #3 | 1 | 356-0203 | 010 | | 010 | |

| PC. NO. | DESCRIPTION | QTY | PART NO. | MATERIAL B.F. | | MATERIAL A.I. | |
|---|---|---|---|---|---|---|---|
| 58 | GREASE FITTING | | | | | | |
| | POWER FRAME #1, #2 & #3 | 1 | 508-0001 | 651 | | 651 | |
| 59 | PIPE PLUG | | | | | | |
| | POWER FRAME #1, #2 & #3 | 2 | 600-0001 | 087 | | 087 | |
| 60 | OILER | | | | | | |
| | POWER FRAME #1, #2 & #3 | 1 | 552-0029 | 652 | | 652 | |
| 61 | PIN | INCLUDED WITH NO. 25 | | | | | |
| 62 | CAPSCREW | | | | | | |
| | POWER FRAME #1 | 1 | 168-0490 | 082 | | 082 | |
| | POWER FRAME #2 & #3 | 2 | 168-0490 | 082 | | 082 | |
| 63 | WASHER | | | | | | |
| | POWER FRAME #1 | 1 | 908-0114 | 080 | | 080 | |
| | POWER FRAME #2 & #3 | 1 | 908-0114 | 080 | | 080 | |
| 64 | SUPPORT | | | | | | |
| | POWER FRAME #1 | 1 | 820-0121 | 010 | | 010 | |
| | POWER FRAME #2 & #3 | 1 | 820-0189 | 010 | | 010 | |
| 72 | GASKET | | | | | | |
| | 1-1/4 x 1-1/2 x 9B | 1 | 364-0602 | 603 | | 603 | |
| | 1-1/2 x 2 x 9A, B & C | 1 | 364-0603 | 603 | | 603 | |
| | 2 x 2-1/2 x 9 | 1 | 364-0604 | 603 | | 603 | |
| | 2-1/2 x 3 x 9 | 1 | 364-0605 | 603 | | 603 | |
| | 3 x 4 x 9A & B | 1 | 364-0607 | 603 | | 603 | |
| | 4 x 5 x 9A & B | 1 | 364-0608 | 603 | | 603 | |
| | 6 x 6 x 9 | 1 | 364-0609 | 603 | | 603 | |
| 73 | BASE | | | | | | |
| | 1-1/4 x 1-1/2 x 9B | 1 | 816-1102 | 010 | | 010 | |
| | 1-1/2 x 2 x 9A, B & C | 1 | 816-1103 | 010 | | 010 | |
| | 2 x 2-1/2 x 9 | 1 | 816-1104 | 010 | | 010 | |
| | 2-1/2 x 3 x 9 | 1 | 816-1105 | 010 | | 010 | |
| | 3 x 4 x 9A & B | 1 | 816-1106 | 010 | | 010 | |
| | 4 x 5 x 9A & B | 1 | 816-1107 | 010 | | 010 | |
| | 6 x 6 x 9 | 1 | 816-1108 | 010 | | 010 | |
| 74 | PIPE PLUG | 1 | 600-0002 | 087 | | 087 | |
| 75 | PIPE PLUG | | | | | | |
| | 1-1/4 x 1-1/2 x 9B | 1 | 600-0002 | 087 | | 087 | |
| | 1-1/2 x 2 x 9A, B & C | 1 | 600-0003 | 087 | | 087 | |
| | 2 x 2-1/2 x 9 | 1 | 600-0003 | 087 | | 087 | |
| | 2-1/2 x 3 x 9 | 1 | 600-0004 | 028 | | 028 | |
| | 3 x 4 x 9A & B | 1 | 600-0004 | 028 | | 028 | |
| | 4 x 5 x 9A & B | 1 | 600-0022 | 028 | | 028 | |
| | 6 x 6 x 9 | 1 | 600-0022 | 028 | | 028 | |
| | (NOT SHOWN) | | | | | | |
| | SEAL KIT **(S)** | 1 | 476-0250 | 644 | | | |
| | (INCLUDES PIECE NO'S 8, 9, 9A, 9B, 9C, 10, 12, 25, 27) | | | | | | |
| | SEAL KIT **(L)** | 1 | 476-0253 | 644 | | | |

# 340A SERIES
# MODELS 341A - 342A - 344A
# 1-1/2 x 2 x 11 - 6 x 6 x 11A

## PARTS LIST

| PC. NO. | DESCRIPTION | QTY | PART NO. | MATERIAL B.F. | | MATERIAL A.I. | |
|---|---|---|---|---|---|---|---|
| 1 | COMPRESSION ELBOW | 1 | 868-3360 | 190 | | 087 | |
| 2 | COMPRESSION CONNECTOR | 1 | 868-3359 | 190 | | 087 | |
| 3 | TUBING | 1 | 872-0124 | 175 | | 087 | |
| 4 | PIPE PLUG | 3 | 600-0002 | 087 | | 087 | |
| 5 | CAPSCREW | 8 | 168-0490 | 082 | | 082 | |
| 6 | CASING | | | | | | |
| | 1-1/2 x 2 x 11 | 1 | 180-2353 | 010 | | 010 | |
| | 2 x 3 x 11 | 1 | 180-2354 | 010 | | 010 | |
| | 3 x 4 x 11 | 1 | 180-2371 | 010 | | 010 | |
| | 4 x 5 x 11 | 1 | 180-2356 | 010 | | 010 | |
| | 5 x 6 x 11 | 1 | 180-2357 | 010 | | 010 | |
| | 6 x 6 x 11 | 1 | 180-2172 | 010 | | 010 | |
| | 6 x 6 x 11A | 1 | 180-2363 | 010 | | 010 | |
| | VERTICAL | | | | | | |
| | 1-1/2 x 2 x 11 | 1 | 180-2457 | 010 | | 010 | |
| 7 | CASE RING | | | | | | |
| | 1-1/2 x 2 x 11 | 1 | 676-1151 | 208 | | 010 | |
| | 2 x 3 x 11 | 1 | 676-1152 | 208 | | 010 | |
| | 3 x 4 x 11 | 1 | 676-1154 | 208 | | 010 | |
| | 4 x 5 x 11 | 1 | 676-1155 | 208 | | 010 | |
| | 5 x 6 x 11 | 1 | 676-1684 | 208 | | 010 | |
| | 6 x 6 x 11 | 1 | 676-1684 | 208 | | 010 | |
| | 6 x 6 x 11A | 1 | 676-1684 | 208 | | 010 | |
| 8 | GASKET | 1 | 364-2109 | 603 | | 603 | |
| | 6 x 6 x 11 & 11A ONLY | 1 | 364-1016 | 603 | | 603 | |
| 9 | CAPSCREW **(S)** | 1 | 168-0382 | 113 | | 113 | |
| | **(L)** | 1 | 168-0490 | 113 | | 113 | |
| 9A | WASHER **(S)** | 1 | 908-0603 | 087 | | 087 | |
| | **(L)** | 1 | 908-0604 | 087 | | 087 | |
| 9B | GASKET **(S)** | 1 | 364-2034 | 603 | | 603 | |
| | **(L)** | 1 | 364-2035 | 603 | | 603 | |
| 9C | CAPSCREW **(S)** | 1 | 908-1290 | 999 | | 999 | |
| | SEAL **(L)** | 1 | 908-1292 | 999 | | 999 | |
| 10 | O-RING **(S)** | 1 | 364-0409 | 457 | | 457 | |
| | **(L)** | 1 | 364-0414 | 457 | | 457 | |
| 11 | IMPELLER **(S)** | | | | | | |
| | 1-1/2 x 2 x 11 | 1 | 443-2511 | 225 | | 010 | |
| | 2 x 3 x 11 | 1 | 443-2387 | 225 | | 010 | |
| | 3 x 4 x 11 | 1 | 443-2388 | 225 | | 010 | |
| | 4 x 5 x 11 | 1 | 443-2389 | 225 | | 010 | |
| | 5 x 6 x 11 | 1 | 443-2390 | 225 | | 010 | |
| | 6 x 6 x 11 | 1 | 443-2390 | 225 | | 010 | |
| | 6 x 6 x 11A | 1 | 443-2390 | 225 | | 010 | |

| PC. NO. | DESCRIPTION | QTY | PART NO. | MATERIAL B.F. | MATERIAL A.I. | |
|---|---|---|---|---|---|---|
| 11 | IMPELLER **(L)** | | | | | |
| | 1-1/2 x 2 x 11 | 1 | 443-2513 | 225 | 010 | |
| | 2 x 3 x 11 | 1 | 443-2399 | 225 | 010 | |
| | 3 x 4 x 11 | 1 | 443-2400 | 225 | 010 | |
| | 4 x 5 x 11 | 1 | 443-2401 | 225 | 010 | |
| | 5 x 6 x 11 | 1 | 443-2402 | 225 | 010 | |
| | 6 x 6 x 11 | 1 | 443-2402 | 225 | 010 | |
| | 6 x 6 x 11A | 1 | 443-2402 | 225 | 010 | |
| 11A | IMPELLER **(S)*** | | | | | |
| | 1-1/2 x 2 x 11 | 1 | 443-2512 | 225 | 010 | |
| | 2 x 3 x11 | 1 | 443-2423 | 225 | 010 | |
| | 3 x 4 x 11 | 1 | 443-2424 | 225 | 010 | |
| | 4 x 5 x 11 | 1 | 443-2425 | 225 | 010 | |
| | 5 x 11 | 1 | 443-2426 | 225 | 010 | |
| | 6 x 11 | 1 | 443-2426 | 225 | 010 | |
| | 6 x 11A | 1 | 443-2426 | 225 | 010 | |
| 11A | IMPELLER **(L)*** | | | | | |
| | 1-1/2 x 2 x 11 | 1 | 443-2514 | 225 | 010 | |
| | 2 x 3 x11 | 1 | 443-2427 | 225 | 010 | |
| | 3 x 4 x 11 | 1 | 443-2428 | 225 | 010 | |
| | 4 x 5 x 11 | 1 | 443-2429 | 225 | 010 | |
| | 5 x 11 | 1 | 443-2430 | 225 | 010 | |
| | 6 x 11 | 1 | 443-2430 | 225 | 010 | |
| | 6 x 11A | 1 | 443-2430 | 225 | 010 | |
| 12 | IMPELLER KEY **(S)** | 1 | 472-0201 | 087 | 087 | |
| | IMPELLER KEY **(L)** | 1 | 472-0247 | 087 | 087 | |
| 14 | IMPELLER RING (OPTIONAL) | | | | | |
| | 1-1/2 x 2 x 11 | 1 | 676-1146 | 208 | 010 | |
| | 2 x 3 x 11 | 1 | 676-1133 | 208 | 010 | |
| | 3 x 4 x 11 | 1 | 676-1140 | 208 | 010 | |
| | 4 x 5 x 11 | 1 | 676-1141 | 208 | 010 | |
| | 5 x 6 x 11 | 1 | 676-1143 | 208 | 010 | |
| | 6 x 6 x 11 | 1 | 676-1143 | 208 | 010 | |
| | 6 x 6 x 11A | 1 | 676-1143 | 208 | 010 | |
| 15 | IMPELLER RING (OPTIONAL) | | | | | |
| | 2 x 3 x 11 | 1 | 676-1133 | 208 | 010 | |
| | 3 x 4 x 11 | 1 | 676-1156 | 208 | 010 | |
| | 4 x 5 x 11 | 1 | 676-1156 | 208 | 010 | |
| | 5 x 6 x 11 | 1 | 676-1156 | 208 | 010 | |
| | 6 x 6 x 11 | 1 | 676-1156 | 208 | 010 | |
| | 6 x 6 x 11A | 1 | 676-1156 | 208 | 010 | |
| 16 | RING 2 x 3 x 11 | 1 | 676-0003 | 010 | 010 | |

*MACHINED FOR OPTIONAL RING NUMBER 14 & 15

# 340A SERIES
# MODELS 341A - 342A - 344A
# 1-1/2 x 2 x 11 - 6 x 6 x 11A

## PARTS LIST

| PC. NO. | DESCRIPTION | QTY | PART NO. | MATERIAL B.F. | | MATERIAL A.I. | |
|---|---|---|---|---|---|---|---|
| 25 | SLEEVE **(S)** | 1 | 756-0077 | 208 | | 104 | |
| | **(L)** | 1 | 756-0078 | 208 | | 104 | |
| 27 | SEAL **(S)** | 1 | 712-0907 | 749 | | 749 | |
| | **(L)** | 1 | 712-0910 | 749 | | 749 | |
| 32 | CAPSCREW MTR. FR. | | | | | | |
| | 213JM - 215JM | 4 | 168-0490 | 082 | | 082 | |
| | 254JM - 256JM | 4 | 168-0490 | 082 | | 082 | |
| | 284JM - 326JM | 4 | 168-0562 | 082 | | 082 | |
| 33 | U DRIVE SCREW | 2 | 708-0013 | 365 | | 365 | |
| 34 | NAMEPLATE | 1 | 532-0045 | 114 | | 114 | |
| 35 | BRACKET (341A) EXCEPT 6 x 6 x11 AND 6 x 6 x 11A | | | | | | |
| | 213JM - 215JM | 1 | 116-0465 | 010 | | 010 | |
| | 254JM - 256JM | 1 | 116-0466 | 010 | | 010 | |
| | 284JM - 326JM | 1 | 116-0467 | 010 | | 010 | |
| | BRACKET (342A) EXCEPT 6 x 6 x 11 AND 6 x 6 x 11A | | | | | | |
| | 213JM - 215JM | 1 | 116-0465 | 010 | | 010 | |
| | 254JM - 256JM | 1 | 116-0466 | 010 | | 010 | |
| | 284JM - 326JM | 1 | 116-0467 | 010 | | 010 | |
| | BRACKET (344A) EXCEPT 6 x 6 x 11 AND 6 x 6 x 11A | | | | | | |
| | POWER FRAME #2 & #3 | 1 | 116-0466 | 010 | | 010 | |
| 35 | BRACKET (341A) 6 x 6 x 11 AND 6 x 6 x 11A ONLY | | | | | | |
| | 213JM - 215JM | 1 | 116-0196 | 010 | | 010 | |
| | 254JM - 256JM | 1 | 116-0199 | 010 | | 010 | |
| | BRACKET (342A) 6 x 6 x 11 AND 6 x 6 x 11A ONLY | | | | | | |
| | 213JM - 215JM | 1 | 116-0196 | 010 | | 010 | |
| | 254JM - 256JM | 1 | 116-0199 | 010 | | 010 | |
| | 284JM - 326JM | 1 | 116-0088 | 010 | | 010 | |
| | BRACKET (344A) 6 x 6 x 11 AND 6 x 6 x 11A ONLY | | | | | | |
| | POWER FRAME #2 & #3 | 1 | 116-0199 | 010 | | 010 | |
| 39 | CAPSCREW (341A) | | | | | | |
| | CAPSCREW (342A) | | | | | | |
| | 1-1/2 x 2 x 11 | 4 | 168-0560 | 082 | | 082 | |
| | 2 x 3 x 11 | 4 | 168-0562 | 082 | | 082 | |
| | 3 x 4 x 11 | 8 | 168-0564 | 082 | | 082 | |
| | 4 x 5 x 11 | 8 | 168-0634 | 082 | | 082 | |
| | 5 x 6 x 11 | 8 | 168-0634 | 082 | | 082 | |
| | 6 x 6 x 11 | 8 | 168-0634 | 082 | | 082 | |
| | 6 x 6 x 11A | 8 | 168-0634 | 082 | | 082 | |
| | CAPSCREW (344A) | | | | | | |
| | POWER FRAME #2 & #3 | 2 | 168-0490 | 082 | | 082 | |
| 40 | WASHER (341A) | NOT REQUIRED | | | | | |
| | WASHER (342A) | NOT REQUIRED | | | | | |
| | WASHER (344A) | | | | | | |
| | POWER FRAME #2 & #3 | 2 | 908-0114 | 080 | | 080 | |
| 41 | SUPPORT (341) | NOT REQUIRED | | | | | |
| | SUPPORT (342) | NOT REQUIRED | | | | | |
| | SUPPORT (344) | | | | | | |
| | POWER FRAME #2 & #3 | 1 | 820-0186 | 010 | | 010 | |
| 42 | DRIVE KEY (344) | | | | | | |
| | POWER FRAME #2 & #3 | 1 | 472-0247 | 087 | | 087 | |

| PC. NO. | DESCRIPTION | QTY | PART NO. | MATERIAL B.F. | | MATERIAL A.I. | |
|---|---|---|---|---|---|---|---|
| 43 | GREASE FITTING | | | | | | |
| | POWER FRAME #2 & #3 | 1 | 508-0005 | 651 | | 651 | |
| 47 | SLINGER | | | | | | |
| | POWER FRAME #2 & #3 | 1 | 764-1021 | 478 | | 478 | |
| 47A | SLINGER | | | | | | |
| | POWER FRAME #2 | 1 | 764-1021 | 478 | | 478 | |
| | POWER FRAME #3 | 1 | 764-1026 | 478 | | 478 | |
| 48 | CAPSCREW | | | | | | |
| | POWER FRAME #2 & #3 | 4 | 168-0492 | 082 | | 082 | |
| 49 | BEARING CAP | | | | | | |
| | POWER FRAME #2 | 1 | 164-0471 | 010 | | 010 | |
| | POWER FRAME #3 | 1 | 164-0472 | 010 | | 010 | |
| 50 | O-RING | | | | | | |
| | POWER FRAME #2 | 1 | 364-0432 | 457 | | 457 | |
| | POWER FRAME #3 | 1 | 364-0438 | 457 | | 457 | |
| 51 | SEAL | | | | | | |
| | POWER FRAME #2 & #3 | 1 | 712-0233 | 653 | | 653 | |
| | OIL LUBE | | | | | | |
| | POWER FRAME #2 & #3 | 1 | 712-0054 | 653 | | 653 | |
| 51A | SEAL | | | | | | |
| | POWER FRAME #2 | 1 | 712-0233 | 653 | | 653 | |
| | POWER FRAME #3 | 1 | 712-0234 | 653 | | 653 | |
| | OIL LUBE | | | | | | |
| | POWER FRAME #2 | 1 | 712-0054 | 653 | | 653 | |
| | POWER FRAME #3 | 1 | 712-0056 | 653 | | 653 | |
| 52 | RETAINING RING | | | | | | |
| | POWER FRAME #2 | 1 | 676-0938 | 088 | | 088 | |
| | POWER FRAME #3 | 1 | 676-0944 | 088 | | 088 | |
| 53 | O.B. BEARING | | | | | | |
| | POWER FRAME #2 | | | | | | |
| | STANDARD OPEN | 1 | 068-2308 | 647 | | 647 | |
| | SEALED PERM LUBE | 1 | 068-2220 | 647 | | 647 | |
| | POWER FRAME #3 | | | | | | |
| | STANDARD OPEN | 1 | 068-2310 | 647 | | 647 | |
| | SEALED PERM LUBE | 1 | 068-2221 | 647 | | 647 | |
| 54 | I.B. BEARING | | | | | | |
| | POWER FRAME #2 | | | | | | |
| | STANDARD OPEN | 1 | 068-0159 | 647 | | 647 | |
| | SEALED PERM LUBE | 1 | 068-2018 | 647 | | 647 | |
| | POWER FRAME #3 | | | | | | |
| | STANDARD OPEN | 1 | 068-0161 | 647 | | 647 | |
| | SEALED PERM LUBE | 1 | 068-2022 | 647 | | 647 | |
| 55 | SHAFT | | | | | | |
| | POWER FRAME #2 | 1 | 728-0122 | 063 | | 063 | |
| | POWER FRAME #3 | 1 | 728-0123 | 063 | | 063 | |

# 340A SERIES
# MODELS 341A - 342A - 344A
# 1-1/2 x 2 x 11 - 6 x 6 x 11A

## PARTS LIST

| PC. NO. | DESCRIPTION | QTY | PART NO. | MATERIAL B.F. | | MATERIAL A.I. | |
|---|---|---|---|---|---|---|---|
| 57 | FRAME | | | | | | |
| | OIL LUBE | | | | | | |
| | POWER FRAME #2 | 1 | 356-0232 | 010 | | 010 | |
| | GREASE | | | | | | |
| | POWER FRAME #2 | 1 | 356-0202 | 010 | | 010 | |
| | OIL LUBE | | | | | | |
| | POWER FRAME #3 | 1 | 356-0233 | 010 | | 010 | |
| | GREASE | | | | | | |
| | POWER FRAME #3 | 1 | 356-0203 | 010 | | 010 | |
| 58 | GREASE FITTING | | | | | | |
| | POWER FRAME #2 & #3 | 1 | 508-0001 | 651 | | 651 | |
| 60 | OILER | | | | | | |
| | POWER FRAME #2 & #3 | 1 | 552-0029 | 652 | | 652 | |
| 61 | PIN | | INCLUDED WITH NO. 25 | | | | |
| 62 | CAPSCREW | | | | | | |
| | POWER FRAME #2 & #3 | 2 | 168-0490 | 082 | | 082 | |
| 63 | WASHER | | | | | | |
| | POWER FRAME #2 & #3 | 1 | 908-0114 | 080 | | 080 | |
| 64 | SUPPORT | | | | | | |
| | POWER FRAME #2 & #3 | 1 | 820-0189 | 010 | | 010 | |
| 72 | GASKET (342A) | | | | | | |
| | 1-1/2 x 3 x 11 | 1 | 364-0603 | 603 | | 603 | |
| | 2 x 3 x 11 | 1 | 364-0605 | 603 | | 603 | |
| | 3 x 4 x 11 | 1 | 364-0607 | 603 | | 603 | |
| | 4 x 5 x 11 | 1 | 364-0608 | 603 | | 603 | |
| | 5 x 6 x 11 | 1 | 364-0609 | 603 | | 603 | |
| | 6 x 6 x 11 | 1 | 364-0609 | 603 | | 603 | |
| | 6 x 6 x 11A | 1 | 364-0609 | 603 | | 603 | |

| PC. NO. | DESCRIPTION | QTY | PART NO. | MATERIAL B.F. | | MATERIAL A.I. | |
|---|---|---|---|---|---|---|---|
| 73 | BASE (342A) | | | | | | |
| | 1-1/2 x 3 x 11 | 1 | 816-1103 | 010 | | 010 | |
| | 2 x 3 x 11 | 1 | 816-1105 | 010 | | 010 | |
| | 3 x 4 x 11 | 1 | 816-1106 | 010 | | 010 | |
| | 4 x 5 x 11 | 1 | 816-1107 | 010 | | 010 | |
| | 5 x 6 x 11 | 1 | 816-1108 | 010 | | 010 | |
| | 6 x 6 x 11 | 1 | 816-1108 | 010 | | 010 | |
| | 6 x 6 x 11A | 1 | 816-1108 | 010 | | 010 | |
| 74 | PIPE PLUG (342A) | 1 | 600-0002 | 087 | | 087 | |
| 75 | PIPE PLUG (342A) | | | | | | |
| | 1-1/2 x 3 x 11 | 1 | 600-0003 | 087 | | 087 | |
| | 2 x 3 x 11 | 1 | 600-0004 | 087 | | 087 | |
| | 3 x 4 x 11 | 1 | 600-0004 | 087 | | 087 | |
| | 4 x 5 x 11 | 1 | 600-0005 | 087 | | 087 | |
| | 5 x 6 x 11 | 1 | 600-0005 | 028 | | 028 | |
| | 6 x 6 x 11 | 1 | 600-0005 | 028 | | 028 | |
| | 6 x 6 x 11A | 1 | 600-0005 | 028 | | 028 | |
| | (NOT SHOWN) | | | | | | |
| | SEAL KIT **(S)** | 1 | 476-0250 | 644 | | | |
| | (INCLUDES PIECE NO'S 8, 9, 9A, 9B, 9C, 10, 12, 25, 27) | | | | | | |
| | SEAL KIT **(L)** | 1 | 476-0253 | 644 | | | |

# 340A SERIES
# MODELS 341A- 342A- 344A
# 1-1/2 x 12 - 6 x 6 x 12A

## PARTS LIST

| PC. NO. | DESCRIPTION | QTY | PART NO. | MATERIAL B.F. | | A.I. | |
|---|---|---|---|---|---|---|---|
| 1 | COMPRESSION ELBOW | 1 | 868-3360 | 190 | | 087 | |
| 2 | COMPRESSION CONNECTOR | 1 | 868-3359 | 190 | | 087 | |
| 3 | TUBING | 1 | 872-0124 | 175 | | 087 | |
| 4 | PIPE PLUG | 3 | 600-0002 | 087 | | 087 | |
| 5 | CAPSCREW | 8 | 168-0489 | 082 | | 082 | |
| 6 | CASING | | | | | | |
| | 1-1/2 x 2 x 12 | 1 | 180-2161 | 010 | | 010 | |
| | 2 x 2-1/2 x 12 | 1 | 180-2163 | 010 | | 010 | |
| | 2-1/2 x 3 x 12 | 1 | 180-2164 | 010 | | 010 | |
| | 3 x 4 x 12 | 1 | 180-2166 | 010 | | 010 | |
| | 4 x 5 x 12 | 1 | 180-2168 | 010 | | 010 | |
| | 5 x 6 x 12 | 1 | 180-2170 | 010 | | 010 | |
| | 6 x 6 x 12 | 1 | 180-2172 | 010 | | 010 | |
| | 6 x 6 x 12A | 1 | 180-2363 | 010 | | 010 | |
| | VERTICAL | | | | | | |
| | 1-1/2 x 2 x 12 | 1 | 180-2201 | 010 | | 010 | |
| 7 | CASE RING | | | | | | |
| | 1-1/2 x 2 x 12 | 1 | 676-1151 | 208 | | 010 | |
| | 2 x 2-1/2 x 12 | 1 | 676-1152 | 208 | | 010 | |
| | 2-1/2 x 3 x 12 | 1 | 676-1152 | 208 | | 010 | |
| | 3 x 4 x 12 | 1 | 676-1154 | 208 | | 010 | |
| | 4 x 5 x 12 | 1 | 676-1155 | 208 | | 010 | |
| | 5 x 6 x 12 | 1 | 676-1684 | 208 | | 010 | |
| | 6 x 6 x 12 | 1 | 676-1684 | 208 | | 010 | |
| | 6 x 6 x 12A | 1 | 676-1684 | 208 | | 010 | |
| 8 | GASKET | 1 | 364-1016 | 603 | | 603 | |
| 9 | CAPSCREW **(S)** | 1 | 168-0382 | 113 | | 113 | |
| | **(L)** | 1 | 168-0490 | 113 | | 113 | |
| 9A | WASHER **(S)** | 1 | 908-0603 | 087 | | 087 | |
| | **(L)** | 1 | 908-0604 | 087 | | 087 | |
| 9B | GASKET **(S)** | 1 | 364-2034 | 603 | | 603 | |
| | **(L)** | 1 | 364-2035 | 603 | | 603 | |
| 9C | CAPSCREW **(S)** | 1 | 908-1290 | 999 | | 999 | |
| | SEAL **(L)** | 1 | 908-1292 | 999 | | 999 | |
| 10 | O-RING **(S)** | 1 | 364-0409 | 457 | | 457 | |
| | **(L)** | 1 | 364-0414 | 457 | | 457 | |
| 11 | IMPELLER **(S)** | 341& 342A ONLY | | | | | |
| | 1-1/2 x 2 x 12 | 1 | 443-1734 | 225 | | 010 | |
| | 2 x 2-1/2 x 12 | 1 | 443-1735 | 225 | | 010 | |
| | 2-1/2 x 3 x 12 | 1 | 443-1736 | 225 | | 010 | |
| | 3 x 4 x 12 | 1 | 443-1737 | 225 | | 010 | |
| 11 | IMPELLER **(L)** | | | | | | |
| | 1-1/2 x 2 x 12 | 1 | 443-1725 | 225 | | 010 | |
| | 2 x 2-1/2 x 12 | 1 | 443-1726 | 225 | | 010 | |
| | 2-1/2 x 3 x 12 | 1 | 443-1727 | 225 | | 010 | |
| | 3 x 4 x 12 | 1 | 443-1728 | 225 | | 010 | |
| | 4 x 5 x 12 | 1 | 443-1729 | 225 | | 010 | |

| PC. NO. | DESCRIPTION | QTY | PART NO. | MATERIAL B.F. | | A.I. | |
|---|---|---|---|---|---|---|---|
| 11 | 5 x 6 x 12 | 1 | 443-1730 | 225 | | 010 | |
| | 6 x 6 x 12 | 1 | 443-1732 | 225 | | 010 | |
| | 6 x 6 x 12A | 1 | 443-1732 | 225 | | 010 | |
| 11A | IMPELLER **(S)*** | 341& 342A ONLY | | | | | |
| | 1-1/2 x 2 x 12 | 1 | 443-1748 | 225 | | 010 | |
| | 2 x 2-1/2 x 12 | 1 | 443-1749 | 225 | | 010 | |
| | 2-1/2 x 3 x 12 | 1 | 443-1750 | 225 | | 010 | |
| | 3 x 4 x 12 | 1 | 443-1751 | 225 | | 010 | |
| 11A | IMPELLER **(L)*** | | | | | | |
| | 1-1/2 x 2 x 12 | 1 | 443-1739 | 225 | | 010 | |
| | 2 x 2-1/2 x 12 | 1 | 443-1740 | 225 | | 010 | |
| | 2-1/2 x 3 x 12 | 1 | 443-1741 | 225 | | 010 | |
| | 3 x 4 x 12 | 1 | 443-1742 | 225 | | 010 | |
| | 4 x 5 x 12 | 1 | 443-1743 | 225 | | 010 | |
| | 5 x 6 x 12 | 1 | 443-1744 | 225 | | 010 | |
| | 6 x 6 x 12 | 1 | 443-1746 | 225 | | 010 | |
| | 6 x 6 x 12A | 1 | 443-1746 | 225 | | 010 | |
| 12 | IMPELLER KEY **(S)** | 1 | 472-0201 | 087 | | 087 | |
| | **(L)** | 1 | 472-0247 | 087 | | 087 | |
| 14 | IMPELLER RING (OPTIONAL) | | | | | | |
| | 1-1/2 x 2 x 12 | 1 | 676-1146 | 208 | | 010 | |
| | 2 x 2-1/2 x 12 | 1 | 676-1133 | 208 | | 010 | |
| | 2-1/2 x 3 x 12 | 1 | 676-1133 | 208 | | 010 | |
| | 3 x 4 x 12 | 1 | 676-1140 | 208 | | 010 | |
| | 4 x 5 x 12 | 1 | 676-1141 | 208 | | 010 | |
| | 5 x 6 x 12 | 1 | 676-1143 | 208 | | 010 | |
| | 6 x 6 x 12 | 1 | 676-1143 | 208 | | 010 | |
| | 6 x 6 x 12A | 1 | 676-1143 | 208 | | 010 | |
| 15 | IMPELLER RING (OPTIONAL) | | | | | | |
| | 2 x 2-1/2 x 12 | 1 | 676-1133 | 208 | | 010 | |
| | 2-1/2 x 3 x 12 | 1 | 676-1133 | 208 | | 010 | |
| | 3 x 4 x 12 | 1 | 676-1156 | 208 | | 010 | |
| | 4 x 5 x 12 | 1 | 676-1156 | 208 | | 010 | |
| | 5 x 6 x 12 | 1 | 676-1156 | 208 | | 010 | |
| | 6 x 6 x 12 | 1 | 676-1156 | 208 | | 010 | |
| | 6 x 6 x 12A | 1 | 676-1156 | 208 | | 010 | |
| 16 | RING | | | | | | |
| | 2 x 2-1/2 x 12 | 1 | 676-0003 | 010 | | 010 | |
| | 2-1/2 x 3 x 12 | 1 | 676-0003 | 010 | | 010 | |
| 25 | SLEEVE **(S)** | 1 | 756-0077 | 208 | | 104 | |
| | **(L)** | 1 | 756-0078 | 208 | | 104 | |
| 27 | SEAL **(S)** | 1 | 712-0907 | 749 | | 749 | |
| | **(L)** | 1 | 712-0910 | 749 | | 749 | |

*MACHINED FOR OPTIONAL RING NUMBER 14 & 15

# 340A SERIES
# MODELS 341A- 342A- 344A
# 1-1/2 x 12 - 6 x 6 x 12A

## PARTS LIST

| PC. NO. | DESCRIPTION | QTY | PART NO. | MATERIAL B.F. | | MATERIAL A.I. | |
|---|---|---|---|---|---|---|---|
| 32 | CAPSCREW (341 & 342) | | | | | | |
| | 213JM - 215JM | 4 | 168-0490 | 082 | | 082 | |
| | 254JM - 256JM | 4 | 168-0492 | 082 | | 082 | |
| | 284JM - 326JM | 4 | 168-0562 | 082 | | 082 | |
| | CAPSCREW (344) | | | | | | |
| | POWER FRAME #2 & #3 | 4 | 168-0492 | 082 | | 082 | |
| 33 | U DRIVE SCREW | 2 | 708-0013 | 365 | | 365 | |
| 34 | NAMEPLATE | 1 | 532-0045 | 114 | | 114 | |
| 35 | BRACKET (341A) | | | | | | |
| | 213JM - 215JM | 1 | 116-0196 | 010 | | 010 | |
| | 254JM - 256JM | 1 | 116-0199 | 010 | | 010 | |
| | BRACKET (342A) | | | | | | |
| | 213JM - 215JM | 1 | 116-0196 | 010 | | 010 | |
| | 254JM - 256JM | 1 | 116-0199 | 010 | | 010 | |
| | 284JM - 326JM | 1 | 116-0088 | 010 | | 010 | |
| | BRACKET (344A) | | | | | | |
| | POWER FRAME #2 & #3 | 1 | 116-0199 | 010 | | 010 | |
| 39 | CAPSCREW (341A) | NOT REQUIRED | | | | | |
| | CAPSCREW (342A) | | | | | | |
| | 1-1/2 x 2 x 12 | 4 | 168-0560 | 082 | | 082 | |
| | 2 x 2-1/2 x 12 | 4 | 168-0562 | 082 | | 082 | |
| | 2-1/2 x 3 x 12 | 4 | 168-0562 | 082 | | 082 | |
| | 3 x 4 x 12 | 4 | 168-0564 | 082 | | 082 | |
| | 4 x 5 x 12 | 4 | 168-0634 | 082 | | 082 | |
| | 5 x 6 x 12 | 4 | 168-0634 | 082 | | 082 | |
| | 6 x 6 x 12 & 12A | 4 | 168-0634 | 082 | | 082 | |
| | CAPSCREW (344A) | | | | | | |
| | POWER FRAME #2 & #3 | 2 | 168-0490 | 082 | | 082 | |
| 40 | WASHER (341A) | NOT REQUIRED | | | | | |
| | WASHER (342A) | NOT REQUIRED | | | | | |
| | WASHER (344A) | | | | | | |
| | POWER FRAME #2 & #3 | 2 | 908-0114 | 080 | | 080 | |
| 41 | SUPPORT (341A) | | | | | | |
| | 213JM - 215JM | NOT REQUIRED | | | | | |
| | 254JM - 256JM | NOT REQUIRED | | | | | |
| | SUPPORT (344) | | | | | | |
| | POWER FRAME #2 & #3 | 1 | 820-0186 | 010 | | 010 | |
| 42 | DRIVE KEY | 1 | 472-0247 | 087 | | 087 | |
| 43 | GREASE FITTING | 1 | 508-0005 | 657 | | 651 | |
| 44 | VENT TUBE | 1 | 864-0051 | 656 | | 656 | |
| 46 | PROTECTOR | 2 | 624-0010 | 503 | | 503 | |
| 47 | SLINGER | | | | | | |
| | POWER FRAME #2 & #3 | 1 | 764-1021 | 478 | | 478 | |
| 47A | SLINGER | | | | | | |
| | POWER FRAME #2 | 1 | 764-1021 | 478 | | 478 | |
| | POWER FRAME #3 | 1 | 764-1026 | 478 | | 478 | |

| PC. NO. | DESCRIPTION | QTY | PART NO. | MATERIAL B.F. | MATERIAL A.I. | |
|---|---|---|---|---|---|---|
| 48 | CAPSCREW | | | | | |
| | POWER FRAME #2 & #3 | 4 | 168-0492 | 082 | 082 | |
| 49 | BEARING CAP | | | | | |
| | POWER FRAME #2 | 1 | 164-0471 | 010 | 010 | |
| | POWER FRAME #3 | 1 | 164-0472 | 010 | 010 | |
| 50 | O-RING | | | | | |
| | POWER FRAME #2 | 1 | 364-0432 | 457 | 457 | |
| | POWER FRAME #3 | 1 | 364-0438 | 457 | 457 | |
| 51 | SEAL | | | | | |
| | POWER FRAME #2 & #3 | 1 | 712-0233 | 653 | 653 | |
| | OIL LUBE | | | | | |
| | POWER FRAME #2 & #3 | 1 | 712-0054 | 653 | 653 | |
| 51A | SEAL | | | | | |
| | POWER FRAME #2 | 1 | 712-0233 | 653 | 653 | |
| | POWER FRAME #3 | 1 | 712-0234 | 653 | 653 | |
| | OIL LUBE | | | | | |
| | POWER FRAME #2 | 1 | 712-0054 | 653 | 653 | |
| | POWER FRAME #3 | 1 | 712-0056 | 653 | 653 | |
| 52 | RETAINING RING | | | | | |
| | POWER FRAME #2 | 1 | 676-0938 | 088 | 088 | |
| | POWER FRAME #3 | 1 | 676-0944 | 088 | 088 | |
| 53 | O.B. BEARING | | | | | |
| | POWER FRAME #2 | | | | | |
| | STANDARD OPEN | 1 | 068-2308 | 647 | 647 | |
| | SEALED PERM LUBE | 1 | 068-2220 | 647 | 647 | |
| | POWER FRAME #3 | | | | | |
| | STANDARD OPEN | 1 | 068-2310 | 647 | 647 | |
| | SEALED PERM LUBE | 1 | 068-2221 | 647 | 647 | |
| 54 | I.B. BEARING | | | | | |
| | POWER FRAME #2 | | | | | |
| | STANDARD OPEN | 1 | 068-0159 | 647 | 647 | |
| | SEALED PERM LUBE | 1 | 068-2018 | 647 | 647 | |
| | POWER FRAME #3 | | | | | |
| | STANDARD OPEN | 1 | 068-0161 | 647 | 647 | |
| | SEALED PERM LUBE | 1 | 068-2022 | 647 | 647 | |
| 55 | SHAFT | | | | | |
| | POWER FRAME #2 | 1 | 728-0122 | 063 | 063 | |
| | POWER FRAME #3 | 1 | 728-0123 | 063 | 063 | |
| 56 | PROTECTOR | 2 | 624-0010 | 503 | 503 | |

# 340A SERIES
# MODELS 341A- 342A- 344A
# 1-1/2 x 12 - 6 x 6 x 12A

## PARTS LIST

| PC. NO. | DESCRIPTION | QTY | PART NO. | MATERIAL B.F. | MATERIAL A.I. | |
|---|---|---|---|---|---|---|
| 57 | FRAME | | | | | |
| | OIL LUBE | | | | | |
| | POWER FRAME #2 | 1 | 356-0232 | 010 | 010 | |
| | POWER FRAME #3 | 1 | 356-0233 | 010 | 010 | |
| | GREASE | | | | | |
| | POWER FRAME #2 | 1 | 356-0202 | 010 | 010 | |
| | POWER FRAME #3 | 1 | 356-0203 | 010 | 010 | |
| 58 | GREASE FITTING | 1 | 508-0001 | 651 | 651 | |
| 59 | PIPE PLUG | | | | | |
| | POWER FRAME #2 & #3 | 2 | 600-0001 | 087 | 087 | |
| 60 | OILER | 1 | 522-0029 | 652 | 652 | |
| 61 | PIN | INCLUDED WITH NO. 25 | | | | |
| 62 | CAPSCREW | | | | | |
| | POWER FRAME #2 & #3 | 2 | 168-0490 | 082 | 082 | |
| 63 | WASHER | 2 | 908-0114 | 080 | 080 | |
| 64 | SUPPORT | | | | | |
| | POWER FRAME #2 & #3 | 1 | 820-0189 | 010 | 010 | |
| 72 | GASKET | | | | | |
| | 1-1/2 x 2 x 12 | 1 | 364-0603 | 603 | 603 | |
| | 2 x 2-1/2 x 12 | 1 | 364-0604 | 603 | 603 | |
| | 2-1/2 x 3 x 12 | 1 | 364-0605 | 603 | 603 | |
| | 3 x 4 x 12 | 1 | 364-0607 | 603 | 603 | |
| | 4 x 5 x 12 | 1 | 364-0609 | 603 | 603 | |
| | 5 x 6 x 12 | 1 | 364-0609 | 603 | 603 | |
| | 6 x 6 x 12 & 12A | 1 | 364-0609 | 603 | 603 | |

| PC. NO. | DESCRIPTION | QTY | PART NO. | MATERIAL B.F. | MATERIAL A.I. | |
|---|---|---|---|---|---|---|
| 73 | BASE | | | | | |
| | 1-1/2 x 2 x 12 | 1 | 816-1103 | 010 | 010 | |
| | 2 x 2-1/2 x 12 | 1 | 816-1104 | 010 | 010 | |
| | 2-1/2 x 3 x 12 | 1 | 816-1105 | 010 | 010 | |
| | 3 x 4 x 12 | 1 | 816-1106 | 010 | 010 | |
| | 4 x 5 x 12 | 1 | 816-1108 | 010 | 010 | |
| | 5 x 6 x 12 | 1 | 816-1108 | 010 | 010 | |
| | 6 x 6 x 12 & 12A | 1 | 816-1108 | 010 | 010 | |
| 74 | PIPE PLUG | 1 | 600-0002 | 087 | 087 | |
| 75 | PIPE PLUG | | | | | |
| | 1-1/2 x 2 x 12 | 1 | 600-0003 | 087 | 087 | |
| | 2 x 2-1/2 x 12 | 1 | 600-0003 | 087 | 087 | |
| | 2-1/2 x 3 x 12 | 1 | 600-0004 | 087 | 087 | |
| | 3 x 4 x 12 | 1 | 600-0004 | 028 | 028 | |
| | 4 x 5 x 12 | 1 | 600-0005 | 028 | 028 | |
| | 5 x 6 x 12 | 1 | 600-0005 | 028 | 028 | |
| | 6 x 6 x 12 & 12A | 1 | 600-0005 | 028 | 028 | |
| | (NOT SHOWN) | | | | | |
| | SEAL KIT **(S)** | 1 | 476-0250 | 644 | | |
| | (INCLUDES PIECE NO'S 8, 9, 9A, 9B, 9C, 10, 12, 25, 27) | | | | | |
| | SEAL KIT **(L)** | 1 | 476-0253 | 644 | | |

# 340A SERIES
# MODELS 341A- 342A- 344A
# 6 x 6 x 12B - 6 x 8 x 15 - 8 x 10 x 15

## PARTS LIST

| PC. NO. | DESCRIPTION | QTY | PART NO. | MATERIAL | | | |
|---|---|---|---|---|---|---|---|
| | | | | B.F. | | A.I. | |
| 1 | COMP. ELBOW | 1 | 868-3360 | 190 | | 087 | |
| 2 | COMP. CONN. | 1 | 868-3359 | 190 | | 087 | |
| 3 | TUBING | 1 | 872-0124 | 175 | | 087 | |
| 4 | PIPE PLUG | 3 | 600-0002 | 087 | | 087 | |
| 5 | CAPSCREW | | | | | | |
| | 6x6x12B | 8 | 168-0489 | 082 | | 082 | |
| | 6x8x15 | 12 | 168-0636 | 082 | | 082 | |
| | 8x10x15 | 12 | 168-0636 | 082 | | 082 | |
| 6 | CASING | | | | | | |
| | 6x6x12B | 1 | 180-2516 | 010 | | 010 | |
| | 6x8x15 | 1 | 180-2366 | 010 | | 010 | |
| | 8x10x15 | 1 | 180-2367 | 010 | | 010 | |
| 7 | CASE RING | | | | | | |
| | 6x6x12B | 1 | 676-2100 | 208 | | 010 | |
| | 6x8x15 | 2 | 676-2036 | 222 | | 010 | |
| | 8x10x15 | 2 | 676-2037 | 222 | | 010 | |
| 8 | GASKET | | | | | | |
| | 12" | 1 | 364-1016 | 603 | | 603 | |
| | 15" | 1 | 364-0557 | 457 | | 457 | |
| 9A | WASHER | 1 | 908-1326 | 104 | | 104 | |
| 9B | GASKET | 1 | 364-2046 | 603 | | 603 | |
| 10 | O-RING | 1 | 364-0419 | 457 | | 457 | |
| 11 | IMPELLER | | | | | | |
| | 6x6x12B, ELB | 1 | 443-3086 | 208 | | 010 | |
| | 6x8x15 | 1 | 443-3088 | 208 | | 010 | |
| | 8x10x15 | 1 | 443-3090 | 208 | | 010 | |
| 11A | IMPELLER | | | | | | |
| | 6x6x12B, ELB | 1 | 443-3087 | 208 | | 010 | |
| | 6x8x15 | 1 | 443-3089 | 208 | | 010 | |
| | 8x10x15 | 1 | 443-3091 | 208 | | 010 | |
| 12 | IMPELLER KEY | 1 | 472-0318 | 087 | | 087 | |
| 14 | IMPELLER RING, OPTIONAL | | | | | | |
| | 6x6x12B | 1 | 676-2101 | 208 | | 010 | |
| | 6x8x15 | 1 | 676-1053 | 208 | | 010 | |
| | 8x10x15 | 1 | 676-1971 | 208 | | 010 | |
| 15 | IMPELLER RING, OPTIONAL | | | | | | |
| | 6x6x12B | 1 | 676-2101 | 208 | | 010 | |
| | 6x8x15 | 1 | 676-1053 | 208 | | 010 | |
| | 8x10x15 | 1 | 676-1053 | 208 | | 010 | |
| 25 | SHAFT SLEEVE | 1 | 756-0692 | 208 | | 104 | |
| 27 | MECHANICAL SEAL | 1 | 712-1014 | 749 | | 749 | |
| 32 | CAPSCREW | | | | | | |
| | 326-405 TCZ | 4 | 168-0564 | 082 | | 082 | |
| | 444TCZ + | 8 | 168-0566 | 082 | | 082 | |
| 33 | WASHER | 2 | 708-0013 | 365 | | 365 | |

| PC. NO. | DESCRIPTION | QTY | PART NO. | MATERIAL | | | |
|---|---|---|---|---|---|---|---|
| | | | | B.F. | | A.I. | |
| 34 | NAME PLATE | 1 | 532-0045 | 114 | | 114 | |
| 35 | BRACKET | | | | | | |
| | 12", 326-405 TCZ | 1 | 116-0538 | 010 | | 010 | |
| | 15", 326-405 TCZ | 1 | 116-0537 | 010 | | 010 | |
| | 15", 444 TCZ + | 1 | 116-0539 | 010 | | 010 | |

*MACHINED FOR OPTIONAL IMPELLER WEAR RINGS, ITEM 14 & 15 (ELB, EXTRA LARGE BORE)

AP-340P-REPAIR (3.04)

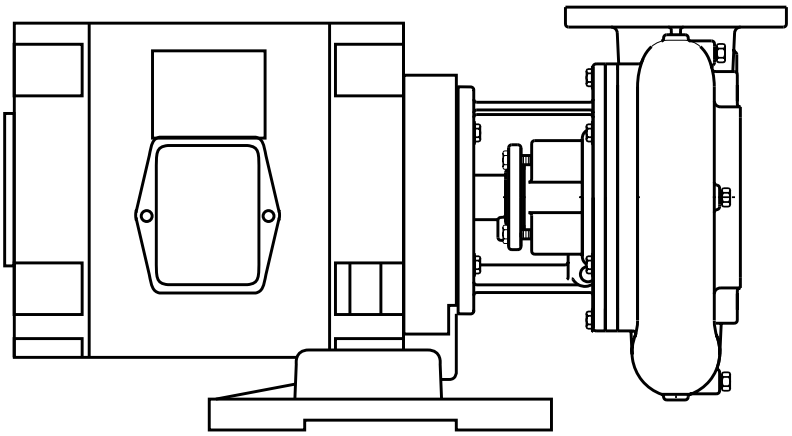
AURORA®
Pentair Pump Group

**Aurora Pumps**
800 Airport Road
North Aurora, IL 60542
phone: 630-859-7000
fax: 630-859-7060

**NOTE:**
Aurora Pump reserves the right to make revisions to its products and their specifications, and to this bulletin and related information without notice

SUPERSEDES 360P PAGE 1
DATED JUNE 1998

# 360A SERIES
# REPAIR PARTS INDEX



READ AND UNDERSTAND THE PUMP AND MOTOR INSTRUCTIONS BEFORE ATTEMPTING TO INSTALL, DISASSEMBLE OR REPAIR THE PUMP

AURORA®
PENTAIR PUMP GROUP

# 360A SERIES
# MODELS 361A - 362A - 364A

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| | Exploded view and piece numbers | |
| 362A | Vertical Close Coupled | 5 |
| | Exploded view and piece numbers | |
| 364A | Horizontal Power Frame Mounted | 6 |
| | Exploded view and piece numbers | |
| 364A (6x8x15 and 8x10x15) | Horizontal Power Frame Mounted | 7 |
| | Exploded view and piece numbers | |

| PUMP SIZE | PAGE |
|---|---|
| 1-1/4 x 1-1/2 x 7 thru 4 x 4 x 7 | 8 - 10 |
| 1-1/4 x 1-1/2 x 9B thru 6 x 6 x 9 | 11 - 14 |
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| 1-1/2 x 2 x 12 thru 6 x 6 x 12A | 15 - 18 |
| 6 x 8 x 15 and 8 x 10 x 15* | 19 - 20 |


*Available in Model 364A only

**Notes:**

1) Part number 9A, 9B, 9C, 10, 11, 12, 16, 17, 18, 19, 23, 25, 26, 27, 28, 29, 32, 35, 39, 40, 41, and 66 are listed with a larger letter **(S)** or **(L)**. These pumps are built on two shaft sizes, **(S)** indicating small and **(L)** for large.

2) To determine when to use **(S)** or **(L)** parts, in addition to the pump size, it is also necessary to have the motor frame number for 361A and 362A pumps and also the operating speed for 364A. Motor frame 184JP and Smaller use **(S)** parts. Motor frame 213JP and Larger use **(L)** parts.

3) For 364A power frame assignment, refer to page 3.

4) Part numbers for standard fitted pumps are not shown specifically, but they are the same as for bronze fitted except for the impeller which is cast iron (010) rather than bronze.

## THE CHART FOR USE WITH 364A PUMPS ONLY.
## FOR CLOSE COUPLED PUMPS REFER TO MOTOR FRAME SIZES ON PAGE 2.

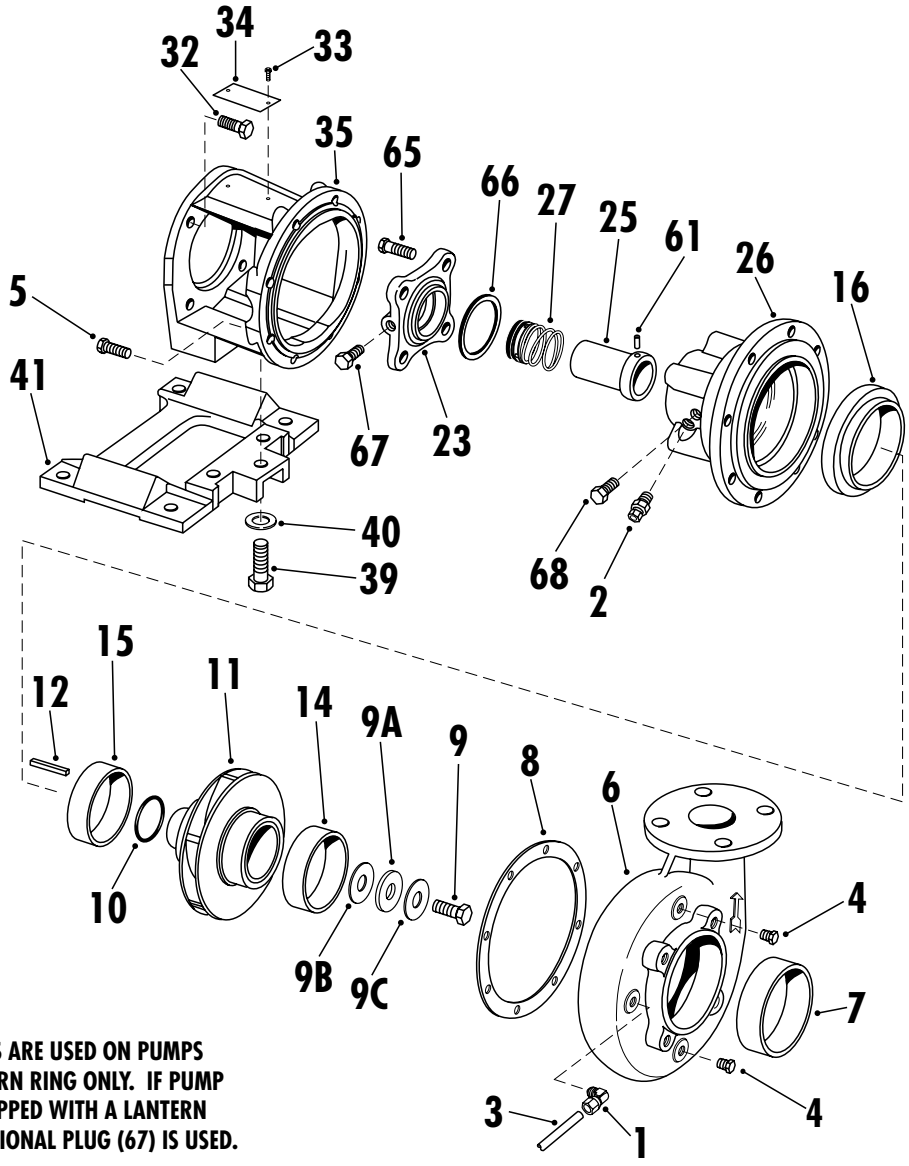
| PUMP SIZE | 3500 | 1750 | | 1150 | |
|---|---|---|---|---|---|
| | ENCLOSED | ENCLOSED | SEMI-ENCLOSED | ENCLOSED | SEMI-ENCLOSED |
| 1-1/4 x 1-1/2 x 7 | 1 | 1 | 1 | - | - |
| 1-1/4 x 1-1/2 x 9B | - | 1 | - | - | - |
| 1-1/2 x 2 x 7 | 1 | 1 | 1 | - | - |
| 1-1/2 x 2 x 9A | - | 1 | 2 | - | 1 |
| 1-1/2 x 2 x 9B | - | 1 | - | - | - |
| 1-1/2 x 2 x 9C | 2 | 1 | - | - | - |
| 1-1/2 x 2 x 11 | - | 2 | - | 2 | - |
| 1-1/2 x 2 x 12 | - | 2 | 3 | 2 | 2 |
| 2 x 2-1/2 x 7A | 2 | 1 | 1 | - | - |
| 2 x 2-1/2 x 7B | 1 | 1 | - | - | - |
| 2 x 2-1/2 x 9 | 3 | 1 | - | - | - |
| 2 x 2-1/2 x 12 | - | 2 | - | 2 | - |
| 2 x 3 x 11 | - | 2 | - | 2 | - |
| 2-1/2 x 3x 7A | 2 | 1 | 1 | - | - |
| 2-1/2 x 3 x 7B | 2 | 1 | - | - | - |
| 2-1/2 x 3 x 9 | 3 | 2 | 2 | - | 2 |
| 2-1/2 x 3 x 12 | - | 3 | 3 | 2 | 2 |
| 3 x 4 x 9A | 3 | 2 | - | - | - |
| 3 x 4 x 9B | 3 | 2 | - | - | - |
| 3 x 4 x 11 | - | 2 | - | 2 | - |
| 3 x 4 x 12 | - | 3 | 3 | 2 | 2 |
| 4 x 4 x 7A | 2 | 1 | - | - | - |
| 4 x 4 x 7B | 2 | 1 | 1 | - | - |
| 4 x 5 x 9A | 3 | 2 | - | - | - |
| 4 x 5 x 9B | - | 2 | 2 | - | 2 |
| 4 x 5 x 11 | - | 3 | - | 2 | - |
| 4 x 5 x 12 | - | 3 | 3 | 2 | 2 |
| 5 x 6 x 11 | - | 3 | - | 2 | - |
| 5 x 6 x 12 | - | 3 | 3 | 3 | 2 |
| 6 x 6 x 9 | - | 2 | 2 | 2 | 2 |
| 6 x 6 x 11 | - | 3 | - | 2 | - |
| 6 x 6 x 11A | - | 3 | - | 2 | - |
| 6 x 6 x12 | - | 3 | - | 3 | - |
| 6 x 6 x 12A | - | 3 | - | - | - |
| 6 x 8 x 15 | - | 21 | - | 21 | - |
| 8 x 10 x 15 | - | 21 | - | 21 | - |

Determine power frame size from chart above based on the pump size and operating speed.

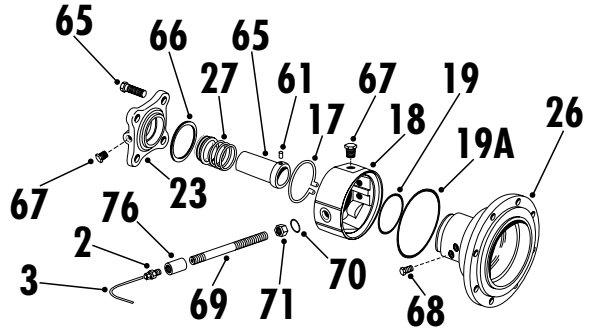
Power frame NO. 1 - use **(S)** parts
Power frame NO. 2 - use **(L)** parts
Power frame NO. 3 - use **(L)** parts
Power frame No. 21 - use PF21 parts

# 360A SERIES

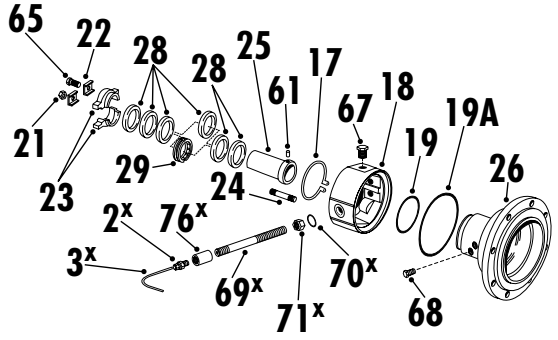
## MODEL 361A
## PIECE NUMBERS




x THESE PARTS ARE USED ON PUMPS WITH LANTERN RING ONLY. IF PUMP IS NOT EQUIPPED WITH A LANTERN RING, ADDITIONAL PLUG (67) IS USED.

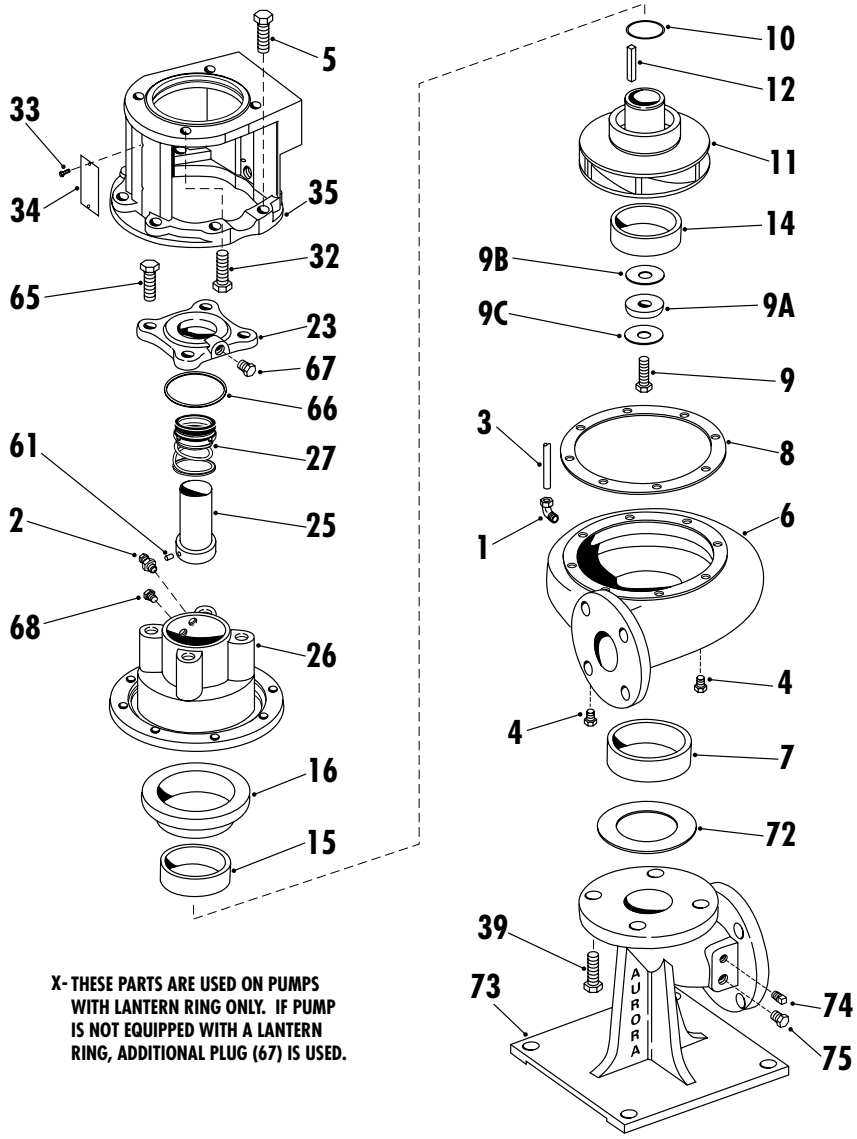



MECHANICAL SEAL WITH WATER JACKET

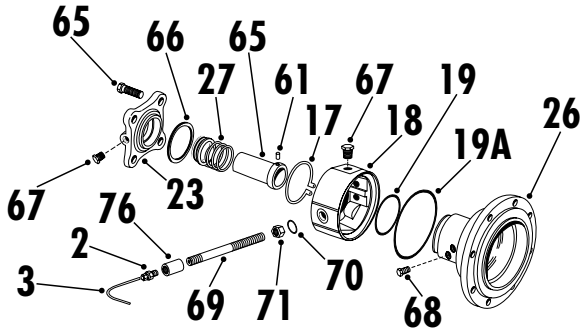



PACKING WITH LANTERN RING AND WATER JACKET

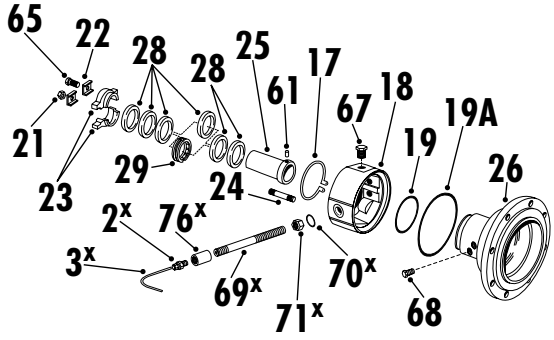
# MODEL 362A
# PIECE NUMBERS




**X- THESE PARTS ARE USED ON PUMPS WITH LANTERN RING ONLY. IF PUMP IS NOT EQUIPPED WITH A LANTERN RING, ADDITIONAL PLUG (67) IS USED.**



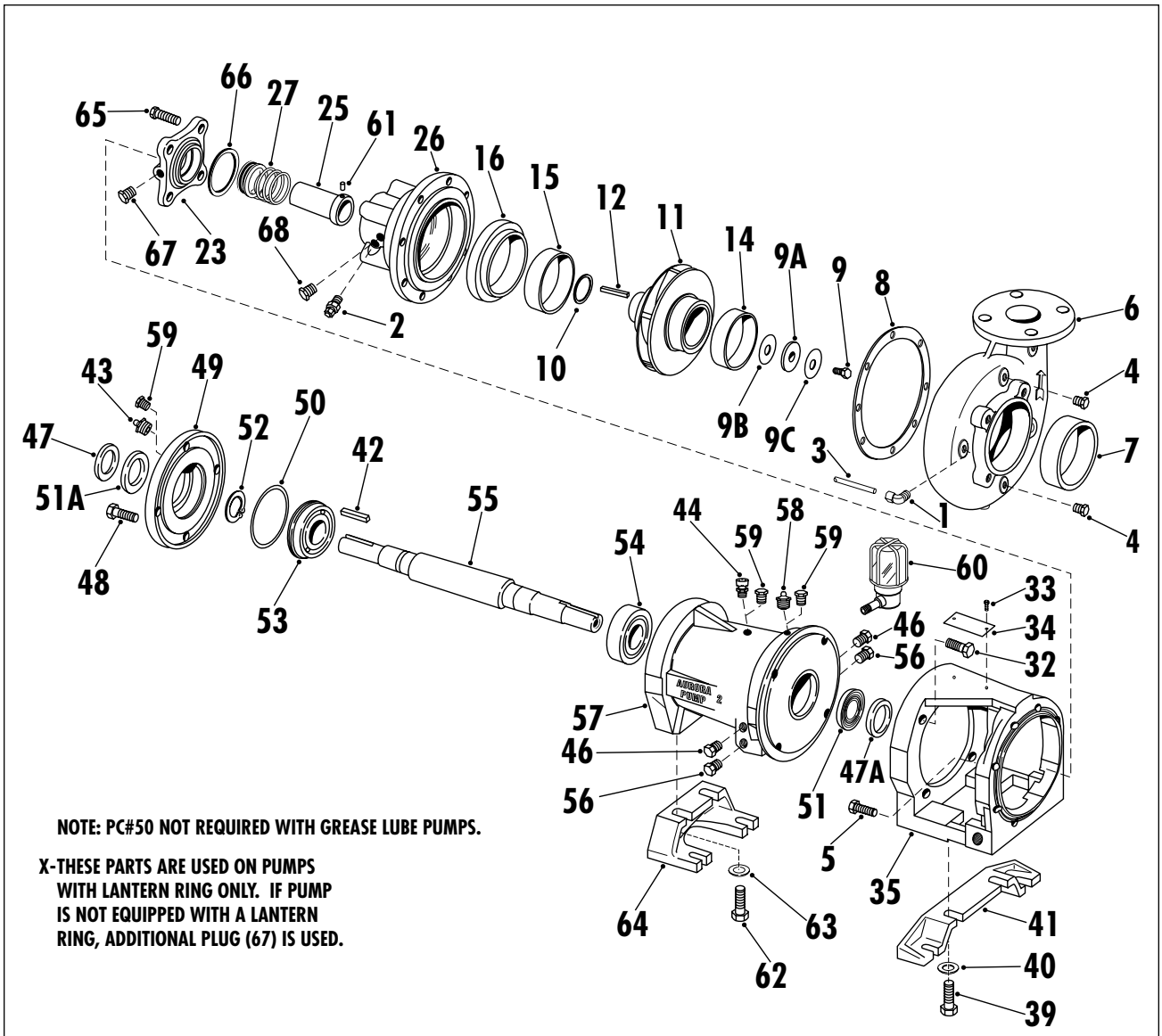

**MECHANICAL SEAL WITH WATER JACKET**




**PACKING WITH LANTERN RING AND WATER JACKET**

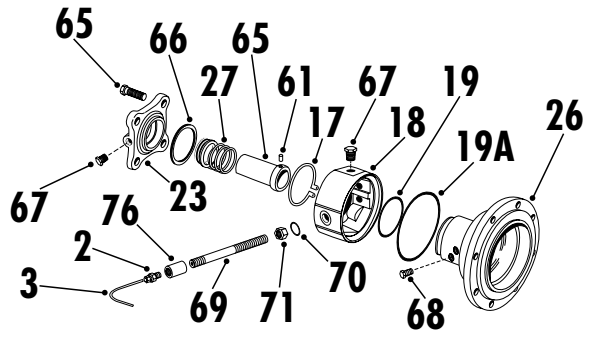
# 360A SERIES

## MODEL 364A
## PIECE NUMBERS

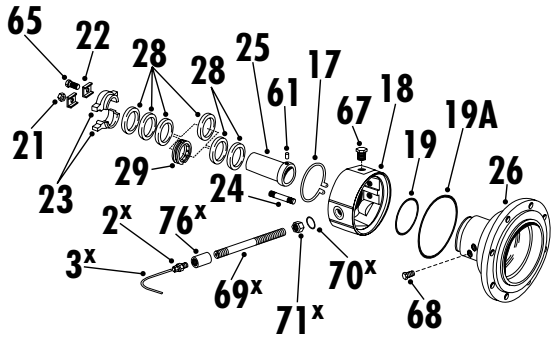



NOTE: PC#50 NOT REQUIRED WITH GREASE LUBE PUMPS.

X-THESE PARTS ARE USED ON PUMPS WITH LANTERN RING ONLY. IF PUMP IS NOT EQUIPPED WITH A LANTERN RING, ADDITIONAL PLUG (67) IS USED.

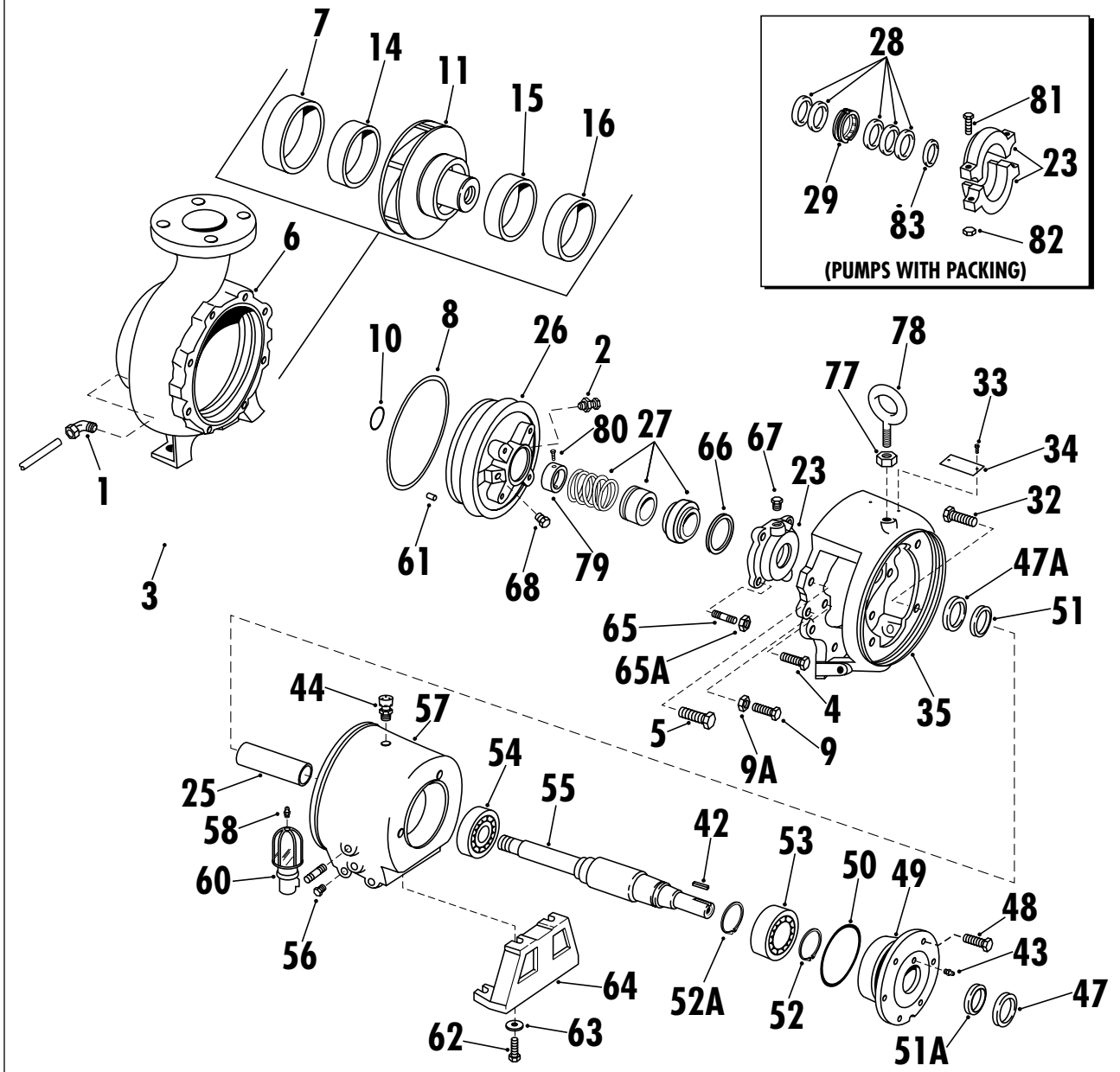



MECHANICAL SEAL WITH WATER JACKET




PACKING WITH LANTERN RING AND WATER JACKET

# 360A SERIES
# ANSI - MODEL 364A
# 6 x 8 x 15 & 8 x 10 x 15
# PIECE NUMBERS




**NOTE: PC#50 NOT REQUIRED WITH GREASE LUBE PUMPS.**

# 360A SERIES
# MODELS 361A - 362A - 364A
# 1-1/4 x 1-1/2 x 7 - 4 x 4 x 7

## PARTS LIST

| PC. NO. | DESCRIPTION | QTY | PART NO. | MATERIAL B.F. | A.B. | A.I. | S.S. |
|---|---|---|---|---|---|---|---|
| 1 | COMPRESSION ELBOW | 1 | 868-3360 | 190 | 190 | 087 | 104 |
| 2 | COMPRESSION CONNECTOR | 1 | 868-3359 | 190 | 190 | 087 | 104 |
| 3 | TUBING | 1 | 872-0124 | 175 | 175 | 087 | 104 |
| 4 | PIPE PIPE PLUG | 3 | 600-0002 | 087 | 190 | 087 | 104 |
| 5 | CAPSCREW | 8 | 168-0391 | 082 | 190 | 082 | 104 |
| 6 | CASING | | | | | | |
| | 1-1/4 x 1-1/2 x 7 | 1 | 180-2138 | 010 | 208 | 010 | 104 |
| | 1-1/2 x 2 x 7 | 1 | 180-2140 | 010 | 208 | 010 | 104 |
| | 2 x 2-1/2 x 7A & B | 1 | 180-2142 | 010 | 208 | 010 | 104 |
| | 2-1/2 x 3 x 7A & B | 1 | 180-2144 | 010 | 208 | 010 | 104 |
| | 4 x 4 x 7A & B | 1 | 180-2146 | 010 | 208 | 010 | 104 |
| | VERTICAL | | | | | | |
| | 1-1/4 x 1-1/2 x 7 | 1 | 180-2196 | 010 | 208 | 010 | 104 |
| | 1-1/2 x 2 x 7 | 1 | 180-2197 | 010 | 208 | 010 | 104 |
| 6 | SEMI-OPEN IMPELLER PUMPS | | | | | | |
| | CASING | | | | | | |
| | 1-1/4 x 1-1/2 x 7 | 1 | 180-2139 | 642 | 643 | 642 | 646 |
| | 1-1/2 x 2 x 7 | 1 | 180-2141 | 642 | 643 | 642 | 646 |
| | 2 x 2-1/2 x 7 | 1 | 180-2143 | 642 | 643 | 642 | 646 |
| | 2-1/2 x 3 x 7A | 1 | 180-2145 | 642 | 643 | 642 | 646 |
| | 4 x 4 x 7B | 1 | 180-2147 | 642 | 643 | 642 | 646 |
| 7 | CASE RING | | | | | | |
| | 1-1/4 x 1-1/2 x 7 | 1 | 676-1150 | 208 | 208 | 010 | 104 |
| | 1-1/2 x 2 x 7 | 1 | 676-1151 | 208 | 208 | 010 | 104 |
| | 2 x 2-1/2 x 7A & B | 1 | 676-1152 | 208 | 208 | 010 | 104 |
| | 2-1/2 x 3 x 7A & B | 1 | 676-1152 | 208 | 208 | 010 | 104 |
| | 4 x 4 x 7A & B | 1 | 676-1154 | 208 | 208 | 010 | 104 |
| 8 | GASKET | 1 | 364-1014 | 603 | 603 | 603 | 603 |
| 9 | CAPSCREW **(S)** | 1 | 168-0382 | 113 | 104 | 113 | 104 |
| | **(L)** | 1 | 168-0490 | 113 | 104 | 113 | 104 |
| 9A | WASHER **(S)** | 1 | 908-0603 | 087 | 101 | 087 | 101 |
| | **(L)** | 1 | 908-0604 | 087 | 101 | 087 | 101 |
| 9B | GASKET **(S)** | 1 | 364-2034 | 603 | 603 | 603 | 603 |
| | **(L)** | 1 | 364-2035 | 603 | 603 | 603 | 603 |
| 9C | CAPSCREW **(S)** | 1 | 908-1290 | 999 | 118 | 999 | 118 |
| | SEAL **(L)** | 1 | 908-1292 | 999 | 118 | 999 | 118 |
| 10 | O-RING **(S)** | 1 | 364-0409 | 457 | 457 | 457 | 457 |
| | **(L)** | 1 | 364-0414 | 457 | 457 | 457 | 457 |
| 11 | IMPELLER **(S)** | | | | | | |
| | 1-1/4 x 1-1/2 x 7 | 1 | 443-0407 | 225 | 225 | 010 | 104 |
| | 1-1/2 x 2 x 7 | 1 | 443-0409 | 225 | 225 | 010 | 104 |
| | 2 x 2-1/2 x 7A | 1 | 443-0411 | 225 | 225 | 010 | 104 |
| | 2 x 2-1/2 x 7B | 1 | 443-0415 | 225 | 225 | 010 | 104 |
| | 2-1/2 x 3 x 7A | 1 | 443-2034 | 225 | 225 | 010 | 104 |
| | 2-1/2 x 3 x 7B | 1 | 443-0417 | 225 | 225 | 010 | 104 |
| | 4 x 4 x 7A | 1 | 443-0425 | 225 | 225 | 010 | 104 |
| | 4 x 4 x 7B | 1 | 443-0423 | 225 | 225 | 010 | 104 |
| 11 | IMPELLER **(L)** | | | | | | |
| | 2 x 2-1/2 x 7A | 1 | 443-0413 | 225 | 225 | 010 | 104 |
| | 2 x 2-1/2 x 7B | 1 | 443-2184 | 225 | 225 | 010 | 104 |
| | 2-1/2 x 3 x 7A | 1 | 443-2035 | 225 | 225 | 010 | 104 |
| | 2-1/2 x 3 x 7B | 1 | 443-0419 | 225 | 225 | 010 | 104 |
| | 4 x 4 x 7A | 1 | 443-0427 | 225 | 225 | 010 | 104 |
| | 4 x 4 x 7B | 1 | 443-0472 | 225 | 225 | 010 | 104 |

*MACHINED FOR OPTIONAL RING NUMBER 14 & 15

| PC. NO. | DESCRIPTION | QTY | PART NO. | MATERIAL B.F. | A.B. | A.I. | S.S. |
|---|---|---|---|---|---|---|---|
| 11A | IMPELLER **(S)*** | | | | | | |
| | 1-1/4 x 1-1/2 x 7 | 1 | 443-0408 | 225 | 225 | 010 | 104 |
| | 1-1/2 x 2 x 7 | 1 | 443-0410 | 225 | 225 | 010 | 104 |
| | 2 x 2-1/2 x 7A | 1 | 443-0412 | 225 | 225 | 010 | 104 |
| | 2 x 2-1/2 x 7B | 1 | 443-0416 | 225 | 225 | 010 | 104 |
| | 2-1/2 x 3 x 7A | 1 | 443-1775 | 225 | 225 | 010 | 104 |
| | 2-1/2 x 3 x 7B | 1 | 443-0418 | 225 | 225 | 010 | 104 |
| | 4 x 4 x 7A | 1 | 443-0426 | 225 | 225 | 010 | 104 |
| | 4 x 4 x 7B | 1 | 443-0424 | 225 | 225 | 010 | 104 |
| 11A | IMPELLER **(L)*** | | | | | | |
| | 2 x 2-1/2 x 7A | 1 | 443-0414 | 225 | 225 | 010 | 104 |
| | 2 x 2-1/2 x 7B | 1 | 443-2185 | 225 | 225 | 010 | 104 |
| | 2-1/2 x 3 x 7A | 1 | 443-1776 | 225 | 225 | 010 | 104 |
| | 2-1/2 x 3 x 7B | 1 | 443-0420 | 225 | 225 | 010 | 104 |
| | 4 x 4 x 7A | 1 | 443-0428 | 225 | 225 | 010 | 104 |
| | 4 x 4 x 7B | 1 | 443-0471 | 225 | 225 | 010 | 104 |
| 11 | SEMI-OPEN IMPELLER PUMPS | | | | | | |
| | 1-1/4 x 1-1/2 x 7 | 1 | 443-1831 | 208 | 208 | 010 | 104 |
| | 1-1/2 x 2 x 7 | 1 | 443-1834 | 208 | 208 | 010 | 104 |
| | 2 x 2-1/2 x 7A | 1 | 443-2049 | 208 | 208 | 010 | 104 |
| | 2-1/2 x 3 x 7A | 1 | 443-2051 | 208 | 208 | 010 | 104 |
| | 4 x 4 x 7B | 1 | 443-2053 | 208 | 208 | 010 | 104 |
| 12 | IMPELLER KEY **(S)** | 1 | 472-0201 | 087 | 087 | 087 | 087 |
| | **(L)** | 1 | 472-0247 | 087 | 087 | 087 | 087 |
| 14 | IMPELLER RING (OPTIONAL) | | | | | | |
| | 1-1/4 x 1-1/2 x 7 | 1 | 676-1145 | 208 | 208 | 010 | 104 |
| | 1-1/2 x 2 x 7 | 1 | 676-1146 | 208 | 208 | 010 | 104 |
| | 2 x 2-1/2 x 7A & B | 1 | 676-1133 | 208 | 208 | 010 | 104 |
| | 2-1/2 x 3 x 7A & B | 1 | 676-1133 | 208 | 208 | 010 | 104 |
| | 4 x 4 x 7A & B | 1 | 676-1140 | 208 | 208 | 010 | 104 |
| 15 | IMPELLER RING (OPTIONAL) | | | | | | |
| | 2 x 2-1/2 x 7A - 4 x 4 x 7B | 1 | 676-1133 | 208 | 208 | 010 | 104 |
| 16 | WEAR RING | | | | | | |
| | 2 x 2-1/2 x 7A - 4 x 4 x 7B **(S)** | 1 | 676-0003 | 208 | 208 | 010 | 104 |
| | 2 x 2-1/2 x 7A - 4 x 4 x 7B **(L)** | 1 | 676-1148 | 208 | 208 | 010 | 104 |
| 17 | RETAINING RING **(S)** | 1 | 676-0946 | 088 | 088 | 088 | 088 |
| | **(L)** | 1 | 676-0947 | 088 | 088 | 088 | 088 |
| 18 | JACKET PACKING **(S)** | 1 | 460-0006 | 010 | 010 | 010 | 010 |
| | JACKET SEALS **(S)** | 1 | 460-0007 | 010 | 010 | 010 | 010 |
| | JACKET PACKING **(L)** | 1 | 460-0008 | 010 | 010 | 010 | 010 |
| | JACKET SEALS **(L)** | 1 | 460-0009 | 010 | 010 | 010 | 010 |
| 19 | GASKET **(S)** | 1 | 364-0423 | 457 | 457 | 457 | 457 |
| | GASKET **(L)** | 1 | 364-0426 | 457 | 457 | 457 | 457 |
| 19A | GASKET **(S)** | 1 | 364-0438 | 457 | 457 | 457 | 457 |
| | GASKET **(L)** | 1 | 364-0441 | 457 | 457 | 457 | 457 |
| 20 | CAPSCREW | NOT REQUIRED | | | | | |
| 21 | NUT | 2 | 544-0113 | 082 | 190 | 082 | 104 |
| 22 | CLAMP | 2 | 204-0116 | 360 | 190 | 360 | 104 |
| 23 | GLAND PACKING **(S)** | 1 | 372-0376 | 010 | 208 | 010 | 104 |
| | JC1, JC2, JC9B, JC21 | 1 | 372-0378 | 010 | 208 | 010 | 104 |
| | JC9 | 1 | 372-0379 | 010 | 208 | 010 | 104 |

# 360A SERIES
# MODELS 361A - 362A - 364A
# 1-1/4 x 1-1/2 x 7 - 4 x 4 x 7

## PARTS LIST

| PC. NO. | DESCRIPTION | QTY | PART NO. | MATERIAL B.F. | A.B. | A.I. | S.S. |
|---|---|---|---|---|---|---|---|
| 23 | JC21 DOUBLE | 1 | 372-0380 | 010 | 208 | 010 | 104 |
| | DURA RO-ROTT | 1 | 372-0381 | 010 | 208 | 010 | 104 |
| | DURA PTO-PT | 1 | 372-0382 | 010 | 208 | 010 | 104 |
| | DURA CRO | 1 | 372-0383 | 010 | 208 | 010 | 104 |
| | GLAND PACKING **(L)** | 1 | 372-0377 | 010 | 208 | 010 | 104 |
| | JC1, JC2, JC9B, JC21 | 1 | 372-0384 | 010 | 208 | 010 | 104 |
| | JC9 | 1 | 372-0385 | 010 | 208 | 010 | 104 |
| | JC21 DOUBLE | 1 | 372-0386 | 010 | 208 | 010 | 104 |
| | DURA RO-ROTT | 1 | 372-0387 | 010 | 208 | 010 | 104 |
| | DURA PTO-PT | 1 | 372-0388 | 010 | 208 | 010 | 104 |
| | DURA CRO | 1 | 372-0389 | 010 | 208 | 010 | 104 |
| 24 | STUD | 2 | 803-0313 | 082 | 190 | 082 | 104 |
| 25 | SLEEVE PACKING **(S)** | 1 | 756-0517 | 208 | 208 | 108 | 108 |
| | JC1 | 1 | 756-0511 | 208 | 208 | 104 | 104 |
| | JC2, JC21 | 1 | 756-0512 | 208 | 208 | 104 | 104 |
| | DURA RO-ROTT, JC9 | 1 | 756-0513 | 208 | 208 | 104 | 104 |
| | JC9B | 1 | 756-0514 | 208 | 208 | 104 | 104 |
| | DURA CRO, JC21 DOUBLE | 1 | 756-0515 | 208 | 208 | 104 | 104 |
| | DURA PTO-PT | 1 | 756-0516 | 208 | 208 | 104 | 104 |
| | SLEEVE PACKING **(L)** | 1 | 756-0524 | 208 | 208 | 108 | 108 |
| | JC1 | 1 | 756-0518 | 208 | 208 | 104 | 104 |
| | JC2, JC21 | 1 | 756-0519 | 208 | 208 | 104 | 104 |
| | DURA RO-ROTT, JC9 | 1 | 756-0520 | 208 | 208 | 104 | 104 |
| | JC9B | 1 | 756-0521 | 208 | 208 | 104 | 104 |
| | DURA CRO, JC21 DOUBLE | 1 | 756-0523 | 208 | 208 | 104 | 104 |
| | DURA PTO-PT | 1 | 756-0522 | 208 | 208 | 104 | 104 |
| 26 | COVER (STANDARD) **(S)** | 1 | 812-0319 | 010 | 208 | 010 | 104 |
| | COVER **(L)** | 1 | 812-0320 | 010 | 208 | 010 | 104 |
| | JACKETED **(S)** | 1 | 812-0336 | 010 | 208 | 010 | 104 |
| | COVER **(L)** | 1 | 812-0337 | 010 | 208 | 010 | 104 |
| 27 | MECHANICAL SEALS **(S)** | | | | | | |
| | JC1 | 1 | 712-0354 | 756 | 764 | 756 | 764 |
| | JC2 | 1 | 712-0613 | 756 | 764 | 756 | 764 |
| | JC9 | 1 | 712-1107 | 762 | 762 | 762 | 762 |
| | JC9B | 1 | 712-1417 | 762 | 762 | 762 | 762 |
| | JC21 (STANDARD) | 1 | 712-0907 | 749 | 764 | 749 | 764 |
| | JC21 DOUBLE | 1 | 712-2732 | 749 | 764 | 749 | 764 |
| | DURA RO-ROTT | 1 | 712-3591 | 773 | 776 | 773 | 776 |
| | DURA PTO-PT | 1 | 712-4377 | 773 | 776 | 773 | 776 |
| | DURA CRO | 1 | 712-5414 | 773 | 776 | 773 | 776 |
| | MECHANICAL SEALS **(L)** | | | | | | |
| | JC1 | 1 | 712-0359 | 756 | 764 | 756 | 764 |
| | JC2 | 1 | 712-0619 | 756 | 764 | 756 | 764 |
| | JC9 | 1 | 712-1111 | 762 | 762 | 762 | 762 |
| | JC9B | 1 | 712-1413 | 762 | 762 | 762 | 762 |
| | JC21 (STANDARD) | 1 | 712-0910 | 749 | 764 | 749 | 764 |
| | JC21 DOUBLE | 1 | 712-2735 | 749 | 764 | 749 | 764 |
| | DURA RO-ROTT | 1 | 712-3587 | 773 | 776 | 773 | 776 |
| | DURA PTO-PT | 1 | 712-4373 | 773 | 776 | 773 | 776 |
| | DURA CRO | 1 | 712-5415 | 773 | 776 | 773 | 776 |
| 28 | PACKING **(S)** | 6 | 564-0113 | 802 | 802 | 802 | 802 |
| | **(L)** | 6 | 564-0110 | 802 | 802 | 802 | 802 |
| 29 | LANTERN RING **(S)** | 1 | 676-0008 | 512 | 512 | 512 | 512 |
| | **(L)** | 1 | 676-0009 | 512 | 512 | 512 | 512 |

| PC. NO. | DESCRIPTION | QTY | PART NO. | MATERIAL B.F. | A.B. | A.I. | S.S. |
|---|---|---|---|---|---|---|---|
| 32 | CAPSCREW **(S)** | 4 | 168-0386 | 082 | 082 | 082 | 082 |
| | **(L)** | 4 | 168-0492 | 082 | 082 | 082 | 082 |
| 33 | U DRIVE SCREW | 2 | 708-0013 | 365 | 365 | 365 | 365 |
| 34 | NAMEPLATE | 1 | 532-0045 | 114 | 114 | 114 | 114 |
| 35 | BRACKET | | | | | | |
| | (FR 143JP - 184JP AND POWER FRAME #1) | | | | | | |
| | **(S)** | 1 | 116-0078 | 010 | 010 | 010 | 010 |
| | (FR 213JP - 256JP AND POWER FRAME #2) | | | | | | |
| | **(L)** | 1 | 116-0079 | 010 | 010 | 010 | 010 |
| | (FR 284 JP - 326JP) | 1 | 116-0478 | 010 | 010 | 010 | 010 |
| 39 | CAPSCREW (361A) **(S)** | 3 | 168-0488 | 082 | 082 | | |
| | **(L)** | NOT REQUIRED | | | | | |
| | CAPSCREW (362A) | | | | | | |
| | 1-1/4 x 1-1/2 x 7 | 4 | 168-0490 | 082 | 190 | 082 | 104 |
| | 1-1/2 x 2 x 7 | 4 | 168-0560 | 082 | 190 | 082 | 104 |
| | 2 x 2-1/2 X 7A & B | 4 | 168-0562 | 082 | 190 | 082 | 104 |
| | 2-1/2 x 3 x 7A & B | 4 | 168-0562 | 082 | 190 | 082 | 104 |
| | 4 x 4 x 7A & B | 4 | 168-0564 | 082 | 190 | 082 | 104 |
| | CAPSCREW (364A) | | | | | | |
| | POWER FRAME #1 | 3 | 168-0488 | 082 | 082 | 082 | 082 |
| | POWER FRAME #2 | 2 | 168-0490 | 082 | 082 | 082 | 082 |
| 40 | WASHER (361A) **(S)** | 3 | 908-0114 | 080 | 080 | 080 | 080 |
| | **(L)** | NOT REQUIRED | | | | | |
| | (362A) | NOT REQUIRED | | | | | |
| | (364A) | | | | | | |
| | POWER FRAME #1 & #2 | 3 | 908-0114 | 080 | 080 | 080 | 080 |
| 41 | SUPPORT (361A) **(S)** | 1 | 820-0184 | 010 | 010 | 010 | 010 |
| | **(L)** | NOT REQUIRED | | | | | |
| | (362A) | NOT REQUIRED | | | | | |
| | (364A) | | | | | | |
| | POWER FRAME #1 | 1 | 820-1441 | 087 | 087 | 087 | 087 |
| | POWER FRAME #2 | 1 | 820-0186 | 010 | 010 | 010 | 010 |
| 42 | DRIVE KEY (364A) | | | | | | |
| | POWER FRAME #1 | 1 | 472-0206 | 087 | 087 | 087 | 087 |
| | POWER FRAME #2 | 1 | 472-0247 | 087 | 087 | 087 | 087 |
| 43 | GREASE FITTING | | | | | | |
| | POWER FRAME #1 & #2 | 1 | 508-0005 | 651 | 651 | 651 | 651 |
| 44 | VENT TUBE | 1 | 864-0051 | 656 | 656 | 656 | 656 |
| 46 | PIPE PLUG | | | | | | |
| | (GREASE) | 2 | 624-0010 | 503 | 503 | 503 | 503 |
| | (OIL) | 1 | 600-0001 | 087 | 190 | 087 | 104 |
| 47 | SLINGER (364A) | | | | | | |
| | POWER FRAME #1 | 1 | 764-1015 | 478 | 478 | 478 | 478 |
| | POWER FRAME #2 | 1 | 764-1021 | 478 | 478 | 478 | 478 |
| 47A | SLINGER (364A) | | | | | | |
| | POWER FRAME #1 | 1 | 764-1015 | 478 | 478 | 478 | 478 |
| | POWER FRAME #2 | 1 | 764-1021 | 478 | 478 | 478 | 478 |
| 48 | CAPSCREW | | | | | | |
| | POWER FRAME #1 | 4 | 168-0388 | 082 | 082 | 082 | 082 |
| | POWER FRAME #2 | 4 | 168-0492 | 082 | 082 | 082 | 082 |

# 360A SERIES
# MODELS 361A - 362A - 364A
# 1-1/4 x 1-1/2 x 7 - 4 x 4 x 7

## PARTS LIST

| PC. NO. | DESCRIPTION | QTY | PART NO. | MATERIAL B.F. | A.B. | A.I. | S.S. |
|---|---|---|---|---|---|---|---|
| 49 | BEARING CAP | | | | | | |
| | POWER FRAME #1 | 1 | 164-0470 | 010 | 010 | 010 | 010 |
| | POWER FRAME #2 | 1 | 164-0471 | 010 | 010 | 010 | 010 |
| 50 | "O" RING (OIL LUBE) | | | | | | |
| | POWER FRAME #1 | 1 | 364-0423 | 457 | 457 | 457 | 457 |
| | POWER FRAME #2 | 1 | 364-0432 | 457 | 457 | 457 | 457 |
| 51 | SEAL (GREASE) | | | | | | |
| | POWER FRAME #1 | 1 | 712-0231 | 653 | 653 | 653 | 653 |
| | POWER FRAME #2 | 1 | 712-0233 | 653 | 653 | 653 | 653 |
| | OIL LUBE | | | | | | |
| | POWER FRAME #1 | 1 | 712-0016 | 653 | 653 | 653 | 653 |
| | POWER FRAME #2 | 1 | 712-0054 | 653 | 653 | 653 | 653 |
| 51A | SEAL (GREASE) | | | | | | |
| | POWER FRAME #1 | 1 | 712-0231 | 653 | 653 | 653 | 653 |
| | POWER FRAME #2 | 1 | 712-0233 | 653 | 653 | 653 | 653 |
| | OIL LUBE | | | | | | |
| | POWER FRAME #1 | 1 | 712-0016 | 653 | 653 | 653 | 653 |
| | POWER FRAME #2 | 1 | 712-0054 | 653 | 653 | 653 | 653 |
| 52 | RET. RING | | | | | | |
| | POWER FRAME #1 | 1 | 676-0929 | 088 | 088 | 088 | 088 |
| | POWER FRAME #2 | 1 | 676-0938 | 088 | 088 | 088 | 088 |
| 53 | O.B. BEARING | | | | | | |
| | POWER FRAME #1 | | | | | | |
| | STANDARD OPEN | 1 | 068-2206 | 647 | | | 647 |
| | SEALED PERM LUBE | 1 | 068-2219 | 647 | | | 647 |
| | POWER FRAME #2 | | | | | | |
| | STANDARD OPEN | 1 | 068-2308 | 647 | | | 647 |
| | SEALED PERM LUBE | 1 | 068-2220 | 647 | | | 647 |
| | SEMI-OPEN IMPELLER PUMPS | | | | | | |
| | POWER FRAME #1 | 1 | 068-2506 | 647 | 647 | 647 | 647 |
| 54 | I.B. BEARING | | | | | | |
| | POWER FRAME #1 | | | | | | |
| | STANDARD OPEN | 1 | 068-1907 | 647 | 647 | | |
| | SEALED PERM LUBE | 1 | 068-0114 | 647 | 647 | | |
| | POWER FRAME #2 | | | | | | |
| | STANDARD OPEN | 1 | 068-0159 | 647 | 647 | | |
| | SEALED PERM LUBE | 1 | 068-2018 | 647 | 647 | | |
| | SEMI-OPEN IMPELLER PUMPS | | | | | | |
| | POWER FRAME #1 | 1 | 068-1932 | 647 | 647 | 647 | 647 |
| 55 | SHAFT | | | | | | |
| | POWER FRAME #1 | 1 | 728-4984 | 063 | 063 | 063 | 104 |
| | POWER FRAME #2 | 1 | 728-4985 | 063 | 063 | 063 | 104 |
| | SEMI-OPEN IMPELLER PUMPS | | | | | | |
| | POWER FRAME #1 | 1 | 728-4987 | 063 | 063 | 063 | 104 |
| 56 | PIPE PLUG | | | | | | |
| | (GREASE) | 2 | 624-0010 | 503 | 503 | 503 | 503 |
| | (OIL) | 2 | 600-0002 | 087 | 190 | 087 | 104 |
| 57 | FRAME | | | | | | |
| | OIL LUBE | | | | | | |
| | POWER FRAME #1 | 1 | 356-0231 | 010 | 010 | | |
| | POWER FRAME #2 | 1 | 356-0232 | 010 | 010 | | |
| | GREASE | | | | | | |
| | POWER FRAME #1 | 1 | 356-0201 | 010 | 010 | | |
| | POWER FRAME #2 | 1 | 356-0202 | 010 | 010 | | |

| PC. NO. | DESCRIPTION | QTY | PART NO. | MATERIAL B.F. | A.B. | A.I. | S.S. |
|---|---|---|---|---|---|---|---|
| 58 | GREASE FITTING | 1 | 508-0001 | 651 | 651 | 651 | 651 |
| 59 | PIPE PIPE PLUG | 2 | 600-0001 | 087 | 087 | 087 | 087 |
| 60 | OILER | 1 | 522-0029 | 652 | 652 | 652 | 652 |
| 61 | PIN | INCLUDED WITH NO. 25 | | | | | |
| 62 | CAPSCREW | | | | | | |
| | POWER FRAME #1 | 1 | 168-0490 | 082 | 082 | 082 | 082 |
| | POWER FRAME #2 | 2 | 168-0490 | 082 | 082 | 082 | 082 |
| 63 | WASHER | | | | | | |
| | POWER FRAME #1 | 1 | 908-0114 | 080 | 080 | 080 | 080 |
| | POWER FRAME #2 | 1 | 908-0114 | 080 | 080 | 080 | 080 |
| 64 | SUPPORT | | | | | | |
| | POWER FRAME #1 | 1 | 820-0187 | 010 | 010 | 010 | 010 |
| | POWER FRAME #2 | 1 | 820-0188 | 010 | 010 | 010 | 010 |
| 65 | CAPSCREW (PACKING) | 2 | 168-0496 | 082 | 190 | 082 | 104 |
| | (SEALS) | 4 | 168-0492 | 082 | 190 | 082 | 104 |
| 66 | GASKET **(S)** | 1 | 364-2021 | 614 | 614 | 614 | 614 |
| | GASKET **(L)** | 1 | 364-2022 | 614 | 614 | 614 | 614 |
| 67 | PIPE PLUG | 2 | 600-0002 | 087 | 190 | 087 | 104 |
| 68 | PIPE PLUG | 2 | 600-0002 | 087 | 087 | 087 | 087 |
| 69 | NIPPLE | 1 | 600-2291 | 079 | 190 | 079 | 104 |
| 70 | SEAL | 1 | 564-0301 | 802 | 802 | 802 | 802 |
| 71 | LOCKNUT | 1 | 544-0951 | 087 | 087 | 087 | 087 |
| 72 | GASKET (362A) | | | | | | |
| | 1-1/4 x 1-1/2 x 7 | 1 | 364-0602 | 603 | 603 | 603 | 603 |
| | 1-1/2 x 2 x 7 | 1 | 364-0603 | 603 | 603 | 603 | 603 |
| | 2 x 2-1/2 x 7A & B | 1 | 364-0604 | 603 | 603 | 603 | 603 |
| | 2-1/2 x 3 x 7A & B | 1 | 364-0605 | 603 | 603 | 603 | 603 |
| | 4 x 4 x 7A & B | 1 | 364-0607 | 603 | 603 | 603 | 603 |
| 73 | BASE (362A) | | | | | | |
| | 1-1/4 x 1-1/2 x 7 | 1 | 816-1102 | 010 | 208 | 010 | 104 |
| | 1-1/2 x 2 x 7 | 1 | 816-1103 | 010 | 208 | 010 | 104 |
| | 2 x 2-1/2 x 7A & B | 1 | 816-1104 | 010 | 208 | 010 | 104 |
| | 2-1/2 x 3 x 7A & B | 1 | 816-1105 | 010 | 208 | 010 | 104 |
| | 4 x 4 x 7A & B | 1 | 816-1106 | 010 | 208 | 010 | 104 |
| 74 | PIPE PLUG (362A) | 1 | 600-0002 | 087 | 190 | 087 | 104 |
| 75 | PIPE PLUG (362A) | | | | | | |
| | 1-1/4 x 1-1/2 x 7 | 1 | 600-0002 | 087 | 190 | 087 | 104 |
| | 1-1/2 x 2 x 7 | 1 | 600-0003 | 087 | 190 | 087 | 104 |
| | 2 x 2-1/2 x 7A & B | 1 | 600-0003 | 087 | 190 | 087 | 104 |
| | 2-1/2 x 3 x 7A & B | 1 | 600-0004 | 028 | 190 | 028 | 104 |
| | 4 x 4 x 7A & B | 1 | 600-0004 | 028 | 190 | 028 | 104 |
| 76 | COUPLING | 1 | 600-0721 | 387 | 387 | 387 | 387 |

# 360A SERIES
# MODELS 361A - 362A - 364A
# 1-1/4 x 1-1/2 x 9B - 6 x 6 x 9

## PARTS LIST

| PC. NO. | DESCRIPTION | QTY | PART NO. | MATERIAL B.F. | A.B. | A.I. | S.S. |
|---|---|---|---|---|---|---|---|
| 1 | COMPRESSION ELBOW | 1 | 868-3660 | 190 | 190 | 087 | 104 |
| 2 | COMPRESSION CONNECTOR | 1 | 868-3359 | 190 | 190 | 087 | 104 |
| 3 | TUBING | 1 | 872-0124 | 175 | 175 | 087 | 104 |
| 4 | PIPE PIPE PLUG | 3 | 600-0002 | 087 | 190 | 087 | 104 |
| 5 | CAPSCREW COVER **(S)** | 8 | 168-0381 | 082 | 190 | 082 | 104 |
| | CAPSCREW CASING **(S)** | 8 | 168-0489 | 082 | 190 | 082 | 104 |
| | CAPSCREW CASING **(L)** | 8 | 168-0495 | 082 | 082 | 082 | 104 |
| 6 | CASING | | | | | | |
| | 1-1/4 x 1-1/2 x 9B | 1 | 180-2148 | 010 | 208 | 010 | 104 |
| | 1-1/2 x 2 x 9A | 1 | 180-2149 | 010 | 208 | 010 | 104 |
| | 1-1/2 x 2 x 9B | 1 | 180-2149 | 010 | 208 | 010 | 104 |
| | 1-1/2 x 2 x 9C | 1 | 180-2151 | 010 | 208 | 010 | 104 |
| | 2 x 2-1/2 x 9 | 1 | 180-2152 | 010 | 208 | 010 | 104 |
| | 2-1/2 x 3 x 9 | 1 | 180-2153 | 010 | 208 | 010 | 104 |
| | 3 x 4 x 9A & B | 1 | 180-2351 | 010 | 208 | 010 | 104 |
| | 4 x 5 x 9A | 1 | 180-2156 | 010 | 208 | 010 | 104 |
| | 4 x 5 x 9B | 1 | 180-2157 | 010 | 208 | 010 | 104 |
| | 6 x 6 x 9 | 1 | 180-2159 | 010 | 208 | 010 | 104 |
| | VERTICAL | | | | | | |
| | 1-1/4 x 1-1/2 x 9B | 1 | 180-2198 | 010 | 208 | 010 | 104 |
| | 1-1/2 x 2 x 9A | 1 | 180-2199 | 010 | 208 | 010 | 104 |
| | 1-1/2 x 2 x 9B | 1 | 180-2199 | 010 | 208 | 010 | 104 |
| | 1-1/2 x 2 x 9C | 1 | 180-2200 | 010 | 208 | 010 | 104 |
| 6 | SEMI-OPEN IMPELLER PUMPS | | | | | | |
| | CASING | | | | | | |
| | 1-1/2 x 2 x 9A | 1 | 180-2150 | 642 | 643 | 642 | 646 |
| | 2-1/2 x 3 x 9 | 1 | 180-2154 | 642 | 643 | 642 | 646 |
| | 4 x 5 x 9B | 1 | 180-2158 | 642 | 643 | 642 | 646 |
| | 6 x 6 x 9 | 1 | 180-2160 | 642 | 643 | 642 | 646 |
| 7 | CASE RING | | | | | | |
| | 1-1/4 x 1-1/2 x 9B | 1 | 676-1150 | 208 | 208 | 010 | 104 |
| | 1-1/2 x 2 x 9 | 1 | 676-1151 | 208 | 208 | 010 | 104 |
| | 2 x 2-1/2 x 9 | 1 | 676-1152 | 208 | 208 | 010 | 104 |
| | 2-1/2 x 3 x 9 | 1 | 676-1152 | 208 | 208 | 010 | 104 |
| | 3 x 4 x 9A & B | 1 | 676-1154 | 208 | 208 | 010 | 104 |
| | 4 x 5 x 9A | 1 | 676-1154 | 208 | 208 | 010 | 104 |
| | 4 x 5 x 9B | 1 | 676-1155 | 208 | 208 | 010 | 104 |
| | 6 x 6 x 9 | 1 | 676-1155 | 208 | 208 | 010 | 104 |
| 8 | GASKET | 1 | 364-1015 | 603 | 603 | 603 | 603 |
| 9 | CAPSCREW **(S)** | 1 | 168-0382 | 113 | | 113 | |
| | **(S)** | 1 | 168-1612 | | 104 | | 104 |
| | CAPSCREW **(L)** | 1 | 168-0490 | 113 | | 113 | |
| | **(L)** | 1 | 168-1623 | | 104 | | 104 |
| 9A | WASHER **(S)** | 1 | 908-0603 | 087 | 101 | 087 | 101 |
| | **(L)** | 1 | 908-0604 | 087 | 101 | 087 | 101 |
| 9B | GASKET **(S)** | 1 | 364-2034 | 603 | 603 | 603 | 603 |
| | **(L)** | 1 | 364-2035 | 603 | 603 | 603 | 603 |
| 9C | CAPSCREW **(S)** | 1 | 908-1290 | 999 | NR | 999 | NR |
| | SEAL **(L)** | 1 | 908-1292 | 999 | NR | 999 | NR |

| PC. NO. | DESCRIPTION | QTY | PART NO. | MATERIAL B.F. | A.B. | A.I. | S.S. |
|---|---|---|---|---|---|---|---|
| 10 | O-RING **(S)** | 1 | 364-0409 | 457 | 457 | 457 | 457 |
| | **(L)** | 1 | 364-0414 | 457 | 457 | 457 | 457 |
| 11 | IMPELLER **(S)** | | | | | | |
| | 1-1/4 x 1-1/2 x 9B | 1 | 443-0431 | 225 | 225 | 010 | 104 |
| | 1-1/2 x 2 x 9A | 1 | 443-0437 | 225 | 225 | 010 | 104 |
| | 1-1/2 x 2 x 9B | 1 | 443-0435 | 225 | 225 | 010 | 104 |
| | 1-1/2 x 2 x 9C | 1 | 443-0437 | 225 | 225 | 010 | 104 |
| | 2 x 2-1/2 x 9 | 1 | 443-0441 | 225 | 225 | 010 | 104 |
| | 2-1/2 x 3 x 9 | 1 | 443-0445 | 225 | 225 | 010 | 104 |
| | 3 x 4 x 9A | 1 | 443-1766 | 225 | 225 | 010 | 104 |
| | 3 x 4 x 9B | 1 | 443-1762 | 225 | 225 | 010 | 104 |
| 11 | IMPELLER **(L)** | | | | | | |
| | 1-1/2 x 2 x 9C | 1 | 443-0439 | 225 | 225 | 010 | 104 |
| | 2 x 2-1/2 x 9 | 1 | 443-0443 | 225 | 225 | 010 | 104 |
| | 2-1/2 x 3 x 9 | 1 | 443-0447 | 225 | 225 | 010 | 104 |
| | 3 x 4 x 9A | 1 | 443-1768 | 225 | 225 | 010 | 104 |
| | 3 x 4 x 9B | 1 | 443-1764 | 225 | 225 | 010 | 104 |
| | 4 x 5 x 9A | 1 | 443-1752 | 225 | 225 | 010 | 104 |
| | 4 x 5 x 9B | 1 | 443-0459 | 225 | 225 | 010 | 104 |
| | 6 x 6 x 9 | 1 | 443-0467 | 225 | 225 | 010 | 104 |
| 11A | IMPELLER **(S)*** | | | | | | |
| | 1-1/4 x 1-1/2 x 9B | 1 | 443-0432 | 225 | 225 | 010 | 104 |
| | 1-1/2 x 2 x 9A | 1 | 443-0438 | 225 | 225 | 010 | 104 |
| | 1-1/2 x 2 x 9B | 1 | 443-0436 | 225 | 225 | 010 | 104 |
| | 1-1/2 x 2 x 9C | 1 | 443-0438 | 225 | 225 | 010 | 104 |
| | 2 x 2-1/2 x 9 | 1 | 443-0442 | 225 | 225 | 010 | 104 |
| | 2-1/2 x 3 x 9 | 1 | 443-0446 | 225 | 225 | 010 | 104 |
| | 3 x 4 x 9A | 1 | 443-1767 | 225 | 225 | 010 | 104 |
| | 3 x 4 x 9B | 1 | 443-1763 | 225 | 225 | 010 | 104 |
| 11A | IMPELLER **(L)*** | | | | | | |
| | 1-1/2 x 2 x 9C | 1 | 443-0440 | 225 | 225 | 010 | 104 |
| | 2 x 2-1/2 x 9 | 1 | 443-0444 | 225 | 225 | 010 | 104 |
| | 2-1/2 x 3 x 9 | 1 | 443-0448 | 225 | 225 | 010 | 104 |
| | 3 x 4 x 9A | 1 | 443-1769 | 225 | 225 | 010 | 104 |
| | 3 x 4 x 9B | 1 | 443-1765 | 225 | 225 | 010 | 104 |
| | 4 x 5 x 9A | 1 | 443-1753 | 225 | 225 | 010 | 104 |
| | 4 x 5 x 9B | 1 | 443-0460 | 225 | 225 | 010 | 104 |
| | 6 x 6 x 9 | 1 | 443-0468 | 225 | 225 | 010 | 104 |
| 11 | SEMI-OPEN IMPELLER PUMPS | | | | | | |
| | 1-1/2 x 2 x 9A (1150) | 1 | 443-1835 | 208 | 208 | 010 | 104 |
| | 1-1/2 x 2 x 9A (1750) | 1 | 443-2048 | 208 | 208 | 010 | 104 |
| | 2-1/2 x 3 x 9 | 1 | 443-2057 | 208 | 208 | 010 | 104 |
| | 4 x 5 x 9B | 1 | 443-2061 | 208 | 208 | 010 | 104 |
| | 6 x 6 x 9 | 1 | 443-2063 | 208 | 208 | 010 | 104 |

*MACHINED FOR OPTIONAL RING NUMBER 14 & 15

# 360A SERIES
# MODELS 361A - 362A - 364A
# 1-1/4 x 1-1/2 x 9B - 6 x 6 x 9

## PARTS LIST

| PC. NO. | DESCRIPTION | QTY | PART NO. | MATERIAL B.F. | A.B. | A.I. | S.S. |
|---|---|---|---|---|---|---|---|
| 12 | IMPELLER KEY **(S)** | 1 | 472-0201 | 087 | 087 | 087 | 087 |
| | **(L)** | 1 | 472-0247 | 087 | 087 | 087 | 087 |
| 14 | IMPELLER RING (OPTIONAL) | | | | | | |
| | 1-1/4 x 1-1/2 x 9B | 1 | 676-1145 | 208 | 208 | 010 | 104 |
| | 1-1/2 x 2 x 9 | 1 | 676-1146 | 208 | 208 | 010 | 104 |
| | 2 x 2-1/2 x 9 | 1 | 676-1133 | 208 | 208 | 010 | 104 |
| | 2-1/2 x 3 x 9 | 1 | 676-1133 | 208 | 208 | 010 | 104 |
| | 3 x 4 x 9A & B | 1 | 676-1140 | 208 | 208 | 010 | 104 |
| | 4 x 5 x 9A | 1 | 676-1140 | 208 | 208 | 010 | 104 |
| | 4 x 5 x 9B | 1 | 676-1141 | 208 | 208 | 010 | 104 |
| | 6 x 6 x 9 | 1 | 676-1141 | 208 | 208 | 010 | 104 |
| 15 | IMPELLER RING (OPTIONAL) | | | | | | |
| | 2 x 2-1/2 x 9 | 1 | 676-1133 | 208 | 208 | 010 | 104 |
| | 2-1/2 x 3 x 9 | 1 | 676-1133 | 208 | 208 | 010 | 104 |
| | 3 x 4 x 9A & B | 1 | 676-1156 | 208 | 208 | 010 | 104 |
| | 4 x 5 x 9A | 1 | 676-1156 | 208 | 208 | 010 | 104 |
| | 4 x 5 x 9B | 1 | 676-1156 | 208 | 208 | 010 | 104 |
| | 6 x 6 x 9 | 1 | 676-1156 | 208 | 208 | 010 | 104 |
| 16 | WEAR RING **(S)** | | | | | | |
| | 2 x 2-1/2 x 9 | 1 | 676-1148 | 208 | 208 | 010 | 104 |
| | 2-1/2 x 3 x 9 | 1 | 676-1148 | 208 | 208 | 010 | 104 |
| | WEAR RING **(L)** | | | | | | |
| | 2 x 2-1/2 x 9 | 1 | 676-1148 | 208 | 208 | 010 | 104 |
| | 2-1/2 x 3 x 9 | 1 | 676-1148 | 208 | 208 | 010 | 104 |
| | 3 x 4 x 9A & B | 1 | 676-1149 | 208 | 208 | 010 | 104 |
| | 4 x 5 x 9A & B | 1 | 676-1149 | 208 | 208 | 010 | 104 |
| | 6 x 6 x 9 | 1 | 676-1149 | 208 | 208 | 010 | 104 |
| 17 | RETAINING RING **(S)** | 1 | 676-0946 | 088 | 088 | 088 | 088 |
| | **(L)** | 1 | 676-0947 | 088 | 088 | 088 | 088 |
| 18 | JACKET PACKING **(S)** | 1 | 460-0006 | 010 | 010 | 010 | 010 |
| | JACKET SEALS **(S)** | 1 | 460-0007 | 010 | 010 | 010 | 010 |
| | JACKET PACKING **(L)** | 1 | 460-0008 | 010 | 010 | 010 | 010 |
| | JACKET SEALS **(L)** | 1 | 460-0009 | 010 | 010 | 010 | 010 |
| 19 | GASKET **(S)** | 1 | 364-0423 | 457 | 457 | 457 | 457 |
| | **(L)** | 1 | 364-0426 | 457 | 457 | 457 | 457 |
| 19A | GASKET **(S)** | 1 | 364-0438 | 457 | 457 | 457 | 457 |
| | **(L)** | 1 | 364-0441 | 457 | 457 | 457 | 457 |
| 20 | CAPSCREW **(S)** | 8 | 618-0386 | 082 | 190 | 082 | 104 |
| | **(L)** | NOT REQUIRED | | | | | |
| 21 | NUT | 2 | 544-0113 | 082 | 190 | 082 | 104 |
| 22 | CLAMP | 2 | 204-0116 | 360 | 190 | 360 | 104 |
| 23 | GLAND PACKING **(S)** | 1 | 372-0376 | 010 | 208 | 010 | 104 |
| | JC1, JC2, JC9B, JC21 | 1 | 372-0378 | 010 | 208 | 010 | 104 |
| | JC9 | 1 | 372-0379 | 010 | 208 | 010 | 104 |
| | JC21 DOUBLE | 1 | 372-0380 | 010 | 208 | 010 | 104 |
| | DURA RO-ROTT | 1 | 372-0381 | 010 | 208 | 010 | 104 |
| | DURA PTO-PT | 1 | 372-0382 | 010 | 208 | 010 | 104 |
| | DURA CRO | 1 | 372-0383 | 010 | 208 | 010 | 104 |

| PC. NO. | DESCRIPTION | QTY | PART NO. | MATERIAL B.F. | A.B. | A.I. | S.S. |
|---|---|---|---|---|---|---|---|
| 23 | GLAND PACKING **(L)** | 1 | 372-0377 | 010 | 208 | 010 | 104 |
| | JC1, JC2, JC9B, JC21 | 1 | 372-0384 | 010 | 208 | 010 | 104 |
| | JC9 | 1 | 372-0385 | 010 | 208 | 010 | 104 |
| | JC21 DOUBLE | 1 | 372-0386 | 010 | 208 | 010 | 104 |
| | DURA RO-ROTT | 1 | 372-0387 | 010 | 208 | 010 | 104 |
| | DURA PTO-PT | 1 | 372-0388 | 010 | 208 | 010 | 104 |
| | DURA CRO | 1 | 372-0389 | 010 | 208 | 010 | 104 |
| 24 | STUD | 2 | 803-0313 | 082 | 190 | 082 | 104 |
| 25 | SLEEVE PACKING **(S)** | 1 | 756-0517 | 208 | 208 | 108 | 108 |
| | JC1 | 1 | 756-0511 | 208 | 208 | 104 | 104 |
| | JC2, JC21 | 1 | 756-0512 | 208 | 208 | 104 | 104 |
| | DURA RO-ROTT, JC9 | 1 | 756-0513 | 208 | 208 | 104 | 104 |
| | JC9B | 1 | 756-0514 | 208 | 208 | 104 | 104 |
| | DURA PTO-PT | 1 | 756-0516 | 208 | 208 | 104 | 104 |
| | DURA CRO | 1 | 756-0515 | 208 | 208 | 104 | 104 |
| | JC21 DOUBLE | 1 | 756-0515 | 208 | 208 | 104 | 104 |
| | SLEEVE PACKING **(L)** | 1 | 756-0524 | 208 | 208 | 108 | 108 |
| | JC1 | 1 | 756-0518 | 208 | 208 | 104 | 104 |
| | JC2, JC21 | 1 | 756-0519 | 208 | 208 | 104 | 104 |
| | DURA RO-ROTT, JC9 | 1 | 756-0520 | 208 | 208 | 104 | 104 |
| | JC9B | 1 | 756-0521 | 208 | 208 | 104 | 104 |
| | DURA CRO, JC21 DOUBLE | 1 | 756-0523 | 208 | 208 | 104 | 104 |
| | DURA PTO-PT | 1 | 756-0522 | 208 | 208 | 104 | 104 |
| 26 | COVER (STD) **(S)** | 1 | 812-0321 | 010 | 208 | 010 | 104 |
| | COVER (STD) **(L)** | 1 | 812-0322 | 010 | 208 | 010 | 104 |
| | (JACKETED) **(S)** | 1 | 812-0338 | 010 | 208 | 010 | 104 |
| | (JACKETED) **(L)** | 1 | 812-0339 | 010 | 208 | 010 | 104 |
| 27 | MECHANICAL SEALS **(S)** | | | | | | |
| | JC1 | 1 | 712-0354 | 756 | 764 | 756 | 764 |
| | JC2 | 1 | 712-0613 | 756 | 764 | 756 | 764 |
| | JC9 | 1 | 712-1107 | 762 | 762 | 762 | 762 |
| | JC9B | 1 | 712-1417 | 762 | 762 | 762 | 762 |
| | JC21 (STD) | 1 | 712-0907 | 749 | 764 | 749 | 764 |
| | JC21 DOUBLE | 1 | 712-2732 | 749 | 764 | 749 | 764 |
| | DURA RO-ROTT | 1 | 712-3591 | 773 | 776 | 773 | 776 |
| | DURA PTO-PT | 1 | 712-4377 | 773 | 776 | 773 | 776 |
| | DURA CRO | 1 | 712-5414 | 773 | 776 | 773 | 776 |
| | MECHANICAL SEALS **(L)** | | | | | | |
| | JC1 | 1 | 712-0359 | 756 | 764 | 756 | 764 |
| | JC2 | 1 | 712-0619 | 756 | 764 | 756 | 764 |
| | JC9 | 1 | 712-1111 | 762 | 762 | 762 | 762 |
| | JC9B | 1 | 712-1413 | 762 | 762 | 762 | 762 |
| | JC21 (STANDARD) | 1 | 712-0910 | 749 | 764 | 749 | 764 |
| | JC21 DOUBLE | 1 | 712-2735 | 749 | 764 | 749 | 764 |
| | DURA RO-ROTT | 1 | 712-3587 | 773 | 776 | 773 | 776 |
| | DURA PTO-PT | 1 | 712-4373 | 773 | 776 | 773 | 776 |
| | DURA CRO | 1 | 712-5415 | 773 | 776 | 773 | 776 |

# 360A SERIES
# MODELS 361A - 362A - 364A
# 1-1/4 x 1-1/2 x 9B - 6 x 6 x 9

## PARTS LIST

| PC. NO. | DESCRIPTION | QTY | PART NO. | MATERIAL B.F. | A.B. | A.I. | S.S. |
|---|---|---|---|---|---|---|---|
| 28 | PACKING **(S)** | 6 | 564-0113 | 802 | 802 | 802 | 802 |
| | **(L)** | 6 | 564-0110 | 802 | 802 | 802 | 802 |
| 29 | LANTERN RING **(S)** | 1 | 676-0008 | 512 | 512 | 512 | 512 |
| | **(L)** | 1 | 676-0009 | 512 | 512 | 512 | 512 |
| 32 | CAPSCREW | | | | | | |
| | (FR 143JP - 184JP & P.F. #1) | | | | | | |
| | **(S)** | 4 | 168-0386 | 082 | 082 | 082 | 082 |
| | (FR 213JP - 256JP & P.F. #2 & #3) | | | | | | |
| | **(L)** | 4 | 168-0490 | 082 | 082 | 082 | 082 |
| | (FR 284JP - 326JP) | 4 | 168-0564 | 082 | 082 | 082 | 082 |
| 33 | U DRIVE SCREW | 2 | 708-0013 | 365 | 365 | 365 | 365 |
| 34 | NAMEPLATE | 1 | 532-0045 | 114 | 114 | 114 | 114 |
| 35 | BRACKET | | | | | | |
| | (FR 143JP - 184JP & P.F. #1) | | | | | | |
| | **(S)** | 1 | 116-0078 | 010 | 010 | 010 | 010 |
| | (FR 213JP - 256JP & P.F. #2 & #3) | | | | | | |
| | **(L)** | 1 | 116-0080 | 010 | 010 | 010 | |
| | (FR 284JP - 326JP) | 1 | 116-0081 | 010 | 010 | 010 | 010 |
| 39 | CAPSCREW (361A) **(S)** | 3 | 168-0488 | 082 | 082 | 082 | 082 |
| | **(L)** | NOT REQUIRED | | | | | |
| | CAPSCREW (362A) | | | | | | |
| | 1-1/4 x 1-1/2 x 9B | 4 | 168-0490 | 082 | 190 | 082 | 104 |
| | 1-1/2 x 2 x 9A, B & C | 4 | 168-0560 | 082 | 190 | 082 | 104 |
| | 2 x 2-1/2 x 9 | 4 | 168-0562 | 082 | 190 | 082 | 104 |
| | 2-1/2 x 3 x 9 | 4 | 168-0562 | 082 | 190 | 082 | 104 |
| | 3 x 4 x 9A & B | 4 | 168-0564 | 082 | 190 | 082 | 104 |
| | 4 x 5 x 9A & B | 4 | 168-0634 | 082 | 190 | 082 | 104 |
| | 6 x 6 x 9 | 4 | 168-0634 | 082 | 190 | 082 | 104 |
| | CAPSCREW (364A) | | | | | | |
| | POWER FRAME #1 | 3 | 168-0488 | 082 | 080 | 082 | 080 |
| | POWER FRAME #2 & #3 | 2 | 168-0490 | 082 | 080 | 082 | 080 |
| 40 | WASHER (361A) **(S)** | 3 | 908-0114 | 080 | 080 | 080 | 080 |
| | **(L)** | NOT REQUIRED | | | | | |
| | WASHER (362A) | NOT REQUIRED | | | | | |
| | WASHER (364A) | | | | | | |
| | POWER FRAME #1 | 3 | 908-0114 | 080 | 080 | 080 | 080 |
| | POWER FRAME #2 & #3 | 2 | 908-0114 | 080 | 080 | 080 | 080 |
| 41 | SUPPORT (361A) **(S)** | 1 | 820-0184 | 010 | 010 | 010 | 010 |
| | **(L)** | NOT REQUIRED | | | | | |
| | SUPPORT (362A) | NOT REQUIRED | | | | | |
| | SUPPORT (364A) | | | | | | |
| | POWER FRAME #1 | 1 | 820-1441 | 087 | 087 | 087 | 087 |
| | POWER FRAME #2 & #3 | 1 | 820-0186 | 010 | 010 | 010 | 010 |
| 42 | DRIVE KEY (344A) | | | | | | |
| | POWER FRAME #1 | 1 | 472-0206 | 087 | 087 | 087 | 087 |
| | POWER FRAME #2 & #3 | 1 | 472-0247 | 087 | 087 | 087 | 087 |
| 43 | GREASE FITTING | 1 | 508-0005 | 651 | 651 | 651 | 651 |
| 44 | VENT TUBE | 1 | 864-0051 | 656 | 656 | 656 | 656 |

| PC. NO. | DESCRIPTION | QTY | PART NO. | MATERIAL B.F. | A.B. | A.I. | S.S. |
|---|---|---|---|---|---|---|---|
| 46 | PIPE PLUG | | | | | | |
| | (GREASE) | 2 | 624-0010 | 503 | 503 | 503 | 503 |
| | (OIL) | 1 | 600-0002 | 087 | 190 | 087 | 104 |
| 47 | SLINGER (364A) | | | | | | |
| | POWER FRAME #1 | 1 | 764-1015 | 478 | 478 | 478 | 478 |
| | POWER FRAME #2 | 1 | 764-1021 | 478 | 478 | 478 | 478 |
| | POWER FRAME #3 | 1 | 764-1021 | 478 | 478 | 478 | 478 |
| 47A | SLINGER (364A) | | | | | | |
| | POWER FRAME #1 | 1 | 764-1015 | 478 | 478 | 478 | 478 |
| | POWER FRAME #2 | 1 | 764-1021 | 478 | 478 | 478 | 478 |
| | POWER FRAME #3 | 1 | 764-1026 | 478 | 478 | 478 | 478 |
| 48 | CAPSCREW | | | | | | |
| | POWER FRAME #1 | 4 | 168-0388 | 082 | 082 | 082 | 082 |
| | POWER FRAME #2 & #3 | 4 | 168-0492 | 082 | 082 | 082 | 082 |
| 49 | BEARING CAP | | | | | | |
| | POWER FRAME #1 | 1 | 164-0470 | 010 | 010 | 010 | 010 |
| | POWER FRAME #2 | 1 | 164-0471 | 010 | 010 | 010 | 010 |
| | POWER FRAME #3 | 1 | 164-0472 | 010 | 010 | 010 | 010 |
| 50 | O-RING (OIL LUBE) | | | | | | |
| | POWER FRAME #1 | 1 | 364-0423 | 457 | 457 | 457 | 457 |
| | POWER FRAME #2 | 1 | 364-0432 | 457 | 457 | 457 | 457 |
| | POWER FRAME #3 | 1 | 364-0438 | 457 | 457 | 457 | 457 |
| 51 | SEAL (GREASE) | | | | | | |
| | POWER FRAME #1 | 1 | 712-0231 | 653 | 653 | 653 | 653 |
| | POWER FRAME #2 | 1 | 712-0233 | 653 | 653 | 653 | 653 |
| | POWER FRAME #3 | 1 | 712-0233 | 653 | 653 | 653 | 653 |
| | OIL LUBE | | | | | | |
| | POWER FRAME #1 | 1 | 712-0016 | 653 | 653 | 653 | 653 |
| | POWER FRAME #2 | 1 | 712-0054 | 653 | 653 | 653 | 653 |
| | POWER FRAME #3 | 1 | 712-0054 | 653 | 653 | 653 | 653 |
| 51A | SEAL (GREASE) | | | | | | |
| | POWER FRAME #1 | 1 | 712-0231 | 653 | 653 | 653 | 653 |
| | POWER FRAME #2 | 1 | 712-0233 | 653 | 653 | 653 | 653 |
| | POWER FRAME #3 | 1 | 712-0234 | 653 | 653 | 653 | 653 |
| | OIL LUBE | | | | | | |
| | POWER FRAME #1 | 1 | 712-0016 | 653 | 653 | 653 | 653 |
| | POWER FRAME #2 | 1 | 712-0054 | 653 | 653 | 653 | 653 |
| | POWER FRAME #3 | 1 | 712-0056 | 653 | 653 | 653 | 653 |
| 52 | RETAINING RING | | | | | | |
| | POWER FRAME #1 | 1 | 676-0929 | 088 | 088 | 088 | 088 |
| | POWER FRAME #2 | 1 | 676-0938 | 088 | 088 | 088 | 088 |
| | POWER FRAME #3 | 1 | 676-0944 | 088 | 088 | 088 | 088 |

# 360A SERIES
# MODELS 361A - 362A - 364A
# 1-1/4 x 1-1/2 x 9B - 6 x 6 x 9

## PARTS LIST

| PC. NO. | DESCRIPTION | QTY | PART NO. | MATERIAL B.F. | A.B. | A.I. | S.S. |
|---|---|---|---|---|---|---|---|
| 53 | O.B. BEARING | | | | | | |
| | POWER FRAME #1 | | | | | | |
| | STANDARD OPEN | 1 | 068-2206 | 647 | 647 | 647 | 647 |
| | SEALED PERM LUBE | 1 | 068-2219 | 647 | 647 | 647 | 647 |
| | POWER FRAME #2 | | | | | | |
| | STANDARD OPEN | 1 | 068-2308 | 647 | 647 | 647 | 647 |
| | SEALED PERM LUBE | 1 | 068-2220 | 647 | 647 | 647 | 647 |
| | POWER FRAME #3 | | | | | | |
| | STANDARD OPEN | 1 | 068-2310 | 647 | 647 | 647 | 647 |
| | SEALED PERM LUBE | 1 | 068-2221 | 647 | 647 | 647 | 647 |
| | SEMI-OPEN IMPELLER PUMPS | | | | | | |
| | POWER FRAME #1 | 1 | 068-2506 | 647 | 647 | 647 | 647 |
| | POWER FRAME #2 | 1 | 068-2558 | 647 | 647 | 647 | 647 |
| 54 | I.B. BEARING | | | | | | |
| | POWER FRAME #1 | | | | | | |
| | STANDARD OPEN | 1 | 068-1907 | 647 | 647 | 647 | 647 |
| | SEALED PERM LUBE | 1 | 068-0114 | 647 | 647 | 647 | 647 |
| | POWER FRAME #2 | | | | | | |
| | STANDARD OPEN | 1 | 068-0159 | 647 | 647 | 647 | 647 |
| | SEALED PERM LUBE | 1 | 068-2018 | 647 | 647 | 647 | 647 |
| | POWER FRAME #3 | | | | | | |
| | STANDARD OPEN | 1 | 068-0161 | 647 | 647 | 647 | 647 |
| | SEALED PERM LUBE | 1 | 068-2022 | 647 | 647 | 647 | 647 |
| | SEMI-OPEN IMPELLER PUMPS | | | | | | |
| | POWER FRAME #1 | 1 | 068-1932 | 647 | 647 | 647 | 647 |
| | POWER FRAME #2 | 1 | 068-0182 | 647 | 647 | 647 | 647 |
| 55 | SHAFT | | | | | | |
| | POWER FRAME #1 | 1 | 728-4984 | 063 | 063 | 063 | 104 |
| | POWER FRAME #2 | 1 | 728-4985 | 063 | 063 | 063 | 104 |
| | POWER FRAME #3 | 1 | 728-4986 | 063 | 063 | 063 | 104 |
| | SEMI-OPEN IMPELLER PUMPS | | | | | | |
| | POWER FRAME #1 | 1 | 728-4987 | 063 | 063 | 063 | 104 |
| | POWER FRAME #2 | 1 | 728-4988 | 063 | 063 | 063 | 104 |
| 56 | PIPE PLUG | | | | | | |
| | (GREASE) | 2 | 624-0010 | 503 | 503 | 503 | 503 |
| | (OIL) | 1 | 600-0002 | 087 | 190 | 087 | 104 |
| 57 | FRAME | | | | | | |
| | OIL LUBE | | | | | | |
| | POWER FRAME #1 | 1 | 356-0231 | 010 | 010 | 010 | 010 |
| | POWER FRAME #2 | 1 | 356-0232 | 010 | 010 | 010 | 010 |
| | POWER FRAME #3 | 1 | 356-0233 | 010 | 010 | 010 | 010 |
| | GREASE | | | | | | |
| | POWER FRAME #1 | 1 | 356-0201 | 010 | 010 | 010 | 010 |
| | POWER FRAME #2 | 1 | 356-0202 | 010 | 010 | 010 | 010 |
| | POWER FRAME #3 | 1 | 356-0203 | 010 | 010 | 010 | 010 |
| 58 | GREASE FITTING | 1 | 508-0001 | 651 | 651 | 651 | 651 |
| 59 | PIPE PLUG | 2 | 600-0001 | 087 | 087 | 087 | 087 |
| 60 | OILER | 1 | 522-0029 | 652 | 652 | 652 | 652 |
| 61 | PIN | INCLUDED WITH NO. 25 | | | | | |

| PC. NO. | DESCRIPTION | QTY | PART NO. | MATERIAL B.F. | A.B. | A.I. | S.S. |
|---|---|---|---|---|---|---|---|
| 62 | CAPSCREW | | | | | | |
| | POWER FRAME #1 | 1 | 168-0490 | 082 | 082 | 082 | 082 |
| | POWER FRAME #2 & #3 | 2 | 168-0490 | 082 | 082 | 082 | 082 |
| 63 | WASHER | | | | | | |
| | POWER FRAME #1 | 1 | 908-0114 | 080 | 080 | 080 | 080 |
| | POWER FRAME #2 & #3 | 1 | 908-0114 | 080 | 080 | 080 | 080 |
| 64 | SUPPORT | | | | | | |
| | POWER FRAME #1 | 1 | 820-0187 | 010 | 010 | 010 | 010 |
| | POWER FRAME #2 & #3 | 1 | 820-0189 | 010 | 010 | 010 | 010 |
| 65 | CAPSCREW | | | | | | |
| | (PACKING) | 2 | 168-0496 | 082 | 190 | 082 | 104 |
| | (SEALS) | 4 | 168-0492 | 082 | 190 | 082 | 104 |
| 66 | GASKET **(S)** | 1 | 364-2021 | 614 | 614 | 614 | 614 |
| | **(L)** | 1 | 364-2022 | 614 | 614 | 614 | 614 |
| 67 | PIPE PLUG | 2 | 600-0002 | 087 | 190 | 087 | 104 |
| 68 | PIPE PLUG | 2 | 600-0002 | 087 | 087 | 087 | 087 |
| 69 | NIPPLE | 1 | 600-2291 | 079 | 190 | 079 | 104 |
| 70 | SEAL | 1 | 564-0301 | 802 | 802 | 802 | 802 |
| 71 | LOCKNUT | 1 | 544-0951 | 087 | 087 | 087 | 087 |
| 72 | GASKET (362A) | | | | | | |
| | 1-1/4 x 1-1/2 x 9B | 1 | 364-0602 | 603 | 603 | 603 | 603 |
| | 1-1/2 x 2 x 9A, B & C | 1 | 364-0603 | 603 | 603 | 603 | 603 |
| | 2 x 2-1/2 x 9 | 1 | 364-0604 | 603 | 603 | 603 | 603 |
| | 2-1/2 x 3 x 9 | 1 | 364-0605 | 603 | 603 | 603 | 603 |
| | 3 x 4 x 9A & B | 1 | 364-0607 | 603 | 603 | 603 | 603 |
| | 4 x 5 x 9A & B | 1 | 364-0608 | 603 | 603 | 603 | 603 |
| | 6 x 6 x 9 | 1 | 364-0609 | 603 | 603 | 603 | 603 |
| 73 | BASE (362A) | | | | | | |
| | 1-1/4 x 1-1/2 x 9B | 1 | 816-1102 | 010 | 208 | 010 | 104 |
| | 1-1/2 x 2 x 9A, B & C | 1 | 816-1103 | 010 | 208 | 010 | 104 |
| | 2 x 2-1/2 x 9 | 1 | 816-1104 | 010 | 208 | 010 | 104 |
| | 2-1/2 x 3 x 9 | 1 | 816-1105 | 010 | 208 | 010 | 104 |
| | 3 x 4 x 9A & B | 1 | 816-1106 | 010 | 208 | 010 | 104 |
| | 4 x 5 x 9A & B | 1 | 816-1107 | 010 | 208 | 010 | 104 |
| | 6 x 6 x 9 | 1 | 816-1108 | 010 | 208 | 010 | 104 |
| 74 | PIPE PLUG (362A) | 1 | 600-0002 | 087 | 190 | 087 | 104 |
| 75 | PIPE PLUG (364A) | | | | | | |
| | 1-1/4 x 1-1/2 x 9B | 1 | 364-0602 | 603 | 603 | 603 | 603 |
| | 1-1/2 x 2 x 9A, B & C | 1 | 364-0603 | 603 | 603 | 603 | 603 |
| | 2 x 2-1/2 x 9 | 1 | 364-0603 | 603 | 603 | 603 | 603 |
| | 2-1/2 x 3 x 9 | 1 | 364-0604 | 603 | 603 | 603 | 603 |
| | 3 x 4 x 9A & B | 1 | 364-0604 | 603 | 603 | 603 | 603 |
| | 4 x 5 x 9A & B | 1 | 364-0608 | 603 | 603 | 603 | 603 |
| | 6 x 6 x 9 | 1 | 364-0608 | 603 | 603 | 603 | 603 |
| 76 | COUPLING | 1 | 600-0721 | 387 | 387 | 387 | 387 |

# 360A SERIES
# MODELS 361A- 362A - 364A
## 1-1/2 x 2 x 11 - 6 x 6 x 11A
## 1-1/2 x 2 x 12 - 6 x 6 x 12B
## PARTS LIST

| PC. NO. | DESCRIPTION | QTY | PART NO. | MATERIAL B.F. | A.B. | A.I. | S.S. |
|---|---|---|---|---|---|---|---|
| 1 | COMPRESSION ELBOW | 1 | 868-3360 | 190 | 190 | 087 | 104 |
| 2 | COMPRESSION CONNECTOR | 1 | 868-3359 | 190 | 190 | 087 | 104 |
| 3 | TUBING | 1 | 872-0124 | 175 | 175 | 087 | 104 |
| 4 | PIPE PIPE PLUG | 3 | 600-0002 | 087 | 190 | 087 | 104 |
| 5 | CAPSCREW 11 PUMPS | 8 | 168-0494 | 082 | 190 | 082 | 104 |
| | 6 x 11, 6 x 11A, and 12 | 8 | 168-0487 | 082 | 190 | 082 | 104 |
| 6 | CASING | | | | | | |
| | 1-1/2 x 2 x 11 | 1 | 180-2353 | 010 | 208 | 010 | 104 |
| | 2 x 3 X 11 | 1 | 180-2354 | 010 | 208 | 010 | 104 |
| | 3 x 4 x 11 | 1 | 180-2371 | 010 | 208 | 010 | 104 |
| | 4 x 5 x 11 | 1 | 180-2356 | 010 | 208 | 010 | 104 |
| | 5 x 6 x 11 | 1 | 180-2357 | 010 | 208 | 010 | 104 |
| | 6 x 6 x 11 | 1 | 180-2172 | 010 | 208 | 010 | 104 |
| | 6 x 6 x 11A | 1 | 180-2363 | 010 | 208 | 010 | 104 |
| | 1-1/2 x 2 x 12 | 1 | 180-2161 | 010 | 208 | 010 | 104 |
| | 2 x 2-1/2 x 12 | 1 | 180-2163 | 010 | 208 | 010 | 104 |
| | 2-1/2 x 3 x 12 | 1 | 180-2164 | 010 | 208 | 010 | 104 |
| | 3 x 4 x 12 | 1 | 180-2166 | 010 | 208 | 010 | 104 |
| | 4 x 5 x 12 | 1 | 180-2168 | 010 | 208 | 010 | 104 |
| | 5 x 6 x 12 | 1 | 180-2170 | 010 | 208 | 010 | 104 |
| | 6 x 6 x 12 | 1 | 180-2172 | 010 | 208 | 010 | 104 |
| | 6 x 6 x 12A | 1 | 180-2363 | 010 | 208 | 010 | 104 |
| | 6 x 6 x 12B | 1 | 180-2516 | 010 | 208 | 010 | 104 |
| | VERTICAL | | | | | | |
| | 1-1/2 x 2 x 11 | 1 | 180-2457 | 010 | 208 | 010 | 104 |
| | 1-1/2 x 2 x 12 | 1 | 180-2201 | 010 | 208 | 010 | 104 |
| | (SEMI-OPEN) | | | | | | |
| | 1-1/2 x 2 x 12 | 1 | 180-2162 | 010 | 208 | 010 | 104 |
| | 2-1/2 x 3 x 12 | 1 | 180-2165 | 010 | 208 | 010 | 104 |
| | 3 x 4 x 12 | 1 | 180-2167 | 010 | 208 | 010 | 104 |
| | 4 x 5 x 12 | 1 | 180-2169 | 010 | 208 | 010 | 104 |
| | 5 x 6 x 12 | 1 | 180-2171 | 010 | 208 | 010 | 104 |
| 7 | CASE RING | | | | | | |
| | 1-1/2 x 2 x 11 | 1 | 676-1151 | 208 | 208 | 010 | 104 |
| | 2 x 3 x 11 | 1 | 676-1152 | 208 | 208 | 010 | 104 |
| | 3 x 4 x 11 | 1 | 676-1154 | 208 | 208 | 010 | 104 |
| | 4 x 5 x 11 | 1 | 676-1155 | 208 | 208 | 010 | 104 |
| | 5 x 6 x 11 | 1 | 676-1684 | 208 | 208 | 010 | 104 |
| | 6 x 6 x 11 | 1 | 676-1684 | 208 | 208 | 010 | 104 |
| | 6 x 6 x 11A | 1 | 676-1684 | 208 | 208 | 010 | 104 |
| | 1-1/2 x 2 x 12 | 1 | 676-1151 | 208 | 208 | 010 | 104 |
| | 2 x 2-1/2 x 12 | 1 | 676-1152 | 208 | 208 | 010 | 104 |
| | 2-1/2 x 3 x 12 | 1 | 676-1152 | 208 | 208 | 010 | 104 |
| | 3 x 4 x 12 | 1 | 676-1154 | 208 | 208 | 010 | 104 |
| | 4 x 5 x 12 | 1 | 676-1155 | 208 | 208 | 010 | 104 |
| | 5 x 6 x 12 | 1 | 676-1684 | 208 | 208 | 010 | 104 |
| | 6 x 6 x 12 | 1 | 676-1684 | 208 | 208 | 010 | 104 |
| | 6 x 6 x 12A | 1 | 676-1684 | 208 | 208 | 010 | 104 |
| | 6 x 6 x 12B | 1 | 676-2100 | 208 | 208 | 010 | 104 |
| 8 | GASKET 11" PUMPS | 1 | 364-2109 | 603 | 603 | 603 | 603 |
| | 6 x 11, 6 x 11A, 12 PUMPS | 1 | 364-1016 | 603 | 603 | 603 | 603 |

*MACHINED FOR OPTIONAL RING NUMBER 14 & 15

| PC. NO. | DESCRIPTION | QTY | PART NO. | MATERIAL B.F. | A.B. | A.I. | S.S. |
|---|---|---|---|---|---|---|---|
| 9 | CAPSCREW | 1 | 168-0490 | 113 | 104 | 113 | 104 |
| 9A | WASHER | 1 | 908-0604 | 087 | 104 | 087 | 104 |
| 9B | GASKET | 1 | 364-2035 | 603 | 603 | 603 | 603 |
| 9C | CAPSCREW SEAL | 1 | 908-1292 | 999 | 118 | 999 | 118 |
| 10 | O-RING | 1 | 364-0414 | 457 | 457 | 457 | 457 |
| 11 | IMPELLER | | | | | | |
| | 1-1/2 x 2 x 11 **(S)** | 1 | 433-2511 | 225 | 225 | 010 | 104 |
| | 1-1/2 x 2 x 11 **(L)** | 1 | 443-2513 | 225 | 225 | 010 | 104 |
| | 2 x 3 x 11 | 1 | 443-2399 | 225 | 225 | 010 | 104 |
| | 3 x 4 x 11 | 1 | 443-2400 | 225 | 225 | 010 | 104 |
| | 4 x 5 x 11 | 1 | 443-2401 | 225 | 225 | 010 | 104 |
| | 5 x 6 x 11 | 1 | 443-2402 | 225 | 225 | 010 | 104 |
| | 6 x 6 x 11 | 1 | 443-2402 | 225 | 225 | 010 | 104 |
| | 6 x 6 x 11A | 1 | 443-2402 | 225 | 225 | 010 | 104 |
| | 1-1/2 x 2 x 12 | 1 | 443-1725 | 225 | 225 | 010 | 104 |
| | 2 x 2-1/2 x 12 | 1 | 443-1726 | 225 | 225 | 010 | 104 |
| | 2-1/2 x 3 x 12 | 1 | 443-1727 | 225 | 225 | 010 | 104 |
| | 3 x 4 x 12 | 1 | 443-1728 | 225 | 225 | 010 | 104 |
| | 4 x 5 x 12 | 1 | 443-1729 | 225 | 225 | 010 | 104 |
| | 5 x 6 x 12 | 1 | 443-1730 | 225 | 225 | 010 | 104 |
| | 6 x 6 x 12 | 1 | 443-1732 | 225 | 225 | 010 | 104 |
| | 6 x 6 x 12A | 1 | 443-1732 | 225 | 225 | 010 | 104 |
| | 6 x 6 x 12B | 1 | 443-2664 | 225 | 225 | 010 | 104 |
| 11A | IMPELLER* | | | | | | |
| | 1-1/2 x 2 x 11 **(S)** | 1 | 443-2512 | 225 | 225 | 010 | 104 |
| | 1-1/2 x 2 x 11 **(L)** | 1 | 443-2514 | 225 | 225 | 010 | 104 |
| | 2 x 3 x 11 | 1 | 443-2427 | 225 | 225 | 010 | 104 |
| | 3 x 4 x 11 | 1 | 443-2428 | 225 | 225 | 010 | 104 |
| | 4 x 5 x 11 | 1 | 443-2429 | 225 | 225 | 010 | 104 |
| | 5 x 6 x 11 | 1 | 443-2430 | 225 | 225 | 010 | 104 |
| | 6 x 6 x 11 | 1 | 443-2430 | 225 | 225 | 010 | 104 |
| | 6 x 6 x 11A | 1 | 443-2430 | 225 | 225 | 010 | 104 |
| | 1-1/2 x 2 x 12 | 1 | 443-1739 | 225 | 225 | 010 | 104 |
| | 2 x 2-1/2 x 12 | 1 | 443-1740 | 225 | 225 | 010 | 104 |
| | 2-1/2 x 3 x 12 | 1 | 443-1741 | 225 | 225 | 010 | 104 |
| | 3 x 4 x 12 | 1 | 443-1742 | 225 | 225 | 010 | 104 |
| | 4 x 5 x 12 | 1 | 443-1743 | 225 | 225 | 010 | 104 |
| | 5 x 6 x 12 | 1 | 443-1744 | 225 | 225 | 010 | 104 |
| | 6 x 6 x 12 | 1 | 443-1746 | 225 | 225 | 010 | 104 |
| | 6 x 6 x 12A | 1 | 443-1746 | 225 | 225 | 010 | 104 |
| | 6 x 6 x 12B | 1 | 443-2977 | 225 | 225 | 010 | 104 |
| 11 | SEMI-OPEN IMPELLER PUMPS | | | | | | |
| | 1-1/2 x 2 x 12 | 1 | 443-2065 | 208 | 208 | 010 | 104 |
| | 2-1/2 x 3 x 12 | 1 | 443-2065 | 208 | 208 | 010 | 104 |
| | 3 x 4 x 12 | 1 | 443-2066 | 208 | 208 | 010 | 104 |
| | 4 x 5 x 12 | 1 | 443-2067 | 208 | 208 | 010 | 104 |
| | 5 x 6 x 12 | 1 | 443-2068 | 208 | 208 | 010 | 104 |
| 12 | IMPELLER KEY | 1 | 472-0247 | 087 | 104 | 087 | 087 |

# 360A SERIES
# MODELS 361A- 362A - 364A
## 1-1/2 x 2 x 11 - 6 x 6 x 11A
## 1-1/2 x 2 x 12 - 6 x 6 x 12B
## PARTS LIST

| PC. NO. | DESCRIPTION | QTY | PART NO. | MATERIAL B.F. | A.B. | A.I. | S.S. |
|---|---|---|---|---|---|---|---|
| 14 | IMPELLER RING (OPTIONAL) | | | | | | |
| | 1-1/2 x 2 x 11 | 1 | 676-1146 | 208 | 208 | 010 | 104 |
| | 2 x 3 x 11 | 1 | 676-1133 | 208 | 208 | 010 | 104 |
| | 3 x 4 x 11 | 1 | 676-1140 | 208 | 208 | 010 | 104 |
| | 4 x 5 x 11 | 1 | 676-1141 | 208 | 208 | 010 | 104 |
| | 5 x 6 x 11 | 1 | 676-1143 | 208 | 208 | 010 | 104 |
| | 6 x 6 x 11 | 1 | 676-1143 | 208 | 208 | 010 | 104 |
| | 6 x 6 x 11A | 1 | 676-1143 | 208 | 208 | 010 | 104 |
| | 1-1/2 x 2 x 12 | 1 | 676-1146 | 208 | 208 | 010 | 104 |
| | 2 x 2-1/2 x 12 | 1 | 676-1133 | 208 | 208 | 010 | 104 |
| | 2-1/2 x 3 x 12 | 1 | 676-1133 | 208 | 208 | 010 | 104 |
| | 3 x 4 x 12 | 1 | 676-1140 | 208 | 208 | 010 | 104 |
| | 4 x 5 x 12 | 1 | 676-1141 | 208 | 208 | 010 | 104 |
| | 5 x 6 x 12 | 1 | 676-1143 | 208 | 208 | 010 | 104 |
| | 6 x 6 x 12 | 1 | 676-1143 | 208 | 208 | 010 | 104 |
| | 6 x 6 x 12A | 1 | 676-1143 | 208 | 208 | 010 | 104 |
| | 6 x 6 x 12B | 1 | 676-2101 | 208 | 208 | 010 | 104 |
| 15 | IMPELLER RING (OPTIONAL) | | | | | | |
| | 2 x 3 x 11 | 1 | 676-1133 | 208 | 208 | 010 | 104 |
| | 3 x 4 x 11 | 1 | 676-1156 | 208 | 208 | 010 | 104 |
| | 4 x 5 x 11 | 1 | 676-1156 | 208 | 208 | 010 | 104 |
| | 5 x 6 x 11 | 1 | 676-1156 | 208 | 208 | 010 | 104 |
| | 6 x 6 x 11 | 1 | 676-1156 | 208 | 208 | 010 | 104 |
| | 6 x 6 x 11A | 1 | 676-1156 | 208 | 208 | 010 | 104 |
| | 2 x 2-1/2 x 12 | 1 | 676-1133 | 208 | 208 | 010 | 104 |
| | 2-1/2 x 3 x 12 | 1 | 676-1133 | 208 | 208 | 010 | 104 |
| | 3 x 4 x 12 thru 6 x 6 x 12B | 1 | 676-1156 | 208 | 208 | 010 | 104 |
| 16 | WEAR RING | | | | | | |
| | 2 x 3 x 11 | 1 | 676-1148 | 208 | 208 | 010 | 104 |
| | 6 x 6 x 11 | 1 | 676-1149 | 208 | 208 | 010 | 104 |
| | 6 x 6 x 11A | 1 | 676-1149 | 208 | 208 | 010 | 104 |
| | 2 x 2-1/2 x 12 | 1 | 676-1148 | 208 | 208 | 010 | 104 |
| | 2-1/2 x 3 x 12 | 1 | 676-1148 | 208 | 208 | 010 | 104 |
| | 3 x 4 x 12 thru 6 x 6 x 12B | 1 | 676-1149 | 208 | 208 | 010 | 104 |
| 17 | RETAINING RING | 1 | 676-0947 | 088 | 088 | 088 | 088 |
| 18 | JACKET PACKING | 1 | 460-0008 | 010 | 010 | 010 | 010 |
| | JACKET SEALS | 1 | 460-0009 | 010 | 010 | 010 | 010 |
| 19 | GASKET | 1 | 364-0426 | 457 | 457 | 457 | 457 |
| 19A | GASKET | 1 | 364-0441 | 457 | 457 | 457 | 457 |
| 20 | CAPSCREW | 8 | 168-0490 | 082 | 190 | 082 | 104 |
| 21 | NUT | 2 | 544-0113 | 082 | 190 | 082 | 104 |
| 22 | CLAMP | 2 | 204-0116 | 360 | 190 | 360 | 104 |
| 23 | GLAND PACKING | 1 | 372-0377 | 010 | 208 | 010 | 104 |
| | JC1, JC2, JC9B, JC21 | 1 | 372-0384 | 010 | 208 | 010 | 104 |
| | JC9 | 1 | 372-0385 | 010 | 208 | 010 | 104 |
| | JC21 DOUBLE | 1 | 372-0386 | 010 | 208 | 010 | 104 |
| | DURA RO-ROTT | 1 | 372-0387 | 010 | 208 | 010 | 104 |
| | DURA PTO-PT | 1 | 372-0388 | 010 | 208 | 010 | 104 |
| | DIRA CRO | 1 | 372-0389 | 010 | 208 | 010 | 104 |
| 24 | STUD | 2 | 803-0313 | 082 | 190 | 082 | 104 |

| PC. NO. | DESCRIPTION | QTY | PART NO. | MATERIAL B.F. | A.B. | A.I. | S.S. |
|---|---|---|---|---|---|---|---|
| 25 | SLEEVE PACKING | 1 | 756-0524 | 208 | 208 | 108 | 108 |
| | JC1 | 1 | 756-0518 | 208 | 208 | 104 | 104 |
| | JC2, JC21 | 1 | 756-0519 | 208 | 208 | 104 | 104 |
| | DURA RO-ROTT, JC9 | 1 | 756-0520 | 208 | 208 | 104 | 104 |
| | JC9B | 1 | 756-0521 | 208 | 208 | 104 | 104 |
| | DURA CRO, JC21 DOUBLE | 1 | 756-0523 | 208 | 208 | 104 | 104 |
| | DURA PTO-PT | 1 | 756-0522 | 208 | 208 | 104 | 104 |
| 26 | COVER (STD) | | | | | | |
| | 11 PUMPS | 1 | 812-1076 | 010 | 208 | 010 | 104 |
| | 6 x 11, 6 x 11A and 12 PUMPS | 1 | 812-0323 | 010 | 208 | 010 | 104 |
| | JACKETED | | | | | | |
| | 6 x 11, 6 x 11A and 12 PUMPS | 1 | 812-0340 | 010 | 208 | 010 | 104 |
| 27 | MECHANICAL SEALS | | | | | | |
| | JC1 | 1 | 712-0359 | 756 | 764 | 756 | 764 |
| | JC2 | 1 | 712-0619 | 756 | 764 | 756 | 764 |
| | JC9 | 1 | 712-1111 | 762 | 762 | 762 | 762 |
| | JC9B | 1 | 712-1413 | 762 | 762 | 762 | 762 |
| | JC 21 (STD) | 1 | 712-0910 | 749 | 764 | 749 | 764 |
| | JC21 DOUBLE | 1 | 712-2735 | 749 | 764 | 749 | 764 |
| | DURA RO-ROTT | 1 | 712-3587 | 773 | 776 | 773 | 776 |
| | DURA PTO-PT | 1 | 712-4373 | 773 | 776 | 773 | 776 |
| | DURA CRO | 1 | 712-5415 | 773 | 776 | 773 | 776 |
| 28 | PACKING | 6 | 564-0110 | 802 | 802 | 802 | 802 |
| 29 | LANTERN RING | 1 | 676-0009 | 512 | 512 | 512 | 512 |
| 32 | CAPSCREW | | | | | | |
| | FR 213JP - 256JP & POWER FRAME #2 &#3 | | | | | | |
| | **(L)** | 4 | 168-0492 | 082 | 082 | 082 | 082 |
| 33 | U DRIVE SCREW | 2 | 708-0013 | 365 | 365 | 365 | 365 |
| 34 | NAMEPLATE | 1 | 532-0045 | 114 | 114 | 114 | 114 |
| 35 | BRACKET 11" PUMPS | EXCEPT 6 x 6 x 11 & 6 x 6 x 11A | | | | | |
| | FR 213JP - 256JP & POWER FRAME #2 &#3 | | | | | | |
| | **(L)** | 1 | 116-0472 | 010 | 010 | 010 | 010 |
| | FR 284JP - 326JP | 1 | 116-0473 | 010 | 010 | 010 | 010 |
| 35 | BRACKET | 6 x 6 x 11, 6 x 6 x 11A & 12" PUMPS | | | | | |
| | FR 213JP - 256JP & POWER FRAME #2 &#3 | | | | | | |
| | **(L)** | 1 | 116-0080 | 010 | 010 | 010 | 010 |
| | FR 284JP - 326JP | 1 | 116-0081 | 010 | 010 | 010 | 010 |
| 39 | CAPSCREW (361A) | NOT REQUIRED | | | | | |
| | CAPSCREW (362A) | | | | | | |
| | 1-1/2 x 2 x 11 | 4 | 168-0560 | 082 | 190 | 082 | 104 |
| | 2 x 2-1/2 x 11 | 4 | 168-0562 | 082 | 190 | 082 | 104 |
| | 2 x 3 x 11 | 4 | 168-0562 | 082 | 190 | 082 | 104 |
| | 3 x 4 x 11 | 4 | 168-0564 | 082 | 190 | 082 | 104 |
| | 4 x 5 x 11 | 4 | 168-0634 | 082 | 190 | 082 | 104 |
| | 5 x 6 x 11 | 4 | 168-0634 | 082 | 190 | 082 | 104 |
| | 6 x 6 x 11, 6 x 6 x 11A | 8 | 168-0634 | 082 | 190 | 082 | 104 |
| | 6 x 6 x 12, 12A and 12B | 8 | 168-0634 | 082 | 190 | 082 | 104 |

# 360A SERIES
# MODELS 361A- 362A - 364A
## 1-1/2 x 2 x 11 - 6 x 6 x 11A
## 1-1/2 x 2 x 12 - 6 x 6 x 12B
## PARTS LIST

| PC. NO. | DESCRIPTION | QTY | PART NO. | MATERIAL B.F. | A.B. | A.I. | S.S. |
|---|---|---|---|---|---|---|---|
| 39 | CAPSCREW (364A) | | | | | | |
| | POWER FRAME #2 & #3 | 2 | 168-0490 | 082 | 082 | 082 | 082 |
| 40 | WASHER (361A) | NOT REQUIRED | | | | | |
| | WASHER (362A) | NOT REQUIRED | | | | | |
| | WASHER (364A) | | | | | | |
| | POWER FRAME #2 & #3 | 2 | 908-0114 | 080 | 080 | 080 | 080 |
| 41 | SUPPORT | 1 | 820-0002 | 010 | 010 | 010 | 010 |
| 42 | DRIVE KEY | 1 | 472-0247 | 087 | 087 | 087 | 087 |
| 43 | GREASE FITTING | 1 | 508-0005 | 651 | 651 | 651 | 651 |
| 44 | VENT TUBE | 1 | 864-0051 | 656 | 656 | 656 | 656 |
| 46 | PIPE PLUG | | | | | | |
| | (GREASE) | 2 | 624-0010 | 503 | 503 | 503 | 503 |
| | (OIL) | 1 | 600-0002 | 087 | 190 | 087 | 104 |
| 47 | SLINGER | | | | | | |
| | POWER FRAME #2 | 1 | 764-1021 | 478 | 478 | 478 | 478 |
| | POWER FRAME #3 | 1 | 764-1021 | 478 | 478 | 478 | 478 |
| 47A | SLINGER | | | | | | |
| | POWER FRAME #2 | 1 | 764-1021 | 478 | 478 | 478 | 478 |
| | POWER FRAME #3 | 1 | 764-1026 | 478 | 478 | 478 | 478 |
| 48 | CAPSCREW | 4 | 168-0492 | 082 | 082 | 082 | 082 |
| 49 | BEARING CAP | | | | | | |
| | POWER FRAME #2 | 1 | 164-0471 | 010 | 010 | 010 | 010 |
| | POWER FRAME #3 | 1 | 164-0472 | 010 | 010 | 010 | 010 |
| 50 | O-RING (OIL LUBE) | | | | | | |
| | POWER FRAME #2 | 1 | 364-0432 | 457 | 457 | 457 | 457 |
| | POWER FRAME #3 | 1 | 364-0438 | 457 | 457 | 457 | 457 |
| 51 | SEAL (GREASE) | | | | | | |
| | POWER FRAME #2 | 1 | 712-0233 | 653 | 653 | 653 | 653 |
| | POWER FRAME #3 | 1 | 712-0233 | 653 | 653 | 653 | 653 |
| | OIL LUBE | | | | | | |
| | POWER FRAME #2 | 1 | 712-0054 | 653 | 653 | 653 | 653 |
| | POWER FRAME #3 | 1 | 712-0054 | 653 | 653 | 653 | 653 |
| 51A | SEAL (GREASE) | | | | | | |
| | POWER FRAME #2 | 1 | 712-0233 | 653 | 653 | 653 | 653 |
| | POWER FRAME #3 | 1 | 712-0234 | 653 | 653 | 653 | 653 |
| | OIL LUBE | | | | | | |
| | POWER FRAME #2 | 1 | 712-0054 | 653 | 653 | 653 | 653 |
| | POWER FRAME #3 | 1 | 712-0056 | 653 | 653 | 653 | 653 |
| 52 | RETAINING RING | | | | | | |
| | POWER FRAME #2 | 1 | 676-0938 | 080 | 080 | 080 | 080 |
| | POWER FRAME #3 | 1 | 676-0944 | 080 | 080 | 080 | 080 |
| 53 | O.B. BEARING | | | | | | |
| | POWER FRAME #2 | | | | | | |
| | STANDARD OPEN | 1 | 068-2308 | 647 | 647 | 647 | 647 |
| | SEALED PERM LUBE | 1 | 068-2220 | 647 | 647 | 647 | 647 |
| | POWER FRAME #3 | | | | | | |
| | STANDARD OPEN | 1 | 068-2310 | 647 | 647 | 647 | 647 |
| | SEALED PERM LUBE | 1 | 068-2221 | 647 | 647 | 647 | 647 |

| PC. NO. | DESCRIPTION | QTY | PART NO. | MATERIAL B.F. | A.B. | A.I. | S.S. |
|---|---|---|---|---|---|---|---|
| 53 | SEMI-OPEN IMPELLER 12" PUMPS ONLY | | | | | | |
| | POWER FRAME #2 | 1 | 068-2558 | 647 | 647 | 647 | 647 |
| | POWER FRAME #3 | 1 | 068-2560 | 647 | 647 | 647 | 647 |
| 54 | I.B. BEARING | | | | | | |
| | POWER FRAME #2 | | | | | | |
| | STANDARD OPEN | 1 | 068-0159 | 647 | 647 | 647 | 647 |
| | SEALED PERM LUBE | 1 | 068-2018 | 647 | 647 | 647 | 647 |
| | POWER FRAME #3 | | | | | | |
| | STANDARD OPEN | 1 | 068-0161 | 647 | 647 | 647 | 647 |
| | SEALED PERM LUBE | 1 | 068-2022 | 647 | 647 | 647 | 647 |
| | SEMI-OPEN IMPELLER 12" PUMPS ONLY | | | | | | |
| | POWER FRAME #2 | 1 | 068-0182 | 647 | 647 | 647 | 647 |
| | POWER FRAME #3 | 1 | 068-0184 | 647 | 647 | 647 | 647 |
| 55 | SHAFT | | | | | | |
| | POWER FRAME #2 | 1 | 728-4985 | 063 | 063 | 063 | 104 |
| | POWER FRAME #3 | 1 | 728-4986 | 063 | 063 | 063 | 104 |
| | SEMI-OPEN IMPELLER 12" PUMPS ONLY | | | | | | |
| | POWER FRAME #2 | 1 | 728-4988 | 063 | 063 | 063 | 104 |
| | POWER FRAME #3 | 1 | 728-4989 | 063 | 063 | 063 | 104 |
| | SHAFT 12" PUMPS ONLY | | | | | | |
| | POWER FRAME #2 | 1 | 728-4988 | 063 | 063 | 063 | 104 |
| | POWER FRAME #3 | 1 | 728-4989 | 063 | 063 | 063 | 104 |
| 56 | PIPE PLUG | | | | | | |
| | GREASE | 2 | 624-0010 | 503 | 503 | 503 | 503 |
| | OIL | 1 | 600-0002 | 087 | 190 | 087 | 104 |
| 57 | FRAME | | | | | | |
| | OIL LUBE | | | | | | |
| | POWER FRAME #2 | 1 | 356-0232 | 010 | 010 | 010 | 010 |
| | POWER FRAME #3 | 1 | 356-0233 | 010 | 010 | 010 | 010 |
| | GREASE | | | | | | |
| | POWER FRAME #2 | 1 | 356-0202 | 010 | 010 | 010 | 010 |
| | POWER FRAME #3 | 1 | 356-0203 | 010 | 010 | 010 | 010 |
| 58 | GREASE FITTING | 1 | 508-0001 | 651 | 651 | 651 | 651 |
| 59 | PIPE PIPE PLUG | 2 | 600-0001 | 087 | 190 | 087 | 104 |
| 60 | OILER | 1 | 522-0029 | 652 | 652 | 652 | 652 |
| 61 | PIN | INCLUDED WITH NO. 25 | | | | | |
| 62 | CAPSCREW | 2 | 168-0490 | 082 | 082 | 082 | 082 |
| 63 | WASHER | 2 | 908-0114 | 080 | 080 | 080 | 080 |
| 64 | SUPPORT | 1 | 820-0189 | 010 | 010 | 010 | 010 |
| 65 | CAPSCREW | | | | | | |
| | PACKING | 2 | 168-0496 | 082 | 190 | 082 | 104 |
| | SEALS | 4 | 168-0492 | 082 | 190 | 082 | 104 |
| 66 | GASKET | 1 | 364-2022 | 614 | 614 | 614 | 614 |
| 67 | PIPE PLUG | 2 | 600-0002 | 087 | 190 | 087 | 104 |
| 68 | PIPE PLUG | 6 x 6 x 11, 6 x 6 x 11A & 12" PUMPS | | | | | |
| | | 2 | 600-0002 | 087 | 190 | 087 | 104 |

# 360A SERIES
# MODELS 361A- 362A - 364A
## 1-1/2 x 2 x 11 - 6 x 6 x 11A
## 1-1/2 x 2 x 12 - 6 x 6 x 12B
## PARTS LIST

| PC. NO. | DESCRIPTION | QTY | PART NO. | MATERIAL B.F. | A.B. | A.I. | S.S. |
|---|---|---|---|---|---|---|---|
| 69 | NIPPLE 12" | 1 | 600-2291 | 079 | 190 | 079 | 104 |
| 70 | SEAL PUMPS | 1 | 564-0301 | 802 | 802 | 802 | 802 |
| 71 | LOCKNUT ONLY | 1 | 544-0951 | 087 | 087 | 087 | 087 |
| 72 | GASKET (362A) | | | | | | |
| | 1-1/2 x 2 x 11 | 1 | 364-0603 | 579 | 579 | 579 | 579 |
| | 1-1/2 x 2 x 12 | 1 | 364-0603 | 579 | 579 | 579 | 579 |
| | 2 x 3 x 11 | 1 | 364-0605 | 579 | 579 | 579 | 579 |
| | 2 x 2-1/2 x 12 | 1 | 364-0604 | 579 | 579 | 579 | 579 |
| | 2-1/2 x 3 x 12 | 1 | 364-0605 | 579 | 579 | 579 | 579 |
| | 3 x 4 x 11 | 1 | 364-0607 | 579 | 579 | 579 | 579 |
| | 3 x 4 x 12 | 1 | 364-0607 | 579 | 579 | 579 | 579 |
| | 4 x 5 x 11 | 1 | 364-0608 | 579 | 579 | 579 | 579 |
| | 4 x 5 x 12 | 1 | 364-0608 | 579 | 579 | 579 | 579 |
| | 5 x 6 x 11 | 1 | 364-0609 | 579 | 579 | 579 | 579 |
| | 5 x 6 x 12 | 1 | 364-0609 | 579 | 579 | 579 | 579 |
| | 6 x 6 x 11 | 1 | 364-0609 | 579 | 579 | 579 | 579 |
| | 6 x 6 x 11A | 1 | 364-0609 | 579 | 579 | 579 | 579 |
| | 6 x 6 x 12 | 1 | 364-0609 | 579 | 579 | 579 | 579 |
| | 6 x 6 x 12A and 12B | 1 | 364-0609 | 579 | 579 | 579 | 579 |
| 73 | BASE (362A) | | | | | | |
| | 1-1/2 x 2 x 11 | 1 | 816-1103 | 010 | 208 | 010 | 104 |
| | 1-1/2 x 2 x 12 | 1 | 816-1103 | 010 | 208 | 010 | 104 |
| | 2 x 3 x 11 | 1 | 816-1105 | 010 | 208 | 010 | 104 |
| | 2 x 2-1/2 x 12 | 1 | 816-1104 | 010 | 208 | 010 | 104 |
| | 2-1/2 x 3 x 12 | 1 | 816-1105 | 010 | 208 | 010 | 104 |
| | 3 x 4 x 11 | 1 | 816-1106 | 010 | 208 | 010 | 104 |
| | 3 x 4 x 12 | 1 | 816-1106 | 010 | 208 | 010 | 104 |
| | 4 x 5 x 11 | 1 | 816-1107 | 010 | 208 | 010 | 104 |
| | 4 x 5 x 12 | 1 | 816-1107 | 010 | 208 | 010 | 104 |
| | 5 x 6 x 11 | 1 | 816-1108 | 010 | 208 | 010 | 104 |
| | 5 x 6 x 12 | 1 | 816-1108 | 010 | 208 | 010 | 104 |
| | 6 x 6 x 11 | 1 | 816-1108 | 010 | 208 | 010 | 104 |
| | 6 x 6 x 11A | 1 | 816-1108 | 010 | 208 | 010 | 104 |
| | 6 x 6 x 12 | 1 | 816-1108 | 010 | 208 | 010 | 104 |
| | 6 x 6 x 12A and 12B | 1 | 816-1108 | 010 | 208 | 010 | 104 |

| PC. NO. | DESCRIPTION | QTY | PART NO. | MATERIAL B.F. | A.B. | A.I. | S.S. |
|---|---|---|---|---|---|---|---|
| 74 | PIPE PLUG (362A) | 1 | 600-0002 | 087 | 190 | 087 | 104 |
| 75 | PIPE PLUG (362A) | | | | | | |
| | 1-1/2 x 2 x 11 | 1 | 600-0003 | 087 | 190 | 087 | 104 |
| | 1-1/2 x 2 x 12 | 1 | 600-0003 | 087 | 190 | 087 | 104 |
| | 2 x 3 x 11 | 1 | 600-0003 | 087 | 190 | 087 | 104 |
| | 2 x 2-1/2 x 12 | 1 | 600-0003 | 087 | 190 | 087 | 104 |
| | 2-1/2 x 3 x 12 | 1 | 600-0003 | 087 | 190 | 087 | 104 |
| | 3 x 4 x 11 | 1 | 600-0004 | 087 | 190 | 087 | 104 |
| | 3 x 4 x 12 | 1 | 600-0004 | 028 | 190 | 028 | 104 |
| | 4 x 5 x 11 | 1 | 600-0005 | 028 | 190 | 028 | 104 |
| | 4 x 5 x 12 | 1 | 600-0005 | 028 | 190 | 028 | 104 |
| | 5 x 6 x 11 | 1 | 600-0005 | 028 | 190 | 028 | 104 |
| | 5 x 6 x 12 | 1 | 600-0005 | 028 | 190 | 028 | 104 |
| | 6 x 6 x 11 | 1 | 600-0005 | 028 | 190 | 028 | 104 |
| | 6 x 6 x 11A | 1 | 600-0005 | 028 | 190 | 028 | 104 |
| | 6 x 6 x 12 | 1 | 600-0005 | 028 | 190 | 028 | 104 |
| | 6 x 6 x 12A and 12B | 1 | 600-0005 | 028 | 190 | 028 | 104 |
| 76 | COUPLING | | | | | | |
| | 12" PUMPS ONLY | 1 | 600-0721 | 387 | 387 | 387 | 387 |

# 360A SERIES
# MODELS 364A
# 6 x 8 x 15 - 8 x 10 x 15

## PARTS LIST

| PC. NO. | DESCRIPTION | QTY | PART NO. | MATERIAL B.F. | A.B. | A.I. | S.S. |
|---|---|---|---|---|---|---|---|
| 1 | COMPRESSION ELBOW | 1 | 868-3660 | 190 | | 087 | |
| 2 | COMPRESSION CONNECTOR | 1 | 868-3559 | 190 | | 087 | |
| 3 | TUBING | 1 | 872-0124 | 175 | | 087 | |
| 4 | CAPSCREW | 4 | 168-0492 | 082 | | 082 | |
| 5 | CAPSCREW | 8 | 168-0636 | 082 | | 082 | |
| 6 | CASING | | | | | | |
| | 6 x 8 x 15 | 1 | 180-2366 | 010 | | 010 | |
| | 8 x 10 x 15 | 1 | 180-2367 | 010 | | 010 | |
| 7 | CASE RING | | | | | | |
| | 6 x 8 x 15 | 1 | 676-2036 | 222 | | 010 | |
| | 8 x 10 x 15 | 1 | 676-2037 | 222 | | 010 | |
| 8 | O-RING | 1 | 364-0557 | 457 | | 457 | |
| 9 | CAPSCREW | 2 | 168-0636 | 082 | | 082 | |
| 9A | NUT | 2 | 544-0117 | 080 | | 080 | |
| 10 | O-RING | 1 | 364-0335 | 457 | | 457 | |
| 11 | IMPELLER | | | | | | |
| | 6 x 8 x 15 | 1 | 443-2418 | 208 | | 010 | |
| | 8 x 10 x 15 | 1 | 443-2419 | 208 | | | 010 |
| 11A | IMPELLER* | | | | | | |
| | 6 x 8 x 15 | 1 | 443-2455 | 208 | | 010 | |
| | 8 x 10 x 15 | 1 | 443-2456 | 208 | | 010 | |
| 14 | IMPELLER RING (OPTIONAL) | | | | | | |
| | 6 x 8 x 15 | 1 | 676-1053 | 208 | | 010 | |
| | 8 x 10 x 15 | 1 | 676-1971 | 208 | | 010 | |
| 15 | IMPELLER RING (OPTIONAL) | | | | | | |
| | 6 x 8 x 15 | 1 | 676-1053 | 208 | | 010 | |
| | 8 x 10 x 15 | 1 | 676-1053 | 208 | | 010 | |
| 16 | WEAR RING | | | | | | |
| | 6 x 8 x 15 | 1 | 676-2036 | 222 | | 010 | |
| | 8 x 10 x 15 | 1 | 676-2036 | 222 | | 010 | |
| 23 | GLAND (PACKING) | 1 | 372-0499 | 010 | | 010 | |
| | JC1, JC1B | 1 | 372-0501 | 010 | | 010 | |
| | JC9T, JC1, DOUBLE | 1 | 372-0501 | 010 | | 010 | |
| | DURA RO-ROTT | 1 | 372-0500 | 010 | | 010 | |
| | DURA PTO-PT | 1 | 372-0500 | 010 | | 010 | |
| | GLAND DURA CRO | 1 | 372-0500 | 010 | | 010 | |
| | DURA ROTT DOUBLE | 1 | 372-0500 | 010 | | 010 | |
| | DURA RO DOUBLE | 1 | 372-0500 | 010 | | 010 | |
| 25 | SLEEVE (PACKING) | 1 | 756-0404 | 208 | | 108 | |
| | JC1, JC9T | 1 | 756-0404 | 208 | | 104 | |
| | JC1B | 1 | 756-0406 | 208 | | 104 | |
| | JC1 DOUBLE | 1 | 756-0404 | 208 | | 104 | |
| | DURA RO-ROTT | 1 | 756-0404 | 208 | | 104 | |
| | DURA PTO-PT | 1 | 756-0405 | 208 | | 104 | |
| | DURA CRO DOUBLE | 1 | 756-0404 | 208 | | 104 | |
| | DURA ROTT DOUBLE | 1 | 756-0404 | 208 | | 104 | |
| | DURA RO DOUBLE | 1 | 756-0404 | 208 | | 104 | |
| 26 | COVER (STANDARD) | 1 | 812-1079 | 010 | | 010 | |
| | DURA ROTT DOUBLE | 1 | 812-1082 | 010 | | 010 | |

*MACHINED FOR OPTIONAL RING NUMBER 14 & 15

| PC. NO. | DESCRIPTION | QTY | PART NO. | MATERIAL B.F. | A.B. | A.I. | S.S. |
|---|---|---|---|---|---|---|---|
| 27 | MECHANICAL SEALS | | | | | | |
| | JC1 (STANDARD) | 1 | 712-6390 | 756 | | 756 | |
| | JC1B | 1 | 712-6391 | 756 | | 756 | |
| | JC9T | 1 | 712-6392 | 762 | | 762 | |
| | JC1 DOUBLE | 1 | 712-6393 | 756 | | 756 | |
| | DURA ROTT | 1 | 712-6394 | 714 | | 714 | |
| | DURA RO | 1 | 712-6395 | 713 | | 713 | |
| | DURA PT | 1 | 712-6396 | 716 | | 716 | |
| | DURA PTO | 1 | 712-6397 | 715 | | 715 | |
| | DURA CRO DOUBLE | 1 | 712-6398 | 713 | | 713 | |
| | DURA ROTT DOUBLE | 1 | 712-6399 | 714 | | 714 | |
| | DURA RO DOUBLE | 1 | 712-6400 | 713 | | 713 | |
| 28 | PACKING | 6 | 564-0154 | 802 | | 802 | |
| 29 | LANTERN RING | 1 | 676-0972 | 512 | | 512 | |
| 32 | CAPSCREW | 4 | 168-0654 | 082 | | 082 | |
| 33 | U DRIVE SCREW | 2 | 708-0013 | 365 | | 365 | |
| 34 | NAMEPLATE | 1 | 532-0045 | 114 | | 114 | |
| 35 | BRACKET | 1 | 116-0470 | 010 | | 010 | |
| 42 | DRIVE KEY | 1 | 472-0390 | 087 | | 087 | |
| 43 | GREASE FITTING | 1 | 508-0005 | 651 | | 651 | |
| 44 | VENT TUBE (OIL) | 1 | 864-0053 | 656 | | 656 | |
| 47 | SLINGER | | | | | | |
| | POWER FRAME 21 | 1 | 764-1034 | 522 | | 522 | |
| 47A | SLINGER | | | | | | |
| | POWER FRAME 21 | 1 | 764-1035 | 522 | | 522 | |
| 48 | CAPSCREW | 4 | 168-0564 | 082 | | 082 | |
| 49 | BEARING CAP | | | | | | |
| | POWER FRAME 21 | 1 | 164-0112 | 010 | | 010 | |
| 50 | O-RING (OIL LUBE) | 1 | 364-0450 | 457 | | 457 | |
| 51 | SEAL | 1 | 712-0193 | 653 | | 653 | |
| 51A | SEAL | 1 | 712-0193 | 653 | | 653 | |
| 52 | RETAINING RING | 1 | 676-0926 | 088 | | 088 | |
| 52A | RETAINING RING | 1 | 676-0450 | 088 | | 088 | |
| 53 | O.B. BEARING | 1 | 068-0462 | 647 | | 647 | |
| 54 | I.B. BEARING | 1 | 068-0164 | 647 | | 647 | |
| 55 | SHAFT | | | | | | |
| | POWER FRAME 21 | 1 | 728-7086 | 063 | | 063 | |
| 56 | PIPE PLUG (OIL) | 3 | 600-0002 | 087 | | 087 | |
| 57 | FRAME | | | | | | |
| | POWER FRAME 21 | | | | | | |
| | GREASE | 1 | 356-0009 | 010 | | 010 | |
| | OIL | 1 | 356-0099 | 010 | | 010 | |
| 58 | GREASE FITTING | 2 | 508-0010 | 651 | | 651 | |
| 60 | OILER | 1 | 552-0029 | 652 | | 652 | |

# 360A SERIES
# MODELS 364A
# 6 x 8 x 15 - 8 x 10 x 15

## PARTS LIST

| PC. NO. | DESCRIPTION | QTY | PART NO. | MATERIAL | | | |
|---|---|---|---|---|---|---|---|
| | | | | B.F. | A.B. | A.I. | S.S. |
| 61 | PIN | 1 | 592-0028 | 104 | | 104 | |
| 62 | CAPSCREW | 2 | 168-0564 | 082 | | 082 | |
| 63 | WASHER | 2 | 908-0116 | 080 | | 080 | |
| 64 | SUPPORT | 1 | 820-1396 | 010 | | 010 | |
| 65 | STUD | | | | | | |
| | PACKING | 2 | 808-0513 | 082 | | 082 | |
| | SEAL | 4 | 808-0511 | 082 | | 082 | |
| 65A | NUT | | | | | | |
| | PACKING | 2 | 544-0115 | 080 | | 080 | |
| | SEAL | 4 | 544-0115 | 080 | | 080 | |
| 66 | GASKET | 1 | 364-0814 | 603 | | 603 | |
| 67 | PIPE PLUG | 1 | 600-0002 | 087 | | 087 | |
| 68 | PIPE PLUG | 1 | 600-0002 | 087 | | 087 | |
| 77 | NUT | 1 | 544-0117 | 080 | | 080 | |
| 78 | EYE BOLT | 1 | 100-0110 | 080 | | 080 | |
| 79 | COLLAR | | | | | | |
| | JC1, JC1B | 1 | 224-0222 | 208 | | 104 | |
| 80 | SET SCREW | | | | | | |
| | JC1, JC1B | 2 | 724-0077 | 104 | | 104 | |
| 81 | CAPSCREW | 2 | 168-0396 | 080 | | 080 | |
| 82 | NUT | 2 | 544-0109 | 082 | | 082 | |
| 83 | PACKING | 1 | 564-0301 | 802 | | 802 | |

AURORA PUMP A member of PENTAIR PUMP GROUP

# AURORA PUMP

BULLETIN 370B/REV. C

## 370 SERIES TWO STAGE END SUCTION PUMPS

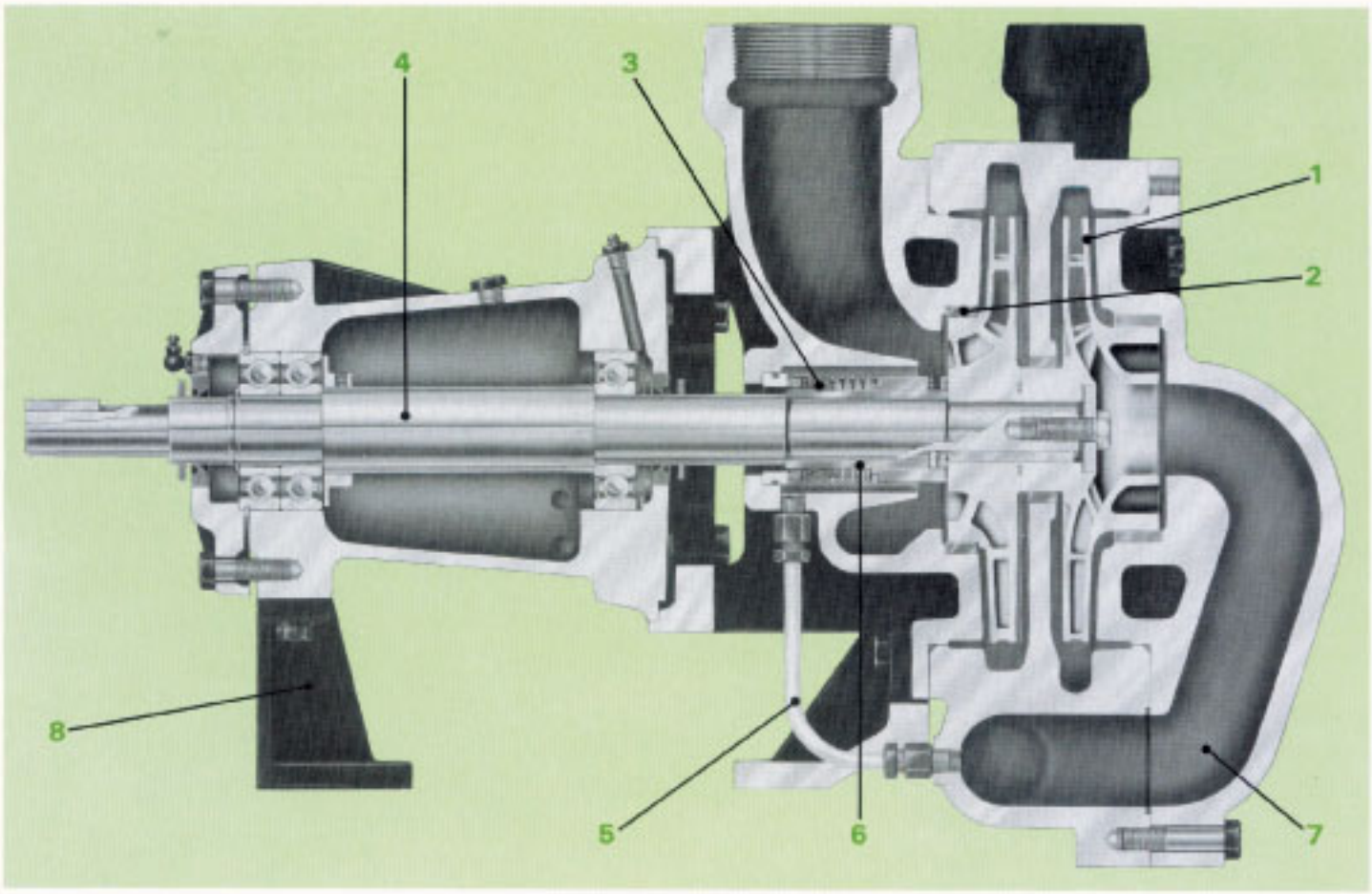
CAPACITIES TO 310 G.P.M.
HEADS TO 790 FEET
TEMPERATURES TO 300°F.



MODEL 374B

(OPTIONAL POSITION 3 SHOWN)

# INTRODUCTION
# AURORA 370 SERIES PUMPS




Compact system designs, application trends requiring increased pressures and temperatures and the much higher costs of engineering and construction have brought about a demand for a practical multi-stage frame mounted end suction pump. Various pressures and forces generated within a multi-stage unit must balance making shaft and bearing design more critical than in single stage units. Split case pump designs readily solve the mechanical problems of multi-staging, but are costly. Aurora Pump, a leader in the pump industry, has combined over 75 years of knowledge in multi-stage split case and end suction design and manufacturing techniques to produce a unique combination of technical features in the 370 Series. Significantly, this new Aurora pump design offers:

- LOW NPSH REQUIREMENTS
- RELIABLE OPERATION
- COMPACT DESIGN FOR EASY INSTALLATION AND MAINTENANCE
- QUIET, SMOOTH-RUNNING DESIGN FOR LONGER LIFE

## QUICK REFERENCE 370 SERIES FEATURE SELECTOR

### STANDARD

Iron fitted construction
Bronze shaft sleeves
Dynamically balanced cast iron shell core enclosed impellers
Bronze case wearing rings
Regreasable bearings
Discharge position No. 1
Hydrostatic test
Carbon steel shaft
303 Stainless high temp. mech. seal
"O" ring sealed shaft sleeve
Coupling guard

### OPTIONAL

All iron construction
316 Stainless steel shaft sleeves
Stainless steel shaft or sleeve
Cast iron case wearing rings
Oil lubricated ball bearings
Alternate piping positions
Steel drip-rim bases
316 Stainless, special high temperature mechanical seal with Cranelast, Tungsten Carbide and Carbon parts

# PUMP FEATURES AND ENGINEERING DETAILS

**1 DYNAMICALLY BALANCED IMPELLERS** keyed to the shaft and secured by a capscrew and washer. Quality controlled manufacturing process assures consistently high performance. Enclosed design provides highest efficiency, low NPSH and minimum wear for long service life. After developing pressure in the first stage impeller the liquid is directed to a second stage impeller where the process is repeated, doubling the discharge head. By offsetting the discharges by 180°, the radial loads on the bearing are balanced and shaft deflection is minimized.

**2 CASE WEARING RINGS** prevent wear on casing and are easily and inexpensively replaced.

**3 HIGH TEMPERATURE MECHANICAL SEAL** is standard and located on the first stage to eliminate the need for costly high pressure seal and premature failure.

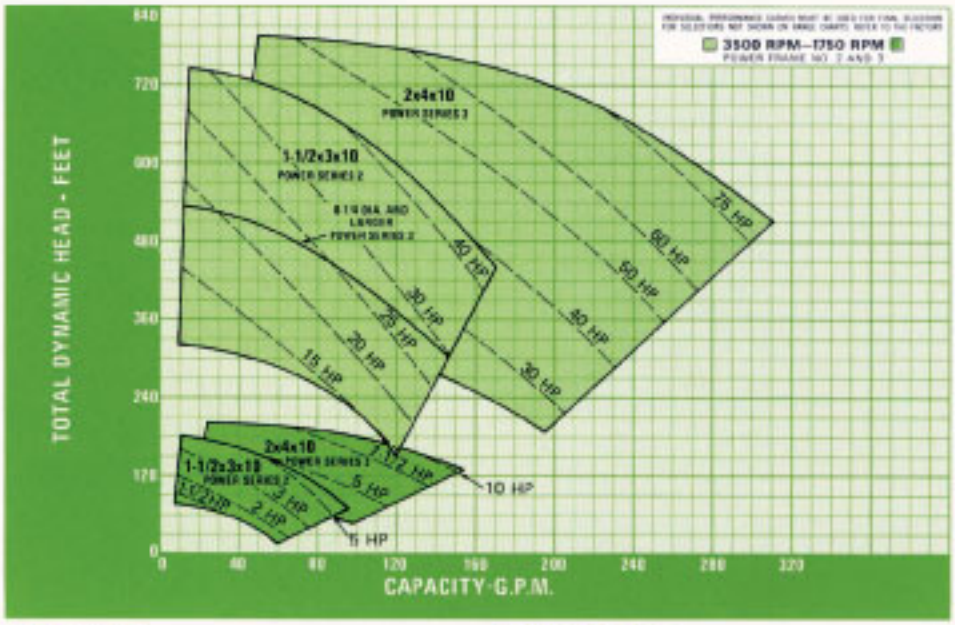
**4 CARBON STEEL SHAFT** is designed for minimum deflection, not to exceed .002" at the sealing faces at maximum load. Bearings selected for 2 years minimum life at maximum load. Average bearing life is 10 years. Grease lubrication is standard.

**5 RELIEF LINE** assures adequate venting of the seal chamber and lube of the seal faces.

**6 BRONZE SHAFT SLEEVE** prevents shaft wear and extends the entire length of the seal box. The sleeve is slip fit over the shaft and is keylocked. Shaft sleeve and impeller screw are sealed by "O" ring gaskets to eliminate corrosion of the shaft by the pumped liquid. This eliminates the requirements for high cost, stainless steel shafts.

**7 HYDROSTATIC TEST** guarantees casting and seal integrity.

**8 REAR SUPPORT FOOT** provides power frame support and simplifies coupling alignment.



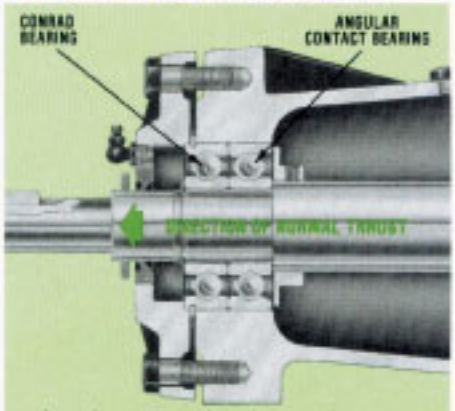

## LIMITATIONS

| MAXIMUM LIMITATIONS BASED ON STANDARD MATERIALS AND PUMPING CLEAR WATER | | | |
|---|---|---|---|
| SPEED — RPM | | MODEL 374 | 3600 |
| H.P. | 1½ x 3 x 10 | | 60 |
| | 2 x 4 x 10 | | 100 |
| HYDROSTATIC TEST PRESSURE P.S.I. | | | 600 |
| CASE WORKING PRESSURE P.S.I. | | –20° to 150° F. | 400 |
| | | 200° F. | 370 |
| | | 225° F. | 355 |
| | | 250° F. | 340 |
| | | 275° F. | 325 |
| | | 300° F. | 310 |
| SUCTION PRESSURE P.S.I. | | | 100 |
| TEMP. °F | SEALING METHOD | FRAME MOUNTED | |
| | STD. HIGH TEMP. MECHANICAL SEAL | 225 | |
| | SPECIAL HIGH TEMP. MECHANICAL SEAL | 300 | |

## DESIGN DETAILS

| AREA | DESCRIPTION | POWER SERIES 2 | POWER SERIES 3 |
|---|---|---|---|
| PUMP SHAFT | ROTATION—FROM DRIVER END | CW | CW |
| | DIAMETER AT IMPELLER | 1¼ | 1½ |
| | DIAMETER AT SHAFT SLEEVE | 1⅛ | 1½ |
| | DIAMETER BETWEEN BEARINGS | 1 15/16 | 2⅜ |
| | DIAMETER AT COUPLING END | 1⅛ | 1⅜ |
| | COUPLING KEY — SQUARE | ¼ | ⅜ |
| | MAX. DEFLECTION AT SEAL FACE | .002 | .002 |
| | OUTSIDE DIA. OF SLEEVE | 1¾ | 1¾ |
| BALL BEARING | BEARING (INB. RADIAL) | 308 | 310 |
| | BEARING (MATCHED SET) | | |
| | CONRAD | 308 | 310 |
| | ANGULAR CONTACT | 7308 | 7310 |
| | BEARING CENTERS | 7 1/16 | 7 1/16 |
| | MIN. $B_{10}$ BEARING LIFE UNDER MAXIMUM LOAD | 2 YRS. | 2 YRS. |

## OUTBOARD TANDEM THRUST BEARING




Angular contact bearing carries maximum thrust load in direction of normal thrust. Conrad bearing locks bearing assembly and carries reverse thrust load of reduced magnitude.

## MATERIALS OF CONSTRUCTION

| PUMP PART | IRON FITTED | ALL IRON |
|---|---|---|
| BRACKET | CAST IRON ASTM A48 | CAST IRON ASTM A48 |
| CASING | CAST IRON ASTM A48 | CAST IRON ASTM A48 |
| IMPELLERS | CAST IRON ASTM A48 | CAST IRON ASTM A48 |
| COVER | CAST IRON ASTM A48 | CAST IRON ASTM A48 |
| MECHANICAL SEAL | 303 STAINLESS STEEL METAL PARTS. "Buna-N" ELASTOMER PARTS. NI-RESIST SEAT AND CARBON WASHER. | |
| POWER FRAME | CAST IRON ASTM A48 | CAST IRON ASTM A48 |
| SHAFT | STEEL AISI C1045 | STEEL AISI C1045 |
| SLEEVES | BRONZE ASTM B62 | STAINLESS STEEL AISI 316 |
| WEARING RINGS | BRONZE ASTM B62 | CAST IRON ASTM A48 |

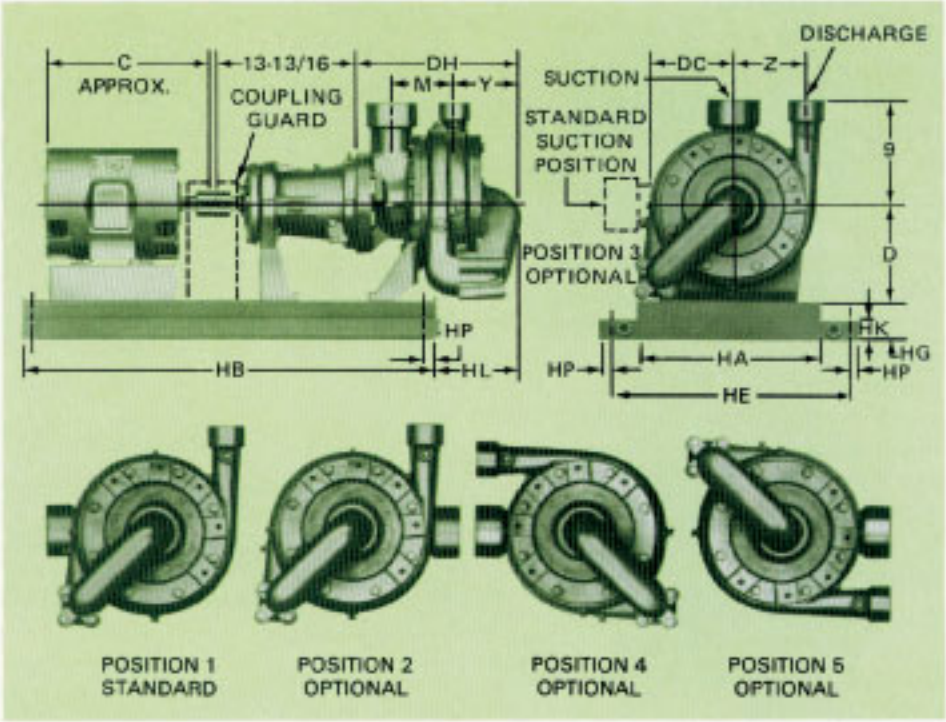
# ENGINEERING SPECIFICATIONS AND DIMENSIONS

The contractor shall furnish (and install as shown on the plans) Aurora Model (374 horizontal flexible coupled) centrifugal pump sizes 1½ x 3 x 10 or 2 x 4 x 10 (iron fitted) (all iron) construction. Each pump shall have a capacity of . . . . . G.P.M. at . . . . . ft. total head, with a temperature of . . . . . °F., . . . . . N.P.S.H. required and . . . . . specific gravity. Each pump is to be furnished with a (standard) (high temperature) mechanical seal with all metal parts to be (303) (316) stainless steel with ("Buna-N") (Cranelast) elastomers, (Ni-Resist) (Tungsten Carbide) seat, and carbon washer. The unit must be equipped with (bronze) (stainless steel) key-locked shaft sleeve that extends the length of the seal box. The pump shaft extension shall be "O" ring sealed from the pumped liquid. Pump shall have case wearing rings.

Impellers are to be precision shell core cast, dynamically balanced, and keylocked to the shaft.

Pump and motor are to be mounted on a common (formed steel drip rim) (steel) baseplate. The shaft is to be carbon steel, installed in a cast iron power frame. Pumps shall have a shaft design for .002" deflection at the seal face with the pump running under maximum load condition. (Grease) (Oil) lubricated ball bearings, having a 2 year minimum life (AFBMA $B_{10}$) under the maximum condition of load and protected by separate oil seals and slingers, shall be used. The pump shall be flexible coupled to a standard horizontal NEMA . . . . HP, . . . . phase, . . . . Hertz, . . . . volts, . . . . R.P.M., (drip-proof) (totally enclosed) (explosion-proof) motor. Alignment shall be checked in accordance with the Standards of the Hydraulic Institute after installation and there shall be no strain transmitted to pumps.

| PUMP SIZE | PUMP WEIGHT |
|---|---|
| 1½ x 3 x 10 | 215 LBS |
| 2 x 4 x 10 | 325 LBS |




| PUMP SIZE | | | D | DC | DH | HL | M | Y | Z |
|---|---|---|---|---|---|---|---|---|---|
| DISCH. | SUCT. | CASE BORE | | | | | | | |
| 1½ | 3 | 10 | 8 | 7 | 14½ | 8 | 5¾ | 5 13/16 | 6⅛ |
| 2 | 4 | 10 | 9 | 7⅞ | 15 11/16 | 9 5/16 | 6¾ | 6 5/8 | 6 5/16 |

| PUMP MODEL | BASE NUMBER | WEIGHT POUNDS | HA | HB | HE | HG | HP | HK | POWER FRAME WEIGHT (LBS.) | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | 2 | 3 |
| 374 | 5 | 56 | 11 | 36½ | 15⅞ | 3 | 1 1/16 | 1½ | 82 | 87 |
| | 6 | 68 | 11 | 42½ | 15⅞ | 3 | 1 1/16 | 1½ | | |
| | 8 | 96 | 14 | 42½ | 19 | 3 | 1 1/16 | 1½ | | |
| | 9 | 110 | 14 | 48½ | 19 | 3 | ¾ | 1½ | | |
| | 11 | 164 | 18 | 46½ | 25⅛ | 4 | 1 3/16 | 2 | | |
| | 12 | 192 | 18 | 54½ | 25⅛ | 4 | 1 3/16 | 2 | | |

**NOTES:**
1. Dimensions and weights are approximate.
2. All dimensions are in inches and may vary ± ¼".
3. Frame sizes, "C" dimension and motor weight are for open drip-proof motors only.
4. Conduit box is shown in approximate position. Dimensions are not specified as they vary with each motor manufacturer.
5. Add pump, base and motor weight for unit weight.
6. Not for construction purposes unless certified.
7. Discharge position No. 1 is furnished as standard unless otherwise specified.
8. Aurora Pump reserves the right to make revisions to it products and their specifications, and to this bulletin and related information, without notice.
9. Note: Power frame selection can be made from the range charts.

| MOTOR FRAME | HORSEPOWER 3500 RPM | HORSEPOWER 1750 RPM | MOTOR WEIGHT IN LBS | C | BASE NUMBER |
|---|---|---|---|---|---|
| 143T | — | 1 | 30 | 12 | 5 |
| 145T | — | 1½-2 | 35 | 13 | 5 |
| 182T | — | 3 | 45 | 13 | 5 |
| 184T | — | 5 | 50 | 14 | 5 |
| 213T | 10 | 7½ | 120 | 16 | 5 |
| 215T | 15 | 10 | 144 | 18 | 6 |
| 254T | 20 | 15 | 217 | 21 | 8 |
| 256T | 25 | — | 246 | 23 | 9 |
| 284TS | 30 | — | 320 | 22 | 9 |
| 286TS | 40 | — | 351 | 24 | 9 |
| 324TS | 50 | — | 442 | 25 | 11 |
| 326TS | 60 | — | 522 | 26 | 11 |
| 364TS | 75 | — | 540 | 27 | 11 |
| 365TS | 100 | — | 590 | 28 | 12 |

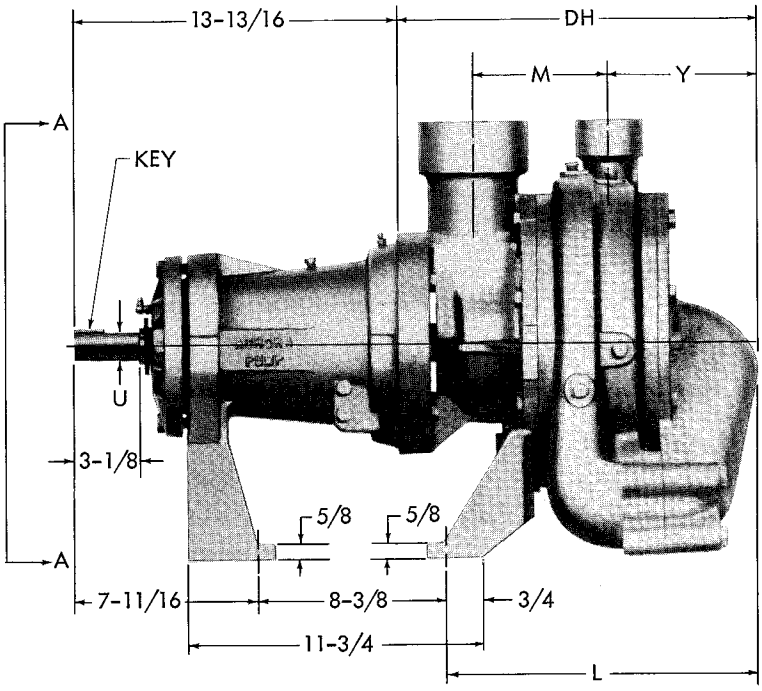
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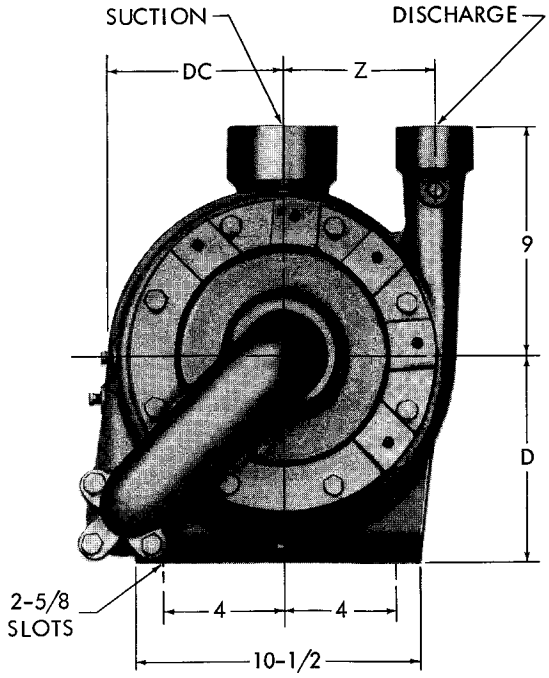
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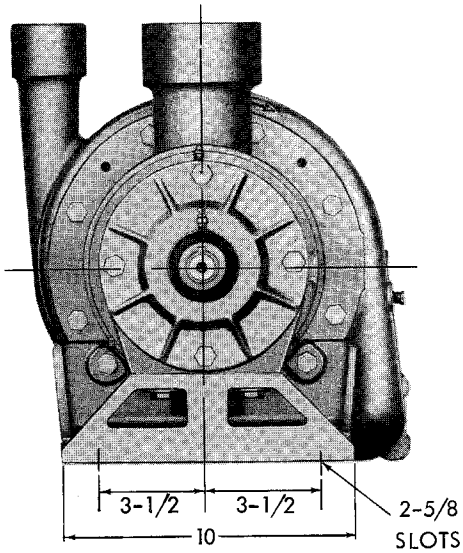


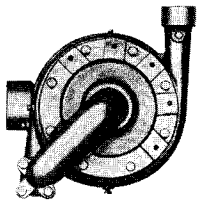

OPTIONAL POSITION (3)

| PUMP SIZE | U | KEYWAY | |
|---|---|---|---|
| | | LENGTH | SQ. |
| 1-1/2 x 3 x 10 | 1-1/8 | 1-3/4 | 1/4 |
| 2 x 4 x 10 | 1-3/8 | | 3/8 |

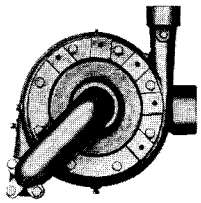
| DISCH. | SUCT. | CASE BORE | D | DC | DH | L | M | Y | Z |
|---|---|---|---|---|---|---|---|---|---|
| 1-1/2 | 3 | 10 | 8 | 7 | 14-1/2 | 12-1/4 | 5-3/4 | 5-13/16 | 6-1/8 |
| 2 | 4 | 10 | 9 | 7-5/8 | 15-11/16 | 13-7/16 | 6-3/4 | 6-9/16 | 6-9/16 |



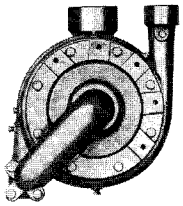

VIEW AA



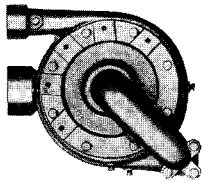
STANDARD POSITION 1



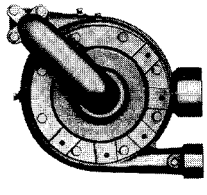
POSITION 2



POSITION 3

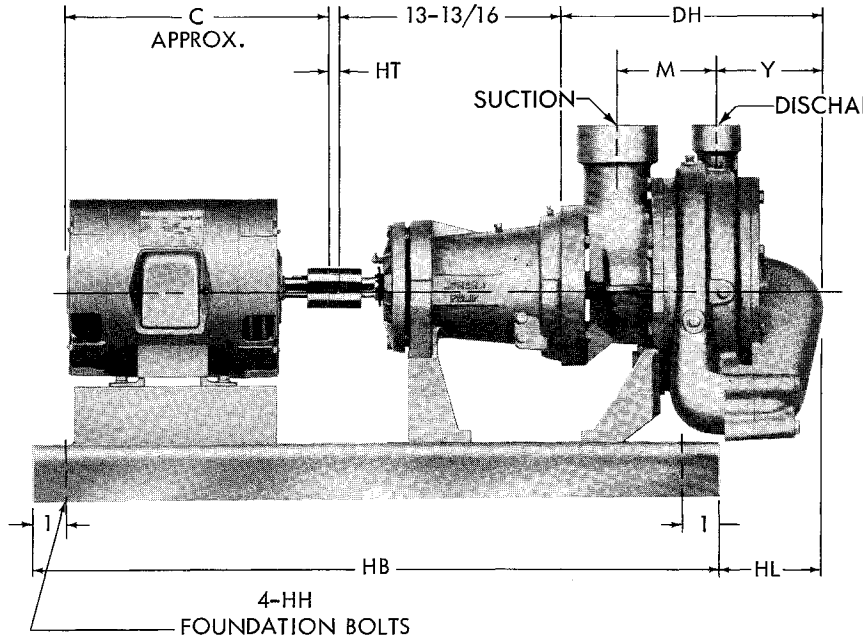


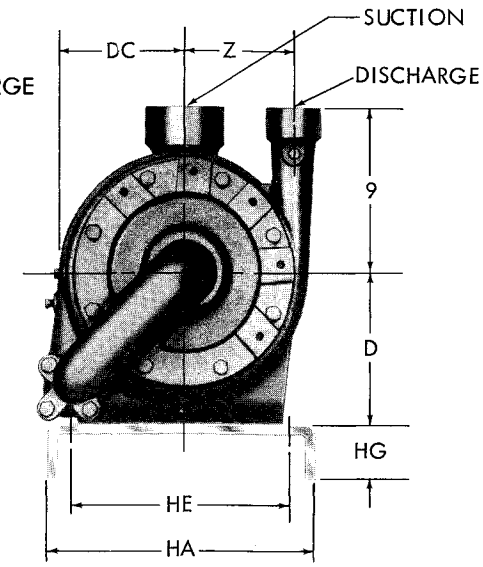
POSITION 4



POSITION 5

NOTES
1. ALL DIMENSIONS IN INCHES.
2. DIMENSIONS MAY VARY ± 1/4.
3. NOT FOR CONSTRUCTION PURPOSES UNLESS CERTIFIED.



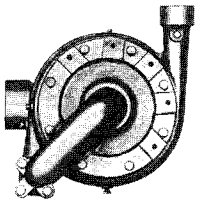

OPTIONAL POSITION (3)

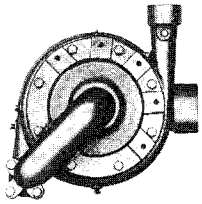
| MOTOR | C | BASE NO. | HB | HT | HG | HE | HA | HH |
|---|---|---|---|---|---|---|---|---|
| 143T | 12 | 1 | 34 | 3/4 | 3 | 9 | 12 | 1/2 |
| 145T | 13 | 1 | 34 | 3/4 | 3 | 9 | 12 | 1/2 |
| 182T | 13 | 2 | 38 | 3/4 | 3 | 9 | 12 | 1/2 |
| 184T | 14 | 2 | 38 | 3/4 | 3 | 9 | 12 | 1/2 |
| 213T | 16 | 2 | 38 | 3/4 | 3 | 9 | 12 | 1/2 |
| 215T | 18 | 3 | 42 | 7/8 | 4 | 10 | 13 | 5/8 |
| 254T | 21 | 3 | 42 | 7/8 | 4 | 10 | 13 | 5/8 |
| 256T | 23 | 4 | 52 | 7/8 | 4-1/8 | 12 | 15 | 5/8 |
| 284TS | 22 | 4 | 52 | 7/8 | 4-1/8 | 12 | 15 | 5/8 |
| 286TS | 24 | 4 | 52 | 1 | 4-1/8 | 12 | 15 | 5/8 |
| 324TS | 25 | 5 | 48 | 1 | 4 | 15 | 18 | 5/8 |
| 326TS | 26 | 5 | 48 | 1 | 4 | 15 | 18 | 5/8 |
| 364TS | 27 | 5 | 48 | 1 | 4 | 15 | 18 | 5/8 |
| 365TS | 28 | 6 | 54 | 1/4 | 4 | 15 | 18 | 5/8 |

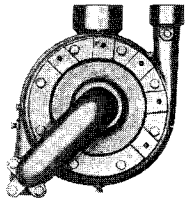
NOTES

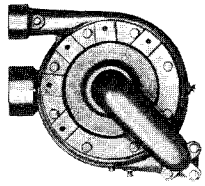
1. ALL DIMENSIONS IN INCHES.
2. DIMENSIONS MAY VARY ± 1/4.
3. NOT FOR CONSTRUCTION PURPOSES UNLESS CERTIFIED.
4. CONDUIT BOX IS SHOWN IN APPROXIMATE LOCATION. DIMENSIONS ARE NOT SPECIFIED AS THEY VARY WITH EACH MOTOR MANUFACTURER.

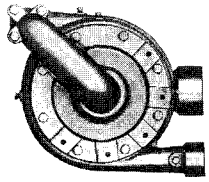
| DISCH. | SUCT. | CASE BORE | D | DC | DH | HL | M | Y | Z | FRAME | 143T | 145T | 182T | 184T | 213T | 215T | 254T | 256T | 284TS | 286TS | 324TS | 326TS | 364TS | 365TS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | C | 11 | 12 | 13 | 14 | 16 | 18 | 21 | 23 | 22 | 24 | 25 | 26 | 27 | 28 |
| 1-1/2 | 3 | 10 | 8 | 7 | 14-1/2 | 8 | 5-3/4 | 5-13/16 | 6-1/8 | BASE | 1 | 1 | 2 | 2 | 2 | 3 | 3 | 4 | 4 | 4 | 5 | 5 | | |
| 2 | 4 | 10 | 9 | 7-5/8 | 15-11/16 | 9-3/16 | 6-3/4 | 6-9/16 | 6-9/16 | BASE | | | 2 | 2 | 2 | 3 | 3 | 4 | 4 | 4 | 5 | 5 | 5 | 6 |

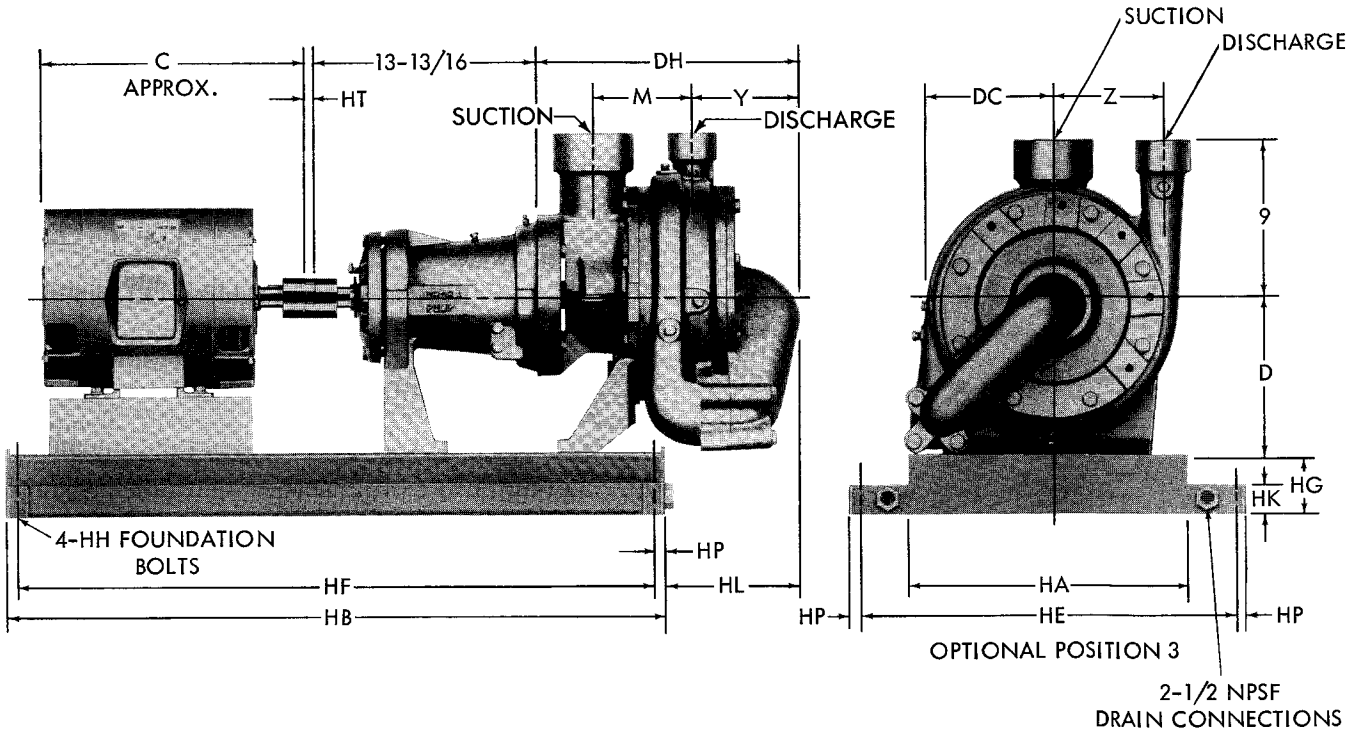

STANDARD POSITION 1


POSITION 2


POSITION 3


POSITION 4


POSITION 5

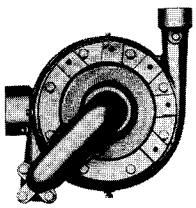


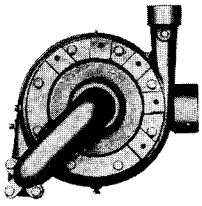

| MOTOR | C | BASE NO. | HB | HT | HG | HE | HA | HH | HK | HF | HP |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 143T | 12 | 5 | 36-1/2 | 3/4 | 3 | 15-7/8 | 11 | 1/2 | 1-1/2 | 35-1/8 | 11/16 |
| 145T | 13 | 5 | 36-1/2 | 3/4 | 3 | 15-7/8 | 11 | 1/2 | 1-1/2 | 35-1/8 | 11/16 |
| 182T | 13 | 5 | 36-1/2 | 3/4 | 3 | 15-7/8 | 11 | 1/2 | 1-1/2 | 35-1/8 | 11/16 |
| 184T | 14 | 5 | 36-1/2 | 3/4 | 3 | 15-7/8 | 11 | 1/2 | 1-1/2 | 35-1/8 | 11/16 |
| 213T | 16 | 5 | 36-1/2 | 3/4 | 3 | 15-7/8 | 11 | 1/2 | 1-1/2 | 35-1/8 | 11/16 |
| 215T | 18 | 6 | 42-1/2 | 7/8 | 3 | 15-7/8 | 11 | 1/2 | 1-1/2 | 41-1/8 | 11/16 |
| 254T | 21 | 8 | 42-1/2 | 7/8 | 3 | 19 | 14 | 5/8 | 1-1/2 | 41 | 3/4 |
| 256T | 23 | 9 | 48-1/2 | 7/8 | 3 | 19 | 14 | 5/8 | 1-1/2 | 47 | 3/4 |
| 284TS | 22 | 9 | 48-1/2 | 7/8 | 3 | 19 | 14 | 5/8 | 1-1/2 | 47 | 3/4 |
| 286TS | 24 | 9 | 48-1/2 | 1 | 3 | 19 | 14 | 5/8 | 1-1/2 | 47 | 3/4 |
| 324TS | 25 | 11 | 46-1/2 | 1 | 4 | 25-1/8 | 18 | 3/4 | 2 | 44-7/8 | 13/16 |
| 326TS | 26 | 11 | 46-1/2 | 1 | 4 | 25-1/8 | 18 | 3/4 | 2 | 44-7/8 | 13/16 |
| 364TS | 27 | 11 | 46-1/2 | 1 | 4 | 25-1/8 | 18 | 3/4 | 2 | 44-7/8 | 13/16 |
| 365TS | 28 | 12 | 54-1/2 | 1/4 | 4 | 25-1/8 | 18 | 3/4 | 2 | 52-7/8 | 13/16 |

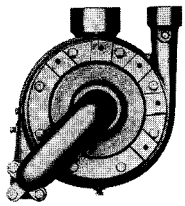
NOTES

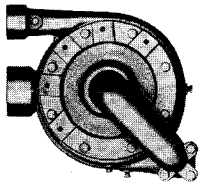
1. ALL DIMENSIONS IN INCHES.
2. DIMENSIONS MAY VARY ± 1/4.
3. NOT FOR CONSTRUCTION PURPOSES UNLESS CERTIFIED.
4. CONDUIT BOX SHOWN IN APPROXIMATE LOCATION. DIMENSIONS ARE NOT SPECIFIED AS THEY VARY WITH EACH MOTOR MANUFACTURER.

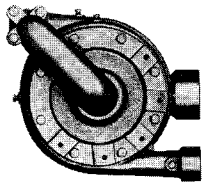
| DISCH. | SUCT. | CASE BORE | D | DC | DH | HL | M | Y | Z | FRAME | 143T | 145T | 182T | 184T | 213T | 215T | 254T | 256T | 284TS | 286TS | 324TS | 326TS | 364TS | 365TS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | C | 11 | 12 | 13 | 14 | 16 | 18 | 21 | 23 | 22 | 24 | 25 | 26 | 27 | 28 |
| 1-1/2 | 3 | 10 | 8 | 7 | 14-1/2 | 8 | 5-3/4 | 5-13/16 | 6-1/8 | BASE | 5 | 5 | 5 | 5 | 5 | 6 | 8 | 9 | 9 | 9 | 11 | 11 | | |
| 2 | 4 | 10 | 9 | 7-5/8 | 15-11/16 | 9-3/16 | 6-3/4 | 6-9/16 | 6-9/16 | BASE | | | 5 | 5 | 5 | 6 | 8 | 9 | 9 | 9 | 11 | 11 | 11 | 12 |


STANDARD POSITION 1


POSITION 2


POSITION 3


POSITION 4


POSITION 5

AURORA PUMP
A member of PENTAIR PUMP GROUP

# INSTRUCTION MANUAL 2
## INSTALLATION
## FRAME MOUNTED

GENERAL. The life of your Aurora pump can be extended considerably by carefully following the installation instructions contained herein. Each step of the pump installation instructions plays a vital part in assuring long life, efficient operation, and reduced maintenance, from the initial location of the pump through prestarting directions.

UNPACKING YOUR PUMP. The crate containing your pump should be opened immediately upon receipt from the factory, and the pump generally inspected for damage and shortage of parts. Particular attention should be given to the discharge and suction nozzle threads or flanges. Any damage or shortage of parts should be reported to the carrier immediately.

CLEANING. If your pump is to be installed immediately, it will be necessary to remove the protective covers from all openings, and to clean the exposed metal parts thoroughly with white gasoline or other suitable solvent to remove the preservative coating.

STORAGE. If your pump is not to be put in service immediately it should be covered and stored in a clean dry area. The protective covers and preservative should be left intact until the pump is put into service. For extended storage, the pump should be dried internally with hot air or some other suitable means, and once free of moisture, filled with a protective fluid such as light oil or kerosene. Accordingly, at time of installation, the pump will have to be completely dismantled and thoroughly cleaned.

PLANNING THE PUMP LOCATION. You probably have spent considerable time planning where your pump will be located. However you may have overlooked some factor which may affect your pump operation or efficiency.

The pump should be located as close to the liquid source as possible so that the suction line can be

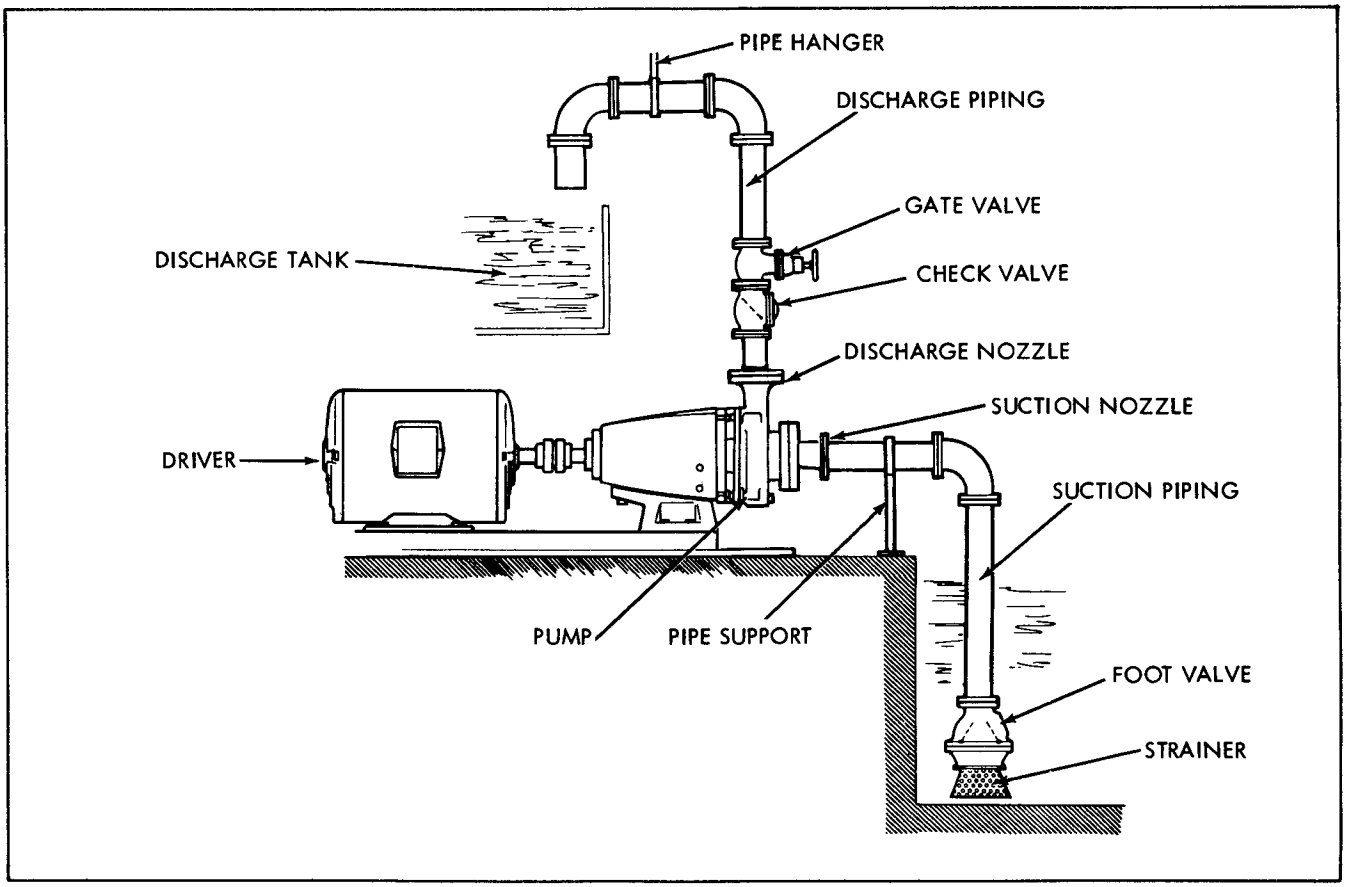



FIGURE 1. RECOMMENDED LOCATION - SHORT DIRECT SUCTION

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AURORA, ILLINOIS

short and direct. It should be located in a clean, open area, where it is easily accessible for inspection, lubrication, and repair. Pumps installed in dark, dirty areas or in cramped locations are often neglected which can result in premature failure of both the pump and the driver.

Your pump should be located so that a hoist or crane can be used to move it without interference from piping. This factor is often overlooked in the advance planning stage.

Protect your pump against the possibility of flooding. Although water will not seriously damage the pump, the drive motor can be damaged.

The pump should be located in an area where moisture, either from leakage through the packing or from condensation, can be adequately drained off. Moisture dripping on exposed metal or wood can cause rapid deterioration of the area. Also, wet floors produce safety hazards.

Adequate provisions should be made for electrical wiring to the pump motor. A switch and overload protection should be installed near the pump unless it is impractical. The electrical conduit should be positioned in such a way as to preclude the possibility of moisture entering the conduit or the motor and causing short circuits.

Outdoor installation will normally provide all of the above mentioned conditions. However it is advisable to provide a weather shelter for your pump.

FOUNDATION. The foundation for your pump must be sufficiently rigid to absorb any vibration and stress encountered during pump operation. A raised foundation of concrete is preferable for most floor mounted pumps. The raised foundation assures a satisfactory base, protects against flooding, simplifies moisture drainage, and facilitates keeping the area clean.

Your pump should be firmly bolted to the foundation, whether it is a raised concrete base, steelwork wall, or structural member. The mounting bolts or studs should be accurately located per the applicable Aurora dimension sheet. Foundation bolts should be enclosed by a sleeve 2 to 4 diameters larger than the bolt to allow movement for proper alignment with the pump mounting holes. Refer to figure 3.

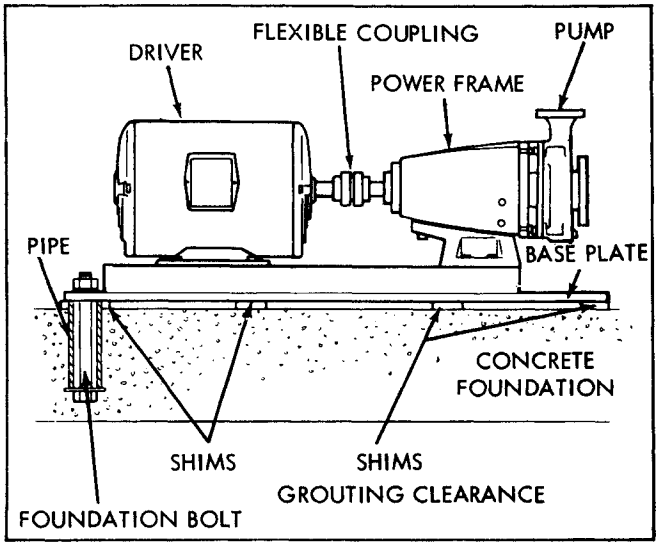



FIGURE 3. FOUNDATION FOR FRAME MOUNTED PUMPS

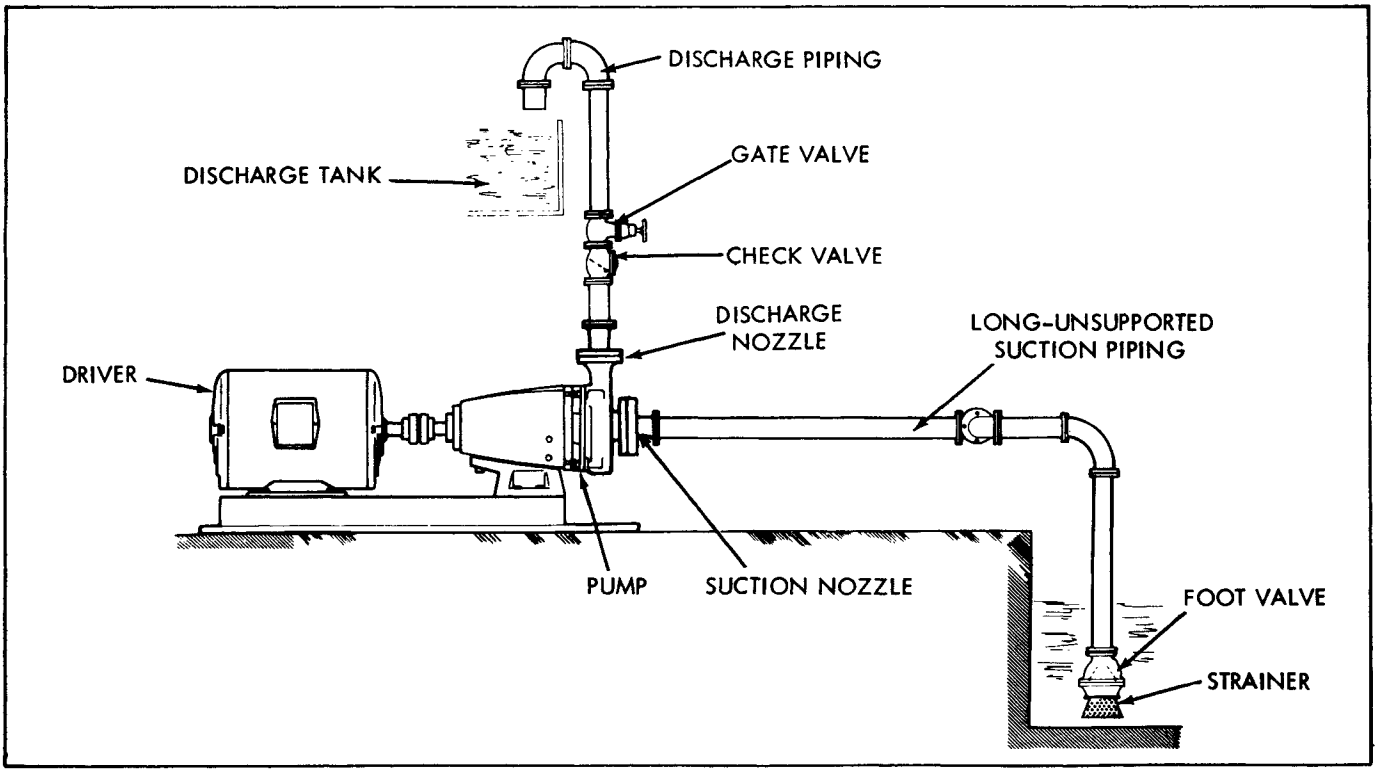



FIGURE 2. UNSATISFACTORY LOCATION - LONG INDIRECT SUCTION WITH NO SUPPORT

## FRAME MOUNTED INSTALLATION

If the pump is to be mounted on steelwork or other structure, adequate support should be provided to prevent distortion of the base plate or the structure, which could produce excessive strain on the pump casing and piping, and seriously affect alignment of the pump and driver.

PREPARING TO INSTALL YOUR PUMP. Your pump and driver unit will normally be mounted on a common base plate. The unit has been accurately aligned and securely mounted to the base plate at the factory. However, the alignment cannot be maintained during shipping and the complete unit must be leveled and realigned at the time of installation.

LEVELING THE PUMP. Leveling the pump will require enough shims to support the base plate near the foundation bolts, and at any points of the base plate carrying a substantial weight load. The shims should be large enough to allow a gap of 3/4" to 1-1/2" between the base plate and foundation for grouting.

The pump unit should be set on the foundation, being careful not to damage the threads on the foundation bolts. The flexible coupling halves should then be disconnected. The shims should be inserted and the pump leveled. A spirit level should be used on the faces of the flexible coupling halves, and on the suction and discharge flanges. If your pump has threaded nozzles, a short piece of pipe inserted in the nozzles will serve as a smooth surface for a leveling reference point. The shims should be adjusted until the pump is leveled horizontally and vertically. Tighten the foundation bolts finger tight.

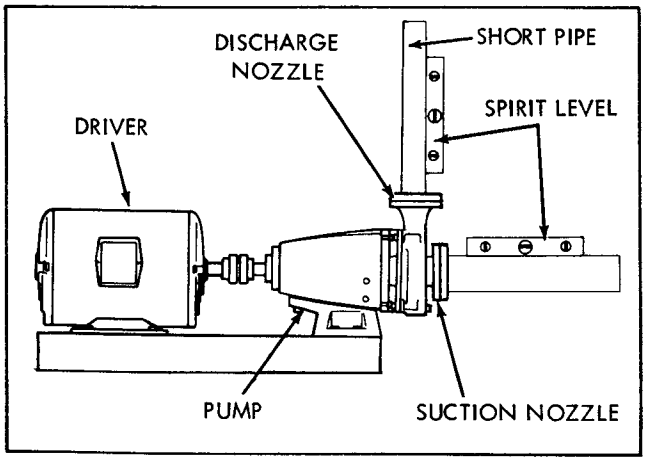



FIGURE 4. LEVELING PUMP UNIT WITH SPIRIT LEVEL AND SHORT LENGTHS OF PIPE

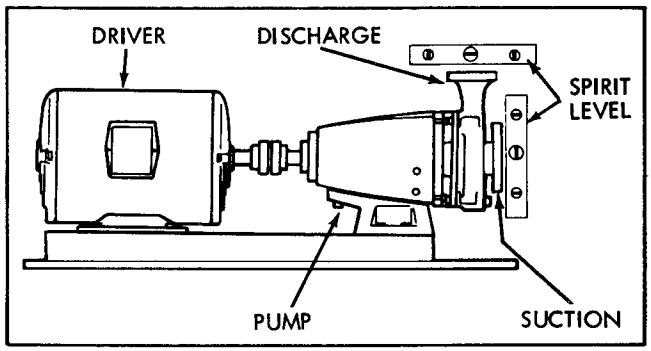



FIGURE 5. LEVELING PUMP UNIT WITH SPIRIT LEVEL ON PUMP FLANGES

INITIAL ALIGNMENT OF THE FLEXIBLE COUPLING. The pump and driver were accurately aligned at the factory. However, it is impossible to maintain this alignment during shipping and handling. Therefore it will be necessary for you to realign the pump and driver. Flexible couplings are not universal joints. They should not be used to compensate for misalignment of the pump and motor shafts. Their function is to transmit power from the driver to the pump while compensating for thermal expansion and shaft end movement. The coupling faces should be far enough apart so that they do not make contact when the motor shaft is forced to the limit of the bearing clearance toward the pump shaft.

In order to properly align the coupling, you will need a taper gauge or set of feeler gauges, and a straight edge, or if available, a dial indicator.

There are two types of misalignment encountered with flexible couplings: angular misalignment, in which the shafts are not parallel, and parallel misalignment where the shafts are parallel but not on the same axis.

To check angular alignment, insert a feeler gauge or taper gage at any four places 90° apart around the

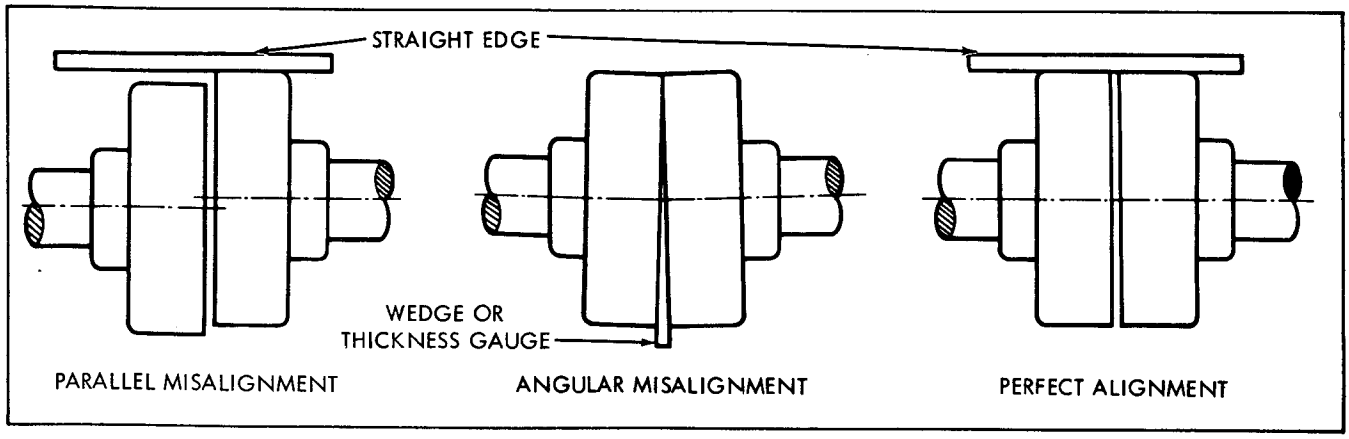



FIGURE 6. FLEXIBLE COUPLING ALIGNMENT

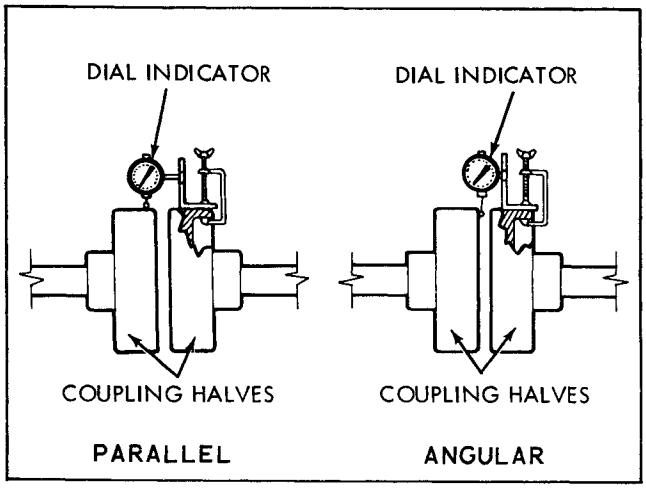



FIGURE 7. CHECKING ALIGNMENT WITH DIAL INDICATOR

coupling halves. Insert shims under the driver feet until the same reading is obtained at all four check points. The pump and driver will then be in angular alignment.

To check angular alignment with a dial indicator, clamp the dial indicator to the pump coupling half so that ball on the indicator just rests on the face of the motor coupling half. A chalk mark should be made at the point where the ball contacts the coupling half. Both the pump shaft and the motor shaft should be rotated an equal amount so that the reading is taken at all check points with the ball on the chalk mark. Insert shims as required.

To check parallel alignment, a straight edge should be held against the edges of the coupling halves at any four places 90° apart around the coupling. The straight edge should be parallel to the pump and driver shafts at all times. Insert shims until the straight edge lies flat against both coupling halves at all four check points. The pump and driver will then be in proper parallel alignment.

To check parallel alignment with the dial indicator, the ball should rest on periphery of the motor coupling half. A chalk mark should be made at the point of contact, and the shafts rotated equally so that the reading is taken with the ball on the chalk mark at all check points. Insert shims as required.

NOTE

Any adjustment to correct one direction of alignment may affect the other direction. Therefore, it is necessary to recheck both angular and parallel alignment after each adjustment.

When the unit is properly aligned, the foundation bolts should be tightened, but not too firmly. Waste material should be stuffed into the sleeves around the foundation bolts, to prevent grout from filling the sleeves during grouting.

GROUTING THE INSTALLATION. Grouting the base plate prevents lateral movement of the base plate, and improves the vibration absorbing characteristics of the foundation by increasing its mass. A wooden dam should be constructed around the base plate to contain the grout while it is being poured. The dam can be built tight against the base plate, or slightly removed from it as desired.

The entire base plate should be completely filled with grout. A non-shrinkable type grout, such as manufactured by EMBCO is recommended. The grout should be puddled frequently to remove any air bubbles from the grout.

The leveling shims can be grouted in place, or they can be removed after the grout has set usually from 48 to 72 hours after pouring.

After the grout has set, alignment of the unit should be checked and the foundation bolts firmly tightened down.

PIPING. Your pump unit is now ready to be piped. The piping practices you follow will directly affect the efficiency and power consumption of your pump.

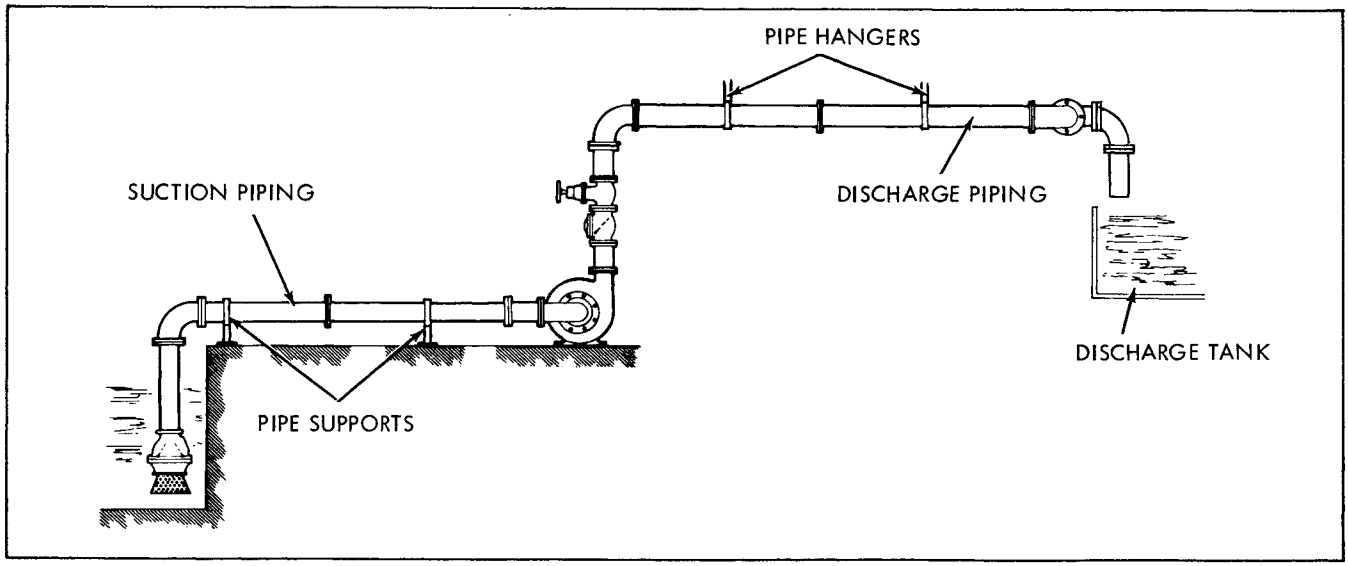



FIGURE 8. SUPPORTING PIPING

Pay particular attention to the seemingly insignificant details involved in piping your pump for they make the difference between a good and bad installation.

SUPPORTING THE PIPE. Both the suction and the discharge piping should be independently supported near the pump. Liberal use of pipe hangers and support blocks will prevent excessive strain on the pump casing and on the pipe joints.

SUCTION PIPING. The suction piping should be short, but no less than ten pipe diameters in length, and direct with as few elbows and fittings as possible, to keep head loss from friction at a minimum. However, the suction pipe should provide a minimum uninterrupted length, equal to ten pipe diameters, to the pump suction flange. A horizontal suction line should have a gradual rise to the pump, and pass under any interfering piping.

PIPE. The suction pipe diameter should be at least the same diameter as the suction nozzle on the pump, and preferably larger. Use of a smaller diameter pipe will result in loss of head due to friction. All joints must be tight to maintain prime on the pump.

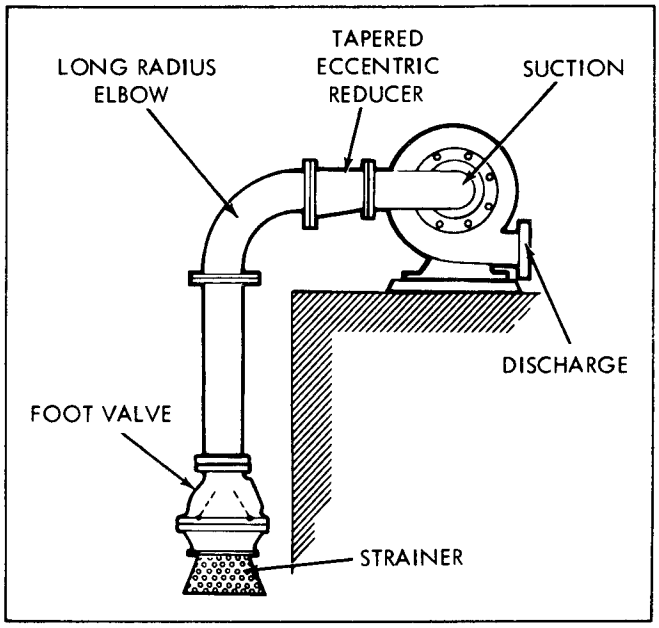



FIGURE 9. RECOMMENDED SUCTION LIFT PIPING - SHORT AND DIRECT

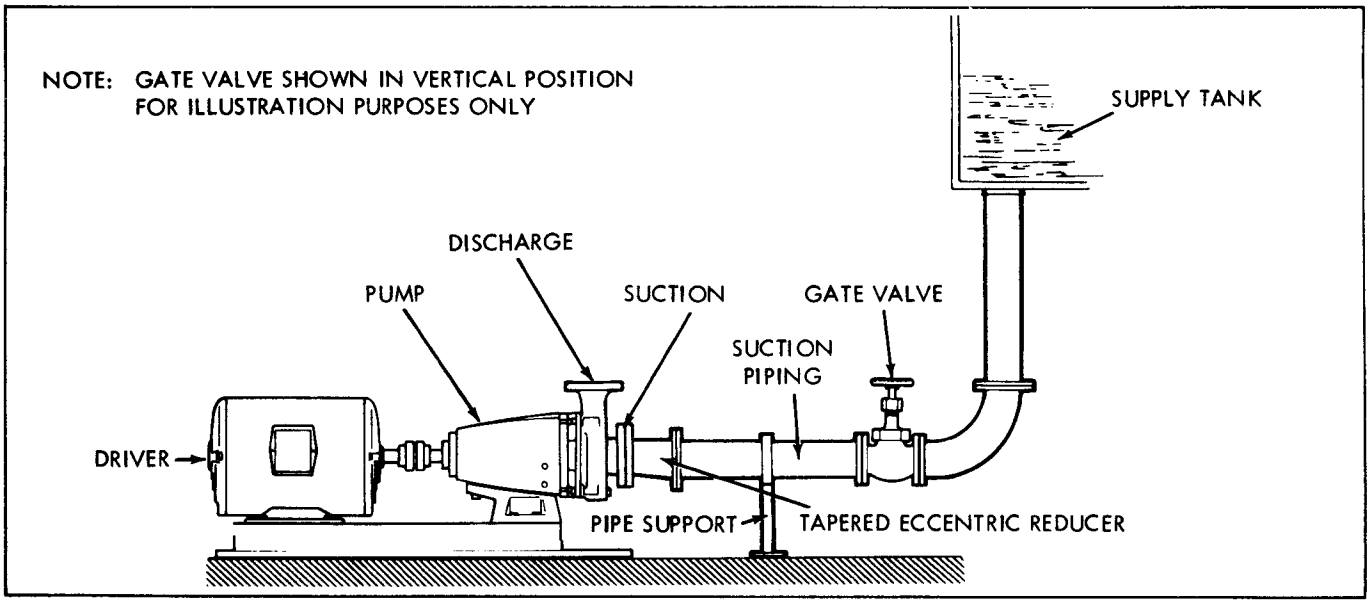



FIGURE 10. RECOMMENDED FLOODED SUCTION PIPING - SHORT AND DIRECT

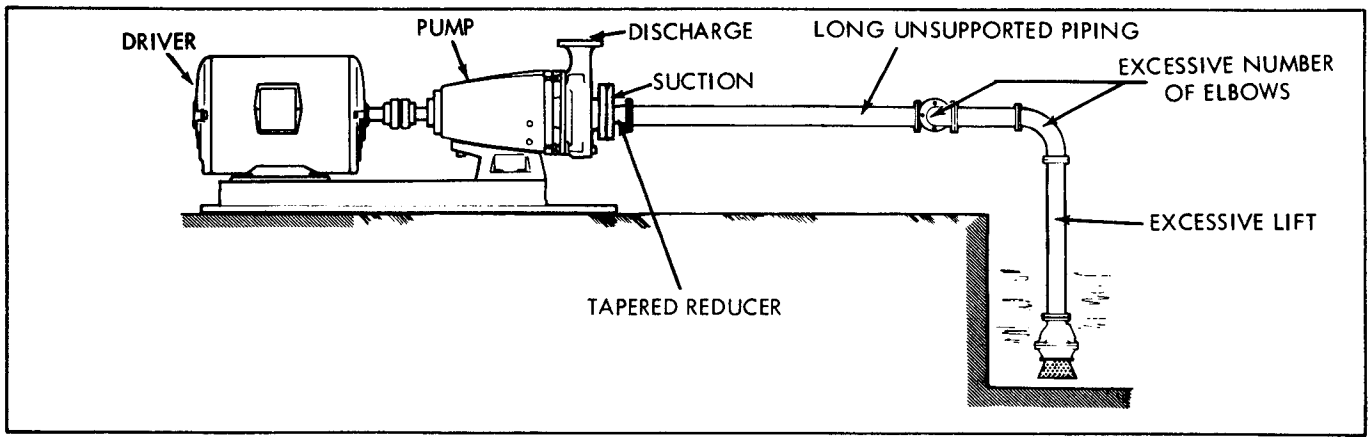



FIGURE 11. UNSATISFACTORY SUCTION LIFT PIPING - LONG AND INDIRECT WITH NO SUPPORT

FRAME MOUNTED INSTALLATION

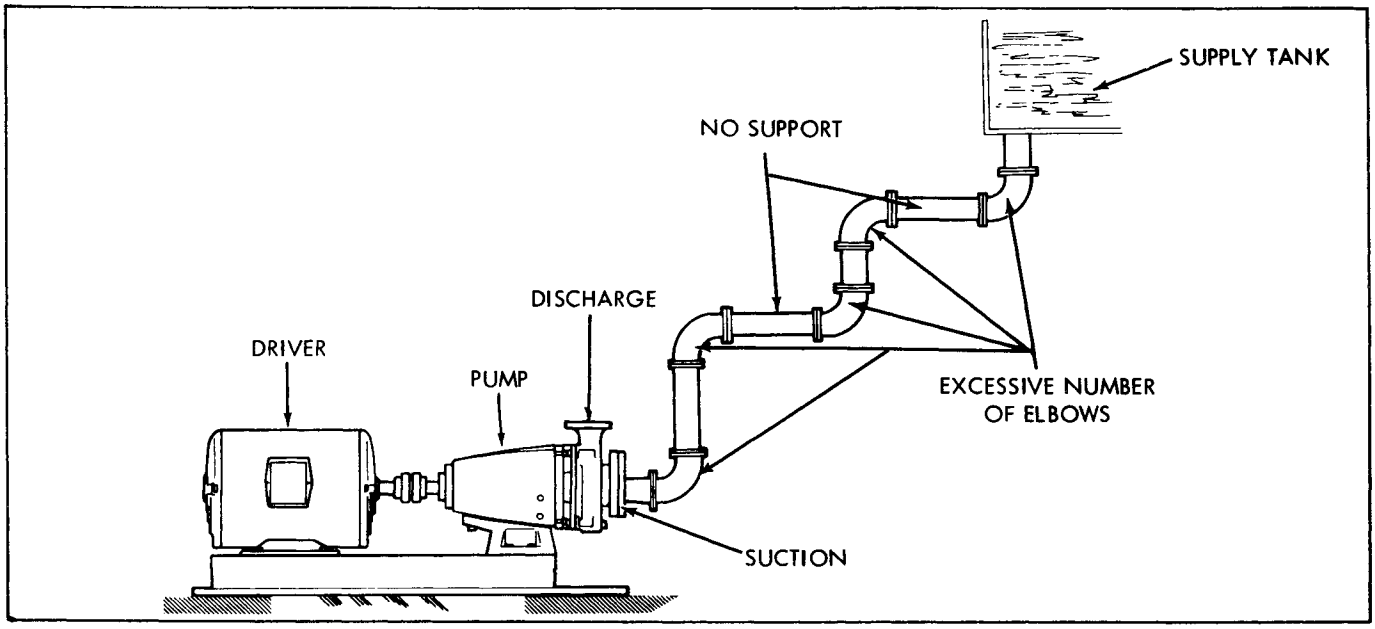



FIGURE 12. UNSATISFACTORY FLOODED SUCTION PIPING - LONG AND INDIRECT WITH NO SUPPORT

ELBOWS. Long radius elbows should be used in place of standard elbows wherever possible, because of their superior flow characteristics. For instance, head loss in a standard four inch elbow is equivalent to the head loss in a piece of pipe 11 feet long, while the head loss in a long radius elbow is approximately half as much. Elbows should not be used at the suction nozzle, but if it is unavoidable, they should be installed in a vertical position. Elbows installed in any position at the suction nozzle have a tendency to distribute the liquid unevenly in the impeller chamber, causing a reduction in capacity, and creating an undesirable thrust condition.

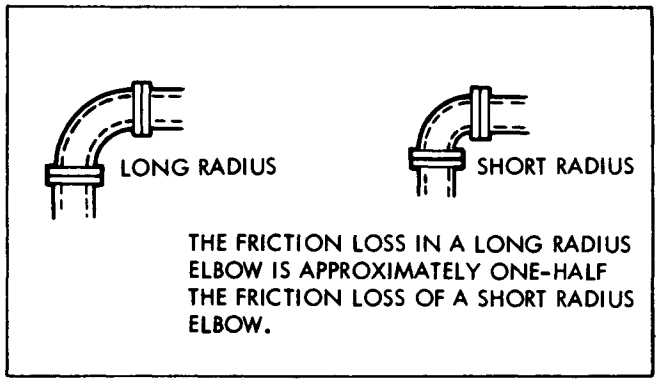



FIGURE 13. LONG VERSUS SHORT RADIUS ELBOWS

REDUCERS. Eccentric reducers should be installed directly at the suction nozzle, with the taper at the bottom to prevent air pockets from forming. Straight taper reducers should never be used in a horizontal suction line because of the air pocket that is formed at the leg of the reducer and the pipe.

DISCHARGE PIPING. Discharge piping should also be short and direct as possible, with few elbows and fittings, to reduce head loss from friction.

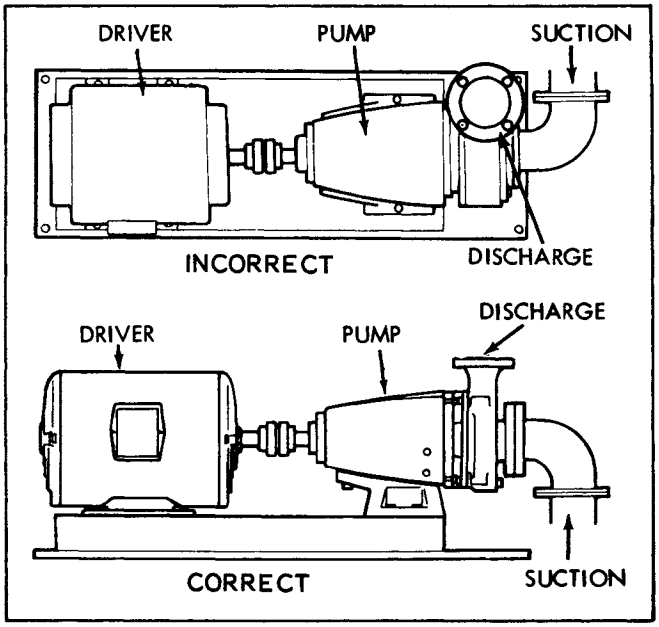



FIGURE 14. ELBOW INSTALLATION IN SUCTION NOZZLE

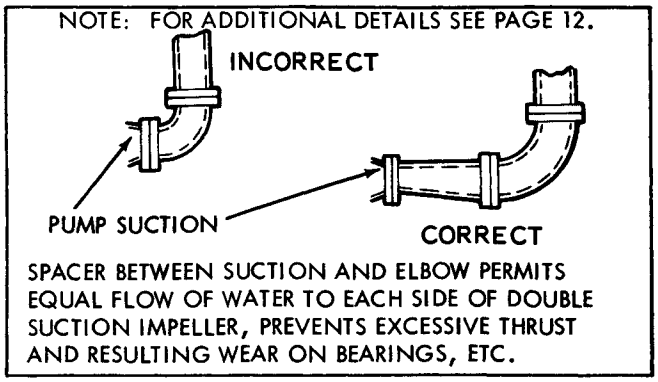



FIGURE 15. REDUCER BETWEEN ELBOW AND PUMP SUCTION NOZZLE

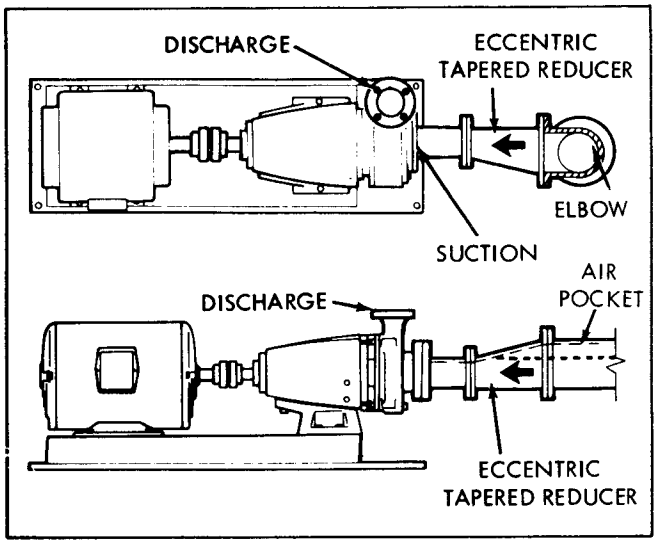



FIGURE 16. UNSATISFACTORY INSTALLATION OF TAPERED REDUCER

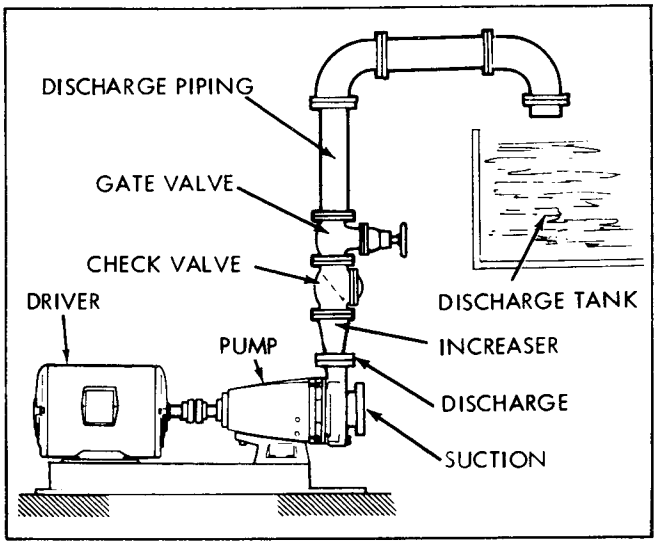



FIGURE 17. RECOMMENDED DISCHARGE PIPING - SHORT AND DIRECT

**PIPE.** The discharge pipe diameter should be the same as, or larger than, the discharge nozzle diameter. The size of discharge pipe to be used is dependent upon its application.

The recommended pipe diameter can be obtained from your nearest Aurora Pump Sales Office.

**ELBOWS.** Long radius elbows should be used in the discharge piping as well as in the suction piping to prevent excessive head loss due to friction. Whenever possible, elbows should not be installed directly at the discharge nozzle as the turbulence created by the elbow will affect pressure gauge readings.

**REDUCERS AND INCREASERS.** An increaser should be installed at the discharge nozzle if larger diameter

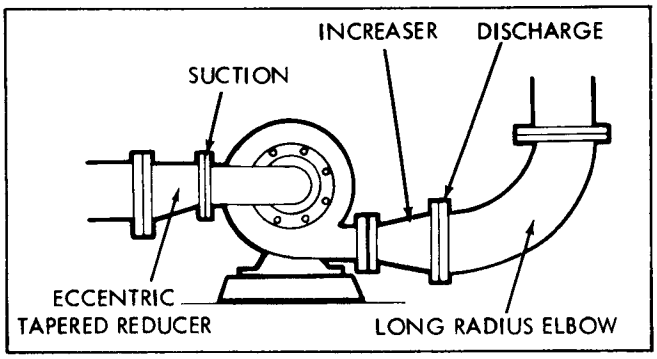



FIGURE 19. REDUCER AND INCREASER INSTALLATION

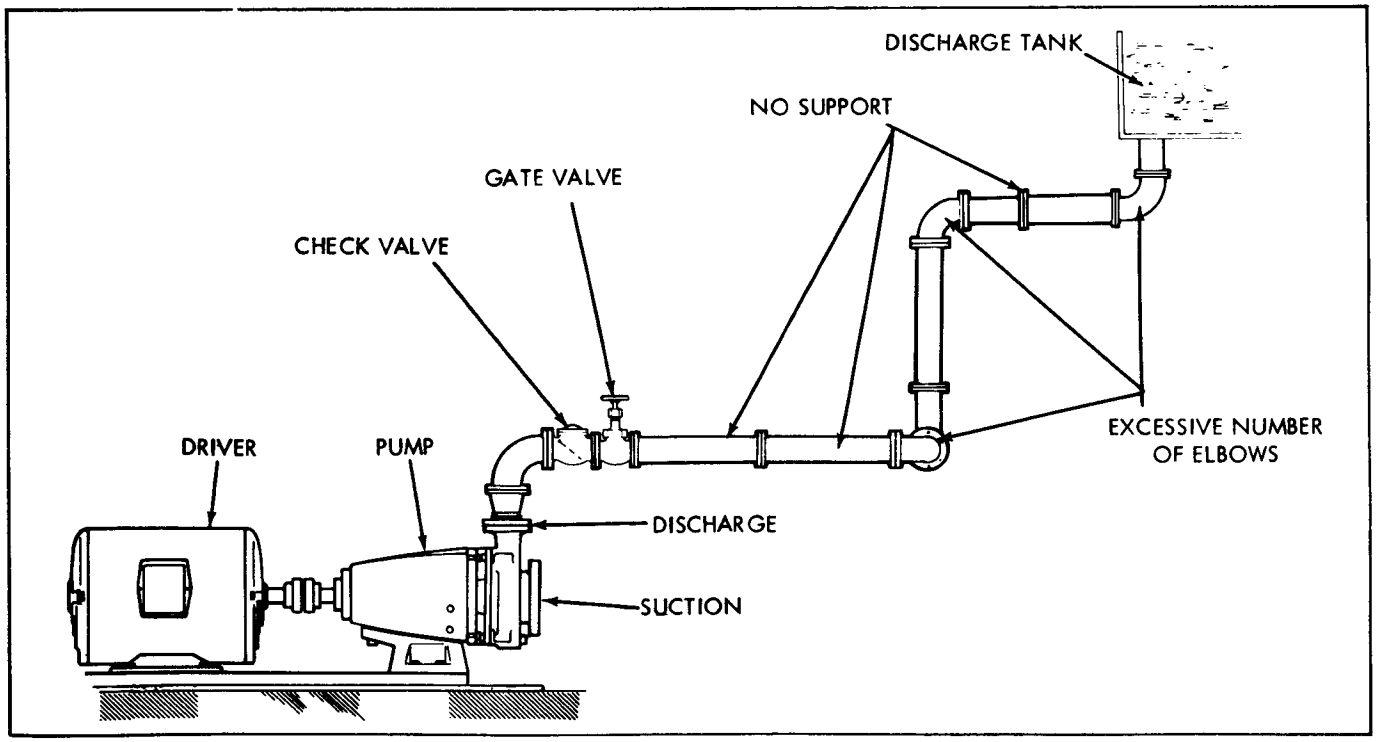



FIGURE 18. UNSATISFACTORY DISCHARGE PIPING - LONG WITH EXCESSIVE ELBOWS AND JOINTS AND NO SUPPORT

discharge piping is used. Straight taper increasers and/or reducers are satisfactory in discharge applications.

EXPANSION JOINTS. Expansion joints are used primarily to prevent the transmission of piping strain, caused by thermal expansion and contraction, piping misalignment, pressure changes, or other causes, to the pump casing. They are also used to suppress any noise that may be transmitted through the piping.

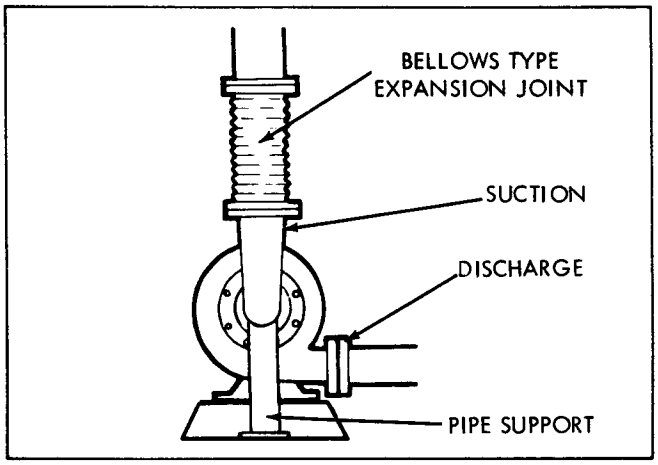



FIGURE 20. EXPANSION JOINT IN SUCTION LINE

It is recommended that the flexible metal type of expansion joint be used, because rubber expansion joints, while costing less, have a tendency to deteriorate, making frequent replacement necessary.

If an expansion joint must be used, an anchor or restraining device should be installed between the joint and the pump to prevent objectional forces from being transmitted to the pump. If an anchor is not installed at this point, a force equal to the area of the joint times the pressure in the pipe is developed and transmitted to the pump. This force may exceed the allowable flange loading, and could result in damage to the pump or piping.

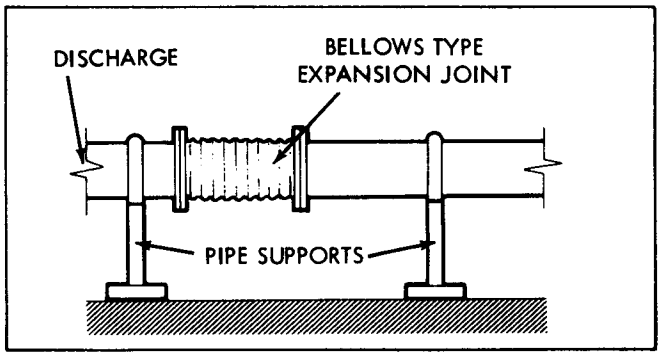



FIGURE 21. EXPANSION JOINT IN DISCHARGE PIPING

PIPE ALIGNMENT. Proper piping alignment is essential before connection is made. Piping alignment should never be achieved by force, this could produce strain on the piping and the pump casing. Proper supports should be installed for the piping to keep its weight off the pump casing.

When flange bolts are used, line up the piping first, then loosely install flange bolts. Check the piping alignment, and tighten the flange bolts until all bolts are tightened securely.

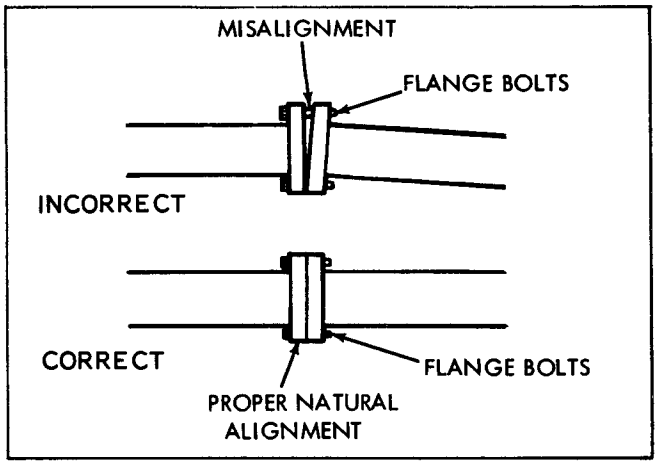



FIGURE 22. PIPE ALIGNMENT

AIR IN PIPING. One of the most common conditions affecting pump efficiency is the formation of air pockets in the suction line. The air pockets are a result of high points and improper installation of elbows, reducers, and valves in the suction piping.

For suction lift applications, lantern rings are required to prevent air from leaking into the pump through the stuffing box, or at the joints.

The pump packings or seal depend on the liquid being pumped for lubrication. Excessive air can prevent proper lubrication with resultant damage to them.

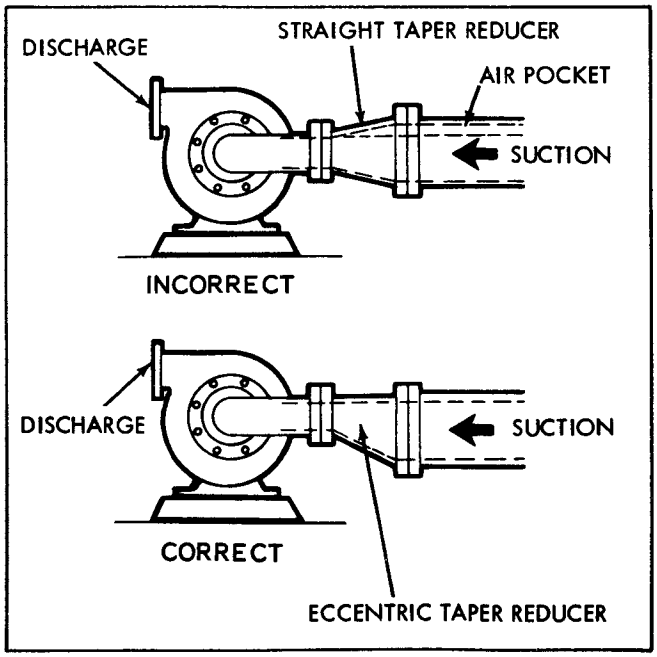



FIGURE 23. AIR POCKETS IN REDUCER

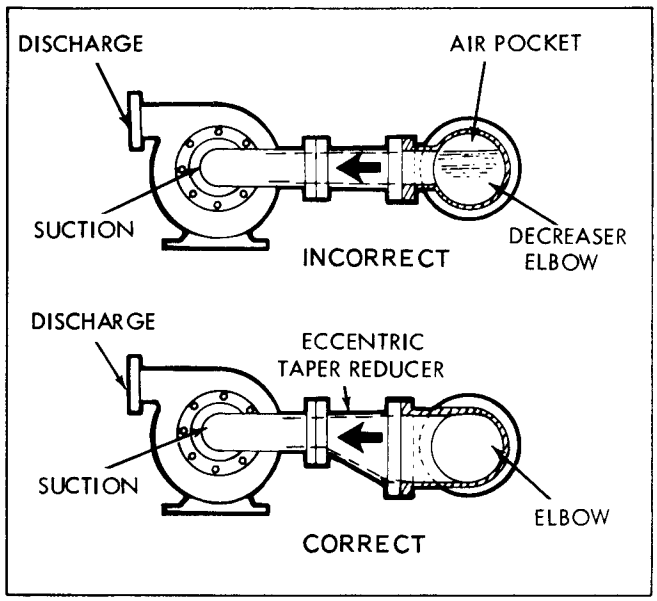



FIGURE 24. AIR POCKET IN ELBOW

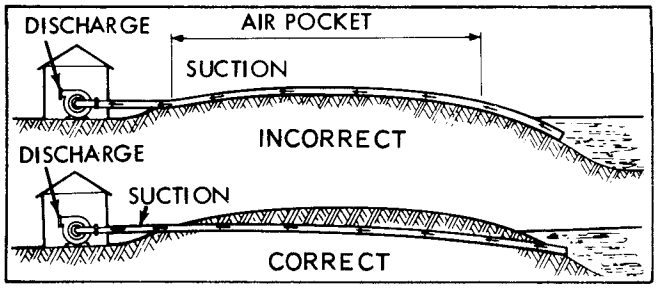



FIGURE 25. AIR POCKET IN HORIZONTAL SUCTION PIPING

In suction lift applications the suction pipe in the liquid well must be sufficiently submerged to prevent exposure of the end of the pipe when the well is at its minimum level and to prevent vortexing action (whirlpool effect) of the liquid at the suction pipe, which will draw air into the pipe. Also, care should be taken to keep the suction pipe located away from the well inlet since the incoming liquid may be carrying air bubbles. Another cause of air in the liquid is dropping of the liquid from too high a point into the well.

VALVES. Valves are an important part of your installation, for they facilitate priming of the pump, and control the volume of the pumped liquid.

SUCTION LIFT. In suction lift applications where the suction lift is low a foot valve can be installed, to maintain the prime on the pump. A foot valve is essentially a check valve, allowing flow in one direction only toward the pump. When the pump is shut down, the pressure of the liquid returning to the well, causes the valve to close, retaining the liquid in the suction line.

A slow closing check valve should be installed when the static discharge head is high. A foot valve should not be used under these conditions, as failure of the driver would allow the water to rush back rapidly thus causing a heavy water hammer.

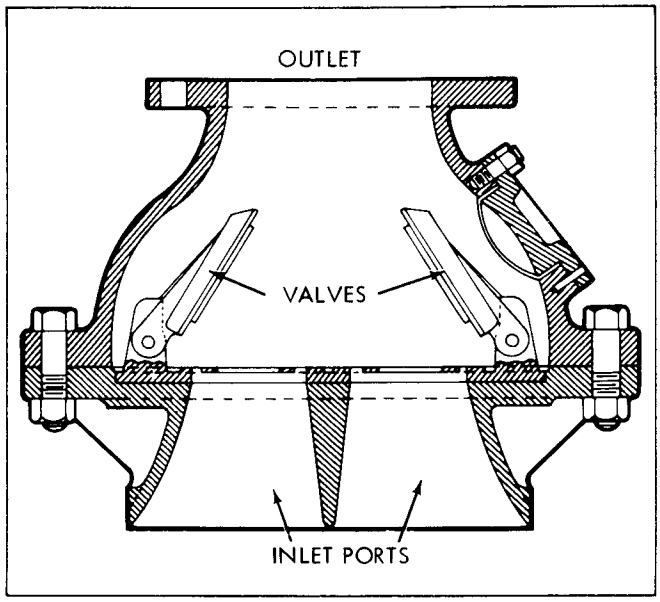



FIGURE 26. FOOT VALVE

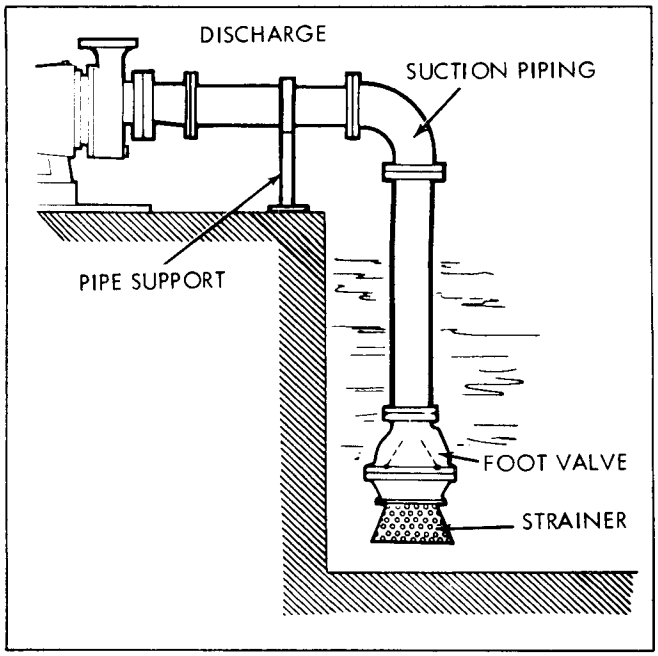



FIGURE 27. FOOT VALVE INSTALLED WITH SCREEN

Foot valves, when used, should be of the flat type rather than multiple spring type. The valve should have a large inlet area, because the friction loss in a foot valve is high. Install check and foot valves as indicated by arrow to ensure proper installation.

FLOODED SUCTION. When the liquid source is above the pump centerline, a flooded suction condition exists, and a gate valve is required to shut off the liquid supply for pump inspection and maintenance. The gate valve should be installed with the stem in a horizontal or downward position to prevent formation of an air pocket in the valve.

DISCHARGE VALVES. Tne discharge piping should include a check valve and a gate valve. The check

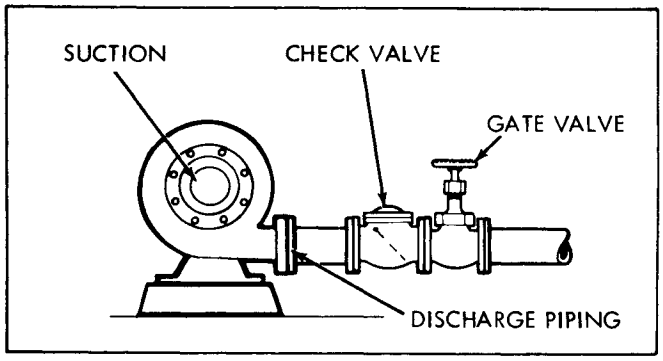



FIGURE 28. GATE VALVE AND CHECK VALVE

valve should be located between the gate valve and the pump. If an increaser is used in the discharge piping, the increaser should be installed between the pump nozzle and the check valve. The check valve protects against a reverse flow of the liquid if the driver fails.

The gate valve is used in the priming operation, as a throttling valve to control pump volume, and to shut down the pump for inspection and maintenance.

AIR VENT VALVE. Vent valves are installed at the high points in the pump casing to allow air or vapor to escape. These valves are used to release trapped air from the pump casing during priming and when pump becomes air bound.

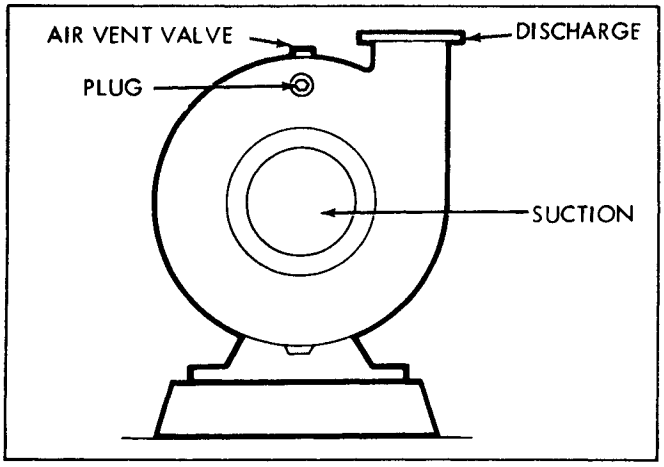



FIGURE 29. AIR VENT VALVE OR PLUG

STRAINERS AND SCREENS. It is important to screen the suction piping to remove foreign matter that can clog the pump and impair its capacity, or stop it completely. Small particles such as sand, dirt, scale from inside pipe and other extraneous materials can get into the close clearance parts of the pump and cause considerable damage to the parts.

Strainers should be selected so as to have a total area of holes equal to at least four times the suction pipe area.

In applications where sticks, twigs, leaves and other large debris are present, a larger outside screen should be placed around the suction inlet to prevent choking of the strainer. This screen should have sufficient openings so that flow velocity does not exceed two feet per second.

PRIMING THE PUMP. Your pump will not operate satisfactorily until it is primed. All air must be expelled from the suction piping and pump casing, and replaced by the liquid to be pumped. There are several methods of priming pumps. The one you select will depend on your specific requirements.

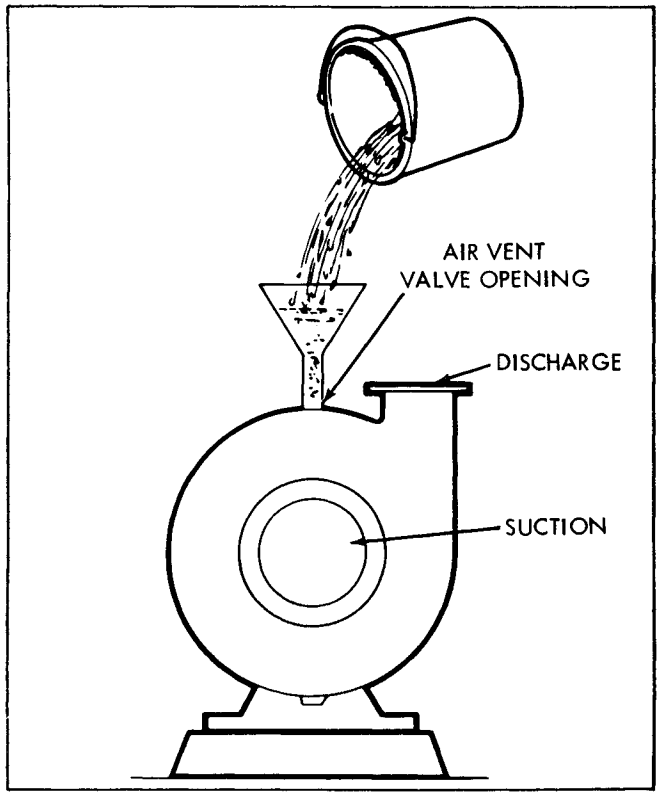



FIGURE 30. PRIMING BY HAND

FLOODED SUCTION PRIMING. This method of priming a pump is relatively simple. The liquid source is located above the pump, and all that is necessary to prime the pump is to open the air vent valve or plug in the pump casing, and to crack the gate valve in the suction line. The suction line and pump should be filled slowly until a steady stream of liquid is observed flowing from the air vent. After your pump is operating, it is recommended that the air vent valve or plug be opened again to insure that all air has been expelled from the pump casing.

FOOT VALVE PRIMING. A foot valve can be used for priming on suction lift applications. The foot valve located at the bottom end or foot of the suction piping, functions as a check valve which allows flow in one direction only, toward the pump.

Initial priming is accomplished by completely filling the suction piping and pump casing with the liquid to be pumped. This can be done by removing the air vent valve or plug at the top of the pump casing and inserting a pipe nipple in the orifice, with an appropriate increaser to accommodate a hose connection.

A priming line can also be inserted in the discharge piping between the check valve and the pump or the priming can be done with a bucket and funnel. The important thing is to completely fill the suction pipe and pump casing with liquid.

When the pump is started, the vacuum created by pumping the priming fluid, combined with atmospheric pressure in the liquid well, forces liquid into the suction piping, thus opening the foot valve and keeping it open until the pump is shut down. When the pump is shut down, the liquid being pumped reverses its flow, causing the foot valve to close, trapping the liquid in the suction piping and pump casing, thus maintaining a prime on the pump.

VACUUM PRIMING. Vacuum priming consists of removing air from the pump casing and suction piping and drawing liquid into them by means of a vacuum creating device. The types of vacuum equipment range from a simple hand pump to complex central priming systems. Your specific priming requirements will govern what type of vacuum primer to use.

AIR EJECTOR. One type of vacuum primer is the air ejector. If liquid under pressure or steam is available, an ejector can be used. The ejector is connected to the air vent orifice. A stream of the ejecting medium is passed through the ejector creating a vacuum in the ejector, and drawing air from the pump casing and suction piping. When liquid flows steadily from the ejector discharge pipe, the pump is primed.

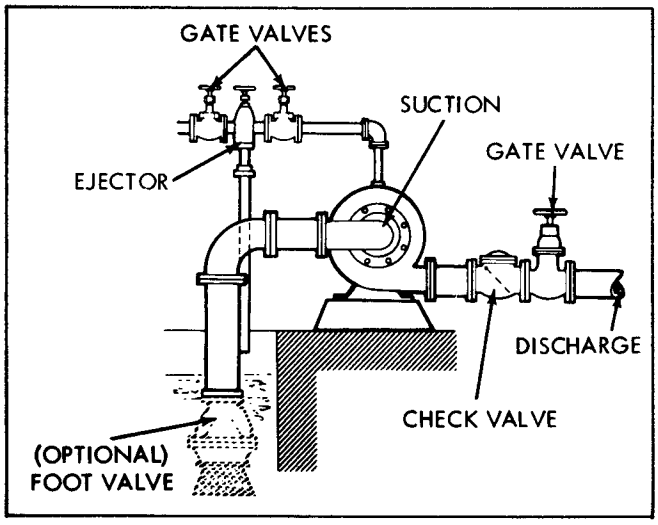



FIGURE 31. PRIMING BY EJECTOR

VACUUM PUMPS. Rotary or reciprocating pumps are frequently used as vacuum pumps. They fall into two categories, wet-vacuum and dry-vacuum. The principle of operation is essentially the same, however, the dry-vacuum pump cannot accommodate a liquid and air mixture while the wet-vacuum pump can accommodate liquid, air or a combination of both.

Vacuum pumps can be installed as part of a central priming system servicing many pumps, as an automatic priming system, or as a manually controlled independently driven pump.

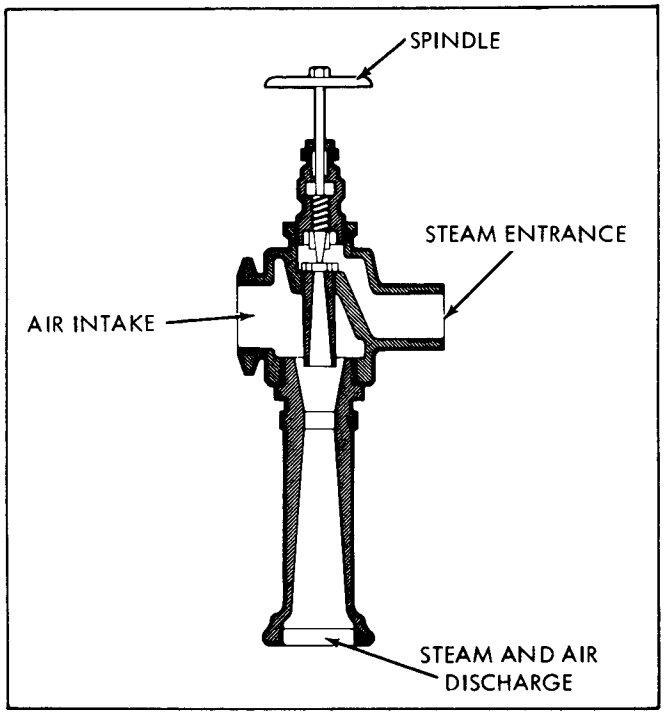



FIGURE 32. EJECTOR CUTAWAY

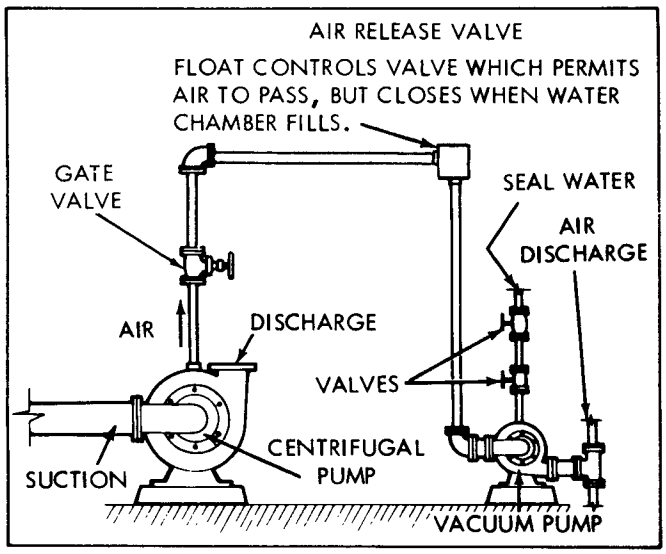



FIGURE 33. PRIMING BY VACUUM PUMP

The suction piping of the vacuum pump is connected to the air vent orifice on the pump to be primed. The vacuum produced by the vacuum pump removes air from the centrifugal pump suction piping and casing, and draws liquid from the liquid well into the centrifugal pump. Dry-vacuum pumps must be installed so that no liquid is taken into the air pump. Installation of a water trap, or use of a vacuum tank are recommended for dry vacuum pumps.

INDUCTOR PRIMING. On suction lift applications it may be desirable to prime your pump with a priming inductor. This type of primer is comprised of a liquid nozzle and an inductor at the foot end of the

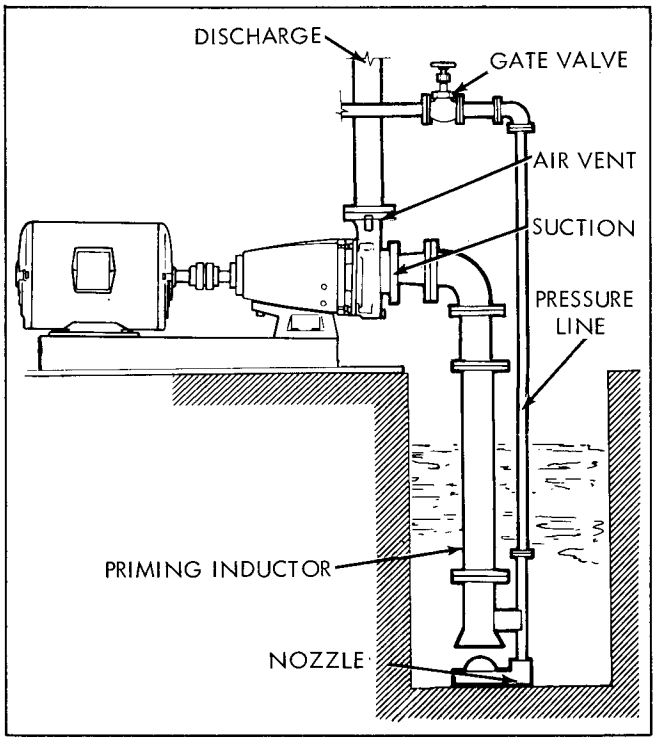



FIGURE 34. PRIMING BY INDUCTOR

suction piping. The nozzle and inductor are connected to a high pressure liquid supply such as a city water service.

The pump is primed by opening the valve in the pressure line, which allows the liquid to flow through the nozzle into the inductor. The velocity of the high pressure liquid drives the liquid into the suction piping and up to the pump, priming it.

ELECTRICAL WIRING. Normally, your pump will be supplied with an attached drive motor. The motor should be wired in accordance with the wiring diagram found on the motor name plate. Be sure the voltage, frequency, and phase of your power supply corresponds with the name plate data. It is advisable to provide a separate switch and overload protection for your pump motor to protect against power failure in some other area. Conversely, if the pump motor develops electrical problems, it will be isolated from other equipment.

PRESTARTING INSTRUCTION. The coupling halves should be connected. Prior to connection however, the drive motor should be started to make sure the direction of roatation is the same as the direction indicated by the arrow on the pump casing.

**WARNING:** On all 350 series pumps and the 364A with a 15" impeller on a #21 power frame, reverse rotation will destroy the pump.

After you are sure the motor is rotating clockwise you can couple the motor to the pump. Again, after coupling but BEFORE starting it is important to check coupling and shaft alignment. Use a standard dial indicator to align the motor shaft and pump shaft to within .003"-.005".

The suction and discharge piping should now be connected to the pump, and the pump primed.

**CAUTION**

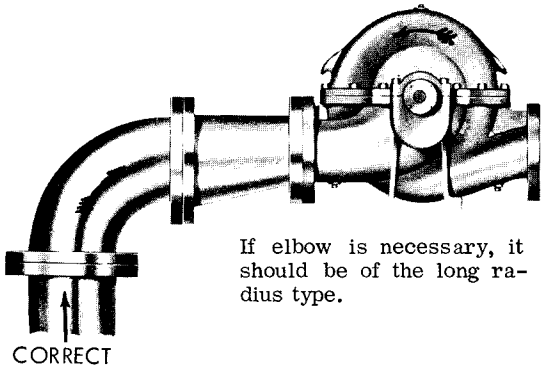
Do not operate the pump without liquid. Pump seals or packing depend on the liquid being pumped for lubrication.

Open or close the various valves as required by your specific application. Start the pump and bring it up to operating temperature. After the temperature has stabilized, the pump should be shut down and the alignment rechecked. It will be necessary to check the alignment with the coupling halves both connected and disconnected.

Remember, any alignment adjustment made in one direction may affect the other direction so extreme care should be taken when final adjustment is made.

Make sure all pump, motor and base plate mounting bolts are firmly tightened down.

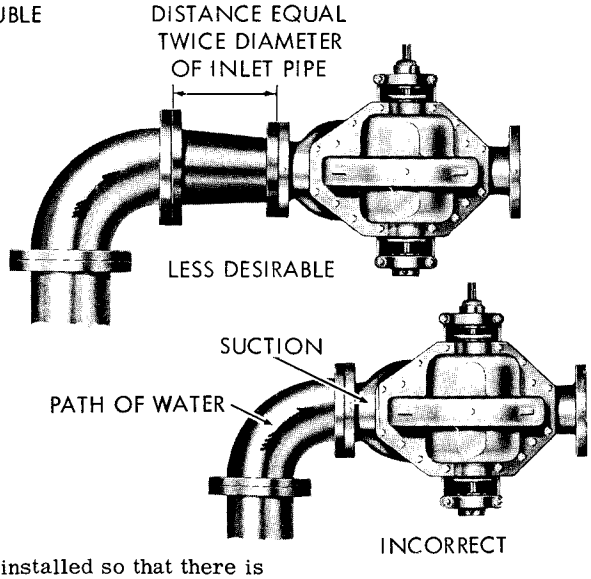
SPECIAL SUCTION PIPING SPECIFICATIONS FOR HORIZONTAL DOUBLE SUCTION PUMPS FOR ADDITIONAL DETAILS SEE PAGE 6



If elbow is necessary, it should be of the long radius type.

CORRECT

Discharge piping and suction piping should be supported close to the pump flange to prevent vibration and strain on pump casing.




The suction pipe on horizontal double suction pumps, should not be installed so that there is an elbow close to the suction nozzle unless the elbow is mounted vertically. There is always an uneven flow of liquid through an elbow and when the elbow is installed at any angle other than vertical more water will enter one side of the impeller than enters the other side. This causes a reduction in capacity and efficiency and creates an axial thrust load which may over heat and possibly cause rapid wear of the thrust bearing.

AP-Sect. 2-Item 2

AURORA PUMP
A member of
PENTAIR PUMP GROUP

# INSTRUCTION MANUAL
## REPAIR
## MODEL 374

6

SERVICE

Your Aurora pump requires no maintenance other than periodic inspection, occasional cleaning and lubrication of bearings. The intent of inspection is to prevent breakdown, thus obtaining optimum service life. The liquid end of the pump is lubricated by the fluid being pumped and therefore does not require periodic lubrication. The motor, however may require lubrication, in which case, the motor manufacturer's recommendation should be followed.

LUBRICATION OF IMPELLER SHAFT BEARINGS

The Model 374 pump is available with two options for lubricating the shaft bearings. They are:

1. Regreasable (standard)
2. Oil Lubrication

Regreasable bearings will require periodic lubrication and can be accomplished by using the zerk or lubrication fittings in the cartridge cap and power frame. Lubricate the bearings at regular intervals using a grease of high quality. Lime, lithium, lithum soda or calcium base grease is recommended as lubricants for pumps operating in both wet and dry locations. Mixing of different brands of grease should be avoided due to possible chemical reactions between the brands which could damage the bearings. Accordingly, avoid grease of vegetable or animal base which can develop acids, as well as grease containing rosin, graphite, talc and other impurities. Under no circumstances should used grease be reused.

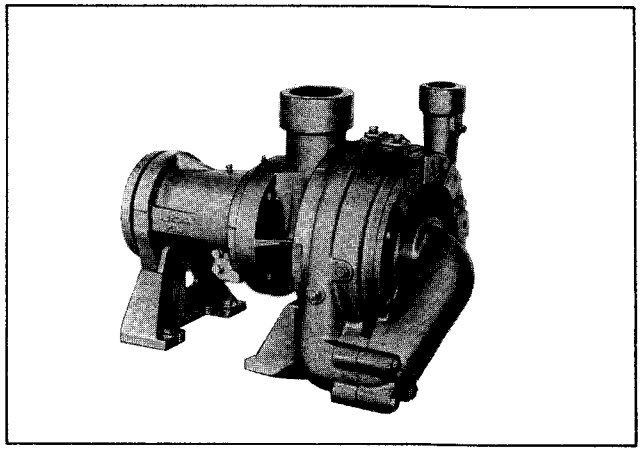
Over lubrication should be avoided as it may result in overheating and possible bearing failure. Under normal application, adequate lubrication is assured if the amount of grease is maintained at 1/3 to 1/2 the capacity of the bearing and adjacent space surrounding it.

In dry locations, each bearing will need lubrication at least every 600 hours of running time or every 6 to 12 months, whichever is more frequent. In wet locations the bearings should be lubricated at least after every 300 hours of running time or every 4 to 6 months, whichever is more frequent. A unit is considered to be installed in a wet location if the pump and motor are exposed to dripping water, to the weather, or to heavy condensation such as is found in unheated and poorly ventilated underground locations.

Oil lubricated bearings are optional on Model 374 pumps. A fixed oil level is maintained within the power frame by an oiler which allows visual indications of reserve oil.

At initial installation and before starting a unit that has been shut down for repairs or for any extended length of time, run enough 10/20 weight motor oil through the oiler to maintain a constant oil level to insure that the bearing will never be without an oil supply. Oil will have to be added at intervals to maintain a constant level in the oiler. This interval can only be determined by experience.

Under working conditions, oil will break down and need to be replaced at regular intervals. The length of these intervals will depend on many factors. Under normal operation, in clean and dry locations, the oil should be changed about once a year. However, when the pump is exposed to dirt contamination, high temperatures (200° F. or above) or a wet location, the oil may have to be changed every 2 or 3 months.



A. Assembled unit

At times it may be necessary to clean the bearings due to accumulated dirt or deteriorated lubricants. This can be accomplished by flushing the bearing with a light oil heated to 180 to 200° F. while rotating it on a spindle. Wipe the bearing housing with a clean rag soaked in a cleaning solvent, and flush all surfaces.

Dry bearing thoroughly before relubricating. Compressed air can be used to speed drying, but care should be taken not to let bearings rotate while being dried.

**CAUTION**

Use normal fire caution procedures when using any petroleum cleaner.

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The motor which drives your Aurora pump may or may not require lubrication. Consult the manufacturer's recommendations for proper maintenance instructions.

REPAIRS

The pump may be disassembled using the illustrations and text provided. Although complete disassembly is covered, it will seldom be necessary to completely disassemble your Aurora pump.

The illustrations accompanying the disassembly instructions show the pump at various stages of disassembly. The illustrations are intended to aid in the correct identification of the parts mentioned in the text.

Inspect removed parts at disassembly to determine their reusability. Cracked castings should never be reused. All gaskets should be replaced with new ones at reassembly simply as a matter of economy; they are much less expensive to replace routinely than to replace as the need occurs. In general it is economical to return to the manufacturer for repair only the motor and motor controller.

DISASSEMBLY

Disassemble only what is needed to make repairs or accomplish inspection. (See Figure 2.)

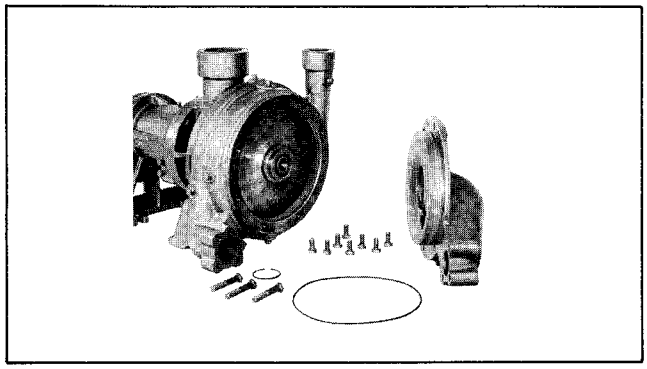
1. Break electrical connections to prevent drive unit from being energized during disassembly.

2. Remove drain plug(s) (4) from casing (6).

3. Remove all relief, cooling, flushing or drain lines from pump, including compression connections (1 and 2) and tubing (3). Break suction connection. If it is intended to leave casing (6) in the line it will not be necessary to break discharge connection.

4. Remove the flexible coupling from between the pump and motor. Next unscrew the bolts that hold supports (41 and 64) to the base and slide the pump out to be worked on.

5. Remove capscrews (18) and (19) to free suction cover (26), gaskets (8) and (8A), exposing second stage impeller (11A).

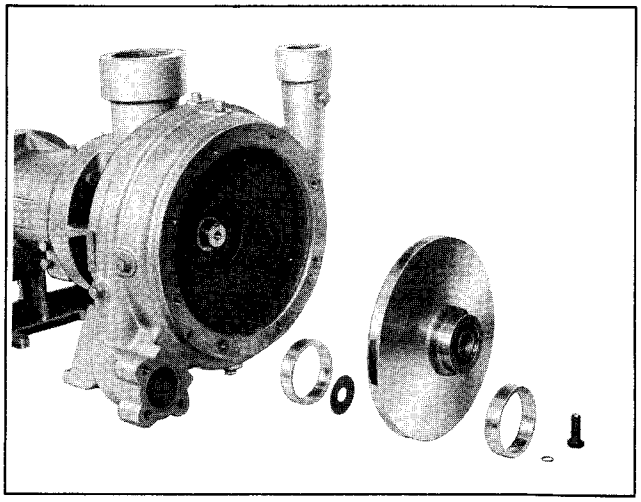


B. Cover and gaskets removed

6. Remove impeller (11A) by unscrewing impeller screw (9). Remove washer (9A) and gasket (9B).

7. Wearing rings (7), (13) and (16) are pressed into their housings with an interference fit, and must be removed with a puller. New ring(s) should be used for reassembly, since it is likely that during removal this fit will be lost.

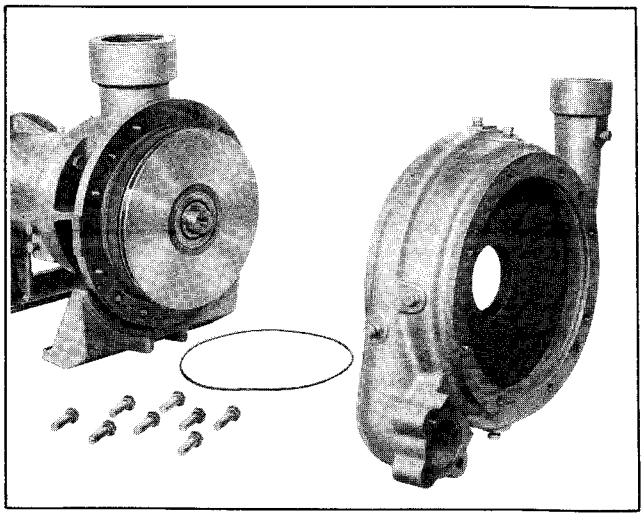
8. Impeller wear rings (optional-14, 15 and 17) are pressed on and must be cut off if replacement is necessary. If they are turned on a lathe, take care not to cut into the impeller. (Pumps prior to 1978 only.)



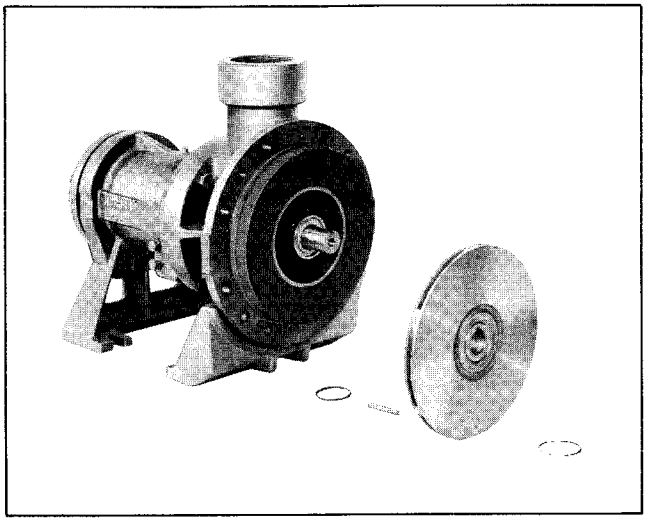
C. 2nd stage impeller and case wearing rings removed

9. Remove capscrews (5). If casing (6) was left in the line, slide remaining pump components from casing. If casing is free, remove from bracket (35). Remove gasket (8).

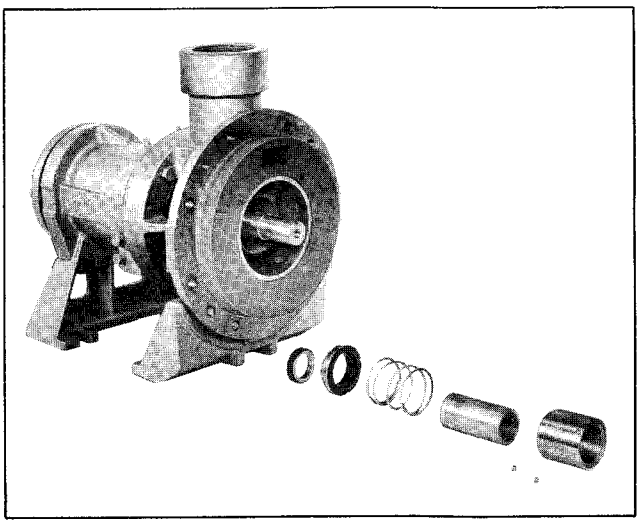
10. Remove gasket (10) from impeller (11) and slide from shaft. Remove impeller key (12) and gasket (10A).



D. Casing and gasket removed



E. 1st stage impeller, key and gaskets removed



F. Mechanical seal and sleeves removed

MECHANICAL SEAL

**CAUTION**

The mechanical seal is a precision product and must be treated as such. During removal great care must be taken to avoid dropping any part of the seal. (See Figure 1.)

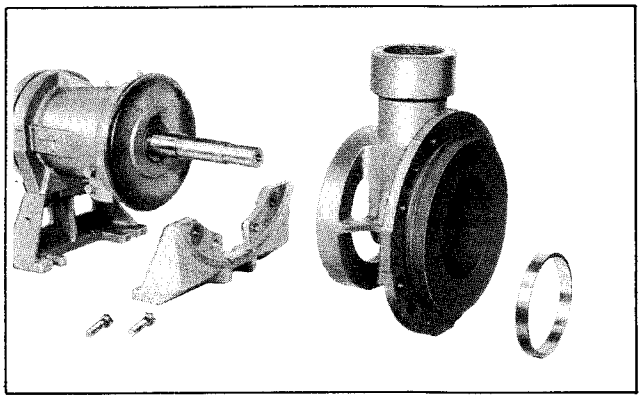
Take particular care not to scratch the lapped faces on the washer or the sealing seat. Do not put a seal back into service until the sealing faces of the washer and seat have been lapped or replaced.

A. Loosen setscrews (24) and slide collar (28) from sleeve (25).

B. Slide sleeve (25) with rotating parts of mechanical seal (27) from the shaft. The sleeve should be carefully cleaned to remove any residue that may be remaining in the seal area. The rubber in the seal may have become partially adhered to the sleeve. The sleeve must also be checked for abrasion or corrosion that can occur when fluid residue penetrates between the seal (27) and sleeve (25). The sleeve under the seal may be polished lightly to a 32RMS finish before reassembly. Do not reuse a pitted sleeve.

C. Remove capscrews (32) and carefully slide bracket (35) from frame (57).

D. The seal flexible cup and stationary seat should be pressed out of the bracket (35) and the cavity cleaned of all residue. Make sure that the 1/32 inch radius in the seal seat cavity is not damaged during disassembly since a sharp edge can easily cut the flexible cup during reassembly.

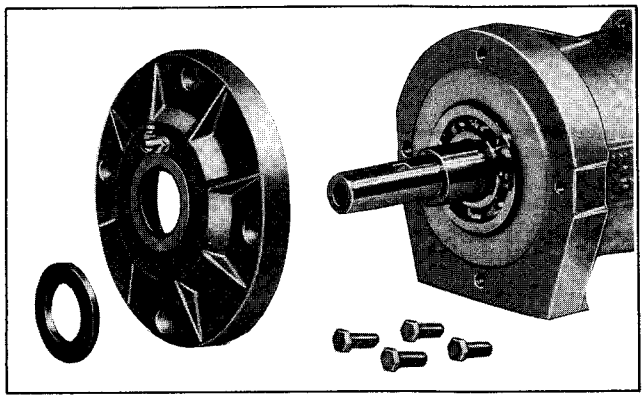


G. Bracket, support and case wearing ring removed

11. Remove capscrews (39 and 62) and washers (63) to take off supports (41 and 64).

12. Remove key (42) from the shaft and remove slingers (47).

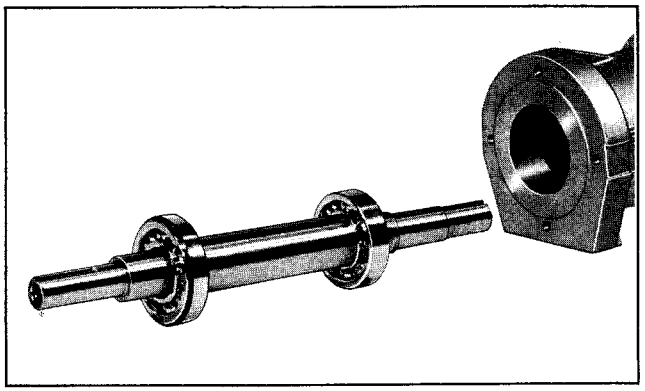
13. Unscrew capscrews (48) and remove bearing cap (49). Remove gasket (50) and retainer ring (52).



H. Bearing cap and slinger removed

14. Slide out shaft (55), bearings (53 and 54) and retainer (66). Since bearings (53 and 54) are press fitted on the shaft, they will have to be pulled or pressed off the shaft. Remove grease seals (51) from frame (57), and bearing cap (49). Remove spring washer (65).

15. Remove screws (33) and nameplate (34) only if replacement is necessary.



1. Shaft assembly removed

REASSEMBLY

Reassembly will generally be in reverse order of disassembly. If disassembly was not complete, use only those steps related to your particular repair program.

1. Press grease seals (51) into frame (57) and bearing cap (49).

2. Slide grease retainer (66) onto shaft (55) and locate 1/16 inch from shoulder for bearings (53). Fasten with set screws (67).

3. Press bearings (53* and 54) onto shaft (55). Snap retainer ring (52) into place. Replace washer (65).

*NOTE

Bearings (53), a duplex matched set of bearings, must be placed on the shaft as follows: The inside bearing, an angular contact bearing, must be mounted with the narrowest face of the outer race toward the pump end of the shaft.

4. With frame (57) in verticle position, slide shaft (55), bearings (53 and 54) and retainer (66) into frame. Place gasket (50) in place.

5. Fasten bearing cap (49) in position with capscrews (48). Position slingers (47) on the shaft.

6. Replace wear rings (7), (13) and (16) in cover (26), casing (6) and bracket (35). Rings should not be hammered into place. Use a press, or clamp the parts in a bench vise, using wooden blocks to protect the rings. It may be necessary to pin or dowel the rings after assembly if the cover, casing or bracket has had rings replaced before, since each reassembly can stretch or tear metal and thereby loosen the fits. If the facilities are available, it is good practice to take a very light finish cut or to ream the inside diameter of the casing rings after pressing to restore roundness. When rings are pressed, they may get squeezed out of shape.

7. Coat the mating surfaces of impeller wear rings (optional-14, 15 and 17) and impellers (11 and 11A) with Locktite sealant grade AV. Replace wear rings, using the same care as for the case wear rings. If the rings are to be trued on a lathe, do not clamp the impeller so tightly that it is permanently distorted. (Pumps prior to 1978 only.)

8. Position bracket (35) on the frame (57) and secure with capscrews (32). Tighten screws evenly to assure proper alignment.

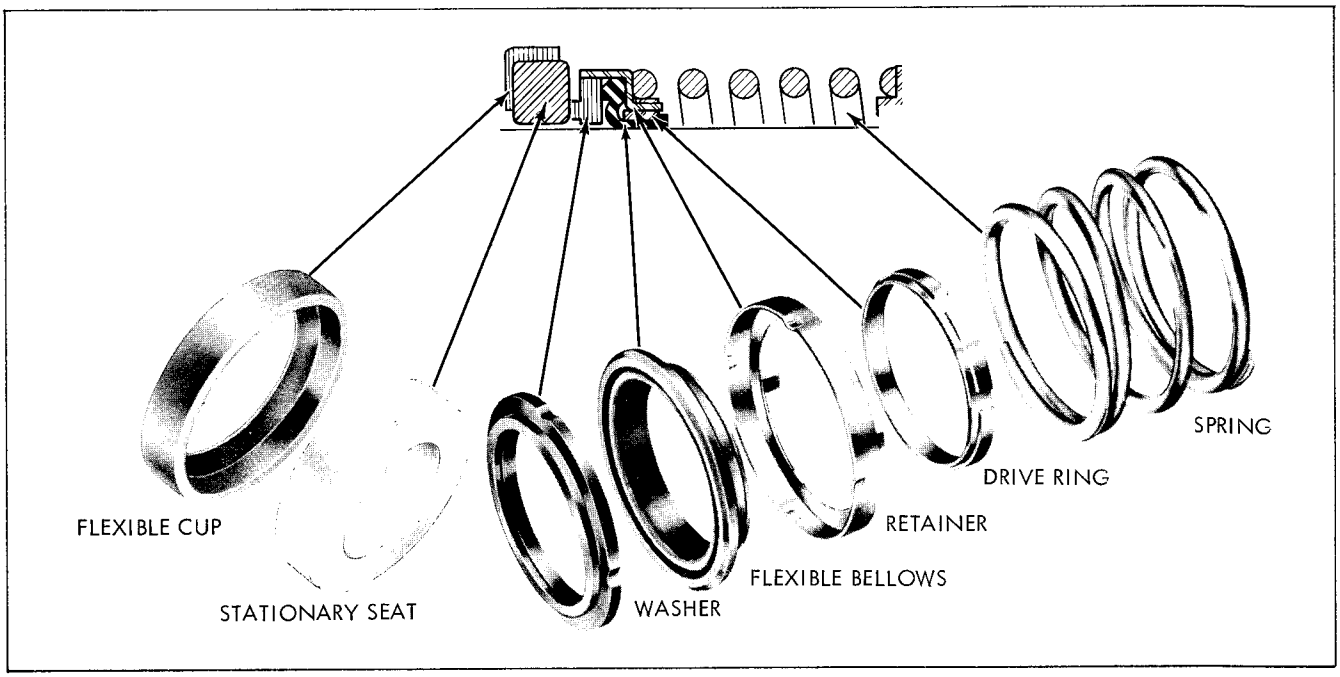



Figure 1. Mechanical Seal (Optional)

9. Fasten the supports (41 and 64) to bracket (35) and frame (57) with washers (63) and capscrews (39 and 62).

10. If nameplate (34) was removed, install and attach with screws (33).

MECHANICAL SEAL

The mechanical seal (27), (see Figure 1), should not be installed as an assembly. It is necessary to have the seal seat properly in place before the balance of parts can be added.

A. Wipe the sealing faces of the seat and seal washer clean. Lightly oil the shaft sleeve (25). Slide the entire rotating assembly onto the sleeve.

B. Thoroughly inspect the seal cavity in the bracket (35) for burrs or nicks which could damage the seat of the seal. Apply a film of soap paste or flax soap, (do not use oil or grease) to the seal seat. Replace flexible cup in bracket (35).

NOTE

If it is not possible to insert seat with fingers, place cardboard protecting ring furnished with seal over lapped face of seat and press into place with a piece of tubing having end cut square. The tubing should be slightly larger than the diameter of the shaft. Remove cardboard after seat is firmly in place.

C. The shaft sleeve with the seal rotating assembly on it may now be replaced on the motor shaft. Seat the sleeve (25) against the shaft shoulder.

D. Slide collar (28) over sleeve (25) and secure in position flush with liquid end of sleeve (25) with setscrews (24). Spring tension will probably prevent the sleeve from remaining in position axially until impeller is locked against it.

10. Carefully place gasket (10A) on shaft in recess of collar (28). Slide key (12) and impeller (11) onto shaft being careful to maintain position of gasket (10A).

11. Replace gasket (8) on bracket (35) and gasket (10) in impeller (11). Secure casing (6) to bracket (35) with capscrews (5).

12. Slide impeller (11A) over motor shaft and secure with gasket (9B), washer (9A) and impeller screw (9).

13. Position gasket (8A) in casing (6) and gasket (8) on cover (26). Secure cover (26) to casing (6) with capscrews (18 and 19).

14. Install the pipe plugs (4) in the pump casing (6). Replace all relief, cooling, flushing or drain lines from the pump including compression connections (1 and 2) and tubing (3).

15. Secure suction and discharge piping to the pump.

16. Connect electricity to the motor.

17. Read carefully the section of the manual titled INSTALLATION, especially those paragraphs referring to pump and coupling alignment.

STARTING PUMP AFTER REASSEMBLY

Do not start pump until all air and vapor has been bled and until making sure that there is liquid in the pump to provide the necessary lubrication. Without the fluid around it, the seal may be ruined in a few seconds of operation. It is possible that the mechanical seal may drip during the first few minutes to one hour of operation.

## MODEL 374 LIST OF PARTS

1. Elbow
2. Connector
3. Tubing
4. Plug, Pipe
5. Capscrew
6. Casing
7. Wear Ring
8. Gasket
8A. Gasket
9. Impeller Screw w/"O" Ring
9A. Washer
9B. Gasket
10. Gasket
10A. Gasket
11. Impeller
11A. Impeller
12. Impeller Key
13. Wear Ring
16. Wear Ring
18. Capscrew
19. Capscrew
24. Setscrew
25. Sleeve
26. Cover
27. Seal
28. Collar
32. Capscrew
33. Screw
34. Nameplate
35. Bracket
39. Capscrew
41. Support
42. Key
43. Grease Fitting
44. Tube, Vent
46. Plug, Pipe
47. Slinger
47A. Slinger
48. Capscrew
49. Bearing Cap
50. Gasket
51. Seal
51A. Seal
52. Retaining Ring
53. Bearing
54. Bearing
55. Shaft
56. Plug, Pipe
57. Frame
58. Grease Fitting
59. Plug, Pipe
60. Oiler Assy.
62. Capscrew
63. Washer
64. Support
65. Spring Washer
66. Retainer
67. Setscrew

NOTES:
1. IRON FITTED CONSTRUCTION WILL BE FURNISHED AS STANDARD UNLESS SPECIFIED.
2. REFER TO FACTORY FOR SPECIAL ALLOYS.
3. AURORA PUMP RESERVES THE RIGHT TO SUBSTITUTE MATERIALS WITHOUT NOTICE.
4. PIECE NUMBERS 14, 15 AND 17 ARE NOT FURNISHED AS STANDARD. WHEN FURNISHED IMPELLER MUST BE MODIFIED.

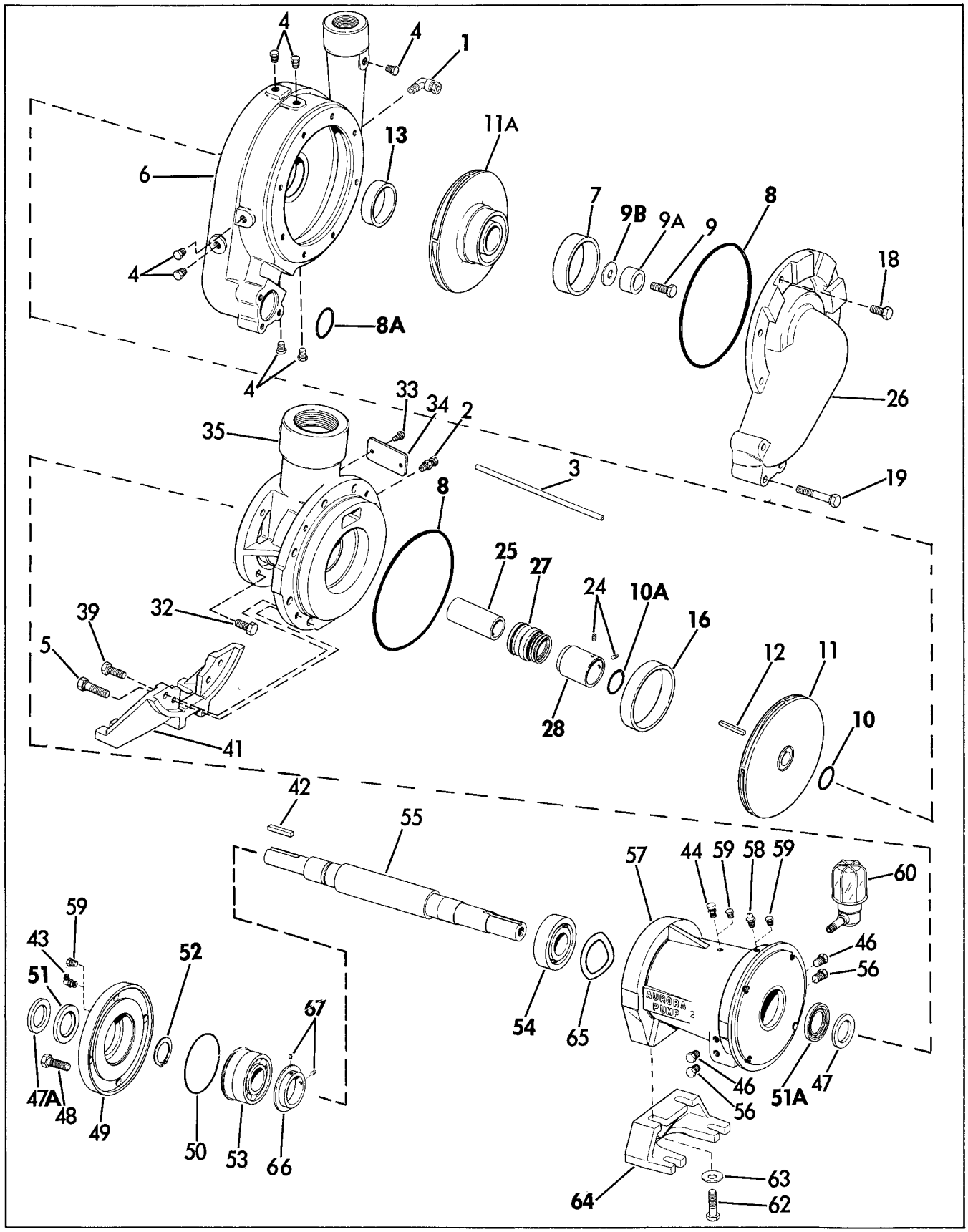
### NOTES

WHEN ORDERING SPARE PARTS ALWAYS INCLUDE THE PUMP TYPE, SIZE, SERIAL NUMBER, AND THE PIECE NUMBER FROM THE EXPLODED VIEW IN THIS MANUAL.

ORDER ALL PARTS FROM YOUR LOCAL AUTHORIZED DISTRIBUTOR, FACTORY BRANCH SALES OFFICE OR THE FACTORY AT NO. AURORA, ILLINOIS.

THIS MANUAL COVERS THE ASSEMBLY AND DISASSEMBLY FOR PUMP MODELS 374, 374A and 374B. MODEL 374 PUMPS DID NOT USE PIECE NUMBERS (50), (66) OR (67) AND PIECE NUMBER (53) WAS A SINGLE ROW BEARING. REFER TO CURRENT REPAIR PARTS MANUAL TO CONVERT MODEL 374 PUMPS TO LATEST MODEL 374B DESIGN.

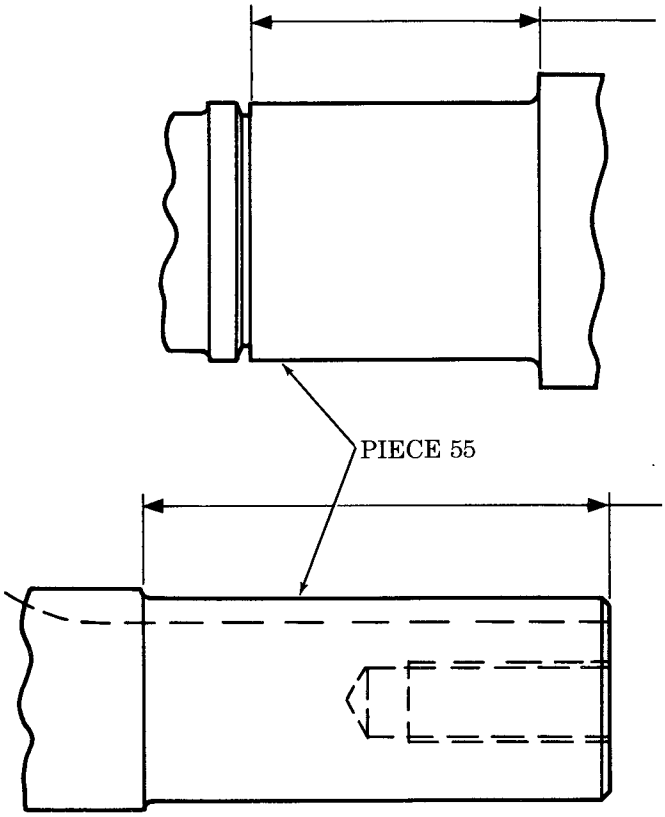
SEE THE ILLUSTRATION ON PAGE 8 OF THIS MANUAL TO IDENTIFY MODELS 374, 374A AND 374B.




BOLD FACE PIECE NUMBERS INDICATE RECOMMENDED SPARE PARTS

Figure 2. Exploded View

# 374 MODEL IDENTIFICATION




BEARING SHOULDER TO SNAP RING GROOVE OF THRUST BEARING

| PART NO. | DIM. | MODEL | PUMP SIZE |
|---|---|---|---|
| 7284985063 | 55/64 | 374 | 1-1/2 x 3 x 10 |
| 7284990063 | 1-25/32 | 374A | 1-1/2 x 3 x 10 |
| 7284991063 | 1-25/32 | 374B | 1-1/2 x 3 x 10 |
| 7280140063 | 1-1/64 | 374 | 2 x 4 x 10 |
| 7280406063 | 2-5/64 | 374B | 2 x 4 x 10 |
| 7287103063 | 2-5/64 | 374B | 1-1/2 x 3 x 10 Powerframe 3A |

END OF SHAFT TO SHOULDER AT IMPELLER END

| PART NO. | DIM. | MODEL | PUMP SIZE |
|---|---|---|---|
| 7284985063 | 2-1/4 | 374 | 1-1/2 x 3 x 10 |
| 7284990063 | 2-1/4 | 374A | 1-1/2 x 3 x 10 |
| 7284991063 | 2-7/8 | 374B | 1-1/2 x 3 x 10 |
| 7287103063 | 2-7/8 | 374B | 1-1/2 x 3 x 10 Powerframe 3A |

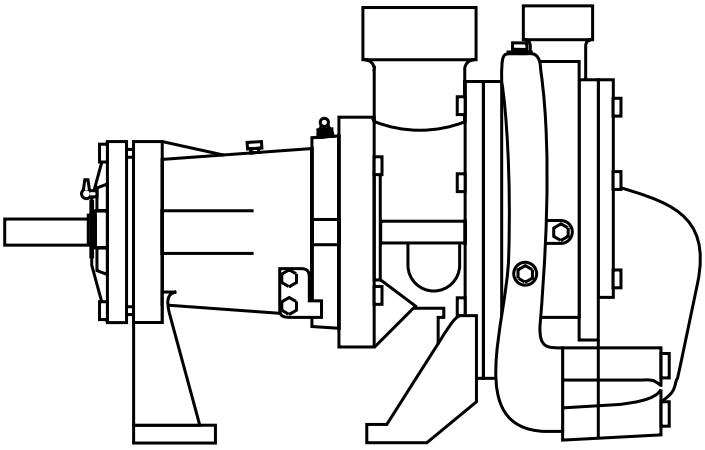
BORE LENGTH SECOND STAGE IMPELLER

| PART NO. | DIM. | MODEL | PUMP SIZE |
|---|---|---|---|
| 4430531010 | 23/32 | 374 & 374A | 1-1/2 x 3 x 10 |
| 4430533010 | 23/32 | 374 & 374A | 1-1/2 x 3 x 10 |
| 4432262010 | 1-1/4 | 374B | 1-1/2 x 3 x 10 |
| 4432263010 | 1-1/4 | 374B | 1-1/2 x 3 x 10 |

Refer to PARTS LISTS of individual model for part numbers.

SUPERSEDES 370P PAGE 1
DATED NOVEMBER 1988

# 370 SERIES
# REPAIR PARTS INDEX



READ AND UNDERSTAND THE PUMP AND MOTOR INSTRUCTIONS BEFORE ATTEMPTING TO INSTALL, DISASSEMBLE OR REPAIR THE PUMP

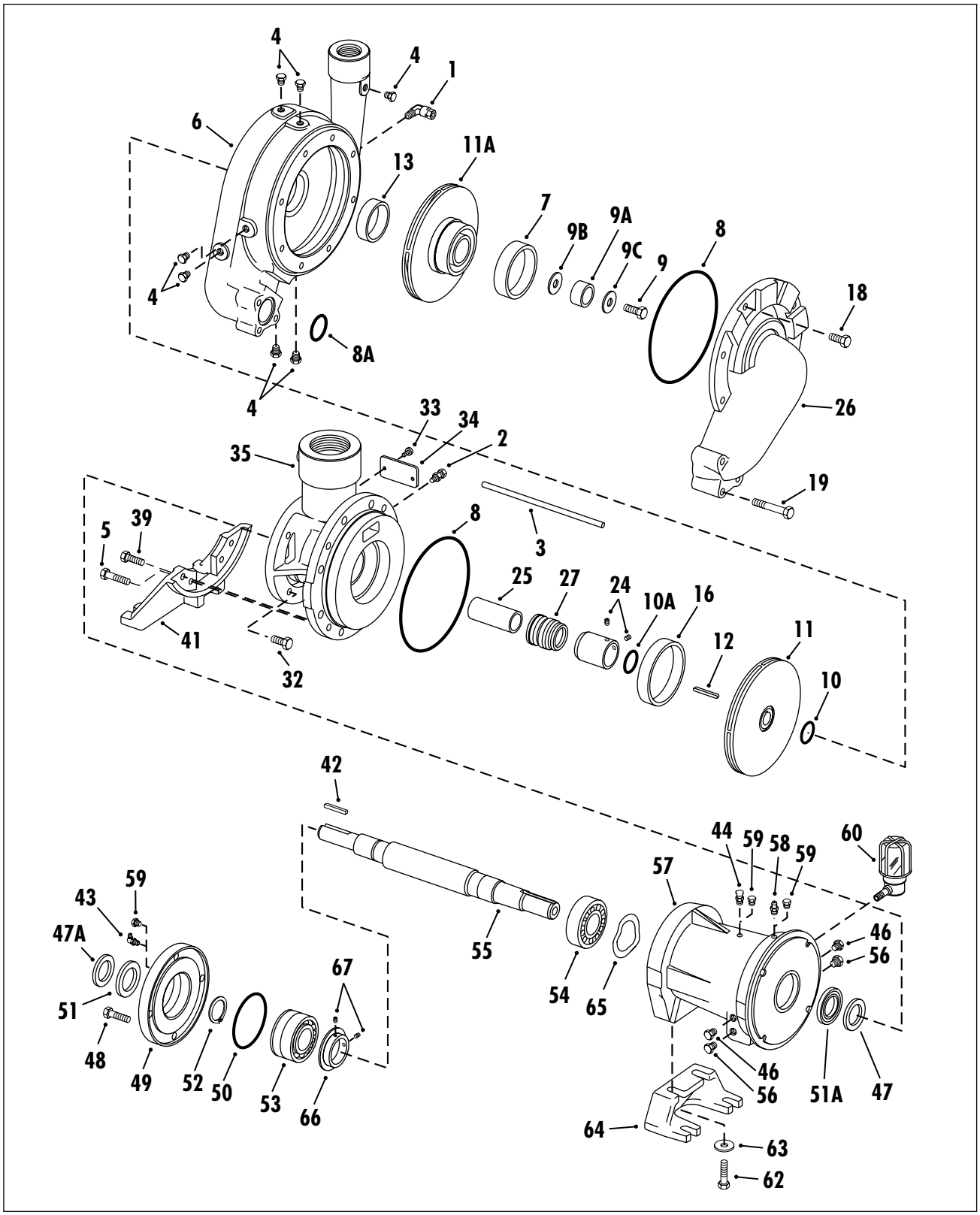
AURORA®
Pentair Pump Group

# 370 SERIES
# MODEL 374B

## TABLE OF CONTENTS

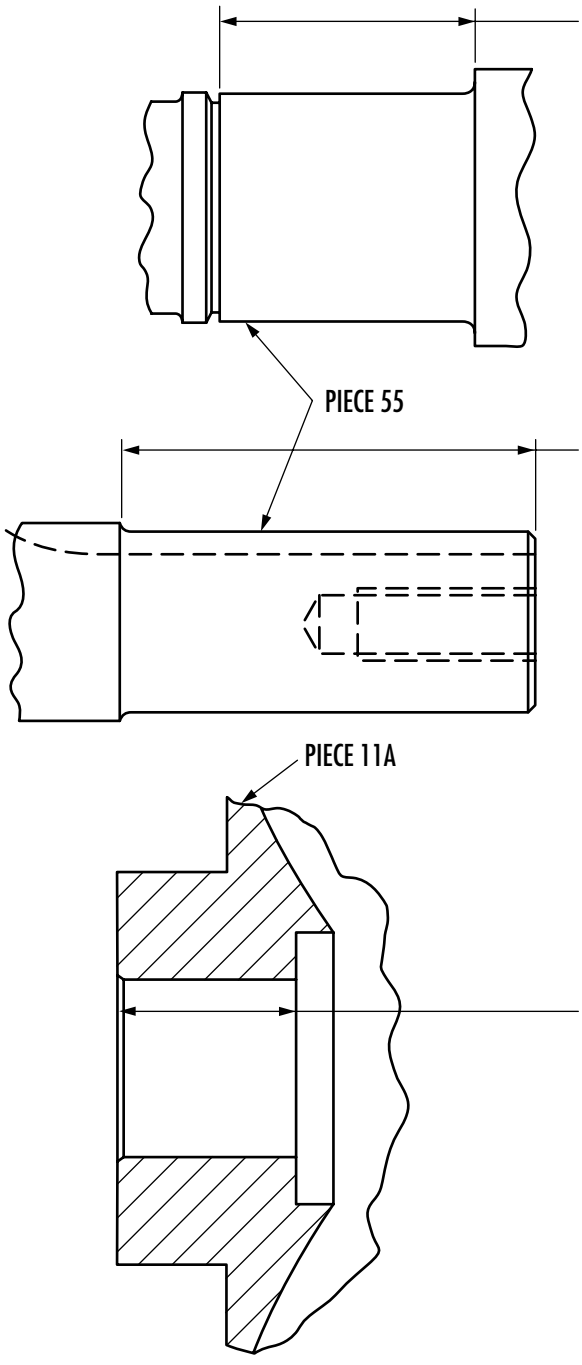

| PUMP MODEL | DESCRIPTION | PAGE |
|---|---|---|
| 374B | EXPLODED VIEW AND PIECE NUMBERS | 3 |
| 374B | MODEL IDENTIFICATION | 4 |
| 374B | 1-1/2 x 3 x 10 #2 POWER FRAME - PARTS LIST | 5 |
| 374B | 1-1/2 x 3 x 10 #3A POWER FRAME - PARTS LIST | 6 |
| 374B | 2 x 4 x 10 #3 POWER FRAME - PARTS LIST | 7 |

# MODEL 374
# PIECE NUMBERS



# 370 SERIES

## MODEL 374
## IDENTIFICATION




BEARING SHOULDER TO SNAP RING GROOVE OF THRUST BEARING

| PART NO. | DIM. | MODEL | PUMP SIZE |
|---|---|---|---|
| 7284985063 | 55/64 | 374 | 1-1/2 x 3 x 10 |
| 7284990063 | 1-25/32 | 374A | 1-1/2 x 3 x 10 |
| 7284991063 | 1-25/32 | 374B | 1-1/2 x 3 x 10 |
| 7280140063 | 1-1/64 | 374 | 2 x 4 x 10 |
| 7280406063 | 2-5/64 | 374B | 2 x 4 x 10 |
| 7287103063 | 2-5/64 | 374B | 1-1/2 x 3 x 10 Powerframe 3A |

END OF SHAFT TO SHOULDER AT IMPELLER END

| PART NO. | DIM. | MODEL | PUMP SIZE |
|---|---|---|---|
| 7284985063 | 2-1/4 | 374 | 1-1/2 x 3 x 10 |
| 7284990063 | 2-1/4 | 374A | 1-1/2 x 3 x 10 |
| 7284991063 | 2-7/8 | 374B | 1-1/2 x 3 x 10 |
| 7287103063 | 2-7/8 | 374B | 1-1/2 x 3 x 10 Powerframe 3A |

BORE LENGTH SECOND STAGE IMPELLER

| PART NO. | DIM. | MODEL | PUMP SIZE |
|---|---|---|---|
| 4430531010 | 23/32 | 374 & 374A | 1-1/2 x 3 x 10 |
| 4430533010 | 23/32 | 374 & 374A | 1-1/2 x 3 x 10 |
| 4432262010 | 1-1/4 | 374B | 1-1/2 x 3 x 10 |
| 4432263010 | 1-1/4 | 374B | 1-1/2 x 3 x 10 |

Refer to PARTS LISTS of individual model for part numbers.

NOTE: MODEL 374B PUMPS DESCRIBED IN THIS PARTS LIST HAVE BEEN MANUFACTURED SINCE JUNE 1978. FOR PUMPS MANUFACTURED PRIOR TO JUNE 1978 REFER TO NON-PRODUCTION SECTION OF THIS MANUAL.

# 370 SERIES
# MODEL 374B
# 1-1/2" x 3" x 10"
# 2 POWER FRAME
# PARTS LIST

| PC. NO. | DESCRIPTION | QTY | PART NO. | MATERIAL S.F. | | A.I. | |
|---|---|---|---|---|---|---|---|
| 1 | COMP. ELBOW | 1 | 868-3660 | 190 | | 087 | |
| 2 | COMP. CONNECTOR | 1 | 868-3359 | 190 | | 087 | |
| 3 | TUBING | 1 | 872-0124 | 175 | | 087 | |
| 4 | PIPE PLUG | 7 | 600-0002 | 087 | | 087 | |
| 5 | CAPSCREW | 2 | 168-0494 | 082 | | 082 | |
| 6 | CASING | 1 | 180-1810 | 010 | | 010 | |
| 7 | CASE RING | 1 | 676-1149 | 208 | | 010 | |
| 8 | GASKET | 2 | 364-0463 | 494 | | 494 | |
| 8A | GASKET | 1 | 364-0418 | 494 | | 494 | |
| 9 | IMP. SCREW | 1 | 168-0490 | 113 | | 113 | |
| 9A | IMP. WASHER | 1 | 908-0604 | 087 | | 087 | |
| 9B | GASKET | 1 | 364-2035 | 603 | | 603 | |
| 9C | CAPSCREW SEAL | 1 | 908-1292 | 999 | | 999 | |
| 10 | GASKET | 1 | 364-0415 | 494 | | 494 | |
| 10A | GASKET | 1 | 364-0415 | 494 | | 494 | |
| 11 | IMPELLER 1ST | | | | | | |
| | 9-1/2" - 7-9/16" DIA. | 1 | 443-0530 | 010 | | 010 | |
| | 7-1/2" DIA. & | | | | | | |
| | SMALLER | 1 | 443-2483 | 010 | | 010 | |
| 11A | IMPELLER 2ND | 1 | 443-2262 | 010 | | 010 | |
| 12 | IMPELLER KEY | 1 | 472-0261 | 087 | | 087 | |
| 13 | CASE RING | 1 | 676-1660 | 208 | | 010 | |
| 16 | CASE RING | 1 | 676-1659 | 208 | | 010 | |
| 18 | CAPSCREW | 8 | 168-0488 | 082 | | 082 | |
| 19 | CAPSCREW | 3 | 168-0502 | 082 | | 082 | |
| 24 | SETSCREW | 2 | 724-0077 | 104 | | 104 | |
| 25 | SLEEVE | 1 | 756-0100 | 208 | | 104 | |
| 26 | COVER | 1 | 812-0065 | 010 | | 010 | |
| 27 | SEAL | | | | | | |
| | J.C. 21 | 1 | 712-1042 | 749 | | 749 | |
| | J.C. 21 - HI TEMP | 1 | 712-1042 | 769 | | 769 | |
| | J.C. 1 | 1 | 712-0462 | 769 | | 769 | |
| 28 | COLLAR | | | | | | |
| | J.C. 21 | 1 | 224-0002 | 208 | | 104 | |
| | J.C. 1 | 1 | 224-0003 | 208 | | 104 | |
| 32 | CAPSCREW | 4 | 168-0494 | 082 | | 082 | |
| 33 | U DRIVE SCREW | 2 | 708-0013 | 365 | | 365 | |
| 34 | NAMEPLATE | 1 | 532-0045 | 114 | | 114 | |
| 35 | BRACKET | 1 | 116-0032 | 010 | | 010 | |
| 39 | CAPSCREW | 8 | 168-0490 | 082 | | 082 | |
| 41 | SUPPORT | 1 | 820-0034 | 010 | | 010 | |

| PC. NO. | DESCRIPTION | QTY | PART NO. | MATERIAL S.F. | | A.I. | |
|---|---|---|---|---|---|---|---|
| 42 | KEY | 1 | 472-0247 | 087 | | 087 | |
| 43 | GREASE FITTING | 1 | 508-0005 | 651 | | 651 | |
| 44 | VENT. TUBE | 1 | 864-0051 | 656 | | 656 | |
| 46 | PIPE PLUG | 1 | 600-0002 | 087 | | 087 | |
| 47 | SLINGER | 1 | 764-1021 | 478 | | 478 | |
| 47A | SLINGER | 1 | 764-1021 | 478 | | 478 | |
| 48 | CAPSCREW | 4 | 168-0488 | 082 | | 082 | |
| 49 | BEARING CAP | 1 | 164-0471 | 010 | | 010 | |
| 50 | O-RING | 1 | 364-0492 | 457 | | 457 | |
| 51 | SEAL* | 1 | 712-0233 | 653 | | 653 | |
| 51A | SEAL* | 1 | 712-0233 | 653 | | 653 | |
| 52 | RETAINING RING | 1 | 676-0938 | 088 | | 088 | |
| 53 | O.B. BEARING | 1 | 068-0343 | 647 | | 647 | |
| 54 | I.B. BEARING* | 1 | 068-0425 | 647 | | 647 | |
| 55 | SHAFT | 1 | 728-4991 | 063 | | 063 | |
| 56 | PIPE PLUG | 2 | 600-0002 | 087 | | 087 | |
| 57 | FRAME-OIL LUBE | 1 | 356-0232 | 010 | | 010 | |
| | GREASE LUBE | 1 | 356-0202 | 010 | | 010 | |
| 58 | GREASE FITTING | 1 | 508-0001 | 651 | | 651 | |
| 59 | PIPE PLUG | 1 | 600-0001 | 087 | | 087 | |
| 60 | OILER | 1 | 552-0027 | 652 | | 652 | |
| 61 | NIPPLE | 1 | 600-1206 | 387 | | 387 | |
| 62 | CAPSCREW | 2 | 168-0490 | 082 | | 082 | |
| 63 | WASHER | 2 | 908-0114 | 080 | | 080 | |
| 64 | SUPPORT | 1 | 820-0033 | 010 | | 010 | |
| 65 | WASHER | 1 | 908-0144 | 088 | | 088 | |
| 66 | GREASE RETAINER* | 1 | 672-0052 | 058 | | 058 | |
| 67 | SETSCREW* | 2 | 724-0077 | 104 | | 104 | |

* OIL LUBE OPTION:

PIECE NO'S. 66 AND 67 ARE NOT REQUIRED.
PIECE NO. 54 IS PART NO. 068-0159-647.

PIECE NO'S. 51 AND 51A ARE PART NO'S. 712-0054-653.

FIELD CONVERSION TO OIL LUBE REQUIRES:

1. THAT SEALS 712-0054-653 BE USED.
2. THAT INITIAL GREASE FILL BE REMOVED FROM BEARING 068-0343-657.

# 370 SERIES
# MODEL 374B
# 1-1/2" x 3" x 10"
# 3A POWER FRAME
# PARTS LIST

| PC. NO. | DESCRIPTION | QTY | PART NO. | MATERIAL S.F. | | MATERIAL A.I. | |
|---|---|---|---|---|---|---|---|
| 1 | COMP. ELBOW | 1 | 868-3660 | 190 | | 087 | |
| 2 | COMP. CONNECTOR | 1 | 868-3359 | 190 | | 087 | |
| 3 | TUBING | 1 | 872-0124 | 175 | | 087 | |
| 4 | PIPE PLUG | 7 | 600-0002 | 087 | | 087 | |
| 5 | CAPSCREW | 2 | 168-0494 | 082 | | 082 | |
| 6 | CASING | 1 | 180-1810 | 010 | | 010 | |
| 7 | CASE RING | 1 | 676-1149 | 208 | | 010 | |
| 8 | GASKET | 2 | 364-0463 | 494 | | 494 | |
| 8A | GASKET | 1 | 364-0418 | 494 | | 494 | |
| 9 | IMP. SCREW | 1 | 168-0490 | 113 | | 113 | |
| 9A | IMP. WASHER | 1 | 908-0604 | 087 | | 087 | |
| 9B | GASKET | 1 | 364-2035 | 803 | | 803 | |
| 9C | CAPSCREW SEAL | 1 | 908-1292 | 999 | | 999 | |
| 10 | GASKET | 1 | 364-0415 | 494 | | 494 | |
| 10A | GASKET | 1 | 364-0415 | 494 | | 494 | |
| 11 | IMPELLER 1ST | 1 | 443-0530 | 010 | | 010 | |
| 11A | IMPELLER 2ND | 1 | 443-2262 | 010 | | 010 | |
| 12 | IMPELLER KEY | 1 | 472-0261 | 087 | | 087 | |
| 13 | CASE RING | 1 | 676-1660 | 208 | | 010 | |
| 16 | CASE RING | 1 | 676-1659 | 208 | | 010 | |
| 18 | CAPSCREW | 8 | 168-0488 | 082 | | 082 | |
| 19 | CAPSCREW | 3 | 168-0502 | 082 | | 082 | |
| 24 | SETSCREW | 2 | 724-0077 | 104 | | 104 | |
| 25 | SLEEVE | 1 | 756-0100 | 208 | | 104 | |
| 26 | COVER | 1 | 812-0065 | 010 | | 010 | |
| 27 | SEAL | | | | | | |
| | J.C. 21 | 1 | 712-1042 | 749 | | 749 | |
| | J.C. 21 - HI TEMP | 1 | 712-1042 | 769 | | 769 | |
| | J.C. 1 | 1 | 712-0462 | 769 | | 769 | |
| 28 | COLLAR | | | | | | |
| | J.C. 21 | 1 | 224-0002 | 208 | | 104 | |
| | J.C. 1 | 1 | 224-0003 | 208 | | 104 | |
| 32 | CAPSCREW | 4 | 168-0492 | 082 | | 082 | |
| 33 | U DRIVE SCREW | 2 | 708-0013 | 365 | | 365 | |
| 34 | NAMEPLATE | 1 | 532-0045 | 114 | | 114 | |
| 35 | BRACKET | 1 | 116-0032 | 010 | | 010 | |
| 39 | CAPSCREW | 8 | 168-0490 | 082 | | 082 | |
| 41 | SUPPORT | 1 | 820-0034 | 010 | | 010 | |

| PC. NO. | DESCRIPTION | QTY | PART NO. | MATERIAL S.F. | | MATERIAL A.I. | |
|---|---|---|---|---|---|---|---|
| 42 | KEY | 1 | 472-0247 | 087 | | 087 | |
| 43 | GREASE FITTING | 1 | 508-0005 | 651 | | 651 | |
| 44 | VENT. TUBE | 1 | 864-0051 | 656 | | 656 | |
| 46 | PIPE PLUG | 1 | 600-0002 | 087 | | 087 | |
| 47 | SLINGER | 1 | 764-1026 | 478 | | 478 | |
| 47A | SLINGER | 1 | 764-1021 | 478 | | 478 | |
| 48 | CAPSCREW | 1 | 168-0492 | 082 | | 082 | |
| 49 | BEARING CAP | 1 | 164-0472 | 010 | | 010 | |
| 50 | O-RING | 1 | 364-0438 | 457 | | 457 | |
| 51 | SEAL* | 1 | 712-0233 | 653 | | 653 | |
| 51A | SEAL* | 1 | 712-0234 | 653 | | 653 | |
| 52 | RETAINING RING | 1 | 676-0944 | 088 | | 088 | |
| 53 | O.B. BEARING | 1 | 068-0345 | 647 | | 647 | |
| 54 | I.B. BEARING* | 1 | 068-0427 | 647 | | 647 | |
| 55 | SHAFT | 1 | 728-7103 | 063 | | 063 | |
| 56 | PIPE PLUG | 2 | 600-0002 | 087 | | 087 | |
| 57 | FRAME-OIL LUBE | 1 | 356-0233 | 010 | | 010 | |
| | GREASE LUBE | 1 | 356-0203 | 010 | | 010 | |
| 58 | GREASE FITTING | 1 | 508-0001 | 651 | | 651 | |
| 59 | PIPE PLUG | 1 | 600-0001 | 087 | | 087 | |
| 60 | OILER | 1 | 552-0027 | 652 | | 652 | |
| 61 | NIPPLE | 1 | 600-1206 | 387 | | 387 | |
| 62 | CAPSCREW | 2 | 168-0490 | 082 | | 082 | |
| 63 | WASHER | 2 | 908-0114 | 080 | | 080 | |
| 64 | SUPPORT | 1 | 820-0033 | 010 | | 010 | |
| 65 | WASHER | 1 | 908-0146 | 088 | | 088 | |
| 66 | GREASE RETAINER* | 1 | 672-0051 | 058 | | 058 | |
| 67 | SETSCREW* | 2 | 724-0077 | 104 | | 104 | |

* OIL LUBE OPTION:
PIECE NO'S. 66 AND 67 ARE NOT REQUIRED.
PIECE NO. 54 IS PART NO. 068-0161-647.
PIECE NO. 51 IS PART NO. 712-0054-653.
PIECE NO. 51A IS PART NO. 712-0056-653.
FIELD CONVERSION TO OIL LUBE REQUIRES:
1. THAT SEALS 712-0054-653 AND 712-0056-653 BE USED.
2. THAT INITIAL GREASE FILL BE REMOVED FROM BEARING 068-0345-657.

# 370 SERIES
# MODEL 374B
# 2" x 4" x 10"
# 3 POWER FRAME
# PARTS LIST

| PC. NO. | DESCRIPTION | QTY | PART NO. | MATERIAL S.F. | | A.I. | |
|---|---|---|---|---|---|---|---|
| 1 | COMP. ELBOW | 1 | 868-3660 | 190 | | 087 | |
| 2 | COMP. CONNECTOR | 1 | 868-3359 | 190 | | 087 | |
| 3 | TUBING | 1 | 872-0124 | 175 | | 087 | |
| 4 | PIPE PLUG | 7 | 600-0002 | 087 | | 087 | |
| 5 | CAPSCREW | 2 | 168-0494 | 082 | | 082 | |
| 6 | CASING | 1 | 180-0373 | 010 | | 010 | |
| 7 | CASE RING | 1 | 676-0393 | 208 | | 010 | |
| 8 | GASKET | 2 | 364-0465 | 494 | | 494 | |
| 8A | GASKET | 1 | 364-0422 | 494 | | 494 | |
| 9 | IMP. SCREW | 1 | 168-0490 | 113 | | 113 | |
| 9A | IMP. WASHER | 1 | 908-0613 | 087 | | 087 | |
| 9B | GASKET | 1 | 364-2025 | 803 | | 803 | |
| 9C | CAPSCREW SEAL | 1 | 908-1292 | 999 | | 999 | |
| 10 | GASKET | 1 | 364-0417 | 457 | | 457 | |
| 10A | GASKET | 1 | 364-0415 | 494 | | 494 | |
| 11 | IMPELLER 1ST | 1 | 443-2074 | 010 | | 010 | |
| 11A | IMPELLER 2ND | 1 | 443-0991 | 010 | | 010 | |
| 12 | IMPELLER KEY | 1 | 472-0260 | 087 | | 087 | |
| 13 | CASE RING | 1 | 676-0394 | 208 | | 010 | |
| 16 | CASE RING | 1 | 676-0392 | 208 | | 010 | |
| 18 | CAPSCREW | 8 | 168-0488 | 082 | | 082 | |
| 19 | CAPSCREW | 3 | 168-0502 | 082 | | 082 | |
| 24 | SETSCREW | 2 | 724-0077 | 104 | | 104 | |
| 25 | SLEEVE | 1 | 756-0128 | 208 | | 104 | |
| 26 | COVER | 1 | 812-0068 | 010 | | 010 | |
| 27 | SEAL | | | | | | |
| | J.C. 21 | 1 | 712-1042 | 749 | | 749 | |
| | J.C. 21 - HI TEMP | 1 | 712-1042 | 769 | | 769 | |
| | J.C. 1 | 1 | 712-0462 | 769 | | 769 | |
| 28 | COLLAR | | | | | | |
| | J.C. 21 | 1 | 224-0007 | 208 | | 104 | |
| | J.C. 1 | 1 | 224-0008 | 208 | | 104 | |
| 32 | CAPSCREW | 4 | 168-0492 | 082 | | 082 | |
| 33 | U DRIVE SCREW | 2 | 708-0013 | 365 | | 365 | |
| 34 | NAMEPLATE | 1 | 532-0045 | 114 | | 114 | |
| 35 | BRACKET | 1 | 116-0083 | 010 | | 010 | |
| 39 | CAPSCREW | 8 | 168-0490 | 082 | | 082 | |
| 41 | SUPPORT | 1 | 820-0123 | 010 | | 010 | |

| PC. NO. | DESCRIPTION | QTY | PART NO. | MATERIAL S.F. | | A.I. | |
|---|---|---|---|---|---|---|---|
| 42 | KEY | 1 | 472-0318 | 087 | | 087 | |
| 43 | GREASE FITTING | 1 | 508-0005 | 651 | | 651 | |
| 44 | VENT. TUBE | 1 | 864-0051 | 656 | | 656 | |
| 46 | PIPE PLUG | 1 | 600-0002 | 087 | | 087 | |
| 47 | SLINGER | 1 | 764-1026 | 478 | | 478 | |
| 47A | SLINGER | 1 | 764-1021 | 478 | | 478 | |
| 48 | CAPSCREW | 4 | 168-0492 | 082 | | 082 | |
| 49 | BEARING CAP | 1 | 164-0472 | 010 | | 010 | |
| 50 | O-RING | 1 | 364-0438 | 457 | | 457 | |
| 51 | SEAL* | 1 | 712-0233 | 653 | | 653 | |
| 51A | SEAL* | 1 | 712-0234 | 653 | | 653 | |
| 52 | RETAINING RING | 1 | 676-0944 | 088 | | 088 | |
| 53 | O.B. BEARING | 1 | 068-0345 | 647 | | 647 | |
| 54 | I.B. BEARING* | 1 | 068-0427 | 647 | | 647 | |
| 55 | SHAFT | 1 | 728-0406 | 063 | | 063 | |
| 56 | PIPE PLUG | 2 | 600-0002 | 087 | | 087 | |
| 57 | FRAME-OIL LUBE | 1 | 356-0233 | 010 | | 010 | |
| | GREASE LUBE | 1 | 356-0203 | 010 | | 010 | |
| 58 | GREASE FITTING | 1 | 508-0001 | 651 | | 651 | |
| 59 | PIPE PLUG | 1 | 600-0001 | 087 | | 087 | |
| 60 | OILER | 1 | 552-0027 | 652 | | 652 | |
| 61 | NIPPLE | 1 | 600-1206 | 387 | | 387 | |
| 62 | CAPSCREW | 2 | 168-0490 | 082 | | 082 | |
| 63 | WASHER | 2 | 908-0114 | 080 | | 080 | |
| 64 | SUPPORT | 1 | 820-0122 | 010 | | 010 | |
| 65 | WASHER | 1 | 908-0146 | 088 | | 088 | |
| 66 | GREASE RETAINER* | 1 | 672-0051 | 058 | | 058 | |
| 67 | SETSCREW* | 2 | 724-0077 | 104 | | 104 | |

* OIL LUBE OPTION:
PIECE NO'S. 66 AND 67 ARE NOT REQUIRED.
PIECE NO. 54 IS PART NO. 068-0161-647.
PIECE NO. 51 IS PART NO. 712-0054-653.
PIECE NO. 51A IS PART NO. 712-0056-653.
FIELD CONVERSION TO OIL LUBE REQUIRES:
1. THAT SEALS 712-0054-653 AND 712-0056-653 BE USED.
2. THAT INITIAL GREASE FILL BE REMOVED FROM BEARING 068-0345-647.

AP-370P-REPAIR 12.99

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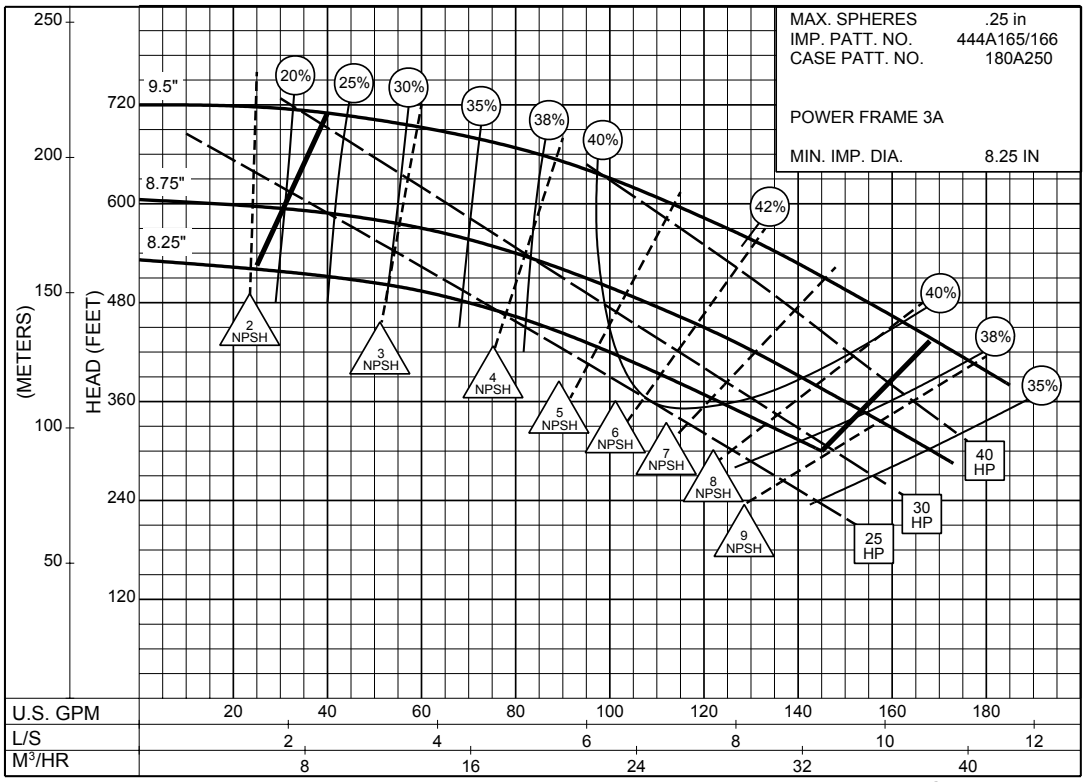
**NOTE:**
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**Aurora Pumps**
800 Airport Road
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phone: 630-859-7000
fax: 630-859-7060

# Performance Curves for the 370 Series

| MODEL/SIZE | R.P.M. | CATALOG PAGE | PDF PAGE |
|---|---|---|---|
| 1-1/2 x 3 x 10 | 3500 | 401 | 2 |
| 1-1/2 x 3 x 10 | 1750 | 402 | 3 |
| 2 x 4 x 10 | 3500/1750 | 403 | 4 |

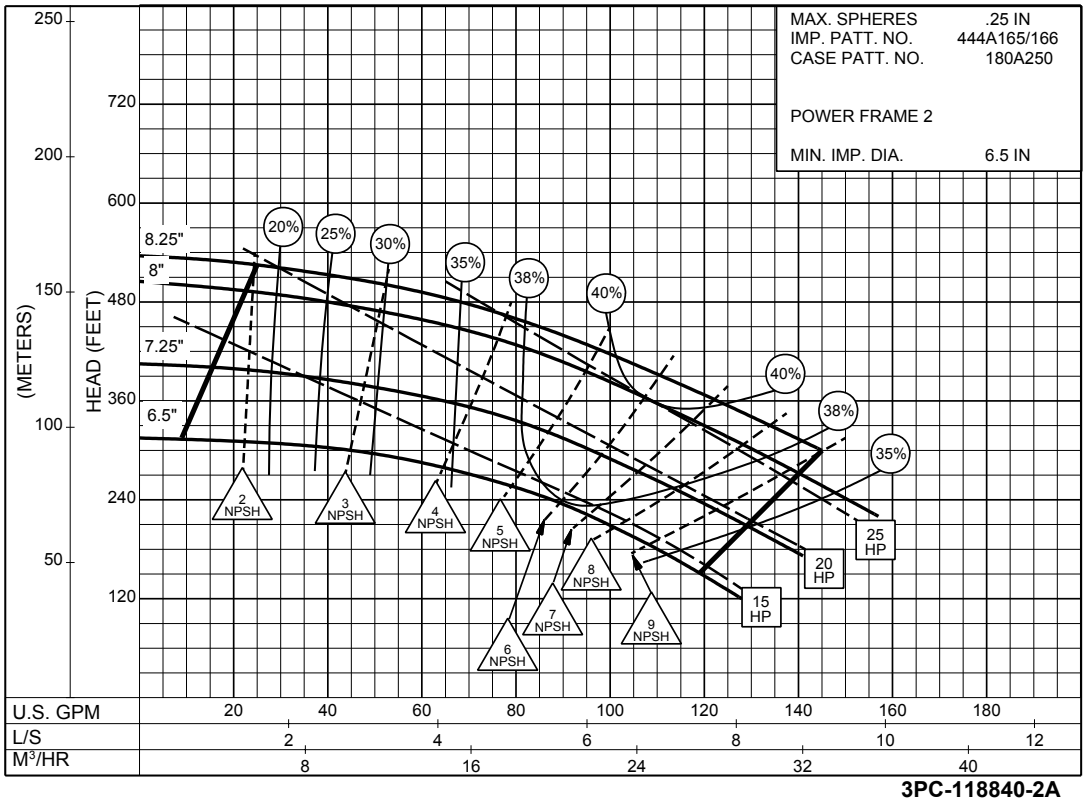
**SIZE : 1-1/2x3x10** **TYPE : 370** **IMPELLER : Enclosed** **R. P. M. : 3500**




**3PC-118840-1A**

**3500 R.P.M**

**SIZE : 1-1/2x3x10** **TYPE : 370** **IMPELLER : Enclosed** **R. P. M. : 3500**




**3PC-118840-2A**

**3500 R.P.M**

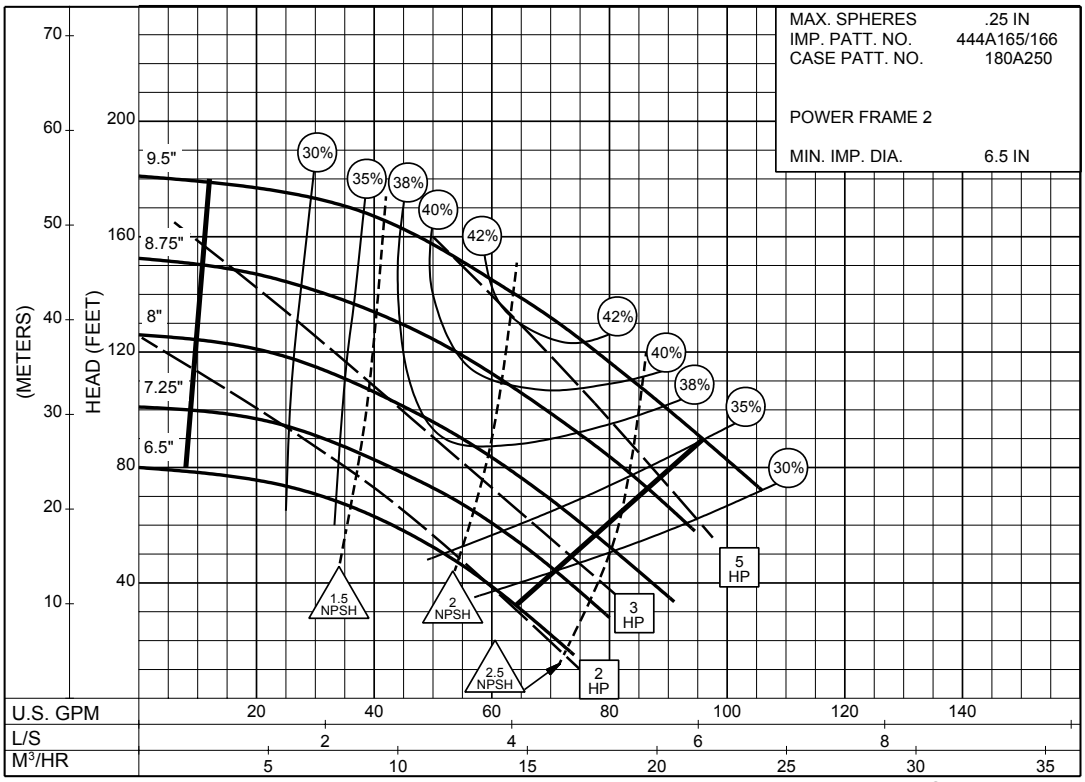
# 1-1/2 x 3 x 10 SERIES 370

ENCLOSED IMPELLER

Supersedes Section 370 Page 402
Dated August 1982

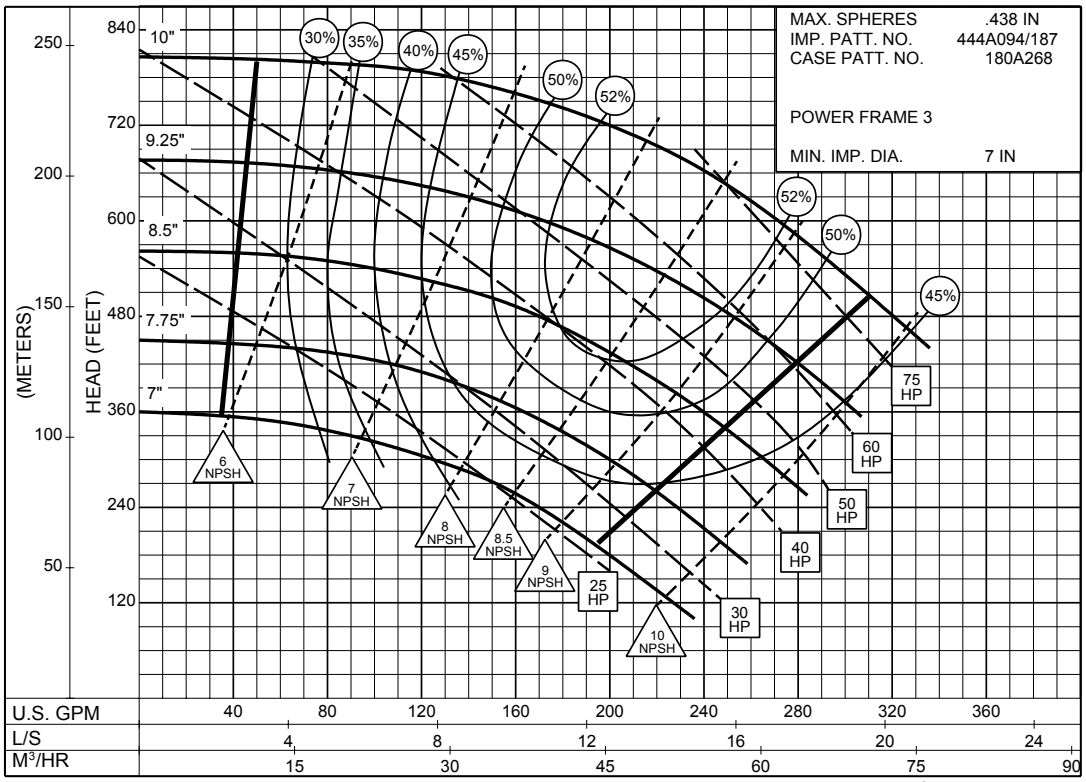
**1750**
R.P.M

**SIZE : 1-1/2x3x10** **TYPE : 370** **IMPELLER : Enclosed** **R. P. M. : 1750**




3PC-118841A

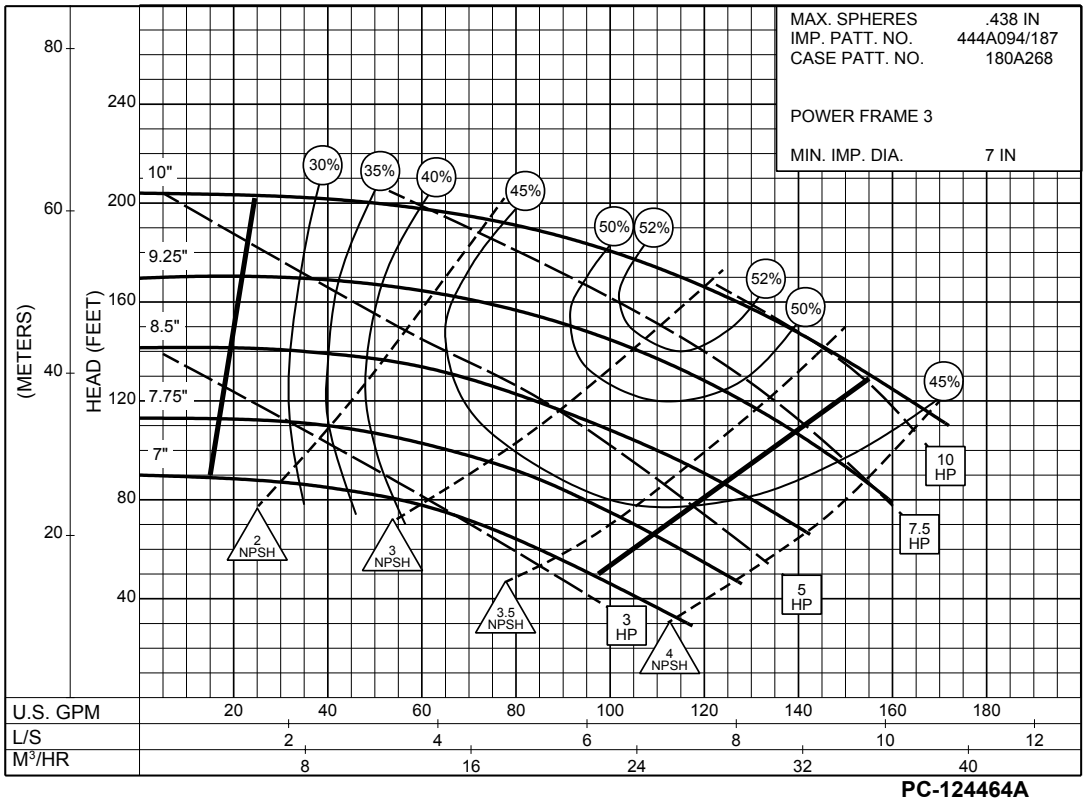
**SIZE : 2x4x10** **TYPE : 370** **IMPELLER : Enclosed** **R. P. M. : 3500**




**PC-124463A**

**3500 R.P.M**

**SIZE : 2x4x10** **TYPE : 370** **IMPELLER : Enclosed** **R. P. M. : 1750**




**PC-124464A**

**1750 R.P.M**

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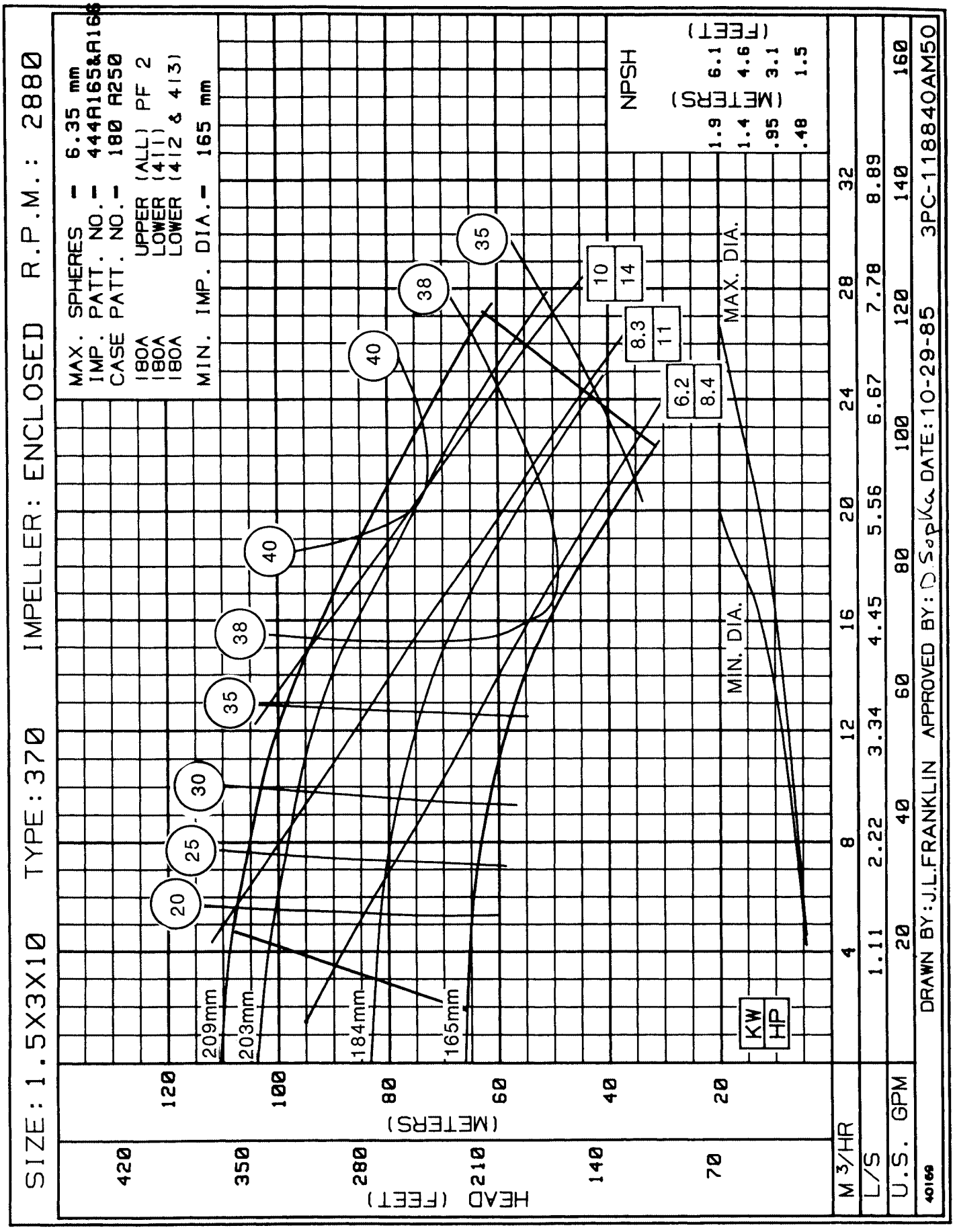
# Performance Curves for the 370 Series (50 Hz)

| MODEL/SIZE | R.P.M. | PDF PAGE |
|---|---|---|
| 1-1/2x3x10 | 2880 | 2-3 |
| 1-1/2x3x10 | 1440 | 4 |
| 2x4x10 | 2880 | 5 |
| 2x4x10 | 1440 | 6 |

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# 1-1/2x3x10 - 2880 RPM
## ENCLOSED IMPELLER

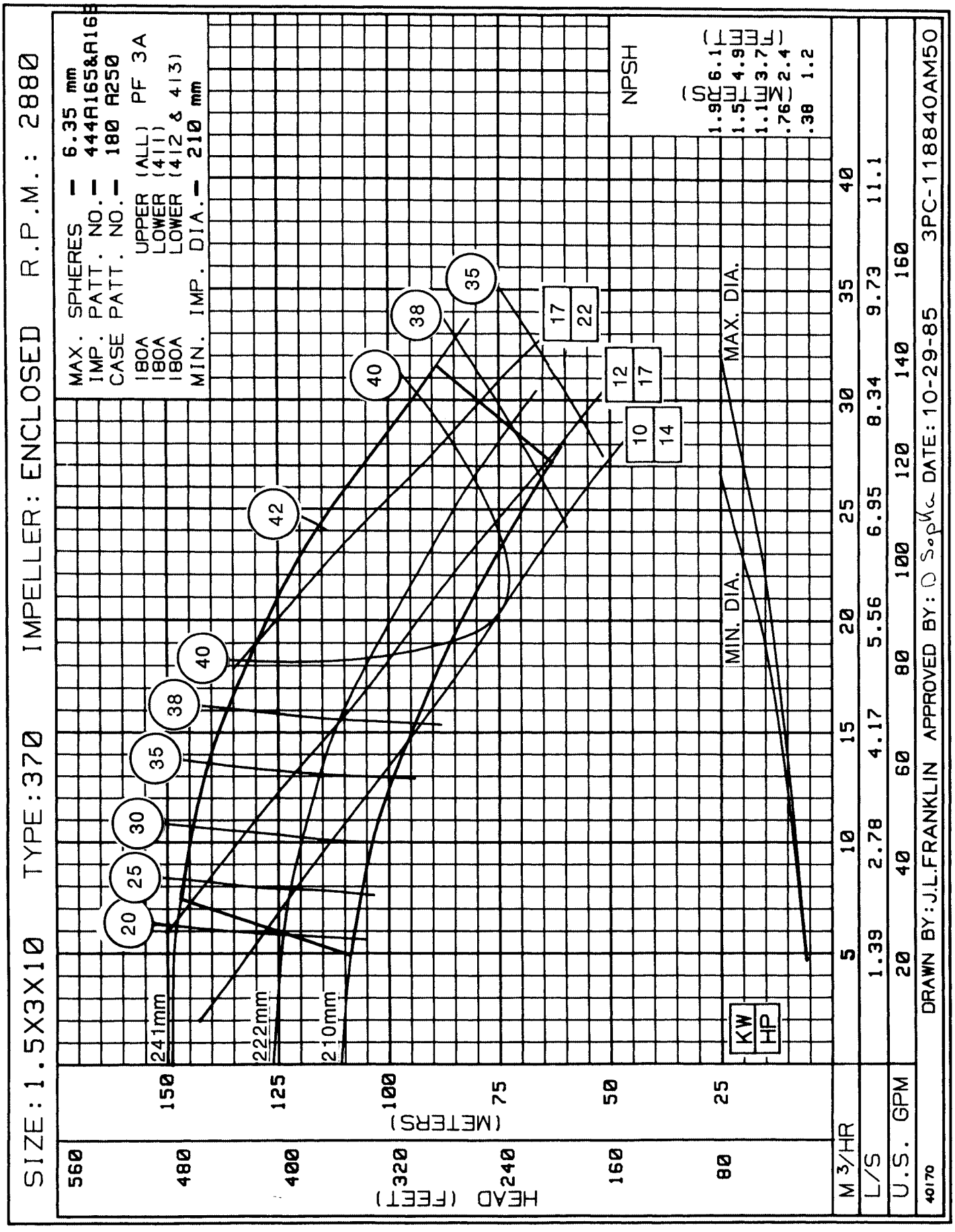
SECTION 370 (Metric 50Hz)
DATE JULY 1994
SUPERCEDES MARCH 1986



SECTION 370 (Metric 50Hz)
DATE JULY 1994
SUPERCEDES MARCH 1986

# 1-1/2x3x10 - 2880 RPM
## ENCLOSED IMPELLER

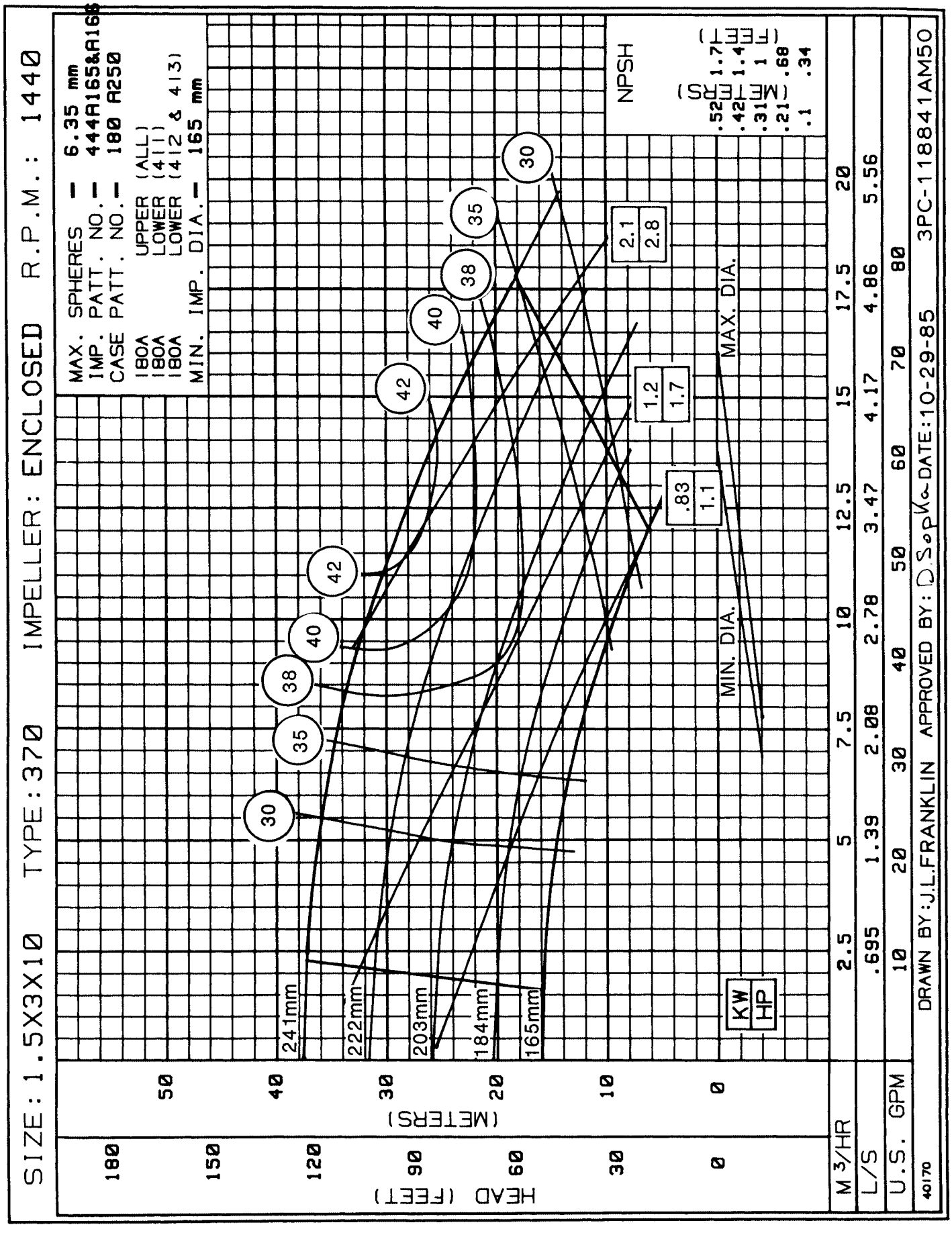
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Pentair Pump Group

# 1-1/2x3x10 - 1440 RPM
## ENCLOSED IMPELLER

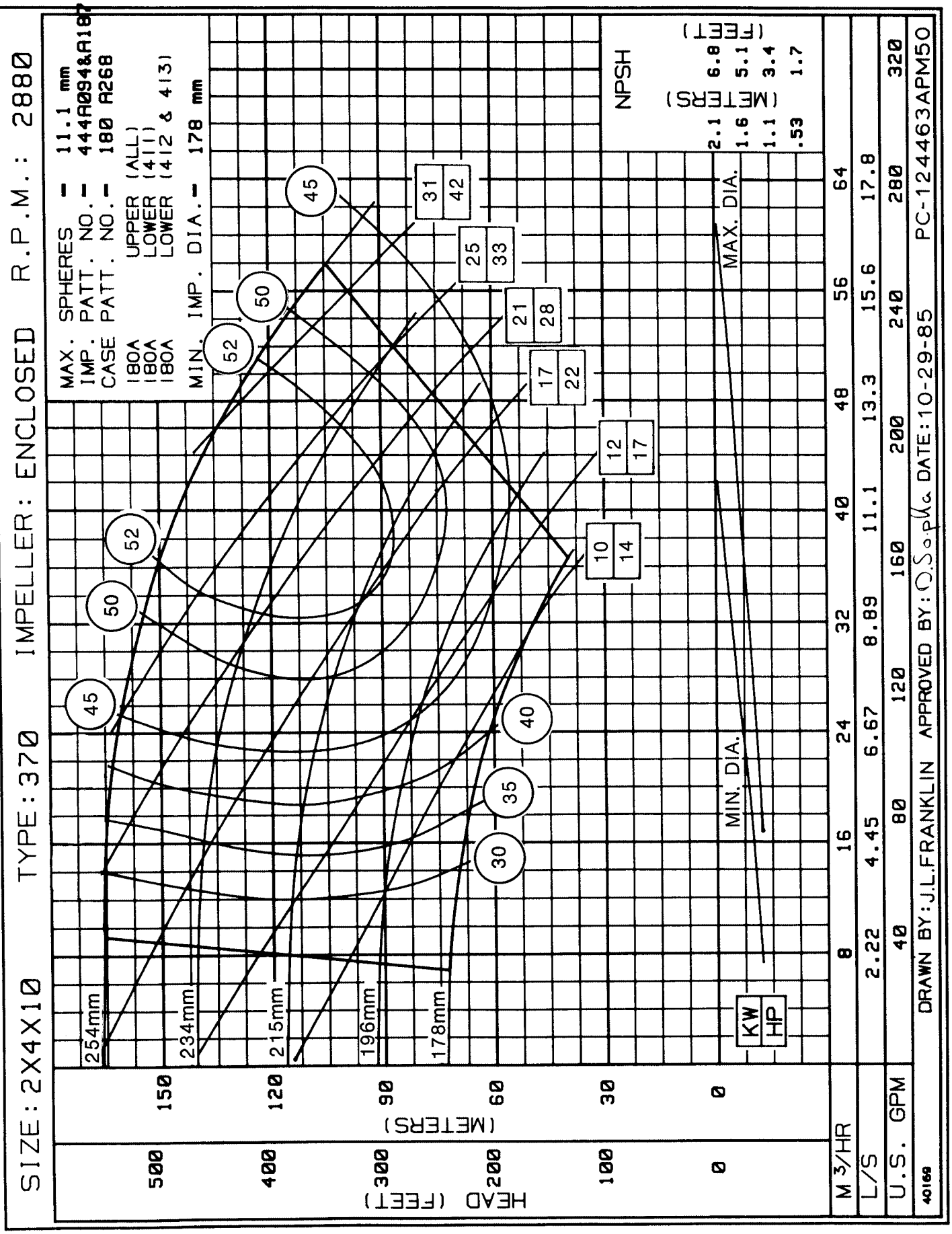
SECTION 370 (Metric 50Hz)
DATE JULY 1994
SUPERCEDES MARCH 1986



SECTION 370 (Metric 50Hz)
DATE JULY 1994
SUPERCEDES MARCH 1986

# 2x4x10 - 2880 RPM
## ENCLOSED IMPELLER

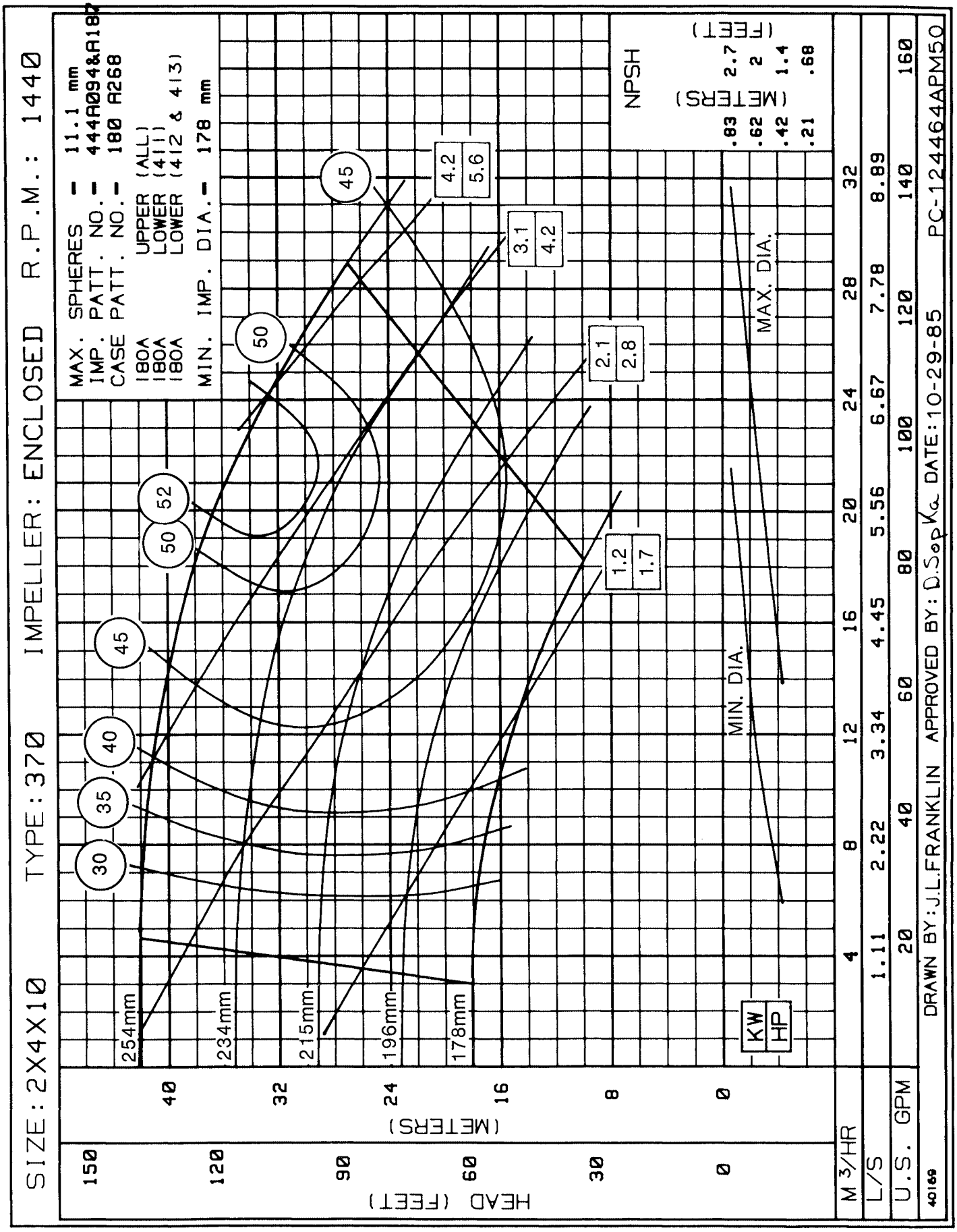
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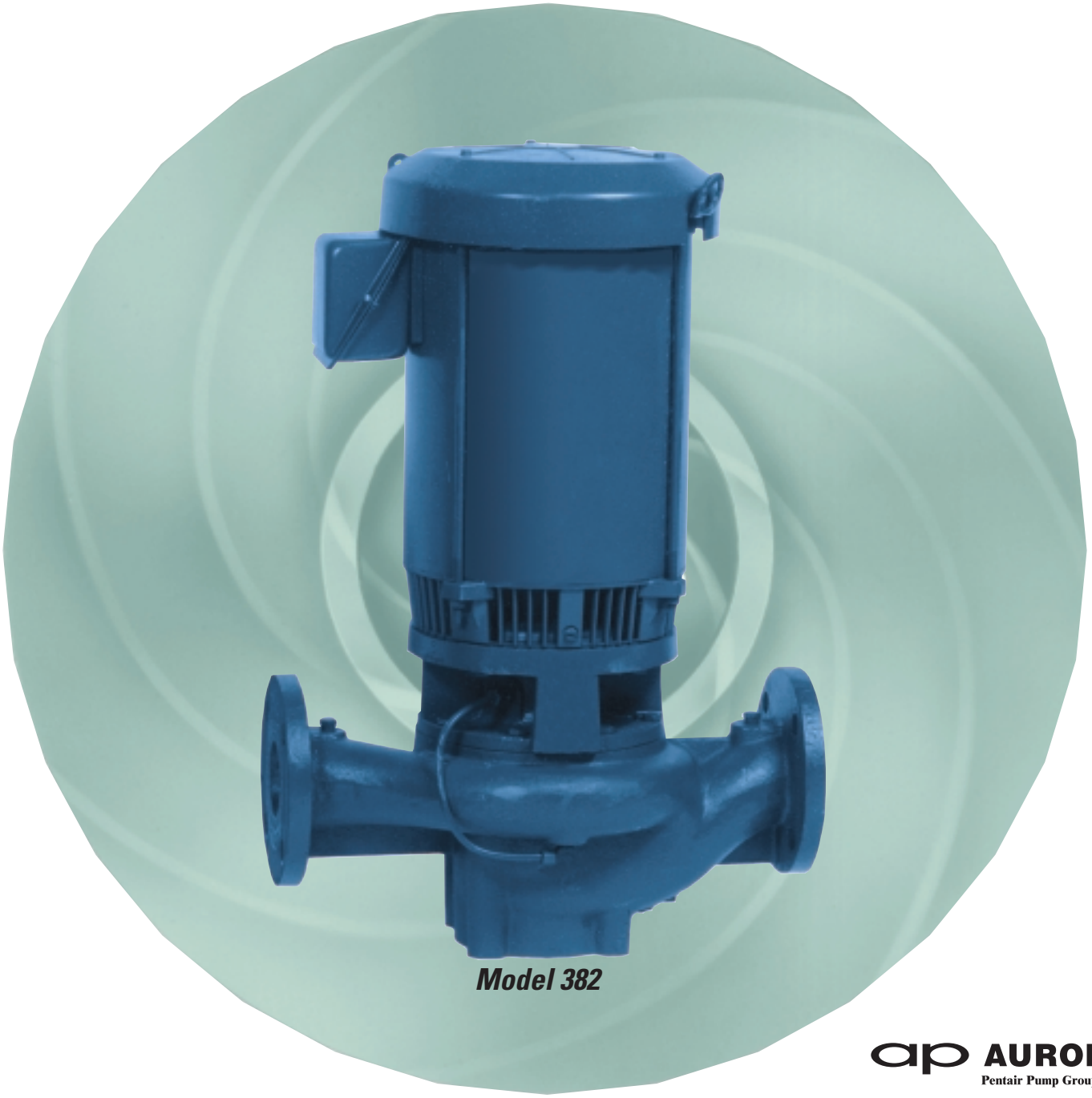
# 2x4x10 - 1440 RPM
## ENCLOSED IMPELLER

SECTION 370 (Metric 50Hz)
DATE JULY 1994
SUPERCEDES MARCH 1986



# 380 Series
# Single Stage Vertical Inline Pump

- Capacities to 4500 G.P.M. (1,020 $M^3$/HR)
- Heads to 370 Feet (78 Meters)
- Temperatures to 250°F (120°C)



Model 382

AURORA®
Pentair Pump Group

## Aurora 380 Series Pumps

Vertical Inline Close Coupled Pumps are specifically designed for mounting, in any position, directly in a pipe line. The suction and discharge nozzles are located on the same centerline 180º apart. Vertical pumps significantly reduce the space required, two pumps fit in the space of one. They are easy to maintain; simply remove the capscrews and the motor and bracket assembly is easily removed from the casing without disturbing the piping.

The impeller is direct coupled to the motor shaft for easy maintenance to minimize impeller run out and reduce noise. Most pump parts except for the casing, are 100% interchangeable with Aurora Pump's high quality, high production 340 and 360 series pumps for speedy spare parts service. The inline casing has provisions for mounting an optional support base should the pump sit on the floor. Mechanical seals are provided as standard to prevent leakage around the shaft. A relief line is provided from the seal faces to the pump discharge for flushing and venting purposes.

Suction Branch Design on Model 382A pumps prerotates suction liquid in the direction of pump impeller rotation. This concept minimizes pumping noise that is otherwise associated with more common short radius suction inlet designs. Each pump has been engineered and assurance tested to arrive at the proper velocities and entrance angles to insure quiet operation.

Aurora 380 Series pumps are available in 31 sizes, offering a size and model precisely fitted to a wide range of head and capacity requirements.

Look through this bulletin for additional details and specifications.

## Feature Selector

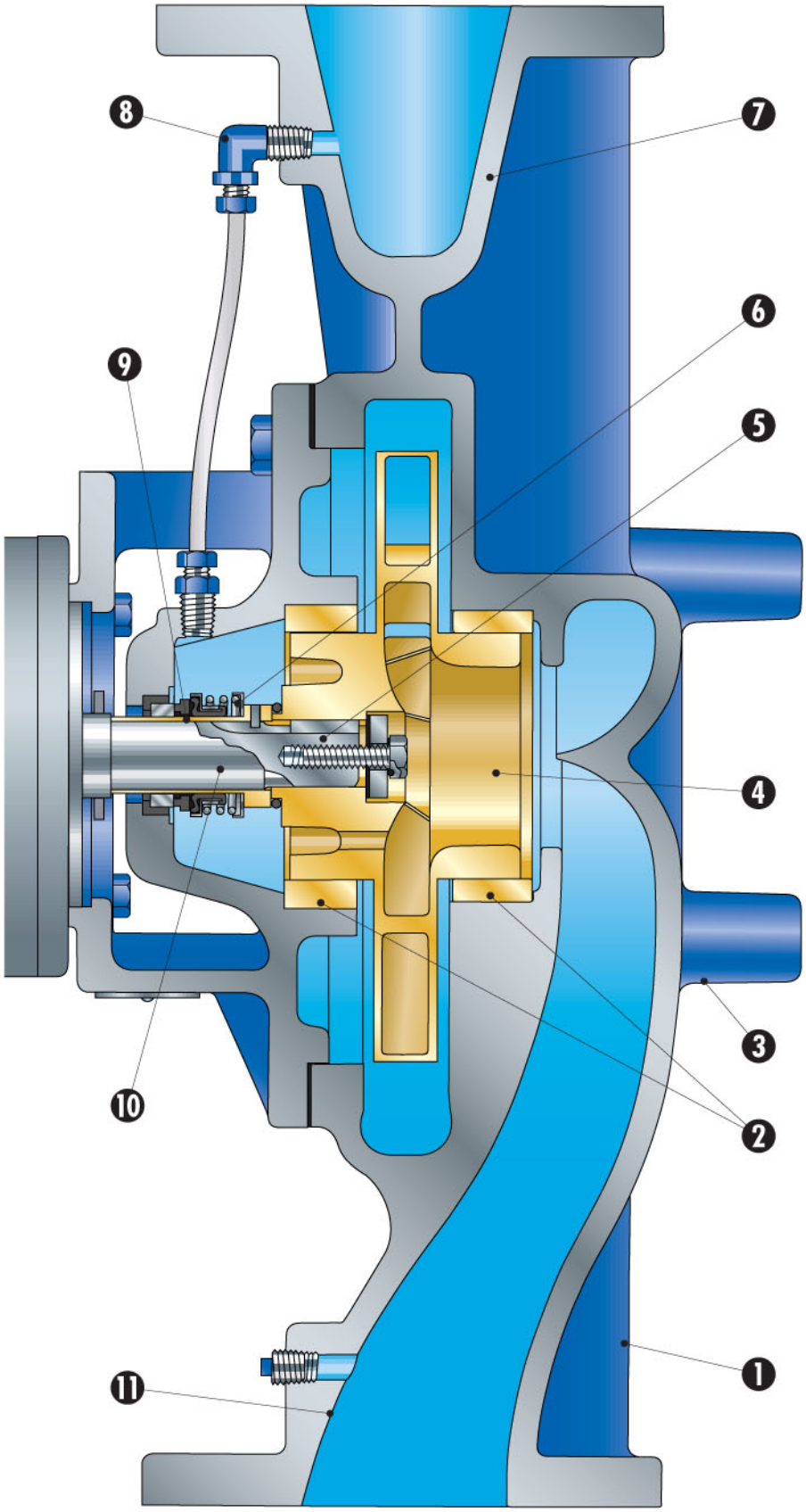
### STANDARD

- Bronze Fitted Construction
- Bronze Shaft Sleeve
- Carbon Steel Shaft
- Dynamically Balanced Cast Impeller
- Casing Wearing Rings
- 303 Stainless Mechanical Seal With Buna-N, Ni-Resist and Carbon Parts
- Factory Hydro Test

### OPTIONAL

- All Iron Construction
- 316 Stainless Steel Shaft Sleeve
- Impeller Wearing Ring (s)
- Suction and Discharge Companion Flanges
- Pump Base
- Certified Performance Test data Consisting of Head Capacity and Power Readings Taken Over the Full Operating Range of the Pump.

# Pump Features




## FEATURES

1. BACK PULL-OUT CASING with inline suction and discharge.

2. CASE WEARING RING prevents wear on casing and is inexpensively replaced. Impeller wear rings are optional.

3. SUPPORT FEET are cast integrally with the casing on Model 382A pumps. The pump thus can alternately sit on the floor or bolt to an optional base if a foundation is preferred.

4. PRECISION CAST, DYNAMICALLY BALANCED, ENCLOSED IMPELLER is keyed to the shaft extension and secured by a capscrew and washer. Gaskets are used to prevent leakage to shaft end.

5. CARBON STEEL SHAFT is designed for minimum deflection.

6. MECHANICAL SEAL has carbon against Ni-Resist face for optimum hot water performance. Long life is assured with 303 Stainless steel metal parts and "Buna-N" flexible elastomers.

7. FACTORY HYDRO TEST guarantees casting and seal integrity.

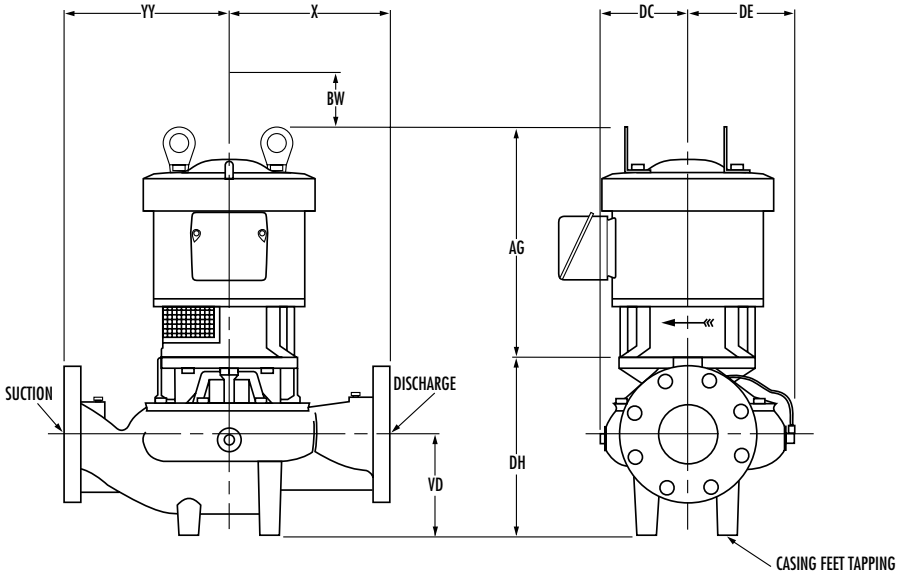
8. RELIEF LINE assures adequate venting of the seal chamber and lubrication of seal faces.

9. BRONZE SHAFT SLEEVE prevents shaft wear and extends the entire length of the seal box. The shaft sleeve is slip fit over the shaft and then is keylocked. Shaft sleeve and impeller screw are sealed by o-ring gaskets to eliminate corrosion of the shaft by the pumped liquid. This standard feature eliminates the requirements for higher costing, special stainless steel shaft.

10. STANDARD JM MOTOR (10-60) HP provides low noise level pump operation. Special TCZ Motor for above 60HP.

11. VOLUTE TYPE SUCTION inlet pre-rotates suction liquid.

# 380 Dimensions



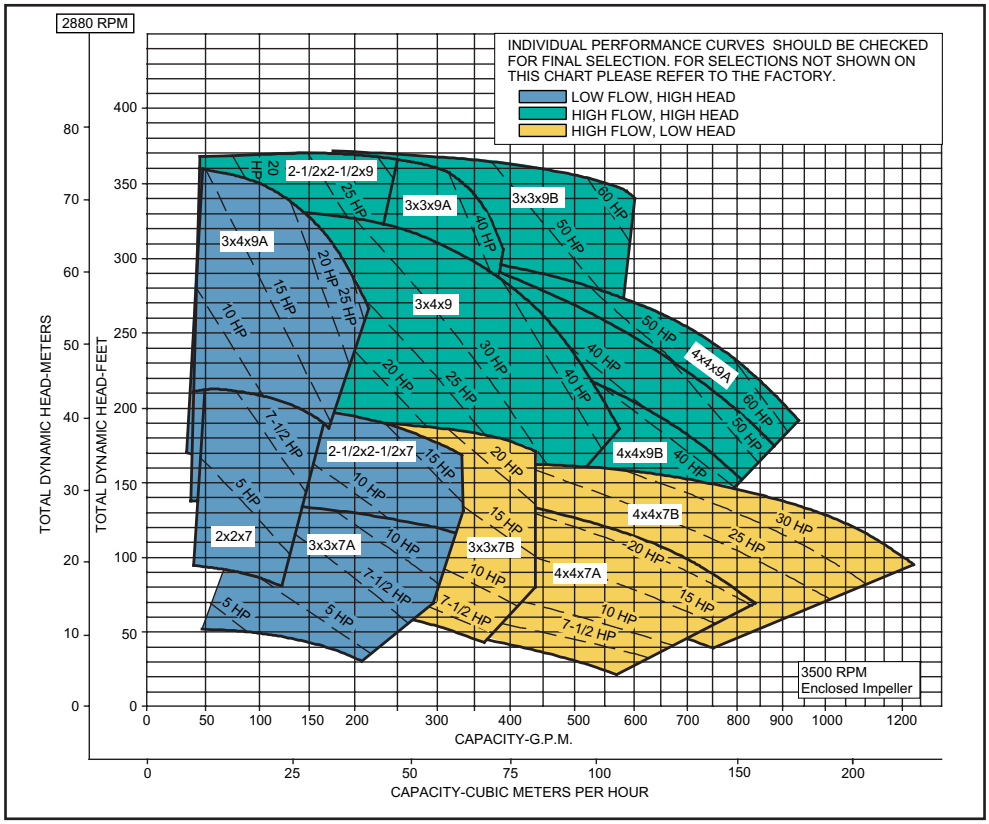

| FRAME | AG APPROX. O.D.P. | AG APPROX. T.E.F.C. EXP. PR. |
|---|---|---|
| 143JM | 10 | 12 |
| 145JM | 11 | 13 |
| 182JM | 12 | 14 |
| 184JM | 15 | 17 |
| 213JM | 17 | 19 |
| 215JM | 17 | 19 |
| 254JM | 21 | 23 |
| 256JM | 21 | 23 |
| 284JM | 22 | 24 |
| 286JM | 22 | 24 |
| 324JM | 24 | 26 |
| 326JM | 24 | 26 |
| 364TCZ | 25.62 | 26.88 |
| 365TCZ | 25.62 | 26.88 |
| 404TCZ | 30 | 30-1/2 |
| 405TCZ | 30 | 30-1/2 |
| 444TCZ | 31-3/4 | 32-1/2 |
| 445TCZ | 31-3/4 | 35-1/2 |

| PUMP SIZE | | | | | | | DH | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DISCHARGE | SUCTION | CASE BORE | X | BW (MIN) | DC | DE | 143JM THRU 215JM | 254JM THRU 326JM | 365TCZ THRU 445TCZ | YY | VD | CASING FEET TAPPING |
| 1-1/2 | 1-1/2 | 9B | 9-1/2 (241) | 4 (102) | 5-3/4 (146) | 6-1/8 (156) | 10 (254) | N/A | – | 9-1/2 (241) | 5-1/4 (133) | NOTE 8 |
| 2 | 2 | 7 | 8 (203) | 3-1/2 (89) | 4-1/2 (114) | 5-1/8 (130) | 9-13/16 (249) | N/A | – | 8 (203) | 5 (127) | NOTE 9 |
| 2 | 2 | 9A, B | 9-1/2 (241) | 4-1/2 (114) | 5-7/8 (149) | 6-3/8 (162) | 10 (254) | N/A | – | 9-1/2 (241) | 5-1/4 (133) | NOTE 8 |
| 2 | 2 | 9C | 9-1/2 (241) | 4-1/2 (114) | 5-7/8 (149) | 6-3/8 (162) | 9-9/16 (243) | 10-9/16 (268) | – | 9-1/2 (241) | 5-1/4 (133) | NOTE 9 |
| 2 | 2 | 12 | 12 (305) | 5 (127) | 7-5/8 (194) | 8 (203) | 10-1/8 (257) | 11-1/8 283) | – | 12 (305) | 5-1/4 (133) | NOTE 8 |
| 2-1/2 | 2-1/2 | 7 | 9 (229) | 3-1/2 (89) | 4-3/4 (121) | 5-1/2 (140) | 10-9/16 (268) | 11-9/16 (294) | – | 9 (229) | 5-5/8 (143) | NOTE 10 |
| 2-1/2 | 2-1/2 | 9 | 10 (254) | 4 (102) | 5-7/8 (149) | 6-5/8 (168) | 10-1/2 (267) | 11-1/2 (292) | – | 10 (254) | 5-5/8 (143) | NOTE 10 |
| 3 | 3 | 7A, B | 9-1/2 (241) | 5 (127) | 5-3/16 (132) | 6-1/8 (156) | 11-5/8 (295) | 12-5/8 (321) | – | 9-1/2 (241) | 6-1/4 (159) | NOTE 10 |
| 3 | 3 | 9A | 11 (279) | 4-1/2 (114) | 6 (152) | 6-3/4 (171) | 11-3/8 (289) | 12-3/8 (314) | – | 11 (279) | 6-1/4 (159) | NOTE 10 |
| 3 | 3 | 9B | 11 (279) | 5 (127) | 6-1/4 (159) | 7-1/8 (181) | 11-1/2 (292) | 12-1/2 (318) | – | 11 (279) | 6-1/2 (165) | NOTE 8 |
| 3 | 4 | 9 | 11 (279) | 4-1/2 (114) | 5-3/4 (146) | 6-1/2 (165) | 10-7/8 (276) | 11-7/8 (302) | – | 11 (279) | 5-7/8 (149) | NOTE 10 |
| 3 | 3 | 12 | 14 (356) | 5 (127) | 7-11/16 (195) | 8-1/4 (210) | 11-1/2 (292) | 12-1/2 (318) | – | 12 (305) | 6-1/2 (165) | NOTE 8 |
| 4 | 4 | 7A, B | 11 (279) | 6 (152) | 5-9/16 (141) | 7-5/16 (186) | 12-3/4 (324) | 13-3/4 (349) | – | 11 (279) | 7-1/4 (184) | NOTE 10 |
| 4 | 4 | 9A, B | 11 (279) | 6 (152) | 6-3/16 (157) | 7-5/16 (186) | 12-3/8 (314) | 13-3/8 (340) | – | 11 (279) | 7-1/4 (184) | NOTE 8 |
| 4 | 5 | 9 | 11 (279) | 4-1/2 (114) | 6 (152) | 7-1/8 (181) | 12-1/8 (308) | 13-1/8 (333) | – | 11 (279) | 7 (178) | NOTE 10 |
| 4 | 4 | 11 | 13 (330) | 5 (127) | 7-1/8 (181) | 8-1/4 (210) | 12-13/16 (325) | 13-13/16 (351) | – | 13 (330) | 7-5/8 (194) | NOTE 11 |
| 4 | 4 | 12 | 13 (330) | 4-1/2 (114) | 7-7/8 (200) | 8-3/4 (222) | 12-1/4 (311) | 13-1/4 (337) | – | 13 (330) | 7 (178) | NOTE 11 |
| 5 | 5 | 9 | 14 (356) | 4-3/4 (121) | 7-1/8 (181) | 8-1/2 (216) | 13 (330) | 14 (356) | – | 14 (356) | 7-5/8 (194) | NOTE 11 |
| 5 | 5 | 11 | 14 (356) | 4-1/2 (114) | 7-3/8 (187) | 8-7/8 (225) | 14 (356) | 15 (381) | – | 14 (356) | 8-5/8 (219) | NOTE 11 |
| 5 | 5 | 12 | 15 (381) | 4-3/4 (121) | 8-1/4 (210) | 9-1/2 (241) | 13-1/2 (343) | 14-1/2 (368) | – | 15 (381) | 8 (203) | NOTE 11 |
| 6 | 6 | 9 | 15 (381) | 5-1/4 (133) | 7 (178) | 9 (229) | 13-1/2 (343) | 14-1/2 (368) | – | 15 (381) | 8 (203) | NOTE 11 |
| 6 | 6 | 11 | 15 (381) | 6 (152) | 8 (203) | 10 (254) | 15 (381) | 16 (406) | – | 15 (381) | 9-1/4 (235) | NOTE 11 |
| 6 | 6 | 12 | 15 (381) | 5-1/2 (140) | 8-3/8 (213) | 10 (254) | 14-1/2 (368) | 15-1/2 (387) | – | 15 (381) | 8-3/4 (222) | NOTE 11 |
| 8 | 8 | 11 | 18 (457) | 6 (152) | 8-3/4 (222) | 10-7/8 (276) | 15-5/8 (397) | 16-5/8 (422) | – | 18 (457) | 9-5/8 (244) | NOTE 11 |
| 8 | 8 | 12 | 18 (457) | 6 (152) | 8-3/4 (222) | 10-7/8 (276) | 15-5/8 (397) | 16-5/8 (422) | – | 18 (457) | 9-5/8 (244) | NOTE 11 |
| 8 | 8 | 15 | 22-1/2 (572) | 13 (330) | 10.34 (263) | 12.91 (328) | – | – | 20.88 (530) | 22-1/2 (572) | 12.13 (308) | NOTE 12 |
| 10 | 10 | 15 | 25 (635) | 13 (330) | 11 (279) | 14.38 (365) | – | – | 22-1/4 (565) | 25 (635) | 12.56 (319) | NOTE 12 |

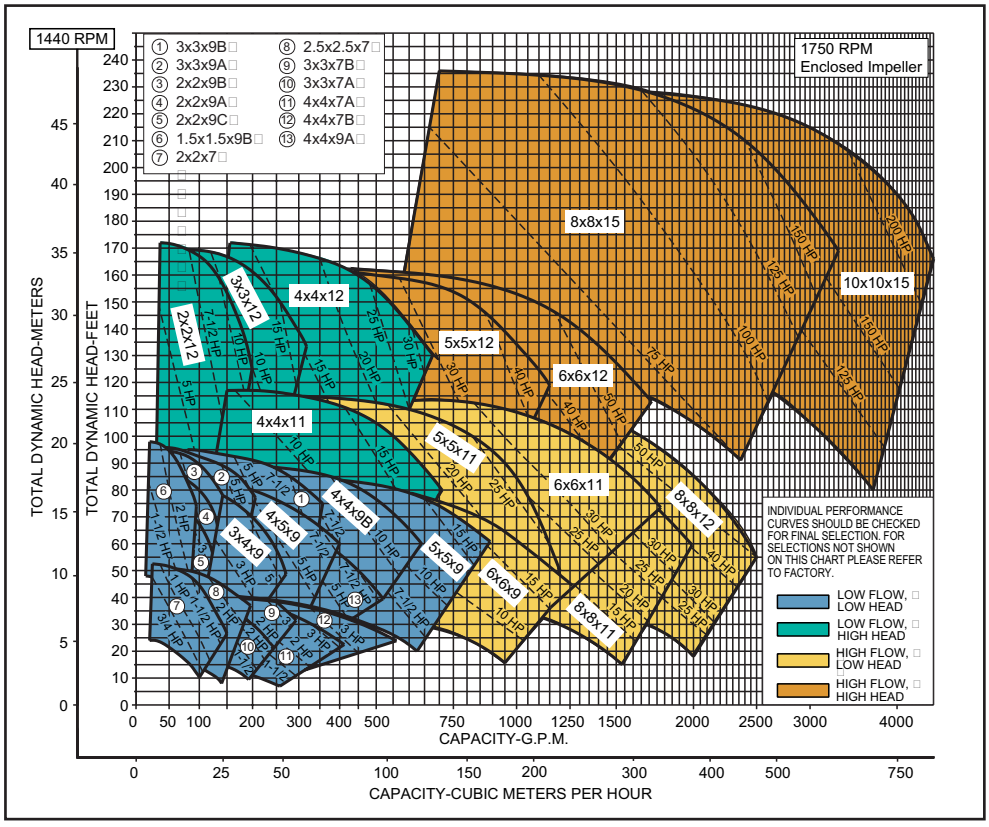
NOTES:
1. All dimensions in inches and (mm).
2. Dimensions may vary ± 1/4" (6).
3. Not for construction purposes unless certified.
4. N/A = not applicable.
5. Conduit box is shown in approximate location. Dimensions are not specified as they vary with each motor manufacturer.
6. Suction and discharge flanges - 125# ANSI Standard flat face.
7. Dimension BW is clearance required for servicing.
8. Normally not tapped. Optionally available [4] 5/8" UNC taps matching 4"-125# flange drilling (7.5" bolt circle).
9. Tapped [4] 5/8" UNC taps matching 2"-125# flange (4.75" bolt circle).
10. Tapped [4] 5/8" UNC taps matching 3"-125# flange (6.0" bolt circle).
11. Tapped [4] 5/8" UNC taps matching 4"-125# flange (7.5" bolt circle).
12. Tapped [4] 3/4" UNC taps matching 6"-125# flange (9.5" bolt circle).

# 380 Range Charts

## 3500 RPM




## 1750 RPM



## Engineering Specifications

The contractor shall furnish (and install as shown on the plans) Aurora Model 382A vertical close coupled inline back pull-out centrifugal pumps size .....x.....x..... of (bronze fitted) (all bronze) (all iron) construction.

The suction and discharge flanges shall be located on a common CL 180º apart for mounting in-line. Each pump shall have a capacity of .....GPM at .....Ft. total head, with a temperature of .....ºF, .....specific gravity.

Each pump is to be furnished with a mechanical seal with all metal parts to be 303 stainless steel with Buna-N elastomers, Ni-Resist seat and carbon washer. A bypass line must be provided between the seal faces and the discharge flange to assure adequate venting of the seal chamber and to provide lubrication. Impellers are to be dynamically balanced and keylocked to the shaft. Model 382A pumps to include a volute type casing suction branch to minimize pumping noise.

The unit must be equipped with (bronze) (stainless steel) shaft sleeve, keylocked, that extends the length of the seal box. Pump shaft extension shall be o-ring sealed from the pumped liquid. Pump casing shall have a case wearing ring (impeller wearing rings). Each pump is to be close coupled to a standard NEMA-JM .....HP .....Phase .....Hertz .....Volt .....RPM (drip proof) (total enclosure) (explosion proof) motor up to 60 HP and special TCZ frame motor for HP above 60.

## Materials of Construction and Limitations

| PUMP PART | BRONZE FITTED |
|---|---|
| Casing | Cast Iron ASTM A48 |
| Impeller | Bronze ASTM B584 |
| Shaft | Carbon Steel Per Motor Mfg. |
| Case Wearing Rings | Bronze ASTM B62 |
| Sleeve | Bronze ASTM B62 |
| Bracket | Cast Iron ASTM A48 |
| Mechanical Seal (STD) | |
| Washer | Carbon |
| Seat | Ni-Resist |
| Elastomer | Buna-N |
| Metal Parts | 303 SS |
| Spring | 303 SS |

| MAXIMUM LIMITATION BASED ON STANDARD MATERIALS AND PUMPING CLEAR WATER | | |
|---|---|---|
| Speed | 3500 RPM | |
| Horsepower | 1150 RPM | 30 |
| | 1750 RPM | 50 |
| | 3500 RPM | 60 |
| | TCZ FRAME MOTORS | RTF |
| Temperature ºF | Standard 225/Optional 250 | |
| Hydrostatic Test Pressure PSI | | 265 |
| Case Working Pressure PSI (All or Any Part Can Be Suction Free | | 175 |



AP-380/Rev. G (5.02)

**NOTE:** Aurora Pump reserves the right to make revisions to its products and their specifications, and to this bulletin and related information, without notice.

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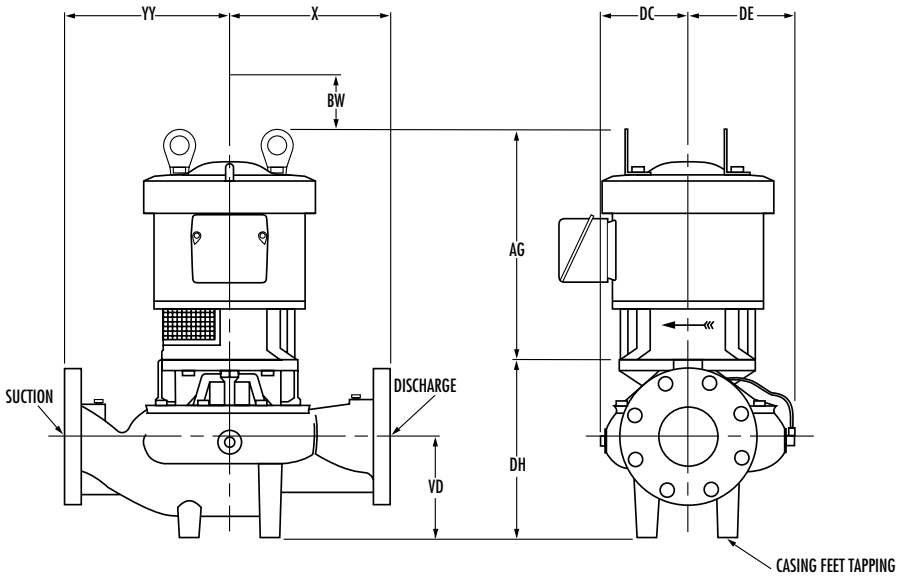
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AURORA®
Pentair Pump Group

# AURORA MODEL 382A PUMPS

## MOTOR FRAME
## 143JM THRU 326JM
## WITH SPLIT SEAL OPTION (143JP/326JP)




**JM and JP Motor Frames**

| FRAME | AG APPROX. O.D.P. | AG APPROX. T.E.F.C. EXP. PR. |
|---|---|---|
| 143 | 10 | 12 |
| 145 | 11 | 13 |
| 182 | 12 | 14 |
| 184 | 15 | 17 |
| 213 | 17 | 19 |
| 215 | 17 | 19 |
| 254 | 21 | 23 |
| 256 | 21 | 23 |
| 284 | 22 | 24 |
| 286 | 22 | 24 |
| 324 | 24 | 26 |
| 326 | 24 | 26 |

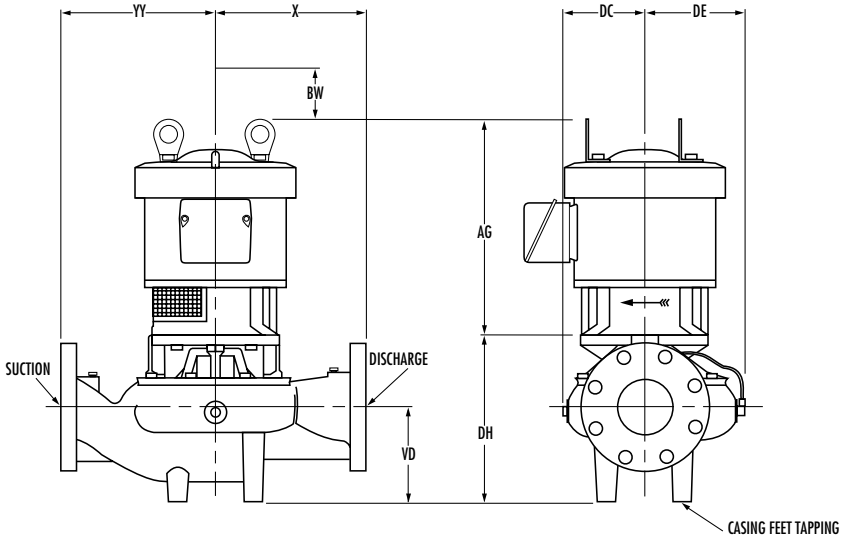
| PUMP SIZE | | | | | | | DH (JM) | | DH (JP) | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DISCHARGE | SUCTION | CASE BORE | X | BW (MIN) | DC | DE | 143JM THRU 215JM | 254JM THRU 326JM | 143JP THRU 184JP | 213JP THRU 326JP | YY | VD | CASING FEET TAPPING |
| 1-1/2 | 1-1/2 | 9B | 9-1/2 (241) | 4 (102) | 5-3/4 (146) | 6-1/8 (156) | 10 (254) | N/A | 13-1/16 (332) | N/A | 9-1/2 (241) | 5-1/4 (133) | NOTE 8 |
| 2 | 2 | 7 | 8 (203) | 3-1/2 (89) | 4-1/2 (114) | 5-1/8 (130) | 9-13/16 (249) | N/A | 12-7/8 (327) | N/A | 8 (203) | 5 (127) | NOTE 9 |
| 2 | 2 | 9A, B | 9-1/2 (241) | 4-1/2 (114) | 5-7/8 (149) | 6-3/8 (162) | 10 (254) | N/A | 13-1/16 (332) | 12-7/8 (327) | 9-1/2 (241) | 5-1/4 (133) | NOTE 8 |
| 2 | 2 | 9C | 9-1/2 (241) | 4-1/2 (114) | 5-7/8 (149) | 6-3/8 (162) | 9-9/16 (244) | 10-9/16 (289) | 12-5/8 (321) | 13-7/16 (341) | 9-1/2 (241) | 5-1/4 (133) | NOTE 9 |
| 2 | 2 | 12 | 12 (305) | 5 (127) | 7-5/8 (194) | 8 (203) | 10-1/8 (257) | 11-1/8 283) | N/A | 14 (356) | 12 (305) | 5-1/4 (133) | NOTE 8 |
| 2-1/2 | 2-1/2 | 7 | 9 (229) | 3-1/2 (89) | 4-3/4 (121) | 5-1/2 (140) | 10-9/16 (268) | 11-9/16 (294) | 13-5/8 (346) | 14-7/16 (367) | 9 (229) | 5-5/8 (143) | NOTE 10 |
| 2-1/2 | 2-1/2 | 9 | 10 (254) | 4 (102) | 5-7/8 (149) | 6-5/8 (168) | 10-1/2 (267) | 11-1/2 (292) | 13-9/16 (344) | 14-3/8 (365) | 10 (254) | 5-5/8 (143) | NOTE 10 |
| 3 | 3 | 7A, B | 9-1/2 (241) | 5 (127) | 5-3/16 (132) | 6-1/8 (156) | 11-5/8 (295) | 12-5/8 (321) | 14-11/16 (373) | 15-1/2 (394) | 9-1/2 (241) | 6-1/4 (159) | NOTE 10 |
| 3 | 3 | 9A | 11 (279) | 4-1/2 (114) | 6 (152) | 6-3/4 (171) | 11-3/8 (289) | 12-3/8 (314) | 14-7/16 (367) | 15-1/4 (387) | 11 (279) | 6-1/4 (159) | NOTE 10 |
| 3 | 3 | 9B | 11 (279) | 5 (127) | 6-1/4 (159) | 7-1/8 (181) | 11-1/2 (292) | 12-1/2 (318) | 14-9/16 (370) | 15-3/8 (391) | 11 (279) | 6-1/2 (165) | NOTE 8 |
| 3 | 4 | 9 | 11 (279) | 4-1/2 (114) | 5-3/4 (146) | 6-1/2 (165) | 10-7/8 (276) | 11-7/8 (302) | 13-15/16 (354) | 14-3/4 (375) | 11 (279) | 5-7/8 (149) | NOTE 10 |
| 3 | 3 | 12 | 14 (356) | 5 (127) | 7-11/16 (195) | 8-1/4 (210) | 11-1/2 (292) | 12-1/2 (318) | N/A | 15-3/8 (391) | 12 (305) | 6-1/2 (165) | NOTE 8 |
| 4 | 4 | 7A, B | 11 (279) | 6 (152) | 5-9/16 (141) | 7-5/16 (186) | 12-3/4 (324) | 13-3/4 (349) | 15-13/16 (402) | 16-5/8 (422) | 11 (279) | 7-1/4 (184) | NOTE 10 |
| 4 | 4 | 9A, B | 11 (279) | 6 (152) | 6-3/16 (157) | 7-5/16 (186) | 12-3/8 (314) | 13-3/8 (340) | 15-7/16 (392) | 16-1/4 (413) | 11 (279) | 7-1/4 (184) | NOTE 8 |

NOTES:
1. All dimensions in inches and (mm).
2. Dimensions may vary ± 1/4" (6).
3. Not for construction purposes unless certified.
4. N/A = not applicable.
5. Conduit box is shown in approximate location. Dimensions are not specified as they vary with each motor manufacturer.
6. Suction and discharge flanges - 125# ANSI Standard flat face.
7. Dimension BW is clearance required for servicing.
8. Normally not tapped. Optionally available [4] 5/8" UNC taps matching 4"-125# flange drilling (7.5" bolt circle).
9. Tapped [4] 5/8" UNC taps matching 2"-125# flange (4.75" bolt circle).
10. Tapped [4] 5/8" UNC taps matching 3"-125# flange (6.0" bolt circle).
11. Tapped [4] 5/8" UNC taps matching 4"-125# flange (7.5" bolt circle).
12. Tapped [4] 3/4" UNC taps matching 6"-125# flange (9.5" bolt circle).

Supersedes Section 380 Page 202
Dated May 2002

# AURORA MODEL 382A PUMPS

## MOTOR FRAME
## 143JM THRU 445TCZ
## WITH SPLIT SEAL OPTION
## (143JP/326JP) (364TCZ/445TCZ)




**JM and JP Motor Frames**

| FRAME | AG APPROX. O.D.P. | AG APPROX. T.E.F.C. EXP. PR. |
|---|---|---|
| 143 | 10 | 12 |
| 145 | 11 | 13 |
| 182 | 12 | 14 |
| 184 | 15 | 17 |
| 213 | 17 | 19 |
| 215 | 17 | 19 |
| 254 | 21 | 23 |
| 256 | 21 | 23 |
| 284 | 22 | 24 |
| 286 | 22 | 24 |
| 324 | 24 | 26 |
| 326 | 24 | 26 |
| 364TCZ | 26 | 27 |
| 365TCZ | 26 | 27 |
| 404TCZ | 30 | 31 |
| 405TCZ | 30 | 31 |
| 444TCZ | 32 | 33 |
| 445TCZ | 32 | 33 |

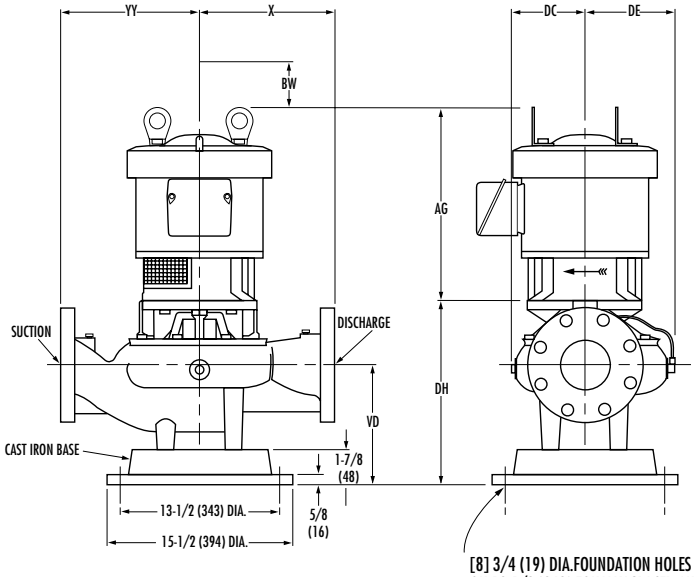
| PUMP SIZE | | | | | | | DH(JM) | | | DH(JP) | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DISCHARGE | SUCTION | CASE BORE | X | BW (MIN) | DC | DE | 143JM THRU 215JM | 254JM THRU 326JM | 3645TCZ THRU 445TCZ | 143JP THRU 184JP | 213JP THRU 326JP | YY | VD | CASING FEET TAPPING |
| 4 | 5 | 9 | 11 (279) | 4-1/2 (114) | 6 (152) | 7-1/8 (181) | 12-1/8 (308) | 13-1/8 (333) | – | 15-3/16 (386) | 15-3/4 (400) | 11 (279) | 7 (178) | NOTE 10 |
| 4 | 4 | 11 | 13 (330) | 5 (127) | 7-1/8 (181) | 8-1/4 (210) | 12-13/16 (325) | 13-13/16 (351) | – | – | 16-1/2 (419) | 13 (330) | 7-5/8 (194) | NOTE 11 |
| 4 | 4 | 12 | 13 (330) | 4-1/2 (114) | 7-7/8 (200) | 8-3/4 (222) | 12-1/4 (311) | 13-1/4 (337) | – | – | 15-7/8 (403) | 13 (330) | 7 (178) | NOTE 11 |
| 5 | 5 | 9 | 14 (356) | 4-3/4 (121) | 7-1/8 (181) | 8-1/2 (216) | 13 (330) | 14 (356) | – | 16-1/16 (408) | 16-7/8 (429) | 14 (356) | 7-5/8 (194) | NOTE 11 |
| 5 | 5 | 11 | 14 (356) | 4-1/2 (114) | 7-3/8 (187) | 8-7/8 (225) | 14 (356) | 15 (381) | – | – | 17-5/8 (448) | 14 (356) | 8-5/8 (219) | NOTE 11 |
| 5 | 5 | 12 | 15 (381) | 4-3/4 (121) | 8-1/4 (210) | 9-1/2 (241) | 13-1/2 (343) | 14-1/2 (368) | – | – | 17-1/8 (435) | 15 (381) | 8 (203) | NOTE 11 |
| 6 | 6 | 9 | 15 (381) | 5-1/4 (133) | 7 (178) | 9 (229) | 13-1/2 (343) | 14-1/2 (368) | – | 16-9/16 (421) | 17-3/8 (441) | 15 (381) | 8 (203) | NOTE 11 |
| 6 | 6 | 11 | 15 (381) | 6 (152) | 8 (203) | 10 (254) | 15 (381) | 16 (406) | – | – | 18-5/8 (473) | 15 (381) | 9-1/4 (235) | NOTE 11 |
| 6 | 6 | 12 | 15 (381) | 5-1/2 (140) | 8-3/8 (213) | 10 (254) | 14-1/2 (368) | 15-1/2 (387) | – | – | 18-1/8 (460) | 15 (381) | 8-3/4 (222) | NOTE 11 |
| 8 | 8 | 11 | 18 (457) | 6 (152) | 8-3/4 (222) | 10-7/8 (276) | 15-5/8 (397) | 16-5/8 (422) | – | – | 19-1/4 (489) | 18 (457) | 9-5/8 (244) | NOTE 11 |
| 8 | 8 | 12 | 18 (457) | 6 (152) | 8-3/4 (222) | 10-7/8 (276) | 15-5/8 (397) | 16-5/8 (422) | – | – | 19-1/4 (489) | 18 (457) | 9-5/8 (244) | NOTE 11 |
| 8 | 8 | 15 | 22-1/2 (572) | 13 (330) | 10-3/8 (263) | 12-15/16 (328) | – | – | 20-7/8 (530) | – | – | 22-1/2 (572) | 12-1/8 (308) | NOTE 12 |
| 10 | 10 | 15 | 25 (635) | 13 (330) | 11 (279) | 14-3/8 (365) | – | – | 22-1/4 (565) | – | – | 25 (635) | 13-9/16 (344) | NOTE 12 |

NOTES:
1. All dimensions in inches and (mm).
2. Dimensions may vary ± 1/4" (6).
3. Not for construction purposes unless certified.
4. N/A = not applicable.
5. Conduit box is shown in approximate location. Dimensions are not specified as they vary with each motor manufacturer.
6. Suction and discharge flanges - 125# ANSI Standard flat face.
7. Dimension BW is clearance required for servicing.
8. Normally not tapped. Optionally available [4] 5/8" UNC taps matching 4"-125# flange drilling (7.5" bolt circle).
9. Tapped [4] 5/8" UNC taps matching 2"-125# flange (4.75" bolt circle).
10. Tapped [4] 5/8" UNC taps matching 3"-125# flange (6.0" bolt circle).
11. Tapped [4] 5/8" UNC taps matching 4"-125# flange (7.5" bolt circle).
12. Tapped [4] 3/4" UNC taps matching 6"-125# flange (9.5" bolt circle).

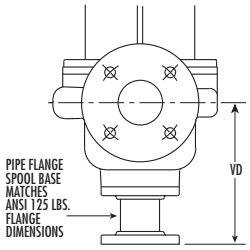
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Pentair Pump Group

# AURORA MODEL 382A PUMPS

ON OPTIONAL BASES
MOTOR FRAME
143JM THRU 326JM
WITH SPLIT SEAL OPTION (143JP/326JP)




[8] 3/4 (19) DIA.FOUNDATION HOLES ON 13-1/2 (343) EQUALLY SPACED AND STRADDLING BOLT CIRCLE CENTER LINE FOR PUMPS WITH CAST IRON BASE. SEE CHART BELOW FOR PUMP SIZE AVAILABILITY.




**JM and JP Motor Frames**

| FRAME | AG APPROX. O.D.P. | AG APPROX. T.E.F.C. EXP. PR. |
|---|---|---|
| 143 | 10 | 12 |
| 145 | 11 | 13 |
| 182 | 12 | 14 |
| 184 | 15 | 17 |
| 213 | 17 | 19 |
| 215 | 17 | 19 |
| 254 | 21 | 23 |
| 256 | 21 | 23 |
| 284 | 22 | 24 |
| 286 | 22 | 24 |
| 324 | 24 | 26 |
| 326 | 24 | 26 |

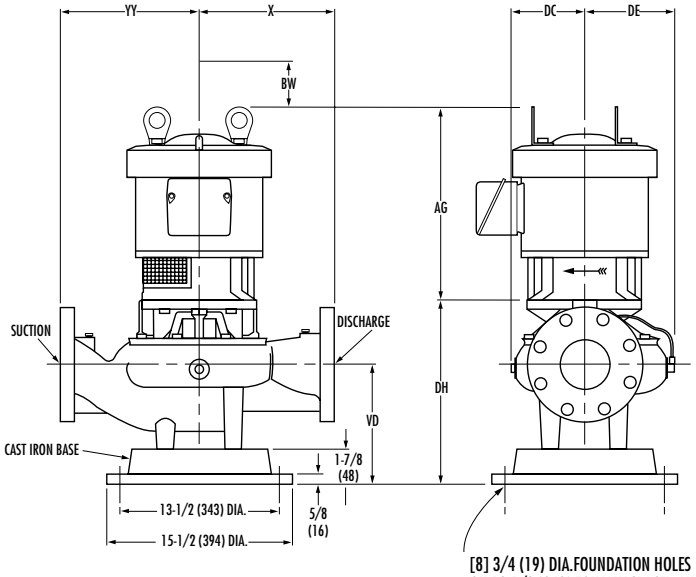
| PUMP SIZE | | | | | | | DH(JM) | | DH(JP) | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DISCHARGE | SUCTION | CASE BORE | X | BW (MIN) | DC | DE | 143JM THRU 215JM | 254JM THRU 326JM | 143JP THRU 184JP | 213JP THRU 326JP | YY | VD | BASE OR SUPPORT TYPE |
| 1-1/2 | 1-1/2 | 9B | 9-1/2 (241) | 4 (102) | 5-3/4 (146) | 6-1/8 (193) | 11-7/8 (302) | N/A | 14-15/16 (379) | N/A | 9-1/2 (241) | 7-1/8 (181) | CAST IRON BASE |
| 2 | 2 | 7 | 8 (203) | 3-1/2 (89) | 4-1/2 (114) | 5-1/8 (130) | 13-13/16 (351) | N/A | 16-7/8 (429 | N/A | 8 (203) | 9 (229) | 2″ PIPE FLANGE |
| 2 | 2 | 9A, B | 9-1/2 (241) | 4-1/2 (114) | 5-7/8 (149) | 6-3/8 (162) | 11-7/8 (302) | N/A | 14-15/16 (379) | 15-15/16 (405) | 9-1/2 (241) | 7-1/8 (181) | CAST IRON BASE |
| 2 | 2 | 9C | 9-1/2 (241) | 4-1/2 (114) | 5-7/8 (149) | 6-3/8 (162) | 13-9/16 (394) | 14-9/16 (370) | 16-5/8 (422) | 17-5/8 (448) | 9-1/2 (241) | 9-1/4 (235) | 2″ PIPE FLANGE |
| 2 | 2 | 12 | 12 (605) | 5 (127) | 7-5/8 (194) | 8 (203) | 12 (305) | 13 (330) | N/A | 16-1/16 (408) | 12 (605) | 7-1/8 (181) | CAST IRON BASE |
| 2-1/2 | 2-1/2 | 7 | 9 (229) | 3-1/2 (89) | 4-3/4 (121) | 5-1/2 (140) | 14-9/16 (370) | 15-9/16 (395) | 17-5/8 (448) | 18-5/8 (473) | 9 (229) | 9-5/8 (244) | 3″ PIPE FLANGE |
| 2-1/2 | 2-1/2 | 9 | 10 (254) | 4 (102) | 5-7/8 (149) | 6-5/8 (168) | 14-1/2 (368) | 15-1/2 (394) | 17-9/16 (446) | 18-9/16 (471) | 10 (254) | 9-5/8 (244) | 3″ PIPE FLANGE |
| 3 | 3 | 7A, B | 9-1/2 (241) | 5 (127) | 5-3/16 (132) | 6-1/8 (193) | 15-5/8 (397) | 16-5/8 (422) | 16-7/16 (418) | 17-7/16 (443) | 9-1/2 (241) | 10-1/4 (260) | 3″ PIPE FLANGE |
| 3 | 3 | 9A | 11 (279) | 4-1/2 (114) | 6 (152) | 6-3/4 (171) | 15-3/8 (391) | 16-3/8 (416) | 18-7/16 (468) | 19-7/16 (494) | 11 (279) | 10-1/4 (260) | 3″ PIPE FLANGE |
| 3 | 3 | 9B | 11 (279) | 5 (127) | 6-1/4 (159) | 7-1/8 (181) | 13-3/8 (340) | 14-3/8 (365) | 16-7/16 (418) | 17-7/16 (443) | 11 (279) | 8-1/8 (206) | CAST IRON BASE |
| 3 | 4 | 9 | 11 (279) | 4-1/2 (114) | 5-3/4 (146) | 6-1/2 (165) | 14-7/8 (378) | 15-7/8 (403) | 17-15/16 (456) | 18-15/16 (481) | 11 (279) | 9-7/8 (251) | 3″ PIPE FLANGE |
| 3 | 3 | 12 | 14 (356) | 5 (127) | 7-11/16 (195) | 8-1/4 (210) | 13-3/8 (340) | 14-3/8 (365) | N/A | 17-7/16 (443) | 12 (305) | 8-1/8 (206) | CAST IRON BASE |
| 4 | 4 | 7A, B | 11 (279) | 6 (152) | 5-9/16 (141) | 7-5/16 (186) | 16-3/4 (425) | 17-3/4 (451) | 19-13/16 (503) | 20-13/16 (529) | 11 (279) | 11-1/4 (286) | 3″ PIPE FLANGE |
| 4 | 4 | 9A, B | 11 (279) | 6 (152) | 6-3/16 (157) | 7-5/16 (186) | 14-1/4 (362) | 15-1/4 (387) | 17-5/16 (440) | 18-5/16 (462) | 11 (279) | 9-1/8 (232) | CAST IRON BASE |

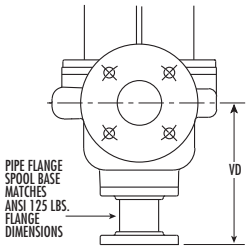
NOTES:
1. All dimensions in inches and (mm).
2. Dimensions may vary ± 1/4" (6).
3. Not for construction purposes unless certified.
4. N/A = not applicable.
5. Conduit box is shown in approximate location. Dimensions are not specified as they vary with each motor manufacturer.
6. Suction and discharge flanges - 125# ANSI Standard flat face.
7. Dimension BW is clearance required for servicing.

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# AURORA MODEL 382A PUMPS

ON OPTIONAL BASES
MOTOR FRAME
143JM THRU 445TCZ
WITH SPLIT SEAL OPTION (143JP/326JP)




**JM and JP Motor Frames**

| FRAME | AG APPROX. O.D.P. | AG APPROX. T.E.F.C. EXP. PR. |
|---|---|---|
| 143 | 10 | 12 |
| 145 | 11 | 13 |
| 182 | 12 | 14 |
| 184 | 15 | 17 |
| 213 | 17 | 19 |
| 215 | 17 | 19 |
| 254 | 21 | 23 |
| 256 | 21 | 23 |
| 284 | 22 | 24 |
| 286 | 22 | 24 |
| 324 | 24 | 26 |
| 326 | 24 | 26 |
| 364TCZ | 26 | 27 |
| 365TCZ | 26 | 27 |
| 404TCZ | 30 | 31 |
| 405TCZ | 30 | 31 |
| 444TCZ | 32 | 33 |
| 445TCZ | 32 | 33 |

| PUMP SIZE | | | | | | | DH(JM) | | | DH(JP) | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DISCHARGE | SUCTION | CASE BORE | X | BW (MIN) | DC | DE | 143JM THRU 215JM | 254JM THRU 326JM | 365TCZ THRU 445TCZ | 143JP THRU 184JP | 213JP THRU 326JP | YY | VD | BASE OR SUPPORT TYPE |
| 4 | 5 | 9 | 11 (279) | 4-1/2 (114) | 6 (152) | 7-1/8 (181) | 16-1/8 (410) | 17-1/8 (435) | – | 19 (483) | 20 (508) | 11 (279) | 11 (279) | 3" PIPE FLANGE |
| 4 | 4 | 11 | 13 (330) | 5 (127) | 7-1/8 (181) | 8-1/4 (210) | 17-13/16 (452) | 18-13/16 (478) | – | – | 21-11/16 (551) | 13 (330) | 12-5/8 (321) | 4" PIPE FLANGE |
| 4 | 4 | 12 | 13 (330) | 4-1/2 (114) | 7-7/8 (220) | 8-3/4 (222) | 17-1/4 (438) | 18-1/4 (463) | – | – | 21-1/8 (537) | 13 (330) | 12 (305) | 4" PIPE FLANGE |
| 5 | 5 | 9 | 14 (356) | 4-3/4 (121) | 7-1/8 (181) | 8-1/2 (216) | 18 (457) | 19 (482) | – | 21-1/16 (535) | 21-7/8 (556) | 14 (356) | 12-5/8 (321) | 4" PIPE FLANGE |
| 5 | 5 | 11 | 14 (356) | 4-1/2 (114) | 7-3/8 (187) | 8-7/8 (225) | 19 (482) | 20 (508) | – | – | 22-7/8 (581) | 14 (356) | 13-5/8 (346) | 4" PIPE FLANGE |
| 5 | 5 | 12 | 15 (381) | 4-3/4 (121) | 8-1/4 (210) | 9-1/2 (241) | 18-1/2 (470) | 19-1/2 (495) | – | – | 22-3/8 (568) | 15 (381) | 13 (330) | 4" PIPE FLANGE |
| 6 | 6 | 9 | 15 (381) | 5-1/4 (133) | 7 (178) | 9 (229) | 18-1/2 (470) | 19-1/2 (495) | – | 21-9/16 (548) | 22-3/8 (568) | 15 (381) | 13 (330) | 4" PIPE FLANGE |
| 6 | 6 | 11 | 15 (381) | 6 (152) | 8 (203) | 10 (254) | 20 (508) | 21 (533) | – | – | 23-5/8 (600) | 15 (381) | 14-1/4 (362) | 4" PIPE FLANGE |
| 6 | 6 | 12 | 15 (381) | 5-1/2 (140) | 8-3/8 (213) | 10 (254) | 19-1/2 (495) | 20-1/2 (521) | – | – | 23-1/8 (587) | 15 (381) | 13-3/4 (349) | 4" PIPE FLANGE |
| 8 | 8 | 11 | 18 (457) | 6 (152) | 8-3/4 (222) | 10-7/8 (276) | 20-5/8 (524) | 21-5/8 (549) | – | – | 24-1/4 (616) | 18 (457) | 14-5/8 (371) | 4" PIPE FLANGE |
| 8 | 8 | 12 | 18 (457) | 6 (152) | 8-3/4 (222) | 10-7/8 (276) | 20-5/8 (524) | 21-5/8 (549) | – | – | 24-1/4 (616) | 18 (457) | 14-5/8 (371) | 4" PIPE FLANGE |
| 8 | 8 | 15 | 22-1/2 (572) | 13 (330) | 10.34 (263) | 12.91 (328) | – | – | 26-7/8 (683) | – | – | 22-1/2 (572) | 18-1/8 (460) | 6" PIPE FLANGE |
| 10 | 10 | 15 | 25 (635) | 13 (330) | 11 (279) | 14.38 (365) | – | – | 28-1/4 (718) | – | – | 25 (635) | 19-9/16 (497) | 6" PIPE FLANGE |

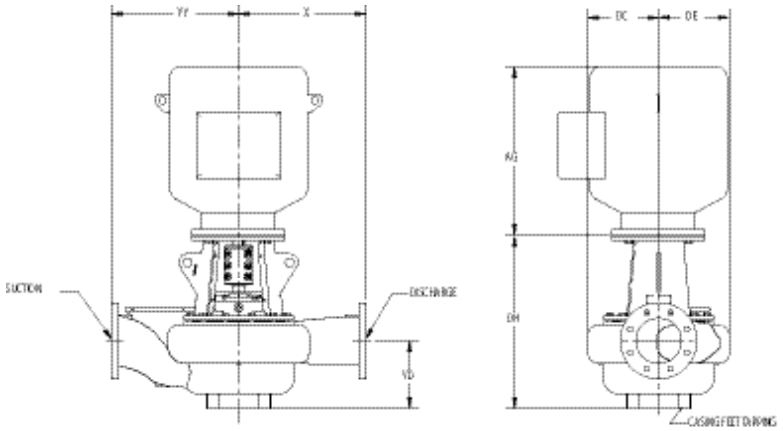
NOTES:
1. All dimensions in inches and (mm).
2. Dimensions may vary ± 1/4" (6).
3. Not for construction purposes unless certified.
4. N/A = not applicable.
5. Conduit box is shown in approximate location. Dimensions are not specified as they vary with each motor manufacturer.
6. Suction and discharge flanges - 125# ANSI Standard flat face.
7. Dimension BW is clearance required for servicing.

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# AURORA MODEL 382A-SC PUMPS

## MOTOR FRAME

## 143 HP THRU 445 HP




| PUMP SIZE | | | | | | DH | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| DISCHARGE | SUCTION | CASE BORE | X | DC | DE | 143 HP THRU 286 HP | 324 HP THRU 445 HP | YY | VD | CASING FEET TAPPING |
| 1-1/2 | 1-1/2 | 9B | 9-1/2 (241) | 5-3/4 (146) | 6-1/8 (156) | 17-7/16 (443) | - | 9-1/2 (241) | 5-1/4 (133) | NOTE 8 |
| 2 | 2 | 7 | 8 (203) | 4-1/2 (114) | 5-1/8 (130) | 17-1/4 (438) | - | 8 (203) | 5 (127) | NOTE 9 |
| 2 | 2 | 9A, B | 9-1/2 (241) | 5-7/8 (149) | 6-3/8 (162) | 17-7/16 (443) | - | 9-1/2 (241) | 5-1/4 (133) | NOTE 8 |
| 2 | 2 | 9C | 9-1/2 (241) | 5-7/8 (149) | 6-3/8 (162) | 17 (432) | 20-3/4 (527) | 9-1/2 (241) | 5-1/4 (133) | NOTE 9 |
| 2 | 2 | 12 | 12 (305) | 7-5/8 (194) | 8 (203) | 19-7/16 (494) | 21-3/16 (538) | 12 (305) | 5-1/4 (133) | NOTE 8 |
| 2-1/2 | 2-1/2 | 7 | 9 (229) | 4-3/4 (121) | 5-1/2 (140) | 18 (457) | 18 (457) | 9 (229) | 5-5/8 (143) | NOTE 10 |
| 2-1/2 | 2-1/2 | 9 | 10 (254) | 5-7/8 (149) | 6-5/8 (168) | 17-15/16 (456) | 21-11/16 ((551) | 10 (254) | 5-5/8 (143) | NOTE 10 |
| 3 | 3 | 7A, B | 9-1/2 (241) | 5-3/16 (132) | 6-1/8 (156) | 19-1/16 (484) | 19-1/16 (484) | 9-1/2 (241) | 6-1/4 (159) | NOTE 10 |
| 3 | 3 | 9A | 11 (279) | 6 (152) | 6-3/4 (171) | 18-13/16 (458) | 22-9/16 (573) | 11 (279) | 6-1/4 (159) | NOTE 10 |
| 3 | 3 | 9B | 11 (279) | 6-1/4 (159) | 7-1/8 (181) | 18-15/16 (481) | 22-11/16 (576) | 11 (279) | 6-1/2 (165) | NOTE 8 |
| 3 | 4 | 9 | 11 (279) | 5-3/4 (146) | 6-1/2 (165) | 18-5/16 (465) | 22-1/16 (560) | 11 (279) | 5-7/8 (149) | NOTE 10 |
| 3 | 3 | 12 | 14 (356) | 7-11/16 (195) | 8-1/4 (210) | 20-13/16 (529) | 22-9/16 (573) | 12 (305) | 6-1/2 (165) | NOTE 8 |
| 4 | 4 | 7A, B | 11 (279) | 5-9/16 (141) | 7-5/16 (186) | 20-3/16 (513) | 20-3/16 (513) | 11 (279) | 7-1/4 (184) | NOTE 10 |
| 4 | 4 | 9A, B | 11 (279) | 6-3/16 (157) | 7-5/16 (186) | 19-13/16 (503) | 23-9/16 (598) | 11 (279) | 7-1/4 (184) | NOTE 8 |

**HP DIMENSION TABLE**

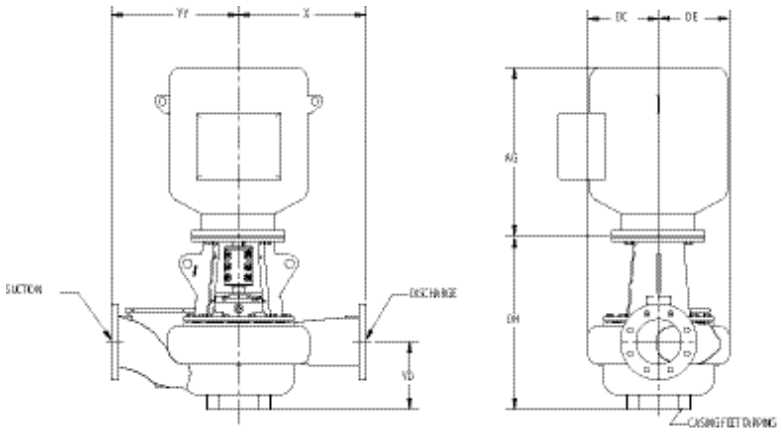
| FRAME | P | AG |
|---|---|---|
| 143 | 8 (203) | 11 (279) |
| 145 | 8 (203) | 12 (305) |
| 182 | 10 (254) | 14 (356) |
| 184 | 10 (254) | 15 (381) |
| 213 | 11 (279) | 16 (406) |
| 215 | 11 (279) | 17 (432) |
| 254 | 13 (330) | 20 (508) |
| 256 | 13 (330) | 21 (534) |
| 284 | 16 (406) | 22 (559) |
| 286 | 16 (406) | 23 (584) |
| 324 | 18 (457) | 25 (635) |
| 326 | 18 (457) | 26 (660) |
| 364 | 21 (534) | 25 (635) |
| 365 | 21 (534) | 25 (635) |
| 404 | 22 (559) | 28 (711) |
| 405 | 22 (559) | 28 (711) |
| 444 | 24 (610) | 32 (813) |
| 445 | 24 (610) | 32 (813) |

NOTES:

1. All dimensions in inches and (mm).
2. Dimensions may vary ± 1/4" (6).
3. Not for construction purposes unless certified.
4. N/A = not applicable.
5. Conduit box is shown in approximate location. Dimensions are not specified as they vary with each motor manufacturer.
6. Suction and discharge flanges - 125# ANSI Standard flat face.
7. Normally not tapped. Optionally available [4] 5/8" UNC taps matching 4"-125# flange drilling (7.5" bolt circle).
8. Tapped [4] 5/8" UNC taps matching 2"-125# flange (4.75" bolt circle).
9. Tapped [4] 5/8" UNC taps matching 3"-125# flange (6.0" bolt circle).
10. Tapped [4] 5/8" UNC taps matching 4"-125# flange (7.5" bolt circle).
11. Tapped [4] 3/4" UNC taps matching 6"-125# flange (9.5" bolt circle).

# AURORA MODEL 382A-SC PUMPS

## MOTOR FRAME
## 143 HP THRU 445 HP




**HP DIMENSION TABLE**

| FRAME | P | AG |
|---|---|---|
| 143 | 8 (203) | 11 (279) |
| 145 | 8 (203) | 12 (305) |
| 182 | 10 (254) | 14 (356) |
| 184 | 10 (254) | 15 (381) |
| 213 | 11 (279) | 16 (406) |
| 215 | 11 (279) | 17 (432) |
| 254 | 13 (330) | 20 (508) |
| 256 | 13 (330) | 21 (534) |
| 284 | 16 (406) | 22 (559) |
| 286 | 16 (406) | 23 (584) |
| 324 | 18 (457) | 25 (635) |
| 326 | 18 (457) | 26 (660) |
| 364 | 21 (534) | 25 (635) |
| 365 | 21 (534) | 25 (635) |
| 404 | 22 (559) | 28 (711) |
| 405 | 22 (559) | 28 (711) |
| 444 | 24 (610) | 32 (813) |
| 445 | 24 (610) | 32 (813) |

| PUMP SIZE | | | | | | DH | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| DISCHARGE | SUCTION | CASE BORE | X | DC | DE | 143 HP THRU 286 HP | 324 HP THRU 445 HP | YY | VD | CASING FEET TAPPING |
| 4 | 5 | 9 | 11 (279) | 6 (152) | 7-1/8 (181) | 19-9/16 (497) | 23-5/16 (592) | 11 (279) | 7 (178) | NOTE 9 |
| 4 | 4 | 11 | 13 (330) | 7-1/8 (181) | 8-1/4 (210) | 22-5/16 (567) | 24-1/16 (611) | 13 (330) | 7-5/8 (194) | NOTE 10 |
| 4 | 4 | 12 | 13 (330) | 7-7/8 (200) | 8-3/4 (222) | 21-9/16 (548) | 23-5/16 (592) | 13 (330) | 7 (178) | NOTE 10 |
| 5 | 5 | 9 | 14 (356) | 7-1/8 (181) | 8-1/2 (216) | 20-7/16 (519) | 24-3/16 (614) | 14 (356) | 7-5/8 (194) | NOTE 10 |
| 5 | 5 | 11 | 14 (3560 | 7-3/8 (187) | 8-7/8 (225) | 23-1/2 (597) | 25-1/4 (641) | 14 (356) | 8-5/8 (219) | NOTE 10 |
| 5 | 5 | 12 | 15 (381) | 8-1/4 (210) | 9-1/2 (241) | 22-13/16 (579) | 24-9/16 (624) | 15 (381) | 8 (203) | NOTE 10 |
| 6 | 6 | 9 | 15 (381) | 7 (178) | 9 (229) | 20-15/16 (532) | 24-11/16 (627) | 15 (381) | 8 (203) | NOTE 10 |
| 6 | 6 | 11 | 15 (381) | 8 (203) | 10 (254) | 24-1/2 (622) | 26-1/4 (667) | 15 (381) | 9-1/4 (235) | NOTE 10 |
| 6 | 6 | 12 | 15 (381) | 8-3/8 (213) | 10 (254) | 23-13/16 (605) | 25-9/16 (649) | 15 (381) | 8-3/4 (222) | NOTE 10 |
| 8 | 8 | 11 | 18 (457) | 8-3/4 (222) | 10-7/8 (276) | 25-1/8 (638) | 26-7/8 (683) | 18 (457) | 9-5/8 (244) | NOTE 10 |
| 8 | 8 | 12 | 18 (457) | 8-3/4 (222) | 10-7/8 (276) | 24-15/16 (633) | 26-11/16 (678) | 18 (457) | 9-5/8 (244) | NOTE 10 |
| 8 | 8 | 15 | 22-1/2 (572) | 10-3/8 (263) | 12-15/16 (328) | 31-1/8 (791) | 31-1/8 (791) | 22-1/2 (572) | 12-1/8 (308) | NOTE 11 |
| 10 | 10 | 15 | 25 (635) | 11 (279) | 14-3/8 (365) | 32-1/2 (826) | 32-1/2 (826) | 25 (635) | 13-9/16 (344) | NOTE 11 |

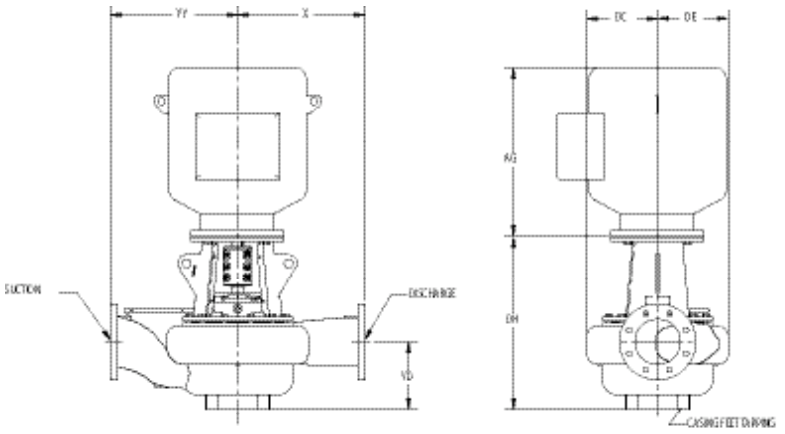
NOTES:
1. All dimensions in inches and (mm).
2. Dimensions may vary ± 1/4" (6).
3. Not for construction purposes unless certified.
4. N/A = not applicable.
5. Conduit box is shown in approximate location. Dimensions are not specified as they vary with each motor manufacturer.
6. Suction and discharge flanges - 125# ANSI Standard flat face.
7. Normally not tapped. Optionally available [4] 5/8" UNC taps matching 4"-125# flange drilling (7.5" bolt circle).
8. Tapped [4] 5/8" UNC taps matching 2"-125# flange (4.75" bolt circle).
9. Tapped [4] 5/8" UNC taps matching 3"-125# flange (6.0" bolt circle).
10. Tapped [4] 5/8" UNC taps matching 4"-125# flange (7.5" bolt circle).
11. Tapped [4] 3/4" UNC taps matching 6"-125# flange (9.5" bolt circle).

AURORA® Pentair Water

# AURORA MODEL 382A-SC PUMPS

## MOTOR FRAME

## 143 HP THRU 445 HP




| PUMP SIZE | | | | | | DH | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| DISCHARGE | SUCTION | CASE BORE | X | DC | DE | 143 HP THRU 286 HP | 324 HP THRU 445 HP | YY | VD | BASE OR SUPPORT TYPE |
| 1-1/2 | 1-1/2 | 9B | 9-1/2 (241) | 5-3/4 (146) | 6-1/8 (156) | 19-5/16 (491) | - | 9-1/2 (241) | 7-1/8 (181) | CAST IRON BASE |
| 2 | 2 | 7 | 8 (203) | 4-1/2 (114) | 5-1/8 (130) | 21-1/4 (540) | - | 8 (203) | 9 (229) | 2" PIPE FLANGE |
| 2 | 2 | 9A, B | 9-1/2 (241) | 5-7/8 (149) | 6-3/8 (162) | 19-5/16 (491) | - | 9-1/2 (241) | 7-1/8 (181) | CAST IRON BASE |
| 2 | 2 | 9C | 9-1/2 (241) | 5-7/8 (149) | 6-3/8 (162) | 21 (533) | 24-3/4 (629) | 9-1/2 (241) | 9-1/4 (235) | 2" PIPE FLANGE |
| 2 | 2 | 12 | 12 (305) | 7-5/8 (194) | 8 (203) | 21-5/16 (541) | 23-1/16 (586) | 12 (305) | 7-1/8 (181) | CAST IRON BASE |
| 2-1/2 | 2-1/2 | 7 | 9 (229) | 4-3/4 (121) | 5-1/2 (140) | 22 (559) | 22 (559) | 9 (229) | 9-5/8 (244) | 3" PIPE FLANGE |
| 2-1/2 | 2-1/2 | 9 | 10 (254) | 5-7/8 (149) | 6-5/8 (168) | 21-15/16 (557) | 25-11/16 (652) | 10 (254) | 9-5/8 (244) | 3" PIPE FLANGE |
| 3 | 3 | 7A, B | 9-1/2 (241) | 5-3/16 (132) | 6-1/8 (156) | 23-1/16 (586) | 23-1/16 (586) | 9-1/2 (241) | 10-1/4 (260) | 3" PIPE FLANGE |
| 3 | 3 | 9A | 11 (279) | 6 (152) | 6-3/4 (171) | 22-13/16 (579) | 26-9/16 (675) | 11 (279) | 10-1/4 (260) | 3" PIPE FLANGE |
| 3 | 3 | 9B | 11 (279) | 6-1/4 (159) | 7-1/8 (181) | 20-13/16 (529) | 24-9/16 (624) | 11 (279) | 8-1/8 (206) | CAST IRON BASE |
| 3 | 4 | 9 | 11 (279) | 5-3/4 (146) | 6-1/2 (165) | 22-5/16 (567) | 26-1/16 (662) | 11 (279) | 9-7/8 (251) | 3" PIPE FLANGE |
| 3 | 3 | 12 | 14 (356) | 7-11/16 (195) | 8-1/4 (210) | 22-11/16 (576) | 24-7/16 (621) | 12 (305) | 8-1/8 (206) | CAST IRON BASE |
| 4 | 4 | 7A, B | 11 (279) | 5-9/16 (141) | 7-5/16 (186) | 24-3/16 (614) | 24-3/16 (614) | 11 (279) | 11-1/4 (286) | 3" PIPE FLANGE |
| 4 | 4 | 9A, B | 11 (279) | 6-3/16 (157) | 7-5/16 (186) | 21-11/16 (576) | 25-7/16 (646) | 11 (279) | 9-1/8 (232) | CAST IRON BASE |

**HP DIMENSION TABLE**

| FRAME | P | AG |
|---|---|---|
| 143 | 8 (203) | 11 (279) |
| 145 | 8 (203) | 12 (305) |
| 182 | 10 (254) | 14 (356) |
| 184 | 10 (254) | 15 (381) |
| 213 | 11 (279) | 16 (406) |
| 215 | 11 (279) | 17 (432) |
| 254 | 13 (330) | 20 (508) |
| 256 | 13 (330) | 21 (534) |
| 284 | 16 (406) | 22 (559) |
| 286 | 16 (406) | 23 (584) |
| 324 | 18 (457) | 25 (635) |
| 326 | 18 (457) | 26 (660) |
| 364 | 21 (534) | 25 (635) |
| 365 | 21 (534) | 25 (635) |
| 404 | 22 (559) | 28 (711) |
| 405 | 22 (559) | 28 (711) |
| 444 | 24 (610) | 32 (813) |
| 445 | 24 (610) | 32 (813) |

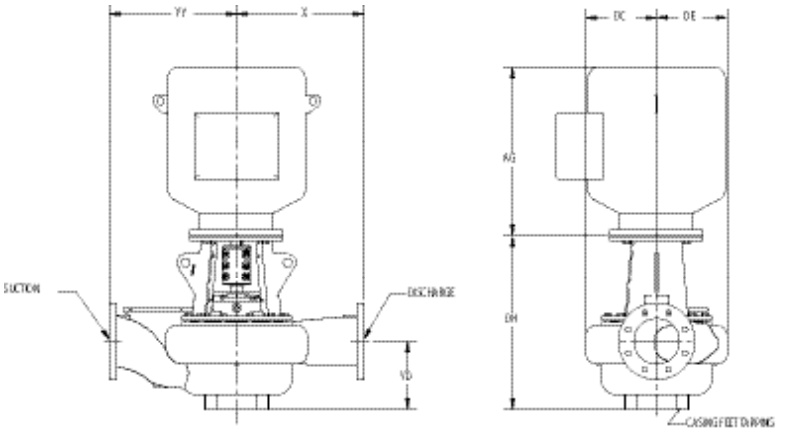
NOTES:
1. All dimensions in inches and (mm).
2. Dimensions may vary ± 1/4" (6).
3. Not for construction purposes unless certified.
4. N/A = not applicable.
5. Conduit box is shown in approximate location. Dimensions are not specified as they vary with each motor manufacturer.
6. Suction and discharge flanges - 125# ANSI Standard flat face.

# AURORA MODEL 382A-SC PUMPS

## MOTOR FRAME
## 143 HP THRU 445 HP

**HP DIMENSION TABLE**

| FRAME | P | AG |
|---|---|---|
| 143 | 8 (203) | 11 (279) |
| 145 | 8 (203) | 12 (305) |
| 182 | 10 (254) | 14 (356) |
| 184 | 10 (254) | 15 (381) |
| 213 | 11 (279) | 16 (406) |
| 215 | 11 (279) | 17 (432) |
| 254 | 13 (330) | 20 (508) |
| 256 | 13 (330) | 21 (534) |
| 284 | 16 (406) | 22 (559) |
| 286 | 16 (406) | 23 (584) |
| 324 | 18 (457) | 25 (635) |
| 326 | 18 (457) | 26 (660) |
| 364 | 21 (534) | 25 (635) |
| 365 | 21 (534) | 25 (635) |
| 404 | 22 (559) | 28 (711) |
| 405 | 22 (559) | 28 (711) |
| 444 | 24 (610) | 32 (813) |
| 445 | 24 (610) | 32 (813) |




| PUMP SIZE | | | | | | DH | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| DISCHARGE | SUCTION | CASE BORE | X | DC | DE | 143 HP THRU 286 HP | 324 HP THRU 445 HP | YY | VD | CASING FEET TAPPING |
| 4 | 5 | 9 | 11 (279) | 6 (152) | 7-1/8 (181) | 23-9/16 (598) | 27-5/16 (694) | 11 (279) | 11 (279) | 3" PIPE FLANGE |
| 4 | 4 | 11 | 13 (330) | 7-1/8 (181) | 8-1/4 (210) | 27-5/16 (694) | 29-1/16 (738) | 13 (330) | 12-5/8 (321) | 4" PIPE FLANGE |
| 4 | 4 | 12 | 13 (330) | 7-7/8 (200) | 8-3/4 (222) | 26-9/16 (675) | 28-5/16 (719) | 13 (330) | 12 (305) | 4" PIPE FLANGE |
| 5 | 5 | 9 | 14 (356) | 7-1/8 (181) | 8-1/2 (216) | 25-7/16 (646) | 29-3/16 (741) | 14 (356) | 12-5/8 (321) | 4" PIPE FLANGE |
| 5 | 5 | 11 | 14 (3560 | 7-3/8 (187) | 8-7/8 (225) | 28-1/2 (724) | 30-1/4 (768) | 14 (356) | 13-5/8 (346) | 4" PIPE FLANGE |
| 5 | 5 | 12 | 15 (381) | 8-1/4 (210) | 9-1/2 (241) | 27-13/16 (706) | 29-9/16 (751) | 15 (381) | 13 (330) | 4" PIPE FLANGE |
| 6 | 6 | 9 | 15 (381) | 7 (178) | 9 (229) | 25-15/16 (659) | 29-11/16 (754) | 15 (381) | 13 (330) | 4" PIPE FLANGE |
| 6 | 6 | 11 | 15 (381) | 8 (203) | 10 (254) | 29-1/2 (749) | 31-1/4 (794) | 15 (381) | 14-1/4 (362) | 4" PIPE FLANGE |
| 6 | 6 | 12 | 15 (381) | 8-3/8 (213) | 10 (254) | 28-13/16 (732) | 30-9/16 (776) | 15 (381) | 13-3/4 (349) | 4" PIPE FLANGE |
| 8 | 8 | 11 | 18 (457) | 8-3/4 (222) | 10-7/8 (276) | 30-1/8 (765) | 31-7/8 (810) | 18 (457) | 14-5/8 (371) | 4" PIPE FLANGE |
| 8 | 8 | 12 | 18 (457) | 8-3/4 (222) | 10-7/8 (276) | 29-15/16 (760) | 31-11/16 (805) | 18 (457) | 14-5/8 (371) | 4" PIPE FLANGE |
| 8 | 8 | 15 | 22-1/2 (572) | 10.34 (263) | 12.91 (328) | 37-1/8 (943) | 37-1/8 (943) | 22-1/2 (572) | 18-1/8 (460) | 6" PIPE FLANGE |
| 10 | 10 | 15 | 25 (635) | 11 (279) | 14.38 (365) | 38-1/2 (978) | 38-1/2 (978) | 25 (635) | 19-9/16 (497) | 6" PIPE FLANGE |

NOTES:
1. All dimensions in inches and (mm).
2. Dimensions may vary ± 1/4" (6).
3. Not for construction purposes unless certified.
4. N/A = not applicable.
5. Conduit box is shown in approximate location. Dimensions are not specified as they vary with each motor manufacturer.
6. Suction and discharge flanges - 125# ANSI Standard flat face.

AURORA®
Pentair Water

AURORA PUMP
A member of PENTAIR PUMP GROUP

# INSTRUCTION MANUAL
## REPAIR
## MODELS 382

6

SERVICE

Your Aurora pump requires no maintenance other than periodic inspection and occasional cleaning. The intent of inspection is to prevent breakdown, thus obtaining optimum service life. The pump is lubricated by the liquid being pumped and therefore does not require periodic lubrication. The motor, however may require lubrication, in which case, the motor manufacturer's recommendation should be followed.

REPAIRS

The pump may be disassembled using the illustrations and text provided. Although complete disassembly is covered, it will seldom be necessary to completely disassemble your Aurora pump.

The illustrations accompanying the disassembly instructions show the pump at various stages of disassembly. The illustrations are intended to aid in the correct identification of the parts mentioned in the text.

Inspect removed parts at disassembly to determine their reusability. Cracked castings should never be reused. Gaskets should be replaced at reassembly simply as a matter of economy; they are much less expensive to replace routinely than to replace as the need occurs. In general it is economical to return to the manufacturer for repair only the motor and motor controller.

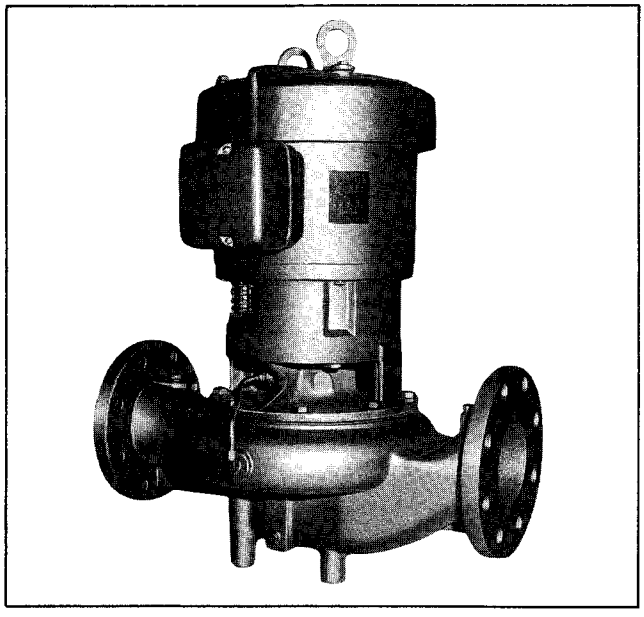
DISASSEMBLY

Disassemble only what is needed to make repairs or to accomplish inspection. Proceed to disassemble the pump as follows: (See Figure 2).

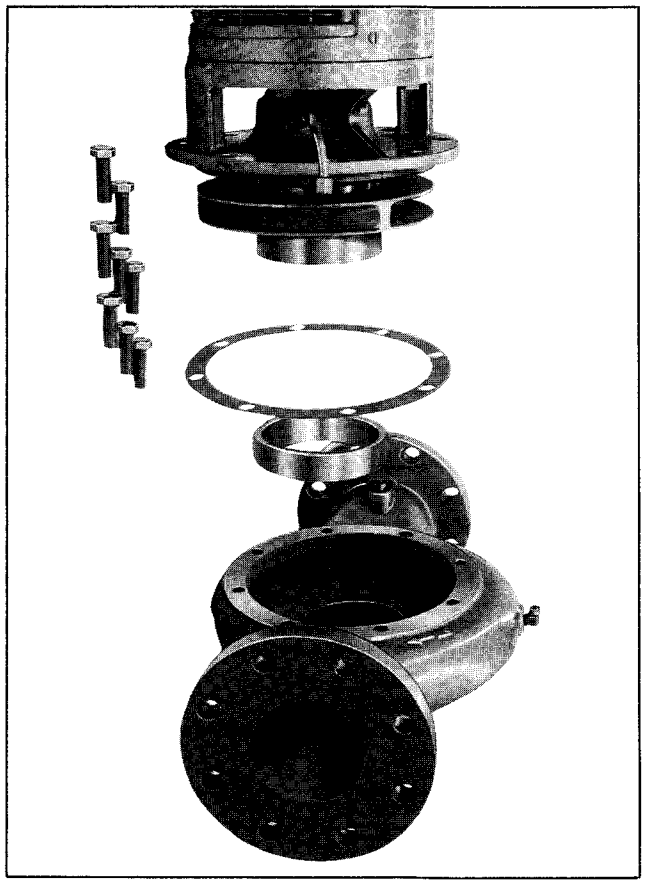
1. Break electrical connections to prevent any possibility of pump starting during disassembly.

2. Remove plugs (4) from casing (6) to drain pump.

3. Remove all relief, cooling, flushing, or drain lines from the pump, including compression connections (1 and 2) and tubing (3). Break suction and discharge connections only if it is desired to remove casing (6).



A. Assembled unit.



B. Casing, gasket and wearing ring removed.

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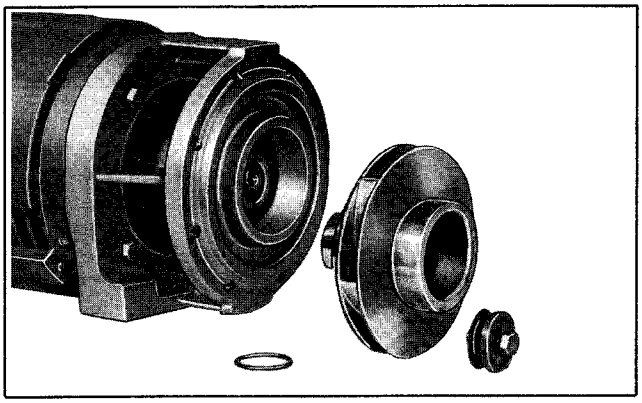
4. Remove capscrews (5) and lift pump assembly from casing (6). Remove gasket (8).

5. Unscrew impeller screw (9) and remove washer (9A) taking care not to damage gasket (9B).

6. Slide impeller (11) and impeller key (12) from shaft, again taking care not to damage gasket (10) located behind the impeller. Remove gasket (10).

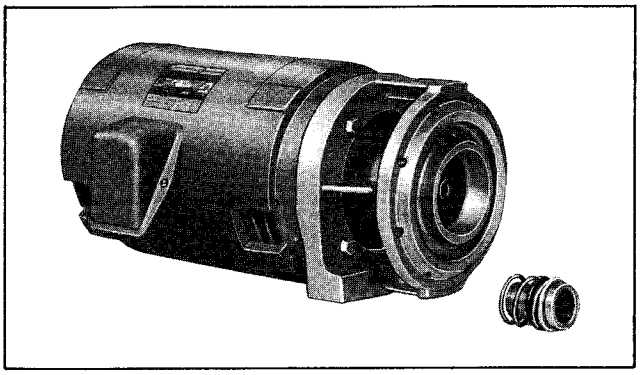
7. Wearing ring(s) (7 & 16) are pressed into their housings with an interference fit, and must be removed with a puller. New ring(s) should be used for reassembly, since it is likely that during removal this fit will be lost.

8. Impeller wear rings (optional - 14 and 15) are pressed on and must be cut off if replacement is necessary. If they are turned off on a lathe, take care not to cut into the impeller.



C. Impeller, O ring removed.

9. Slide sleeve (25) with rotating parts of mechanical seal (27) from the shaft. The sleeve should be carefully cleaned to remove any residue that may be remaining in the seal area. The rubber in the seal (27) may have become partially adhered to the sleeve. The sleeve must also be checked for abrasion or corrosion that can occur when fluid residue penetrates between the seal (27) and the sleeve (25). The sleeve under the seal may be polished lightly to a 32RMS finish before reassembly. Do not reuse a pitted sleeve. Pin (61) may be removed if necessary.

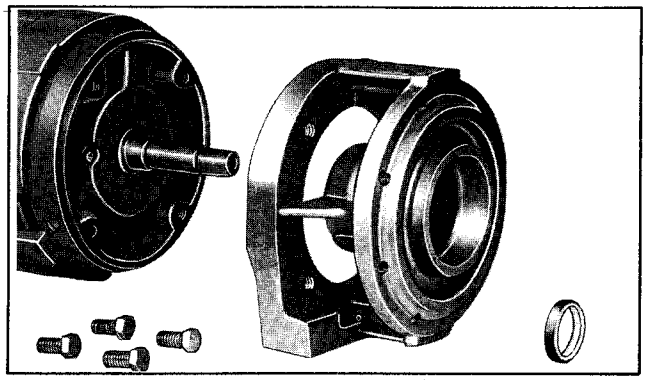


D. Mechanical seal removed.

**CAUTION**

The mechanical seal (see Figure 1) is a precision product and must be treated as such. During removal, great care must be taken to avoid dropping any part of the seal. Take particular care not to scratch the lapped faces on the washer or the sealing seat. Do not put a seal back into service until the sealing faces of the washer and seat have been lapped or replaced.

10. Unscrew capscrews (32) and remove bracket (35) from the motor.



E. Bracket, seal flexible cup and stationary seat removed.

11. The seal flexible cup and stationary seat should be pressed out of the bracket and the cavity cleaned of all residue. Make sure that the 1/32 inch radius in the seal seat cavity is not damaged during disassembly since a sharp edge can easily cut the flexible cup during reassembly.

12. Remove nameplate (34) and screws (33) only if replacement is needed.

## REASSEMBLY

Reassembly will generally be in reverse order of disassembly. If disassembly was not complete, use only those steps related to your particular repair program.

1. The mechanical seal (27) (see Figure 1) cannot be installed as an assembly. It is necessary to have the seal seat properly in place before the balance of parts can be added. Thoroughly inspect the seal cavity in the bracket for burrs or nicks which could damage the seat of the seal. Apply a film of soap paste or flax soap (do not use oil or grease) to the seal seat and install, taking care to seat it evenly and squarely.

NOTE

If it is not possible to insert seat with fingers, place cardboard protecting ring furnished with seal over lapped face of seat and press into place with a piece of tubing having end cut square. The tubing should be slightly larger than the diameter of the shaft. Remove cardboard after seat is firmly in place.

2. Position bracket (35) on the motor and secure with capscrews (32). Tighten screws evenly to assure proper alignment.

3. If nameplate (34) was removed, install and attach with screws(33).

4. Wipe the sealing faces of the seat and seal washer clean. Oil these surfaces with a clean light oil. Lightly oil the shaft sleeve (25). Slide the entire rotating assembly onto the sleeve. The shaft sleeve with the seal rotating assembly on it may now be replaced on the motor shaft. Spring tension will probably prevent the sleeve from remaining in position axially until the impeller is locked against it.

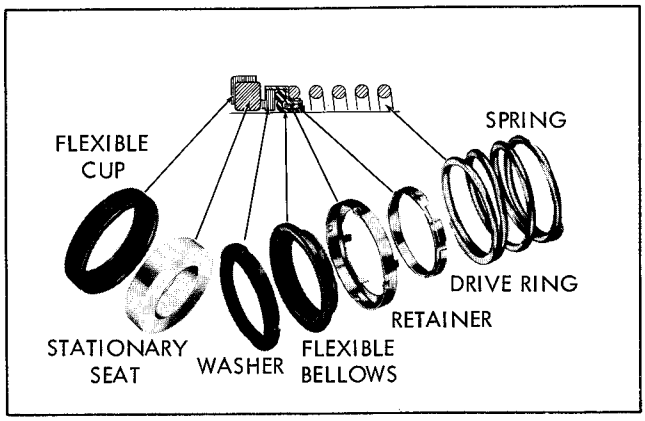



Figure 1. Mechanical Seal

5. Press wearing ring(s) (7 & 16) in casing (6) and bracket (35). Rings should not be hammered into place. Use a press, or clamp the parts in a bench vise, using wooden blocks to protect the rings. It may be necessary to pin or dowel the rings after assembly if the insert or casing has had rings replaced before, since each reassembly can stretch or tear metal and thereby loosen the fits. If the facilities are available, it is good practice to take a very light finish cut or to ream the inside diameter of the casing rings after pressing to restore roundness. When rings are pressed, they may get squeezed out of shape.

6. Place impeller wearing rings (optional - 14 and 15) on impeller (11), using the same care as for the case wearing rings. If the rings are to be trued on a lathe, do not clamp the impeller so tightly that it is permanently distorted.

7. Carefully place gasket (10) on motor end of impeller. Assemble key (12) and impeller (11) to motor shaft. Secure impeller with gasket (9B), washer (9A), and impeller screw (9).

8. Install the four pipe plugs (4) in the pump casing. Position the gasket (8) and casing (6) against the motor bracket and secure with screws (5).

10. Replace all relief, cooling, flushings, or drain lines from the pump including compression connections (1 and 2) and tubing (3). Connect discharge piping and suction piping if required, make sure to install gaskets on the flanged connections. Connect electricity to motor.

11. Read starting instructions before attempting to start pump.

## STARTING PUMP AFTER REASSEMBLY

Do not start pump until all air and vapor has been bled and until making sure that there is liquid in the pump to provide the necessary lubrication. Without the fluid around it, the seal may be ruined in a few seconds of operation. It is possible that the mechanical seal may drip during the first few minutes to one hour of operation.

**NOTE**

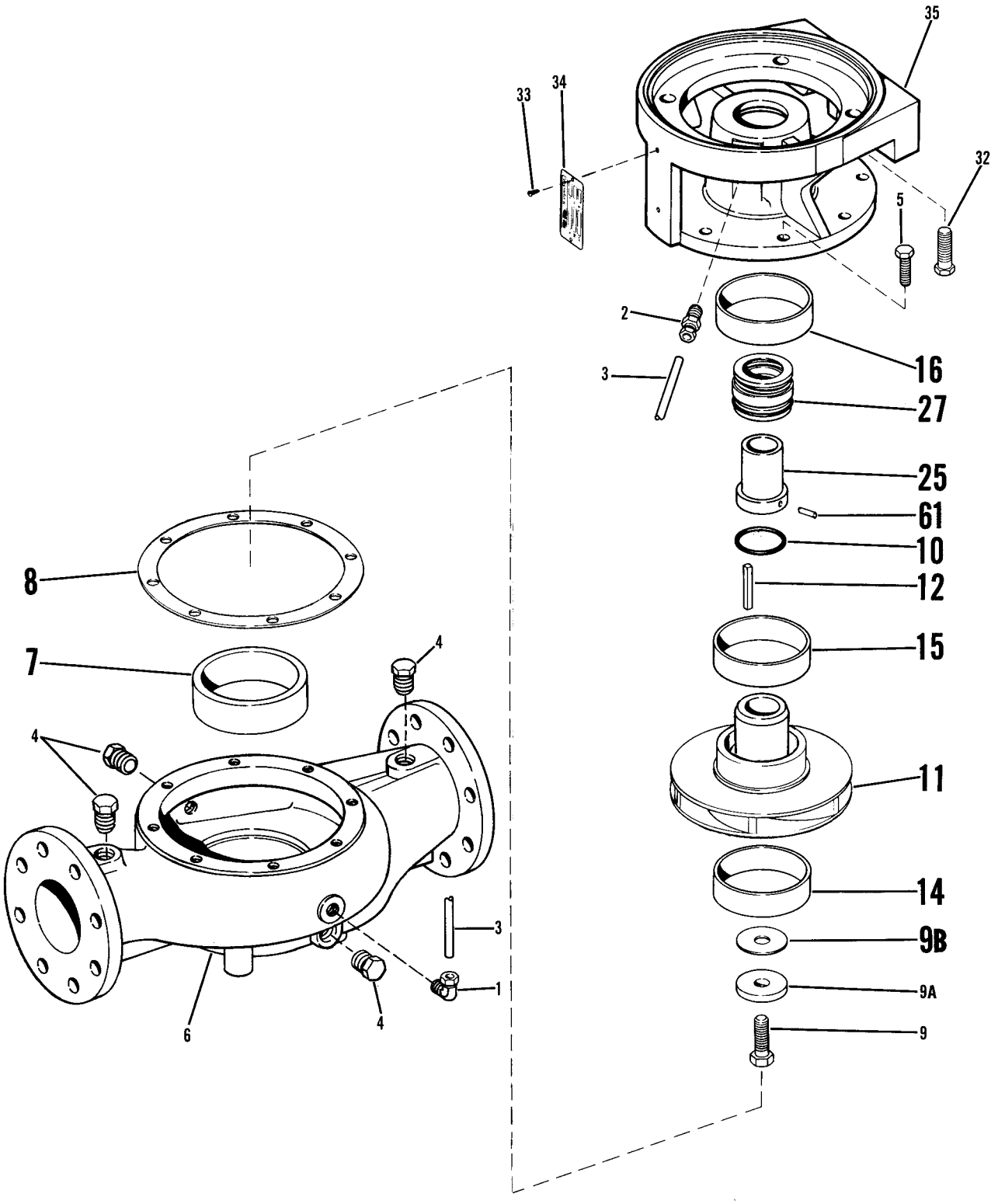
**WHEN ORDERING SPARE PARTS ALWAYS INCLUDE THE PUMP TYPE, SIZE, SERIAL NUMBER, AND THE PIECE NUMBER FROM THE THE EXPLODED VIEW IN THIS MANUAL.**

**ORDER ALL PARTS FROM YOUR LOCAL AUTHORIZED DISTRIBUTOR, FACTORY BRANCH SALES OFFICE OR THE FACTORY AT NORTH AURORA, ILLINOIS.**

MODELS 382 LIST OF PARTS

| | | | |
|---|---|---|---|
| 1. Elbow | 7. Wear Ring | 11. Impeller | 27. Seal |
| 2. Connector | 8. Gasket | 12. Impeller Key | 32. Capscrew |
| 3. Tubing | 9. Impeller Screw | 14. Wear Ring | 33. Screw |
| 4. Plug, Pipe | 9A. Washer | 15. Wear Ring | 34. Nameplate |
| 5. Capscrew | 9B. Gasket | 16. Wear Ring | 35. Bracket |
| 6. Casing | 10. Gasket | 25. Sleeve | 61. Pin |

NOTES:
1. BRONZE FITTED CONSTRUCTION WILL BE FURNISHED AS STANDARD UNLESS SPECIFIED.
2. REFER TO FACTORY FOR SPECIAL ALLOYS.
3. AURORA PUMP RESERVES THE RIGHT TO SUBSTITUTE MATERIALS WITHOUT NOTICE.
4. PIECE NUMBERS 14 AND 15 ARE NOT FURNISHED AS STANDARD. WHEN FURNISHED IMPELLER MUST BE MODIFIED.




BOLD FACE NUMBERS INDICATE RECOMMENDED SPARE PARTS.

Figure 2. Exploded View

SECTION **6** ITEM **383**
DATED **JULY 2001**
SUPERSEDES ITEMS 383
DATED SEPTEMBER 1994

# INSTRUCTION AND REPAIR MANUAL

## MODELS 383

**6**

**ATTENTION: SAFETY WARNINGS:**

Read and understand all warnings before installation or servicing pump.

**OPERATIONAL LIMITS**: *

| | |
|---|---|
| Maximum Operating Pressure: | 175 psi at Temperatures to 150°F (65.6°C) |
| Maximum Operating Temperature: | 225°F (107°C) |

* See ASTM A126/ANSI B16.1 for pressure/temperature ratings of flanges.

**ELECTRICAL SAFETY:**

**⚠ Warning:** Electrical Shock Hazard

All electrical connections are to be made by a qualified electrician in accordance with all codes and ordinances. Failure to follow these instructions could result in serious personal injury, death or property damage.

**⚠ Warning:** Electrical Overload Hazard

Insure all motors have properly sized overload protection. Failure to follow these instructions could result in serious personal injury, death or property damage.

**⚠ Warning:** Sudden Start-Up Hazard

Disconnect and lockout power source before servicing. Failure to follow these instructions could result in serious personal injury, death or property damage.

**HIGH PRESSURE SAFETY:**

**⚠ Warning:** High Pressure Hazard

The pump is rated at a maximum of 175 psi at 150°F. Do not exceed this pressure. Install properly sized pressure relief valves in system. Failure to follow these instructions could result in serious personal injury, death or property damage.

SERVICE

Your Aurora pump requires little maintenance other than periodic inspection, occasional cleaning, lubrication of bearings and gland adjustments to minimize packing leakage. The intent of inspection is to prevent breakdown, thus obtaining optimum service life. The liquid end of the pump is lubricated by the fluid being pumped and therefore does not require periodic lubrication. The motor, however may require lubrication, in which case, the motor manufacturer's recommendation should be followed.

REPAIRS

Before starting any work, insure the electrical power is locked out, the system pressure has been lowered to 0 psi and temperature of the unit is at a safe level.

The pump may be disassembled using the illustrations and text provided. Although complete disassembly is covered, it will seldom be necessary to completely disassemble your Aurora pump.

Inspect removed parts at disassembly to determine if they can be reused. Ball bearings that turn roughly or show wear should be replaced. Cracked casings should never be reused. Scored or worn pump shafts should be replaced. Gaskets should be replaced at reassembly simply as a matter of economy. They are much less expensive to replace routinely than to replace as the need arises. In general it is economical to return to the manufacturer for repair of only the motor and motor controller.

DISASSEMBLY

Disassemble only what is needed to make repairs or to accomplish inspection. Proceed to disassemble the pump as follows:

1. Break electrical connections to prevent any possibility of pump starting during disassembly.
2. Remove plug (74) from casing (6) to drain pump.
3. Remove all relief, cooling, flushing, or drain lines from the pump including compression connections (1 & 2), ball valve (75) and and tubing (3) if provided. Break suction and discharge connections only if it is desired to remove casing (6).

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4. Remove capscrews (5) and two opposite capscrews (41). Thread two capscrews (5) into taps that held capscrews (41) and turn alternately until cover (26) separates from casing. This procedure may vary slightly for some pump sizes. Lift pump assembly with motor from casing (6). Remove gasket (8).

**⚠ Warning:** Lifting Hazard

The motor and pump assembly may be very heavy. Use extreme caution and safe lifting equipment during the lifting procedure. Failure to follow these instructions could result in serious personal injury, death or property damage.

5. Unscrew impeller screw (9) and remove washer (9A), gasket (9B) and seal washer (9C).

6. Slide impeller (11) and impeller key (12) from the shaft, Remove "O" ring (10).

7. Wearing ring(s) (7 & 16) are pressed into their housings with an interference fit and must be removed with a puller if new rings are required.

8. Remove capscrews (65), gland clamps (22), and gland halves (23).

9. Unscrew remaining capscrews (41) and remove cover assembly (26).

10. Shaft sleeve (25) is slip fit on the shaft and should be easily removed unless the pump has been in service for a long time. In this case, it may be necessary to use a puller. Take care to prevent damaging the surface of the sleeve. Replace the sleeve if it is grooved from wear.

11. The packing (28) and lantern ring (29) (if used), must now be removed from the packing box of cover (26), and the cavity thoroughly cleaned to allow new packing to fit properly. The throat of cover (26) should be checked for excessive wear.

12. If necessary, unscrew capscrews (32) and remove bracket (35) from motor.

REASSEMBLY

Reassembly will generally be in reverse order of disassembly. If disassembly was not complete, use only those steps related to your particular repair program.

1. Replace wear ring(s) (7 & 16) in casing (6) and cover (26). Rings should not be hammered into place. Use a press or clamp the parts in a bench vice using wooden blocks to protect the rings. It may be necessary to pin or dowel the rings after assembly if the cover or casings has had rings replaced before, since each reassembly can stretch or tear metal and thereby loosen fits. If the facilities are available, it is good practice to take a very light finish cut or to ream the inside diameter of the casing rings after pressing to restore roundness. When rings are pressed, they may get squeezed out of shape.

2. If bracket (35) was removed, position the motor and secure with capscrews (32). Tighten screws evenly to assure proper alignment.
3. Place one ring of packing (28) into cover (26). On successive rings of packing, stagger the packing joints to prevent excessive leakage though the packing box. If lantern ring (29) is used, place a second ring of packing (28) into the cover before installing lantern ring.

**CAUTION**

There must be two (2) rings of packing in front of lantern ring (29) to assure proper alignment between the lantern ring and the sealing tube connection (1) in the cover (26). Install remaining packing rings (28). Each ring should be tapped firmly in place with a wood or metal bushing.

4. Slide the sleeve (25) through the packing making sure the pin end of the sleeve (25) is in the cover side opposite the gland halves (23).

5. Replace gland halves (23) and place gland clamps (22) over capscrews (65). Tighten capscrews (65) finger tight into cover assembly (26).

NOTE

The slots in gland halves (23) should be diagonal to pump horizontal center line.

6. The cover assembly (26) as a unit may be replaced onto the motor shaft. Align key groove to facilitate impeller reassembly, The cover is held to motor bracket (35) by capscrews (41). These should be installed and tightened at this time.

7. Carefully place "O" ring (10) on motor end of impeller (11). Assemble key (12) and impeller (11) to motor shaft. Secure impeller with gasket (9B), washer (9A), seal washer (9C), and impeller screw (9).

8. Install the pipe plug (74) in the pump casing (6). Position a new gasket (8) on casing (6). Lower bracket, cover, and motor assembly onto casing and secure with capscrews (50).

9. If provided, replace compression fittings (1 & 2), ball valve (75), and tubing (3).

10. Secure suction and discharge piping to the pump. Make sure to install gaskets on flanged connections.

11. Connect electricity to the motor.

12. Read carefully the sections of the manual titled INSTALLATION and OPERATION.

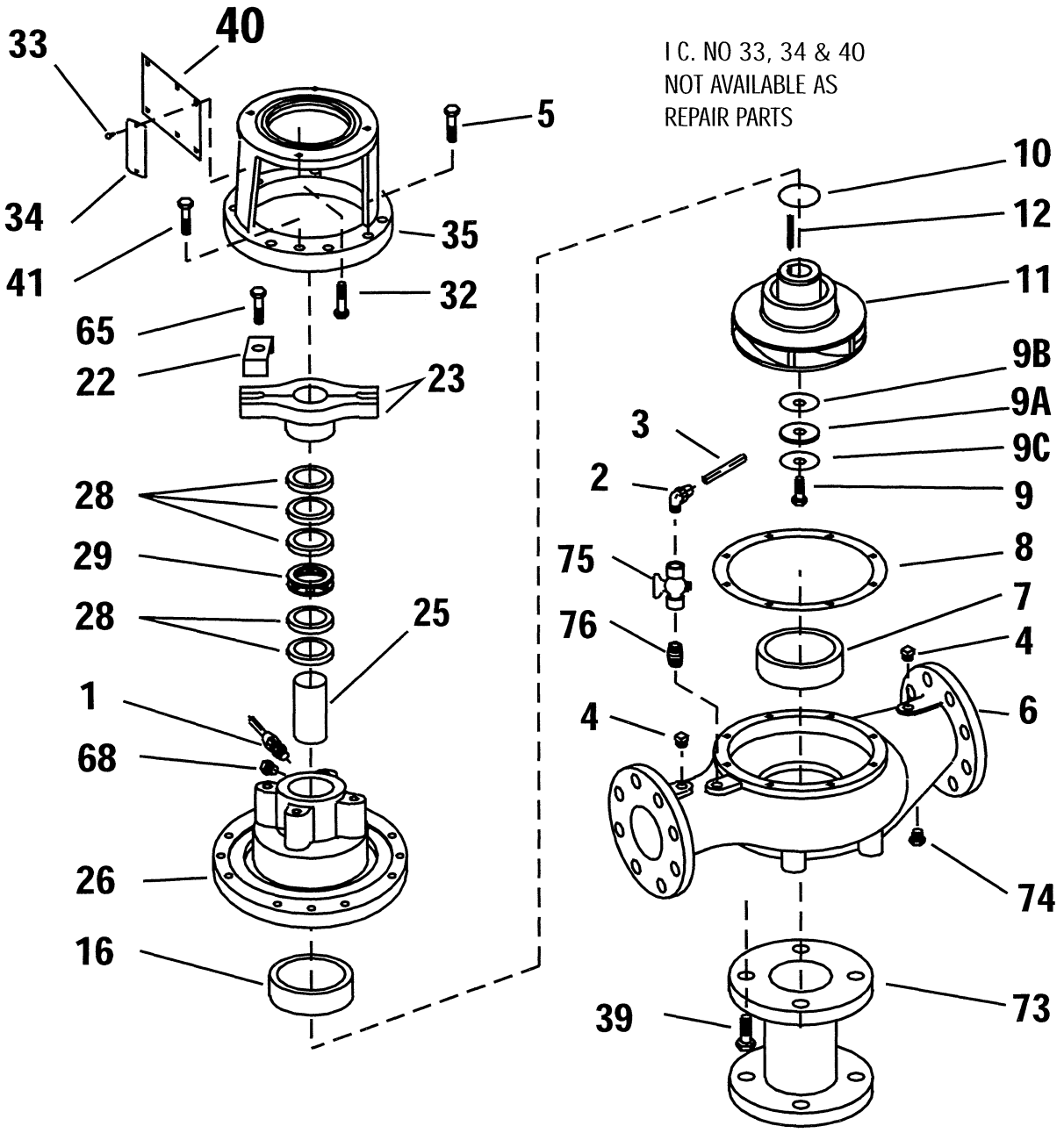
STARTING PUMP AFTER REASSEMBLY

Do not start pump until all air and vapor has been bled and until making sure that there is liquid in the pump to provide the necessary lubrication for the packing.

When the pump is returned to service, additional care must be given to packing box to insure a proper packing life. It is necessary to allow 60-120 drops leakage per minute through the packing for lubrication purposes. If the flow rate is other than this, the capscrews should be either loosened or tightened one quarter turn at a time to acquire the correct leakage (both capscrews must be turned equally to prevent cocking of the gland). It will take approximately ten minutes at any one gland setting before the leakage rate will stabilize. When in doubt, choose the greater leakage rate since overly tight packing will ruin not only the packing, but the sleeve as well.

MODEL 383 A LIST OF PARTS

| | | | |
|---|---|---|---|
| 1. Compression Fitting | 9A. Washer | 25. Sleeve | 40. Nameplate Holder |
| 2. Compression Elbow | 9B. Gasket | 26. Cover | 41. Capscrew |
| 3. Tubing | 9C. Seal Washer | 28. Packing | 65. Capscrew |
| 4. Pipe Plug | 10. Gasket | 29. Lantern Ring | 68. Pipe Plug |
| 5. Capscrew | 11. Impeller | 32. Capscrew | 73. Base |
| 6. Casing | 12. Impeller Key | 33. Screw | 74. Pipe Plug |
| 7. Wear Ring | 16. Wear Ring | 34. Nameplate | 75. Ball Valve |
| 8. Gasket | 22. Clamp | 35. Bracket | 76. Nipple |
| 9. Impeller Screw | 23. Gland | 39. Capscrew | |




**NOTE:**
When ordering spare parts always include the pump type, size, serial number and piece number from the exploded view in this manual.

**NOTE:**
Aurora Pump reserves the right to make revisions to its products and their specifications, and to this bulletin and related information without notice.

AURORA®
Pentair Pump Group

**Aurora Pumps**
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North Aurora, IL 60542
phone: 630-859-7000
fax: 630-859-7060

# INSTRUCTION AND REPAIR MANUAL
## SERIES 382A-SC

**6**

**APPLICATIONS:**

The 382A-SC Series is a superior commercial in-line pump based on the Aurora Pump 340/380 series which has been manufactured and field tested under the severest demands of high temperature condensate service and boiler feed applications for over 50 years. Pumping applications for the 382A-SC include: hot or chilled water circulation, pressure booster systems, and cooling towers for office buildings, hotels, hopitals, universities and warehouses.

**OPERATIONAL LIMITS**

| | |
|---|---|
| Maximum Operating Pressure: | 175 psi |
| Maximum Operating Temperature: | 225°F (107°C) |

**ATTENTION: SAFETY WARNINGS:**

Read and understand all warnings before installation or servicing pump.

**ELECTRICAL SAFETY:**

**⚠ Warning:** Electrical Shock Hazard

All electrical connections are to be made by a qualified electrician in accordance with all codes and ordinances. Failure to follow these instructions could result in serious personal injury, death or property damage.

**⚠ Warning:** Electrical Overload Hazard

Insure all motors have properly sized overload protection. Failure to follow these instructions could result in serious personal injury, death or property damage.

**⚠ Warning:** Sudden Start-Up Hazard

Disconnect and lockout power source before servicing. Failure to follow these instructions could result in serious personal injury, death or property damage.

**HIGH TEMPERATURE SAFETY:**

**⚠ Warning:** Hot Surface Hazard

If pumping hot water, insure guards or proper insulation is installed to protect against skin contact to hot piping or pump components. Failure to follow these instructions could result in serious personal injury, death or property damage.

**⚠ Warning:** Spraying Water Hazard

When servicing pump replace all gaskets and seals. Do not re-use old gaskets or seals. Failure to follow these instructions could result in serious personal injury, death or property damage.

**HIGH PRESSURE SAFETY:**

**⚠ Warning:** High Pressure Hazard

The pump is rated at a maximum of 175 psi (155 psi). Do not exceed this pressure. Install properly sized pressure relief valves in system. Failure to follow these instructions could result in serious personal injury, death or property damage.

**⚠ Warning:** Expansion Hazard

Water expands when heated. Install properly sized thermal expansion tanks and relief valves. Failure to follow these instructions could result in serious personal injury, death or property damage.

**INSTALLATOIN:**

The 382A-SC pump must be installed vertically. Install isolating valves on each side of pump so pump maintenance can be performed with out draining the system. Special mounting requirements may be required if the pump is to be mounted near a noise or vibration sensitive area.

A minimum length of straight pipe is required on the suction side of the pump. Five times the pipe diameter is sufficient to allow a smooth entry of water into the pump.

Suction and discharge piping must be in line. Do not use pump casing to force the alignment of the piping. Properly support the piping to provide a rigid support for the pump. Tighten pump flanges evenly to prevent flange cocking and liquid leakage. Do not reuse old gaskets.

**ELECTRICAL CONNECTIONS:**

**⚠ Warning:** Electrical Shock Hazard

All electrical connections are to be made by a qualified electrician in accordance with all codes and ordinances. Failure to follow these instructions could result in serious personal injury, death or property damage.

**⚠ Warning:** Electrical Overload Hazard

Insure all motors have properly sized overload protection. Failure to follow these instructions could result in serious personal injury, death or property damage.

**⚠ Warning:** Sudden Start-Up Hazard

Disconnect and lockout power source before servicing. Failure to follow these instructions could result in serious personal injury, death or property damage.

**START UP:**

The pump must be filled with water before start up or the mechanical seal will not be lubricated and will fail. Loosen vent plug on pump casing to insure all air is vented from casing and the casing is filled with water.

**Warning:** Hot Surface Hazard

If pumping hot water, insure guards or proper insulation is installed to protect against skin contact to hot piping or pump components. Failure to follow these instructions could result in serious personal injury, death or property damage.

**Warning:** Spraying Water Hazard

When servicing pump, replace all gaskets and seals. Do not re-use old gaskets or seals. Failure to follow these instructions could result in serious personal injury, death or property damage.

Avoid all situations where pipe stain may be transferred to the pump casing. Expansion fittings and pipe hangers located close to the pump may be required. Do not force the piping to match the pump suction and discharge flanges. Re-cut the piping to avoing this situation.

All electrical connections are to be completed by a qualified electrician. Insure properly sized overload protection is installed.

**OPERATING:**

Insure the system is filled with water and vented prior to pump start up. The pump rotation is clockwise when viewed from the back of the motor. Do not run the pump dry or the mechincal seal will be destroyed.

**MAINTENANCE AND SERVICE TO THE PUMP:**

The 382A-SC pump requires no regular service other then periodic inspection and ocasional cleaning. A periodic inspection must be performed looking for seal leaks indicating the mechanical seal is worn out and any unusual noise or vibration that will indicate other pump components require service/repair. The motor may require lubrication; the motor manufacturer's recommendation should be followed.

**REPAIRS:**

**READ AND UNDERSTAND ALL SAFETY WARNINGS AT THE BEGINNING OF THE MANUAL BEFORE BEGINNING INSTALLATION OR ANY REPAIR WORK.**

This repair manual is broken into two sections. The first section covers the replacement of the mechanical seal. The second section covers complete pump disassembly. Refer to the exploded pump diagram for item numbers.

**SECTION 1**

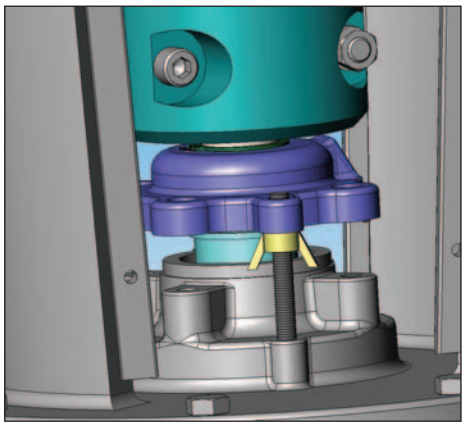
**Replacing the Mechanical Seal**

1. Insure the electrical power is locked out, the system pressure has been lowered and temperature of the unit is at a safe level.

2. Isolate the pump from the system by closing the valves that should be located on the suction and discharge side of the pump. Loosen one of the pipe plugs (#4) and drain the pump.

3. Remove the coupling guards (#17) by removing the four (per side) retaining bolts (#4). Loosen the feral nuts on the tubing connectors (#1) and remove the gland flushing tubing (#3).

4. Remove the four gland bolts (#55) and utilizing the two wing nuts (#52) jack the seal gland (#44) upward until the top surface of the seal gland is in firm contact with the bottom of the retaining ring (#41A). With the wing nuts finger tight against the gland the weight of the shaft (#40) and impeller (#11) can now be supported by the gland and the split coupling can be removed with out the shaft dropping.

5. 

6. Remove the six socket head coupling bolts (#48) along with the nuts (#50) and lock washer (#49). The two coupling halves (#45) can now be pulled away from the shaft.

7. Remove the two annular (round) keys (#46 & #47) as well as the two linear (square) keys (#53 & #54).

8. Carefully lower the shaft impeller assembly by backing off on the two gland supporting wing nuts until the face of the impeller rests inside the casing.

9. Remove the snap ring (#41A) from the shaft.

10. The gland (with the stationary seat of the mechanical seal pressed internally) can be removed through the gap present between the pump shaft and the motor shaft.

11. Pry the old mechanical seal rotating head (#27) up and off the pump shaft. Remove the stationary seat of the mechanical seal from the gland. Remove the O-Ring gasket (#43) from the groove on the bottom of the gland. Clean all surfaces, checking for nicks and sharp edges that may damage the elastomers on the mechanical seal or the gland.

**If the pump is to be fully disassebled stop at this point and proceed to Step 1 under the section titles "Complete Pump Disassebly"**

12. To replace the mechanical seal, lubricate the stationary seat bore in the gland with soapy water mixture and press in the seat insuring it is flat in the bore. Replace the gland o-ring, holding in the groove with a small amount of non-hardening silicon or grease.

13. Lubricate the pump shaft with a soapy water and first place the spring retainer over the shaft, followed by the spring and finally the rotating head of the seal.

14. Place the gland down on the shaft and insure the two jacking holes on the side of the gland are engages with threaded rod and wing nuts.

15. Replace the external retaining ring making sure it is in the grove of the shaft.

16. Using 1/2 of the split coupling as a guide, (the thin groove cut into the top of the coupling identifies the motor side of the coupling), utilize the wing nuts to raise the shaft (with impeller) upward to align the annular grooves on the coupling with the grooves on the shaft. Place one half of the motor annular key in the motor shaft groove. Place the linear motor key in the motor shaft. Place the linear pump key in the pump shaft and align the two linear keys so the coupling half fits both motor and pump shaft. Slide in the pump shaft annular key half (additional adjustment of the wing nuts may

be necessary as the key to groove fit is close). Place the second pump shaft and motor annular keys in their respective grooves and rotate the key 90 degrees so they stay in place. Place the other half of the split coupling onto the shafts. Replace the 6 socket head cap screws (3 sockets facing in on one side and 3 facing out on the other side requiring rotating the shaft 180 degrees to tighten the cap screws) and add lock washers and nuts. Adjust the socket head cap screws so the gap between the coupling halves is even. Tighten the socket head cap screws in a crosswise pattern to the torque listed in the table below.

| Split Coupling Bolt Tightening Torque | | |
|---|---|---|
| **Bolt Size** | **Hex Socket Size** | **Torque (ft-lbs)** |
| 3/8 inch | 5/16 | 35 |
| 1/2 inch | 3/8 | 90 |

17. Lower the gland by utilizing the wing nuts, replace the four gland bolts and tighten the gland down evenly. After the gland is tightened down, tighten the two wing nuts to the under side of the gland (holding them stationary and preventing them from vibrating).

18. Reinstall the flush tubing. Insure the coupling rotates freely with no dragging or binding. Replace the coupling guards and refer to the beginning of the manual for start up instructions.

**COMPLETE PUMP DISASSEMBLY:**

1. With the coupling, gland and mechanical seal removed, remove the bolts (#26) and nuts (#31) holding the motor to the bracket (#35). Pull the motor up and away utilizing suitable lifting equipment.

2. Remove the snap ring (#41B) from the shaft (#40).

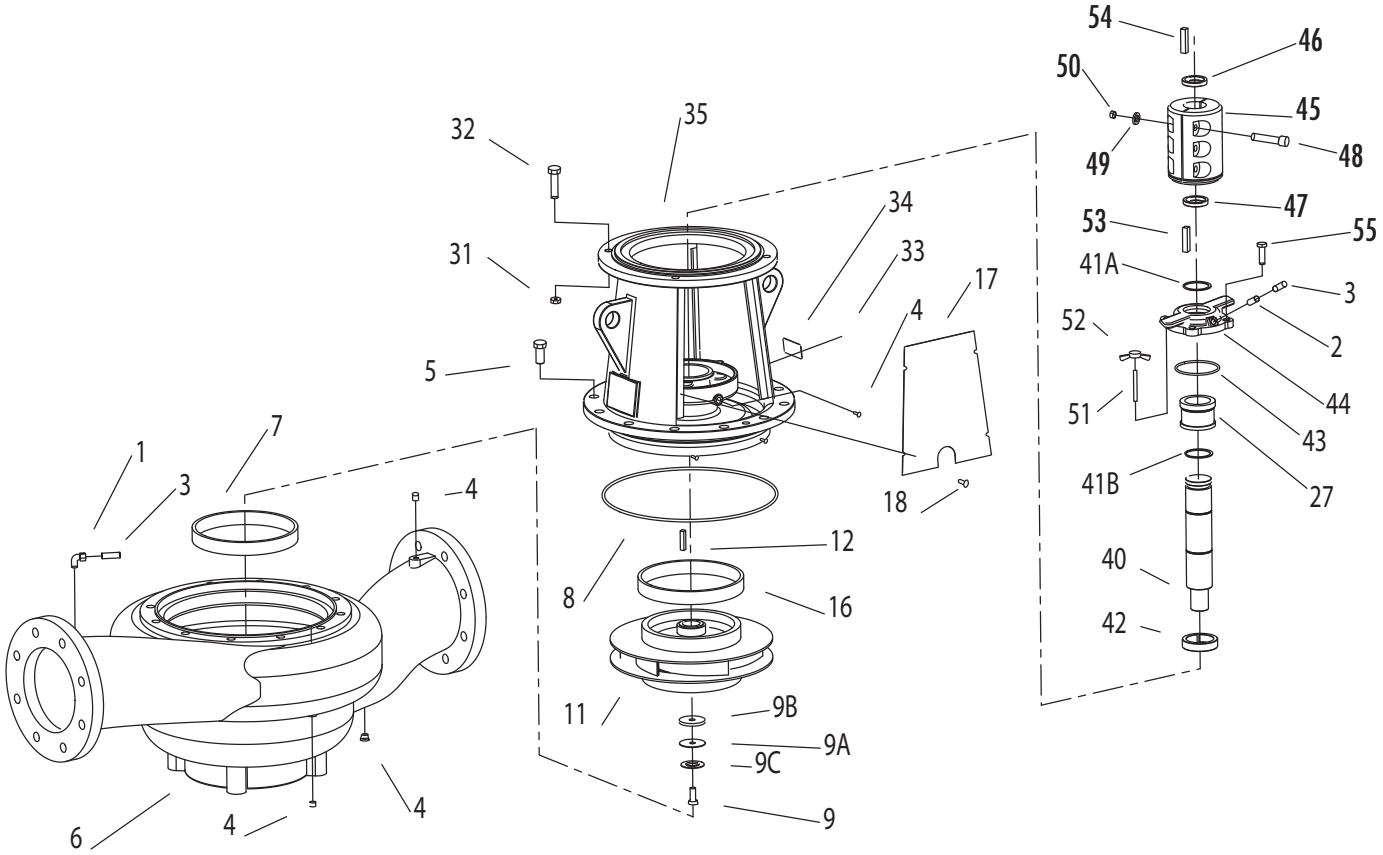
3. Remove the cap screws (#27) holding the bracket (#35) to the casing (#6). Utilizing suitable lifting equipment lift the bracket straight up and off the casing and over the shaft. Take care when lifting to insure a straight lift, the carbon bushing (#42) may be damaged by uneven lifting.

4. Remove the casing gasket (#8) from the casing and bracket.

5. Remove wear rings (#7, #16) from the casing and bracket.

6. Press out the carbon bushing (#42) from the bore inside the bracket (at the base of the packing box). During reassembly the new bushing must be pressed in evenly or it can crack.

7. Pump reassembly is performed in the reverse order.


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4

AP-SECTION 6 ITEM 382A-SC 12.05

AURORA®
Pentair Water

**NOTE:**
Aurora Pump reserves the right to make revisions to its products and their specifications, and to this bulletin and related information without notice.

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SECTION **2** ITEM **383**
DATED **JULY 2001**
SUPERSEDES ITEMS 383
DATED SEPTEMBER 1994

# INSTRUCTION AND INSTALLATION MANUAL

## MODEL 383

**2**

ATTENTION: SAFETY WARNINGS:

Model 383 pumps are furnished with packing and lantern ring when suction pressure is 30 PSIG or less and packing only when suction pressure is greater than 30 PSIG.

LOCATION

The pump should be installed in a clean, heated and well ventilated area that allows access for inspection, cleaning and proper maintenance. Sufficient space should be provided for installation and removal.

MOUNTING

Model 383 pumps have been designed with an assembled column base to support the pump and motor. The column base may be floor mounted or mounted to another base.

PIPING

Suction and discharge piping must not be smaller than the inlet and outlet piping sizes of the pump. Piping connections must be tight, particularly the suction, as air leakage can cause reduced capacity or loss of prime. Isolation valves should be provided in suction and discharge lines.

**CAUTION**

Check the pump for pipe strain. Forcing the pipe to align with the pump flanges or inadequate support of suction and discharge piping can result in binding of the rotating element. Failure to conform to these precautions can result in malfunction or damage to the pump and motor

**ELECTRICAL SAFETY:**

**⚠ Warning:** Electrical Shock Hazard

All electrical connections are to be made by a qualified electrician in accordance with all codes and ordinances. Failure to follow these instructions could result in serious personal injury, death or property damage.

**⚠ Warning:** Electrical Overload Hazard

Insure all motors have properly sized overload protection. Failure to follow these instructions could result in serious personal injury, death or property damage.

**⚠ Warning:** Sudden Start-Up Hazard

Disconnect and lockout power source before servicing. Failure to follow these instructions could result in serious personal injury, death or property damage.

**HIGH PRESSURE SAFETY:**

**⚠ Warning:** High Pressure Hazard

The pump is rated at a maximum of 175 psi at 150°F. Do not exceed this pressure. Install properly sized pressure relief valves in system. Failure to follow these instructions could result in serious personal injury, death or property damage.

WIRING AND CONTROLS

Power supply connection to controls and motors must conform with national and local codes. Line voltage and wire capacity must agree with the ratings of the motor nameplate.

IMPELLER ROTATION

Prime pump before starting the motor or damage can occur to close clearance rotating parts. Bleed all air from the pump casing and suction pipe by opening the pipe plug located on the discharge nozzle. If accessible, rotate shaft slowly to evacuate air trapped in the impeller passages.

Jog the motor to check that the motor shaft rotates clockwise, as indicated by the arrow on the pump casing. If rotation is counter clockwise correct by changing two wire leads.

OPERATION

Before starting the pump:

1. Check that the current supply agrees with the voltage and frequency of the motor nameplate.
2. Check that the motor is wired for correct voltage.
3. Check that thermal overload relays are correct size and set for operation.
4. Check that suction line valve is open and discharge line valve closed.

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After starting the pump:

Check that the pump is operating smoothly and is not rubbing, which could be caused by pipe strain.

The pump is provided with a circulation relief valve that prevents overheating when the pump is operating at reduced capacity. The suction valve should be full open and not be used for flow regulation. The discharge valve is used for flow regulation. Open the discharge valve slowly and check that pipe connections are sealed.

TROUBLE SHOOTING

If motor fails to start:

1. Wrong voltage, wiring hook up incorrect. Switches not set.
2. Rotating element may be bound due to clog in impeller pipe strain.
3. Tripped thermal overload relay or blown fuses.
4. Starter contacts may be shorted or corroded. Terminal connections may be broken at some point in the circuit.

LOST PRIME

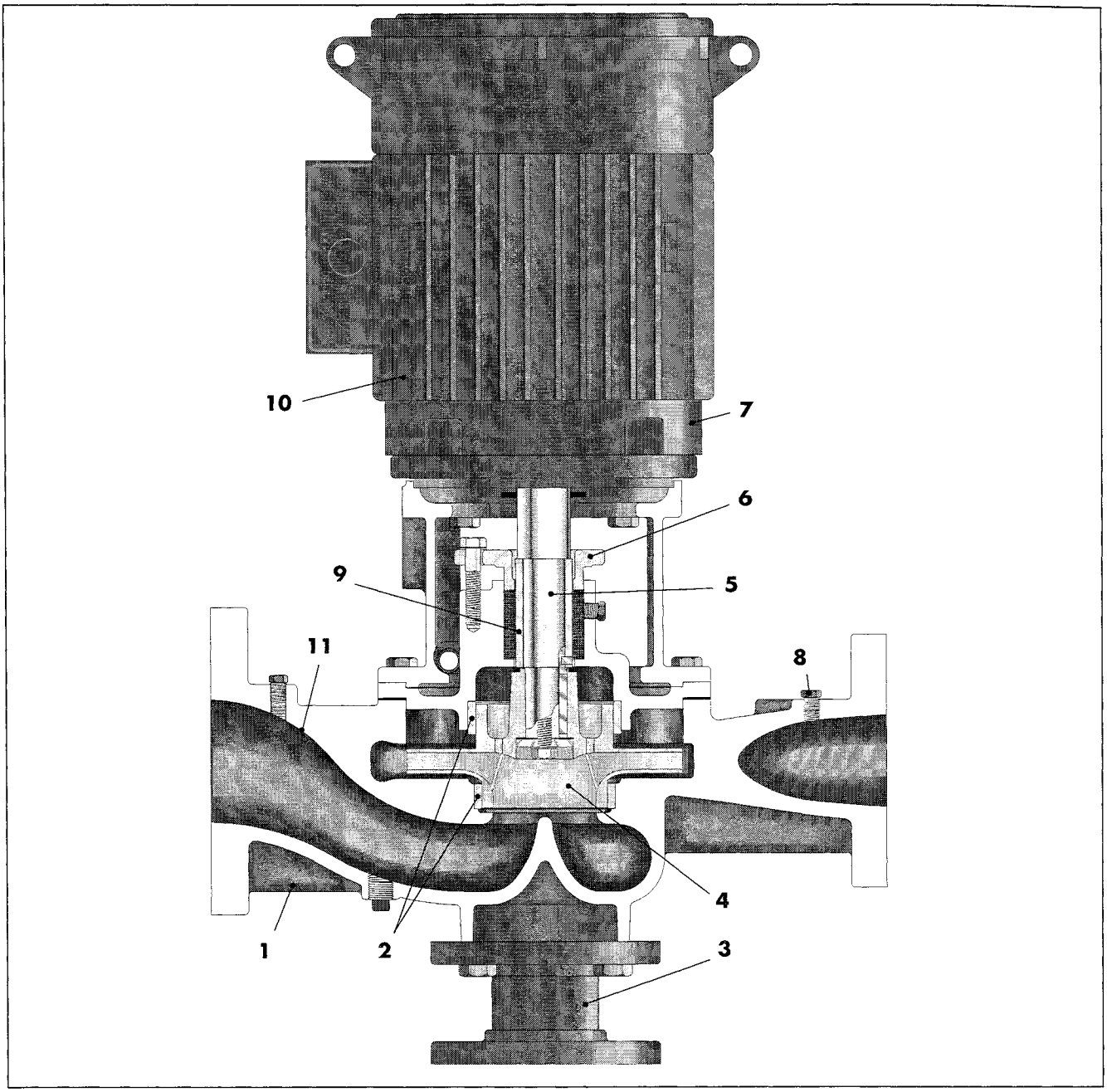
1. Suction pressure too low.
2. Leaks in suction piping connections.
3. High level of air entrainment.

LOW OR NO WATER FLOW

1. Speed may be low; check for low voltage.
2. The impeller may be clogged or damaged or suction and discharge lines partially clogged.
3. Valves may not be full open.
4. Pump not primed.
5. Suction pressure may be low.
6. Required discharge pressure may be greater than originally anticipated

NOISE OR VIBRATION

1. Partially clogged impeller resulting in imbalance.
2. Cavitation, net positive suction head available is too low.
3. Pump fully primed.
4. Foundation improperly secured or not strong enough.
5. Piping not anchored securely.
6. Rotating element binding due to damaged shaft worn bearings or pipe strain.




1 BACK PULL-OUT CASING with inline suction and discharge.

2 CASE WEARING RING prevents wear on casing and is easily and inexpensively replaced.

3 SUPPORT simplifies mounting. The pump can be fastened to the floor, a base or foundation.

4 DYNAMICALLY BALANCED IMPELLER is keyed to the shaft and secured by a capscrew and washer. Vacuum casting and quality controlled manufacturing process assures consistent high performance. Enclosed design provides high efficiency and low wear for long service life.

5 CARBON STEEL SHAFT is designed for minimum deflection at maximum load.

6 TWO PIECE BRONZE PACKING GLAND provides easy packing maintenance.

7 FACTORY PERFORMANCE TEST guarantees performance at specified pump operating conditions.

8 FLUSH LINE with valve (when used) from discharge provides easy water seal adjustment to lantern ring.

9 BRONZE SHAFT SLEEVE extends full length of stuffing box to protect motor shaft. The shaft sleeve is slip fit over the shaft and then is keylocked. Shaft sleeve and impeller screw are sealed by "O-ring" gaskets to eliminate corrosion of the shaft by the pumped liquid.

10 STANDARD MOTOR approved for 383 Series pump service by NEMA and the HYDRAULIC INSTITUTE provides low noise level pump operation.

11 VOLUTE TYPE SUCTION inlet pre-rotates suction liquid.

AP-SECTION 2 ITEM 383

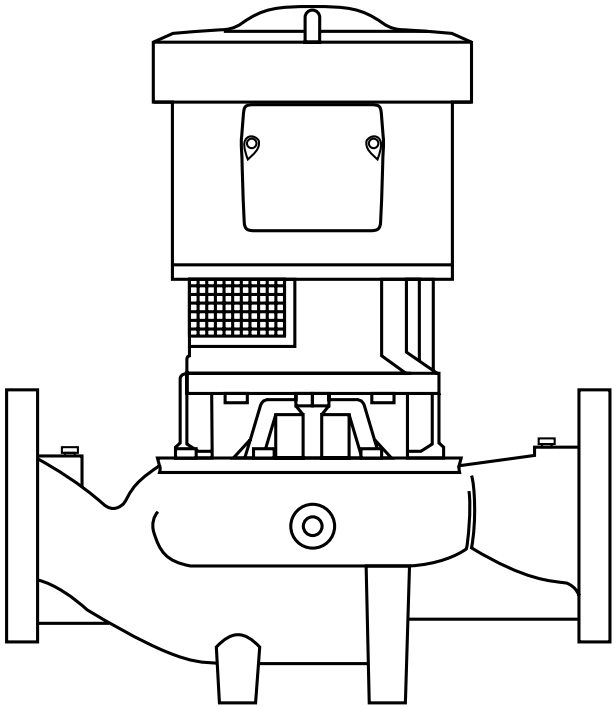
AURORA®
Pentair Pump Group

**NOTE:**
Aurora Pump reserves the right to make revisions to its products and their specifications, and to this bulletin and related information without notice.

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North Aurora, IL 60542
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SUPERSEDES 380P PAGE 1
DATED NOVEMBER 1999

# 380 SERIES
# REPAIR PARTS INDEX



READ AND UNDERSTAND THE PUMP AND MOTOR INSTRUCTIONS BEFORE ATTEMPTING TO INSTALL, DISASSEMBLE OR REPAIR THE PUMP

AURORA®
Pentair Pump Group

# 380 SERIES
# MODEL 382A

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| PUMP MODEL | DESCRIPTION | PAGE |
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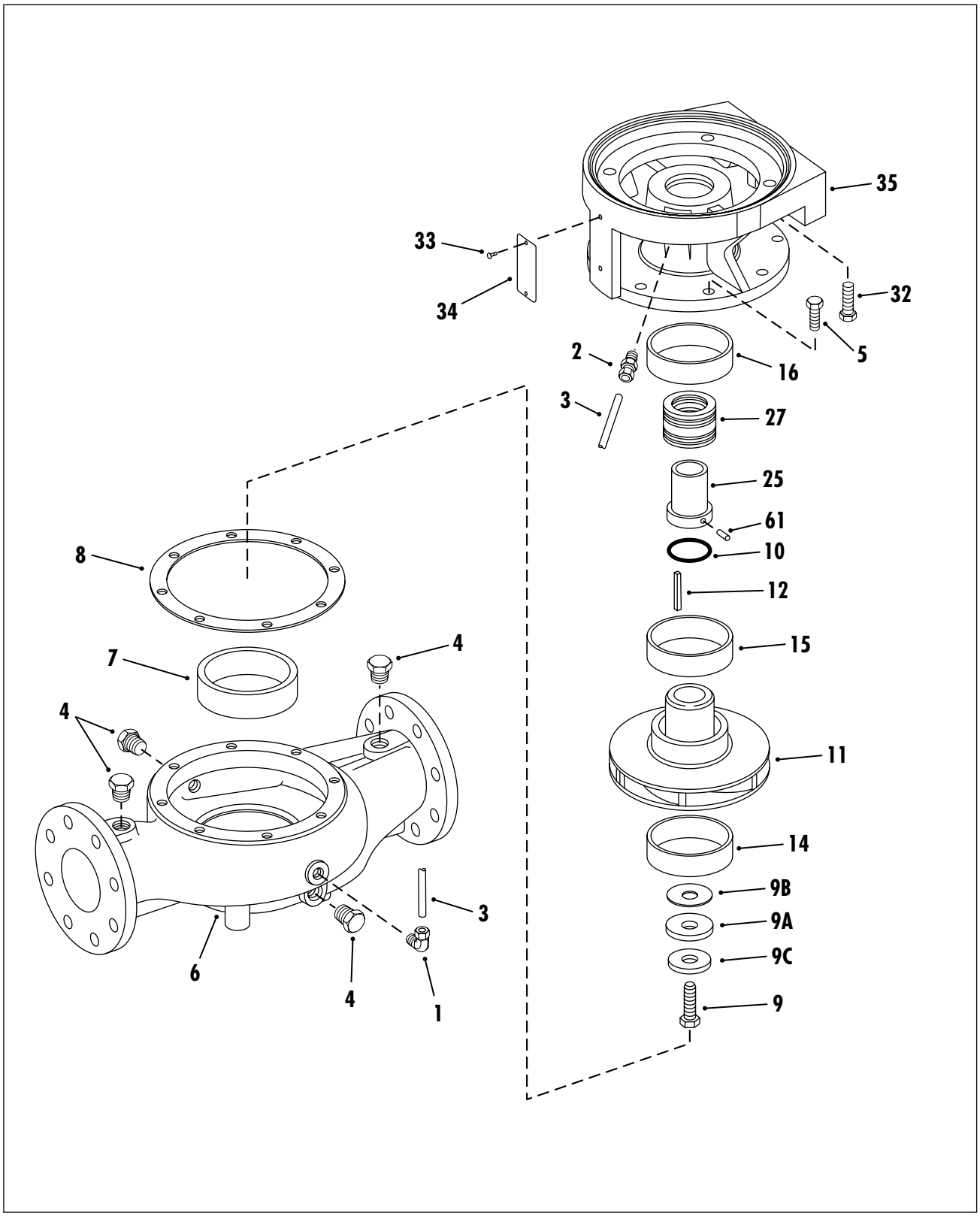

NOTES: MODEL 382A PUMPS.

FOR PUMPS 12" & SMALLER
PART NO. 9, 9A, 9B, 9C, 10, 11, 12, 25 AND 27 ARE LISTED WITH A LARGE LETTER "S" OR "L".. THESE PUMPS ARE BUILT ON TWO SHAFT SIZES, "S" INDICATING SMALL AND "L" FOR LARGE.

TO DETERMINE WHEN TO USE "S" OR "L" PARTS, IN ADDITION TO THE PUMP SIZE AND SERIAL NUMBER, IT IS ALSO NECESSARY TO HAVE THE MOTOR FRAME NUMBER.

MOTOR FRAME 215 JM AND SMALLER USE "S" PARTS.
MOTOR FRAME 254 JM TO 326JM USE "L" PARTS.

# 380 SERIES
# MODEL 382A
# PIECE NUMBERS



# 380 SERIES
# MODEL 382A
# 1-1/2 x 1-1/2 x 7 – 4 x 7A&B
# PARTS LIST

| PC. NO. | DESCRIPTION | QTY | PART NO. | MATERIAL B.F. | A.B. | A.I. | S.S. |
|---|---|---|---|---|---|---|---|
| 1 | COMP. ELBOW | 1 | 868-3660 | 190 | | 087 | |
| 2 | COMP. CONNECTOR | 1 | 868-3359 | 190 | | 087 | |
| 3 | TUBING | 1 | 872-0124 | 175 | | 087 | |
| 4 | PIPE PLUG | 5 | 600-0002 | 087 | | 087 | |
| 5 | CAPSCREW | 8 | 168-0381 | 082 | | 082 | |
| 6 | CASING 1-1/2x7 | 1 | 180-2562 | 010 | | 010 | |
| | 2x7 | 1 | 180-2573 | 010 | | 010 | |
| | 2-1/2x7 | 1 | 180-2574 | 010 | | 010 | |
| | 3x7A&7B | 1 | 180-2560 | 010 | | 010 | |
| | 4x7A&7B | 1 | 180-2561 | 010 | | 010 | |
| 7 | WEAR 1-1/2x7 | 1 | 676-1150 | 208 | | 010 | |
| | RING 2x7 | 1 | 676-1151 | 208 | | 010 | |
| | 2-1/2x7 | 1 | 676-1152 | 208 | | 010 | |
| | 3x7A&7B | 1 | 676-1152 | 208 | | 010 | |
| | 4x7A&7B | 1 | 676-1154 | 208 | | 010 | |
| 8 | GASKET | 1 | 364-1014 | 603 | | 603 | |
| 9 | IMPELLER SCREW S | 1 | 168-0382 | 113 | | 113 | |
| | L | 1 | 168-0490 | 113 | | 113 | |
| 9A | WASHER S | 1 | 908-0603 | 087 | | 087 | |
| | L | 1 | 908-0604 | 087 | | 087 | |
| 9B | GASKET S | 1 | 364-2034 | 603 | | 603 | |
| | L | 1 | 364-2035 | 603 | | 603 | |
| 9C | CAPSCREW SEAL S | 1 | 908-1290 | 999 | | 999 | |
| | L | 1 | 908-1292 | 999 | | 999 | |
| 10 | O-RING S | 1 | 364-0409 | 457 | | 457 | |
| | L | 1 | 364-0414 | 457 | | 457 | |
| 11 | IMP. 1-1/2x7 S | 1 | 443-0407 | 225 | | 010 | |
| | 2x7 | 1 | 443-0407 | 225 | | 010 | |
| | 2-1/2x7 | 1 | 443-0411 | 225 | | 010 | |
| | 3x7A | 1 | 443-2034 | 225 | | 010 | |
| | 3x7B | 1 | 443-0417 | 225 | | 010 | |
| | 4x7A | 1 | 443-0425 | 225 | | 010 | |
| | 4x7B | 1 | 443-0423 | 225 | | 010 | |
| | IMP. 2-1/2 x 7 L | 1 | 443-0413 | 225 | | 010 | |
| | 3x7A | 1 | 443-2035 | 225 | | 010 | |
| | 3x7B | 1 | 443-0419 | 225 | | 010 | |
| | 4x7A | 1 | 443-0427 | 225 | | 010 | |
| | 4x7B | 1 | 443-0472 | 225 | | 010 | |

| PC. NO. | DESCRIPTION | QTY | PART NO. | MATERIAL B.F. | A.B. | A.I. | S.S. |
|---|---|---|---|---|---|---|---|
| 11 | IMPELLER 1-1/2x7 S | 1 | 443-0408 | 225 | | 010 | |
| | (MACH FOR 2x7 | 1 | 443-0410 | 225 | | 010 | |
| | OPT RINGS 2-1/2x7 | 1 | 443-0412 | 225 | | 010 | |
| | #14 & 15) 3x7A | 1 | 443-1775 | 225 | | 010 | |
| | 3x7B | 1 | 443-0418 | 225 | | 010 | |
| | 4x7A | 1 | 443-0426 | 225 | | 010 | |
| | 4x7B | 1 | 443-0424 | 225 | | 010 | |
| | IMPELLER 2-1/2x7 L | 1 | 443-0414 | 225 | | 010 | |
| | (MACH FOR 3x7A | 1 | 443-1776 | 225 | | 010 | |
| | OPT RINGS 3x7B | 1 | 443-0420 | 225 | | 010 | |
| | #14 & 15) 4x7A | 1 | 443-0428 | 225 | | 010 | |
| | 4x7B | 1 | 443-0471 | 225 | | 010 | |
| 12 | IMPELLER KEY S | 1 | 472-0201 | 087 | | 087 | |
| | L | 1 | 472-0247 | 087 | | 087 | |
| 14 | WEAR 1-1/2x7 | 1 | 676-1145 | 208 | | 010 | |
| | RING 2x7 | 1 | 676-1146 | 208 | | 010 | |
| | 2-1/2x7 | 1 | 676-1133 | 208 | | 010 | |
| | 3x7A&7B | 1 | 676-1133 | 208 | | 010 | |
| | 4x7A&7B | 1 | 676-1140 | 208 | | 010 | |
| 15 | WEAR 1-1/2x7 | | NOT REQUIRED | | | | |
| | RING 2x7 | | NOT REQUIRED | | | | |
| | 2-1/2x7 | 1 | 676-1133 | 208 | | 010 | |
| 16 | WEAR RING | | NOT REQUIRED | | | | |
| 25 | SLEEVE S | 1 | 756-0077 | 208 | | 104 | |
| | L | 1 | 756-0078 | 208 | | 104 | |
| 27 | SEAL S | 1 | 712-0907 | 749 | | 749 | |
| | L | 1 | 712-0910 | 749 | | 749 | |
| 32 | CAPSCREW | | | | | | |
| | 143JM-184JM | 4 | 168-0386 | 082 | | 082 | |
| | 213JM-256JM | 4 | 168-0490 | 082 | | 082 | |
| 33 | SCREW | 2 | 708-0013 | 365 | | 365 | |
| 34 | NAMEPLATE | 1 | 532-0045 | 114 | | 114 | |
| 35 | BRACKET | | | | | | |
| | 143JM-184JM | 1 | 116-0192 | 010 | | 010 | |
| | 213JM-215JM | 1 | 116-0194 | 010 | | 010 | |
| | 254JM-256JM | 1 | 116-0197 | 010 | | 010 | |
| 61 | PIN | | INCLUDED WITH NO. 25 | | | | |

# 380A SERIES
# MODEL 382A
# 1-1/2 x 1-1/2 x 9B – 6 x 6 x 9
# PARTS LIST

| PC. NO. | DESCRIPTION | QTY | PART NO. | MATERIAL B.F. | A.B. | A.I. | S.S. |
|---|---|---|---|---|---|---|---|
| 1 | COMP. ELBOW | 1 | 868-3660 | 190 | | 087 | |
| 2 | COMP. CONNECTOR | 1 | 868-3359 | 190 | | 087 | |
| 3 | TUBING | 1 | 872-0124 | 175 | | 087 | |
| 4 | PIPE PLUG | 5 | 600-0002 | 087 | | 087 | |
| 5 | CAPSCREW | 8 | 168-0489 | 082 | | 082 | |
| 6 | CASING | | | | | | |
| | 1-1/2x9B | 1 | 180-2173 | 010 | | 010 | |
| | 2x9A&9B | 1 | 180-2174 | 010 | | 010 | |
| | 2x9C | 1 | 180-2517 | 010 | | 010 | |
| | 2-1/2x9 | 1 | 180-2575 | 010 | | 010 | |
| | 3x4x9 | 1 | 180-2518 | 010 | | 010 | |
| | 3x9A | 1 | 180-2177 | 010 | | 010 | |
| | 3x9B | 1 | 180-2178 | 010 | | 010 | |
| | 4x5x9 | 1 | 180-2519 | 010 | | 010 | |
| | 4x9A&9B | 1 | 180-2181 | 010 | | 010 | |
| | 5x9 | 1 | 180-2576 | 010 | | 010 | |
| | 6x9 | 1 | 180-2577 | 010 | | 010 | |
| 7 | WEAR RING | | | | | | |
| | 1-1/2x9B | 1 | 676-1150 | 208 | | 010 | |
| | 2x9, 9A&9B | 1 | 676-1151 | 208 | | 010 | |
| | 2-1/2x9 | 1 | 676-1152 | 208 | | 010 | |
| | 3x4x9 | 1 | 676-2104 | 208 | | 010 | |
| | 3x9A&9B | 1 | 676-1152 | 208 | | 010 | |
| | 4x5x9, 9A&9B | 1 | 676-1154 | 208 | | 010 | |
| | 5x9 | 1 | 676-1155 | 208 | | 010 | |
| | 6x9 | 1 | 676-1155 | 208 | | 010 | |
| 8 | GASKET | 1 | 364-1015 | 603 | | 603 | |
| 9 | IMP. SCREW S | 1 | 168-0382 | 113 | | 113 | |
| | L | 1 | 168-0490 | 113 | | 113 | |
| 9A | WASHER S | 1 | 908-0603 | 087 | | 087 | |
| | L | 1 | 908-0604 | 087 | | 087 | |
| 9B | GASKET S | 1 | 364-2034 | 603 | | 603 | |
| | L | 1 | 364-2035 | 603 | | 603 | |
| 9C | CAPSCREW SEAL S | 1 | 908-1290 | 999 | | 999 | |
| | L | 1 | 908-1292 | 999 | | 999 | |
| 10 | O-RING S | 1 | 364-0409 | 457 | | 457 | |
| | L | 1 | 364-0414 | 457 | | 457 | |
| 11 | IMPELLER S | | | | | | |
| | 1-1/2x9B | 1 | 443-0431 | 225 | | 010 | |
| | 2x9A, 9C | 1 | 443-0437 | 225 | | 010 | |

| PC. NO. | DESCRIPTION | QTY | PART NO. | MATERIAL B.F. | A.B. | A.I. | S.S. |
|---|---|---|---|---|---|---|---|
| 11 | IMPELLER S | | | | | | |
| | 2x9B | 1 | 443-0435 | 225 | | 010 | |
| | 2-1/2x9 | 1 | 443-0441 | 225 | | 010 | |
| | 3x4x9 | 1 | 443-2748 | 225 | | 010 | |
| | 3x9A | 1 | 443-0441 | 225 | | 010 | |
| | 3x9B | 1 | 443-0445 | 225 | | 010 | |
| | 4x5x9 | 1 | 443-2750 | 225 | | 010 | |
| | 4x9A | 1 | 443-1766 | 225 | | 010 | |
| | 4x9B | 1 | 443-1762 | 225 | | 010 | |
| | 5x9 | 1 | 443-0457 | 225 | | 010 | |
| | 6x9 | 1 | 443-0465 | 225 | | 010 | |
| | 2x9C L | 1 | 443-0439 | 225 | | 010 | |
| | 2-1/2x9 | 1 | 443-0443 | 225 | | 010 | |
| | 3x4x9 | 1 | 443-2749 | 225 | | 010 | |
| | 3x9A | 1 | 443-0443 | 225 | | 010 | |
| | 3x9B | 1 | 443-0447 | 225 | | 010 | |
| | 4x5x9 | 1 | 443-2751 | 225 | | 010 | |
| | 4x9B | 1 | 443-1764 | 225 | | 010 | |
| | 5x9 | 1 | 443-0459 | 225 | | 010 | |
| | 6x9 | 1 | 443-0467 | 225 | | 010 | |
| | IMPELLER S | | | | | | |
| | (MACH. FOR OPT. | | | | | | |
| | RINGS #14 & 15) | | | | | | |
| | 1-1/2x9B | 1 | 443-0432 | 225 | | 010 | |
| | 2x9A | 1 | 443-0438 | 225 | | 010 | |
| | 2x9B | 1 | 443-0436 | 225 | | 010 | |
| | 2x9C | 1 | 443-0438 | 225 | | 010 | |
| | 2-1/2x9 | 1 | 443-0422 | 225 | | 010 | |
| | 3x9A | 1 | 443-0442 | 225 | | 010 | |
| | 3x9B | 1 | 443-0446 | 225 | | 010 | |
| | 4x9A | 1 | 443-1767 | 225 | | 010 | |
| | 5x9 | 1 | 443-0458 | 225 | | 010 | |
| | 6x9 | 1 | 443-0466 | 225 | | 010 | |
| | IMPELLER L | | | | | | |
| | (MACH. FOR OPT. | | | | | | |
| | RINGS #14 & 15) | | | | | | |
| | 2x9C | 1 | 443-0440 | 225 | | 010 | |
| | 2-1/2x9 | 1 | 443-0444 | 225 | | 010 | |
| | 3x9A | 1 | 443-0444 | 225 | | 010 | |
| | 3x9B | 1 | 443-0448 | 225 | | 010 | |
| | 4x9B | 1 | 443-1765 | 225 | | 010 | |
| | 5x9 | 1 | 443-0460 | 225 | | 010 | |
| | 6x9 | 1 | 443-0468 | 225 | | 010 | |

# 380 SERIES
# MODEL 382A
# 1-1/2 x 1-1/2 x 9B – 6 x 6 x 9
# PARTS LIST

| PC. NO. | DESCRIPTION | QTY | PART NO. | MATERIAL B.F. | A.B. | A.I. | S.S. |
|---|---|---|---|---|---|---|---|
| 12 | IMPELLER KEY S | 1 | 472-0201 | 087 | | 087 | |
| | L | 1 | 472-0247 | 087 | | 087 | |
| 14 | WEAR RING | | | | | | |
| | 1-1/2x9B | 1 | 676-1145 | 208 | | 010 | |
| | 2x9A, B & C | 1 | 676-1146 | 208 | | 010 | |
| | 2-1/2x9 | 1 | 676-1133 | 208 | | 010 | |
| | 3x9A&B | 1 | 676-1133 | 208 | | 010 | |
| | 4x9A&B | 1 | 676-1140 | 208 | | 010 | |
| | 5x9 | 1 | 676-1141 | 208 | | 010 | |
| | 6x9 | 1 | 6761141 | 208 | | 010 | |
| 15 | WEAR RING | | | | | | |
| | 1-1/2x9B | | NOT REQUIRED | | | | |
| | 2x9A, B & C | | NOT REQUIRED | | | | |
| | 2-1/2x9 | 1 | 676-1133 | 208 | | 010 | |
| | 3x9A&B | 1 | 676-1133 | 208 | | 010 | |
| | 4x9A&B | 1 | 676-1156 | 208 | | 010 | |
| | 5x9 | 1 | 676-1156 | 208 | | 010 | |
| | 6x9 | 1 | 676-1156 | 208 | | 010 | |
| 16 | WEAR RING | | | | | | |
| | 1-1/2x9B | | NOT REQUIRED | | | | |
| | 2x9A, B & C | | NOT REQUIRED | | | | |
| | 2-1/2x9 | 1 | 676-0003 | 010 | | 010 | |
| | 3x9A&B | 1 | 676-0003 | 010 | | 010 | |
| | 4x9A&B | | NOT REQUIRED | | | | |
| 25 | SLEEVE S | 1 | 756-0077 | 208 | | 104 | |
| | L | 1 | 756-0078 | 208 | | 104 | |
| 27 | SEAL S | 1 | 712-0907 | 749 | | 749 | |
| | L | 1 | 712-0940 | 749 | | 749 | |

| PC. NO. | DESCRIPTION | QTY | PART NO. | MATERIAL B.F. | A.B. | A.I. | S.S. |
|---|---|---|---|---|---|---|---|
| 32 | CAPSCREW | | | | | | |
| | 143JM-184JM | 4 | 168-0386 | 082 | | 082 | |
| | 213JM-215JM | 4 | 168-0490 | 082 | | 082 | |
| | 254JM-256JM | 4 | 168-0490 | 082 | | 082 | |
| 33 | SCREW | 2 | 708-0013 | 365 | | 365 | |
| 34 | NAMEPLATE | 1 | 532-0045 | 114 | | 114 | |
| 35 | BRACKET | | | | | | |
| | 143JM-184JM | 1 | 116-0193 | 010 | | 010 | |
| | 213JM-215JM | 1 | 116-0195 | 010 | | 010 | |
| | 254JM-256JM | 1 | 116-0198 | 010 | | 010 | |
| 61 | PIN | | INCLUDED WITH NO. 25 | | | | |

# 380 SERIES
# MODEL 382A
# 4 x 4 x 11 – 8 x 8 x 11
# PARTS LIST

| PC. NO. | DESCRIPTION | QTY | PART NO. | MATERIAL B.F. | A.B. | A.I. | S.S. |
|---|---|---|---|---|---|---|---|
| 1 | COMP. ELBOW | 1 | 868-3360 | 190 | | 087 | |
| 2 | COMP. CONNECTOR | 1 | 868-3359 | 190 | | 087 | |
| 3 | TUBING | 1 | 872-0124 | 175 | | 087 | |
| 4 | PIPE PLUG | 3 | 600-0002 | 087 | | 087 | |
| 5 | CAPSCREW | 8 | 168-0490 | 082 | | 082 | |
| 6 | CASING | | | | | | |
| | 4x11 | 1 | 180-2578 | 010 | | 010 | |
| | 5x11 | 1 | 180-2579 | 010 | | 010 | |
| | 6x11 | 1 | 180-2580 | 010 | | 010 | |
| | 8x11 | 1 | 180-2581 | 010 | | 010 | |
| 7 | WEAR RING | | | | | | |
| | 4x11 | 1 | 676-1154 | 208 | | 010 | |
| | 5x11 | 1 | 676-1155 | 208 | | 010 | |
| | 6x11 | 1 | 676-1684 | 208 | | 010 | |
| | 8x11 | 1 | 676-2104 | 208 | | 010 | |
| 8 | GASKET | 1 | 364-2109 | 603 | | 603 | |
| 9 | CAPSCREW S | 1 | 168-0382 | 113 | | 113 | |
| | L | 1 | 168-0490 | 113 | | 113 | |
| 9A | WASHER S | 1 | 908-0603 | 087 | | 087 | |
| | L | 1 | 908-0604 | 087 | | 087 | |
| 9B | GASKET S | 1 | 364-2034 | 603 | | 603 | |
| | L | 1 | 364-2035 | 603 | | 603 | |
| 9C | CAPSCREW S | 1 | 908-1290 | 999 | | 999 | |
| | SEAL L | 1 | 908-1292 | 999 | | 999 | |
| 10 | O-RING S | 1 | 364-0409 | 457 | | 457 | |
| | L | 1 | 364-0414 | 457 | | 457 | |
| 11 | IMPELLER S | | | | | | |
| | 4x11 | 1 | 443-2388 | 225 | | 010 | |
| | 5x11 | 1 | 443-2389 | 225 | | 010 | |
| | 6x11 | 1 | 443-2390 | 225 | | 010 | |
| | 8x11 | 1 | 443-2390 | 225 | | 010 | |
| | 4x11 L | 1 | 443-2400 | 225 | | 010 | |
| | 5x11 | 1 | 443-2401 | 225 | | 010 | |
| | 6x11 | 1 | 443-2402 | 225 | | 010 | |
| | 8x11 | 1 | 443-2402 | 225 | | 010 | |
| | IMPELLER S | | | | | | |
| | (MACH. FOR OPT. | | | | | | |
| | RINGS #14 & 15) | | | | | | |
| | 4x11 | 1 | 443-2424 | 225 | | 010 | |
| | 5x11 | 1 | 443-2425 | 225 | | 010 | |
| | 6x11 | 1 | 443-2426 | 225 | | 010 | |
| | 6x11 | 1 | 443-2426 | 225 | | 010 | |

| PC. NO. | DESCRIPTION | QTY | PART NO. | MATERIAL B.F. | A.B. | A.I. | S.S. |
|---|---|---|---|---|---|---|---|
| 11 | IMPELLER L | | | | | | |
| | (MACH. FOR OPT. | | | | | | |
| | RINGS #14 & 15) | | | | | | |
| | 4x11 | 1 | 443-2428 | 225 | | 010 | |
| | 5x11 | 1 | 443-2429 | 225 | | 010 | |
| | 6x11 | 1 | 443-2430 | 225 | | 010 | |
| | 8x11 | 1 | 443-2430 | 225 | | 010 | |
| 12 | IMPELLER KEY S | 1 | 472-0201 | 087 | | 087 | |
| | L | 1 | 472-0247 | 087 | | 087 | |
| 14 | WEAR RING | | | | | | |
| | 4x11 | 1 | 676-1140 | 208 | | 010 | |
| | 5x11 | 1 | 676-1141 | 208 | | 010 | |
| | 6x11 | 1 | 676-1143 | 208 | | 010 | |
| | 8x11 | 1 | 676-1143 | 208 | | 010 | |
| 15 | WEAR RING | | | | | | |
| | 4x11 | 1 | 676-1156 | 208 | | 010 | |
| | 5x11 | 1 | 676-1156 | 208 | | 010 | |
| | 6x11 | 1 | 676-1156 | 208 | | 010 | |
| | 8x11 | 1 | 676-1156 | 208 | | 010 | |
| 16 | WEAR RING | | NOT REQUIRED | | | | |
| 25 | SLEEVE S | 1 | 756-0077 | 208 | | 104 | |
| | L | 1 | 756-0078 | 208 | | 104 | |
| 27 | SEAL S | 1 | 712-0907 | 749 | | 749 | |
| | L | 1 | 712-0910 | 749 | | 749 | |
| 32 | CAPSCREW MTR. FR. | | | | | | |
| | 213JM - 215JM | 4 | 168-0490 | 082 | | 082 | |
| | 254JM - 256JM | 4 | 168-0490 | 082 | | 082 | |
| | 284JM - 326JM | 4 | 168-0562 | 082 | | 082 | |
| 33 | U DRIVE SCREW | 2 | 708-0013 | 365 | | 365 | |
| 34 | NAMEPLATE | 1 | 532-0045 | 114 | | 114 | |
| 35 | | | | | | | |
| | 213JM - 215JM | 1 | 116-0465 | 010 | | 010 | |
| | 254JM - 256JM | 1 | 116-0466 | 010 | | 010 | |
| | 284JM - 326JM | 1 | 116-0467 | 010 | | 010 | |
| 61 | PIN | | INCLUDED WITH NO. 25 | | | | |

# 380 SERIES
# MODEL 382A
# 2 x 2 x 12 – 8 x 8 x 12
# PARTS LIST

| PC. NO. | DESCRIPTION | QTY | PART NO. | MATERIAL B.F. | A.B. | A.I. | S.S. |
|---|---|---|---|---|---|---|---|
| 1 | COMP. ELBOW | 1 | 868-3660 | 190 | | 087 | |
| 2 | COMP. CONNECTOR | 1 | 868-3359 | 190 | | 087 | |
| 3 | TUBING | 1 | 872-0124 | 175 | | 087 | |
| 4 | PIPE PLUG | 5 | 600-0002 | 087 | | 087 | |
| 5 | CAPSCREW | 8 | 168-0489 | 082 | | 082 | |
| 6 | CASING 2x12 | 1 | 180-2175 | 010 | | 010 | |
| | 3x12 | 1 | 180-2179 | 010 | | 010 | |
| | 4x12 | 1 | 180-2582 | 010 | | 010 | |
| | 5x12 | 1 | 180-2583 | 010 | | 010 | |
| | 6x12 | 1 | 180-2584 | 010 | | 010 | |
| | 8x12 | 1 | 180-2593 | 010 | | 010 | |
| 7 | WEAR RING 2x12 | 1 | 676-1151 | 208 | | 010 | |
| | 3x12 | 1 | 676-1152 | 208 | | 010 | |
| | 4x12 | 1 | 676-1154 | 208 | | 010 | |
| | 5x12 | 1 | 676-1155 | 208 | | 010 | |
| | 6x12 | 1 | 676-1684 | 208 | | 010 | |
| | 8x12 | 1 | 676-2100 | 208 | | 010 | |
| 8 | GASKET | 1 | 364-1016 | 603 | | 603 | |
| 9 | IMP. SCREW S | 1 | 168-0382 | 113 | | 113 | |
| | L | 1 | 168-0490 | 113 | | 113 | |
| 9A | WASHER S | 1 | 908-0603 | 087 | | 087 | |
| | L | 1 | 908-0604 | 087 | | 087 | |
| 9B | GASKET S | 1 | 364-2034 | 603 | | 603 | |
| | L | 1 | 364-2035 | 603 | | 603 | |
| 9C | CAPSCREW SEAL S | 1 | 908-1290 | 999 | | 999 | |
| | L | 1 | 908-1292 | 999 | | 999 | |
| 10 | O-RING S | 1 | 364-0409 | 457 | | 457 | |
| | L | 1 | 364-0414 | 457 | | 457 | |
| 11 | IMPELLER S | | | | | | |
| | 2x12 | 1 | 443-1734 | 225 | | 010 | |
| | 3x12 | 1 | 443-1735 | 225 | | 010 | |
| | 4x12 | 1 | 443-1737 | 225 | | 010 | |
| | IMPELLER L | | | | | | |
| | 2x12 | 1 | 443-1725 | 225 | | 010 | |
| | 3x12 | 1 | 443-1726 | 225 | | 010 | |
| | 4x12 | 1 | 443-1728 | 225 | | 010 | |
| | 5x12 | 1 | 443-1729 | 225 | | 010 | |
| | 6x12 | 1 | 443-1730 | 225 | | 010 | |
| | 8x12 | 1 | 443-2664 | 225 | | 010 | |
| | IMPELLER S | | | | | | |
| | (MACH. FOR OPT. | | | | | | |
| | RING #14 2x12 | 1 | 443-1748 | 225 | | 010 | |
| | & 15) 3x12 | 1 | 443-1749 | 225 | | 010 | |
| | 4x12 | 1 | 443-1751 | 225 | | 010 | |

| PC. NO. | DESCRIPTION | QTY | PART NO. | MATERIAL B.F. | A.B. | A.I. | S.S. |
|---|---|---|---|---|---|---|---|
| 11 | IMPELLER L | | | | | | |
| | (MACH. FOR OPT. | | | | | | |
| | RING #14 2x12 | 1 | 443-1739 | 225 | | 010 | |
| | & 15) 3x12 | 1 | 443-1740 | 225 | | 010 | |
| | 4x12 | 1 | 443-1742 | 225 | | 010 | |
| | 5x12 | 1 | 443-1743 | 225 | | 010 | |
| | 6x12 | 1 | 443-1744 | 225 | | 010 | |
| | 8x12 | 1 | 443-2977 | 225 | | 010 | |
| 12 | IMPELLER KEY S | 1 | 472-0201 | 087 | | 087 | |
| | L | 1 | 472-0247 | 087 | | 087 | |
| 14 | WEAR RING 2x12 | 1 | 676-1146 | 208 | | 010 | |
| | 3x12 | 1 | 676-1133 | 208 | | 010 | |
| | 4x12 | 1 | 676-1140 | 208 | | 010 | |
| | 5x12 | 1 | 676-1141 | 208 | | 010 | |
| | 6x12 | 1 | 676-1143 | 208 | | 010 | |
| | 8x12 | 1 | 676-2101 | 208 | | 010 | |
| 15 | WEAR RING 2x12 | | NOT REQUIRED | | | | |
| | 3x12 | 1 | 676-1133 | 208 | | 010 | |
| | 4x12 | 1 | 676-1156 | 208 | | 010 | |
| | 5x12 | 1 | 676-1156 | 208 | | 010 | |
| | 6x12 | 1 | 676-1156 | 208 | | 010 | |
| | 8x12 | 1 | 676-1156 | 208 | | 010 | |
| 16 | WEAR RING | | NOT REQUIRED | | | | |
| 25 | SLEEVE S | 1 | 756-0077 | 208 | | 104 | |
| | L | 1 | 756-0078 | 208 | | 104 | |
| 27 | SEAL S | 1 | 712-0907 | 749 | | 749 | |
| | L | 1 | 712-0940 | 749 | | 749 | |
| 32 | CAPSCREW | | | | | | |
| | 213JM-215JM | 4 | 168-0490 | 082 | | 082 | |
| | 254JM-256JM | 4 | 168-0490 | 082 | | 082 | |
| 33 | SCREW | 2 | 708-0013 | 365 | | 365 | |
| 34 | NAMEPLATE | 1 | 532-0045 | 114 | | 114 | |
| 35 | BRACKET | | | | | | |
| | 213JM-215JM | 1 | 116-0196 | 010 | | 010 | |
| | 254JM-256JM | 1 | 116-0199 | 010 | | 010 | |
| 61 | PIN | | INCLUDED WITH NO. 25 | | | | |

# 380 SERIES
# MODEL 382A
# 8 x 8 x 15 – 10 x 10 x 15
# PARTS LIST

| PC. NO. | DESCRIPTION | QTY | PART NO. | MATERIAL | | | |
|---|---|---|---|---|---|---|---|
| | | | | B.F. | A.B. | A.I. | S.S. |
| 1 | COMP. ELBOW | 1 | 868-3360 | 190 | | 087 | |
| 2 | COMP. CONNECTOR | 1 | 868-3559 | 190 | | 087 | |
| 3 | TUBING | 1 | 872-0124 | 175 | | 087 | |
| 4 | PIPE PLUG | 5 | 600-0002 | 082 | | 082 | |
| 5 | CAPSCREW | 8 | 168-0636 | 082 | | 082 | |
| 6 | CASING | | | | | | |
| | 8 x 8 x 15 | 1 | 180-2595 | 010 | | 010 | |
| | 10 x 10 x 15 | 1 | 180-2596 | 010 | | 010 | |
| 7 | WEAR RING | | | | | | |
| | 8 x 8 x 15 | 1 | 676-2036 | 222 | | 010 | |
| | 10 x 10 x 15 | 1 | 676-2037 | 222 | | 010 | |
| 8 | O-RING | 1 | 364-0557 | 457 | | 457 | |
| 9 | IMPELLER SCREW | 1 | 168-0490 | 104 | | 104 | |
| 9A | WASHER | 1 | 908-1326 | 104 | | 104 | |
| 9B | GASKET | 1 | 364-2046 | 603 | | 603 | |
| 9C | CAPSCREW SEAL | 1 | 908-1292 | 118 | | 118 | |
| 10 | O-RING | 1 | 364-0419 | 457 | | 457 | |
| 11 | IMPELLER | | | | | | |
| | 8 x 8 x 15 | 1 | 443-3088 | 208 | | 010 | |
| | 10 x 10 x 15 | 1 | 443-3090 | 208 | | 010 | |
| 11A | IMPELLER* | | | | | | |
| | 8 x 8 x 15 | 1 | 443-3089 | 208 | | 010 | |
| | 10 x 10 x 15 | 1 | 443-3091 | 208 | | 010 | |
| 12 | IMPELLER KEY | | | | | | |
| | 364-445TCZ | 1 | 472-0318 | 087 | | 087 | |
| 14 | IMPELLER RING (OPT) | | | | | | |
| | 8 x 8 x 15 | 1 | 676-1053 | 208 | | 010 | |
| | 10 x 10 x 15 | 1 | 676-1971 | 208 | | 010 | |
| 15 | IMPELLER RING (OPT) | | | | | | |
| | 8 x 8 x 15 | 1 | 676-1053 | 208 | | 010 | |
| | 10 x 10 x 15 | 1 | 676-1053 | 208 | | 010 | |
| 16 | WEAR RING | | | | | | |
| | 8 x 8 x 15 | 1 | 676-2036 | 222 | | 010 | |
| | 10 x 10 x 15 | 1 | 676-2036 | 222 | | 010 | |
| 25 | SLEEVE | 1 | 756-0692 | 208 | | 108 | |
| 27 | SEAL | 1 | 712-0314 | 749 | | 749 | |
| 32 | CAPSCREW | 4 | 168-0654 | 082 | | 082 | |
| 33 | U DRIVE SCREW | 2 | 708-0013 | 365 | | 365 | |
| 34 | NAMEPLATE | 1 | 532-0045 | 114 | | 114 | |
| 35 | BRACKET, 15" | | | | | | |
| | 364-405TCZ | 1 | 116-0537 | 010 | | 010 | |
| | 444-445TCZ | 1 | 116-0539 | 010 | | 010 | |
| 61 | PIN | | INCLUDED WITH NO. 25 | | | | |

* MACHINED FOR OPT. RINGS #14 AND 15

AP-380P-REPAIR 02.02

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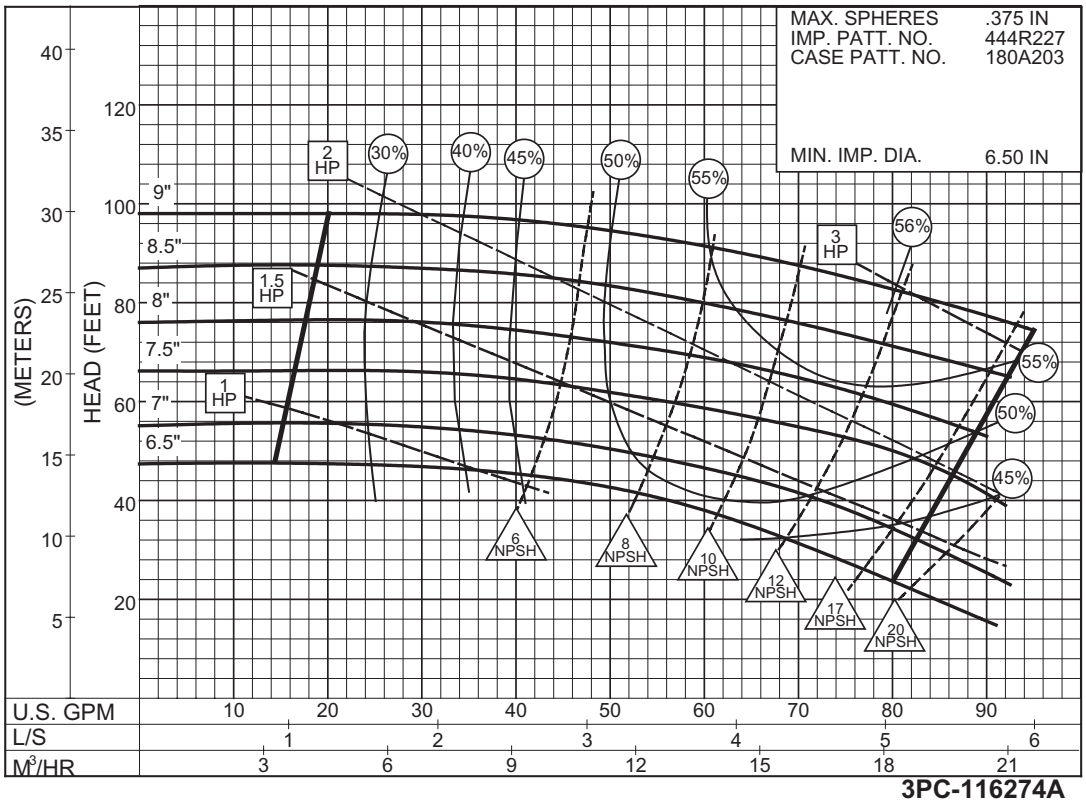
**NOTE:**
Aurora Pump reserves the right to make revisions to its products and their specifications, and to this bulletin and related information without notice

**Aurora Pumps**
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North Aurora, IL 60542
phone: 630-859-7000
fax: 630-859-7060

# Performance Curves for the 380 Series (60 Hz)

| MODEL/SIZE | R.P.M. | PAGE | PDF PAGE |
|---|---|---|---|
| 1-1/2x1-1/2x9B | 1750 | 401 | 2 |
| 2x2x7 | 3500/1750 | 402 | 3 |
| 2x2x9A | 1750 | 403 | 4 |
| 2x2x9B | 1750 | 404 | 5 |
| 2x2x9C | 3500/1750 | 405 | 6 |
| 2x2x12 | 1750/1150 | 406 | 7 |
| 2-1/2x2-1/2x7 | 3500/1750 | 407 | 8 |
| 2-1/2x2-1/2x9 | 3500/1750 | 408 | 9 |
| 3x3x7A | 3500/1750 | 409 | 10 |
| 3x3x7B | 3500/1750 | 410 | 11 |
| 3x3x9A | 3500/1750 | 411 | 12 |
| 3x3x9B | 3500/1750 | 412 | 13 |
| 3x4x9 | 3500/1750 | 413 | 14 |
| 3x3x12 | 1750/1150 | 414 | 15 |
| 4x4x7A | 3500/1750 | 415 | 16 |
| 4x4x7B | 3500/1750 | 416 | 17 |
| 4x4x9A | 3500/1750 | 417 | 18 |
| 4x4x9B | 3500/1750 | 418 | 19 |
| 4x5x9 | 3500/1750 | 419 | 20 |
| 4x4x11 | 1760/1150 | 420 | 21 |
| 4x4x12 | 1760/1150 | 421 | 22 |
| 5x5x9 | 1750/1150 | 422 | 23 |
| 5x5x11 | 1760/1150 | 423 | 24 |
| 5x5x12 | 1760/1150 | 424 | 25 |
| 6x6x9 | 1750/1150 | 425 | 26 |
| 6x6x11 | 1760/1150 | 426 | 27 |
| 6x6x12 | 1760/1150 | 427 | 28 |
| 8x8x11 | 1760/1150 | 428 | 29 |
| 8x8x12 | 1760/1150 | 429 | 30 |
| 8x8x15 | 1775/1150 | 430 | 31 |
| 10x10x15 | 1775/1150 | 431 | 32 |

**SIZE : 1-1/2x1-1/2x9B TYPE : 382 IMPELLER : Enclosed R. P. M. : 1750**




**3PC-116274A**

**1750** R.P.M

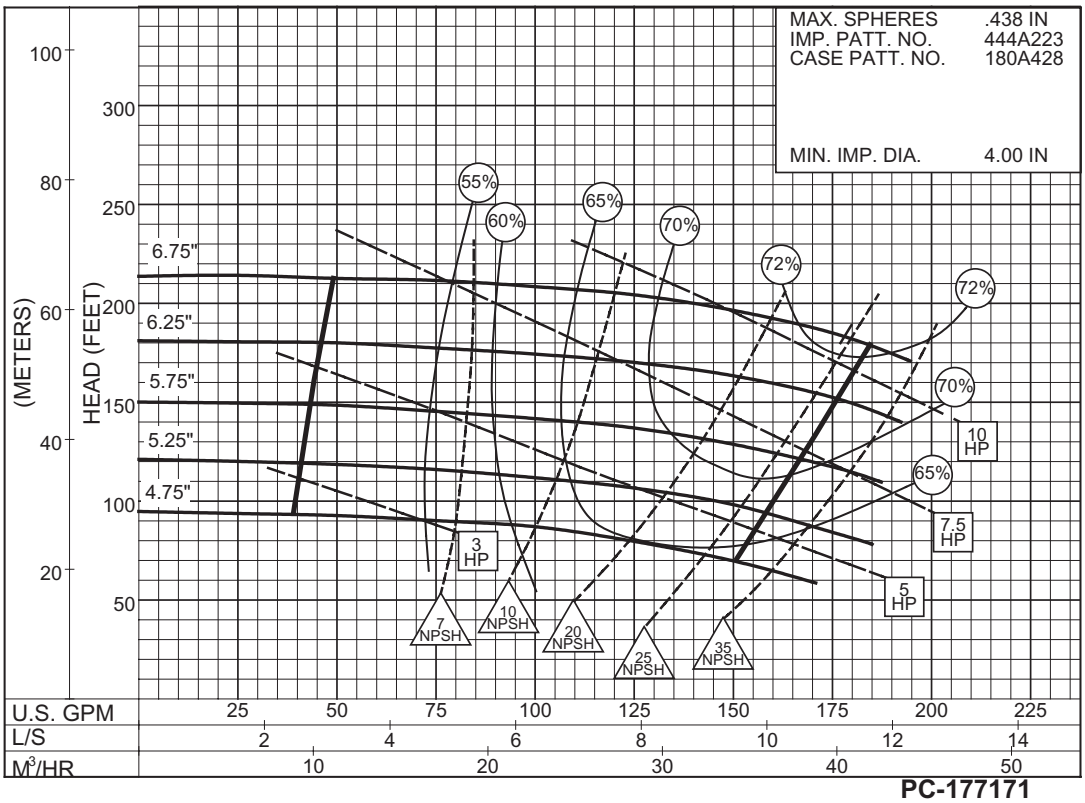
# 2 x 2 x 7 SERIES 380

ENCLOSED IMPELLER

Supersedes Section 380 Page 402
Dated January 2001

**3500 R.P.M**

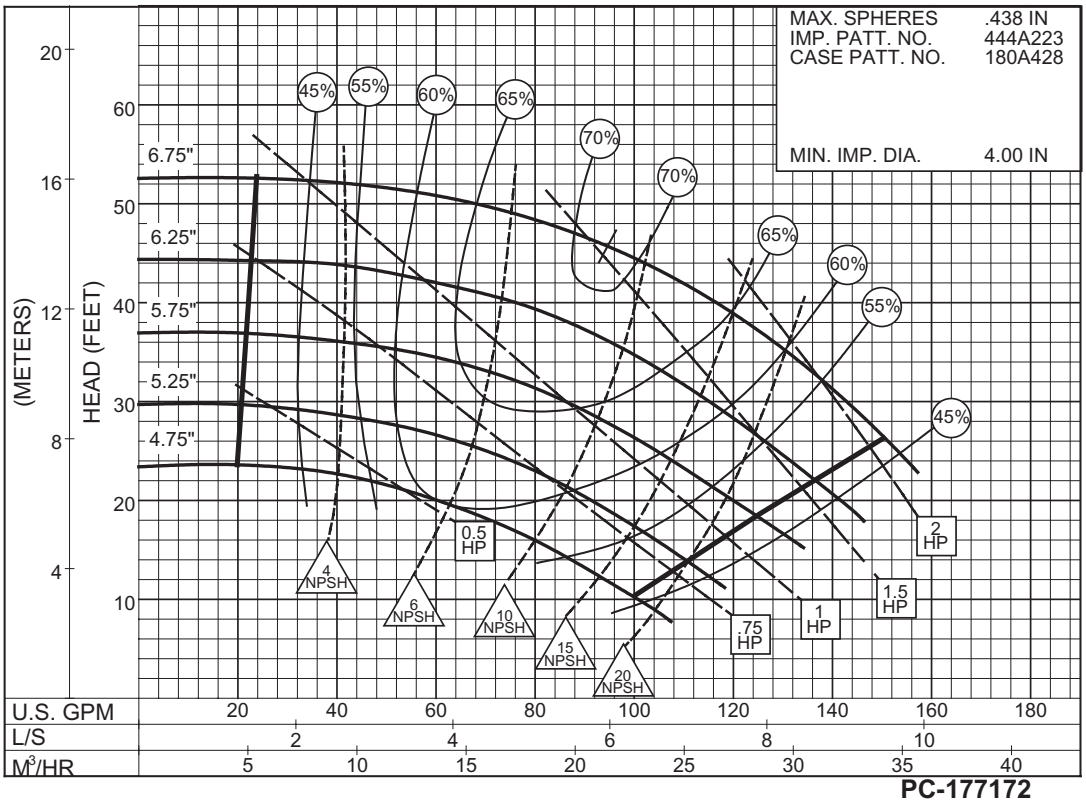
**SIZE : 2x2x7 TYPE : 382 IMPELLER : Enclosed R. P. M. : 3500**




PC-177171

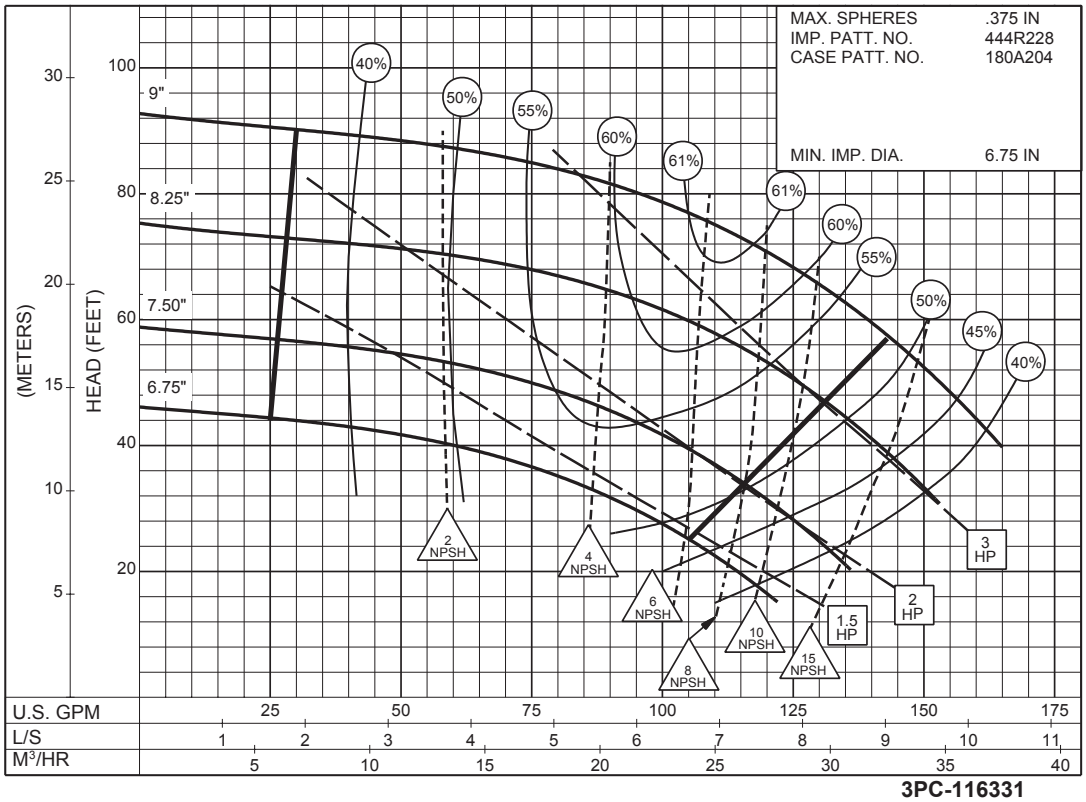
**1750 R.P.M**

**SIZE : 2x2x7 TYPE : 382 IMPELLER : Enclosed R. P. M. : 1750**




PC-177172

**SIZE : 2x2x9A** **TYPE : 382** **IMPELLER : Enclosed** **R. P. M. : 1750**




**3PC-116331**

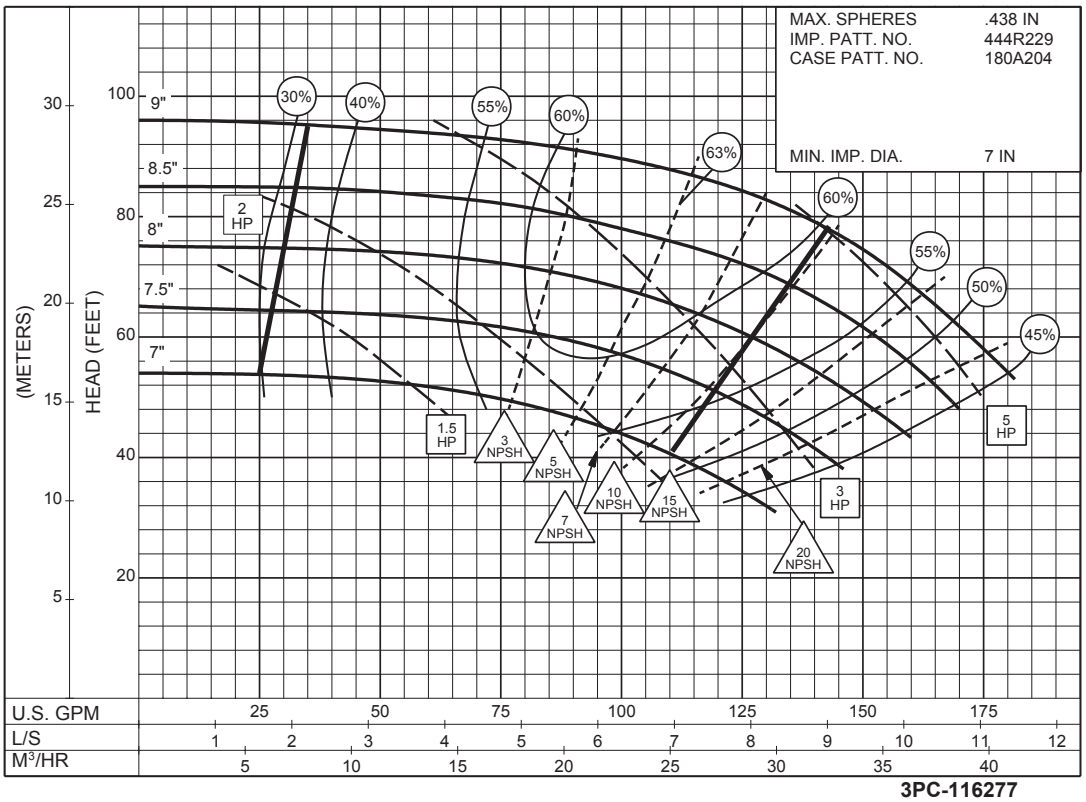
**1750** R.P.M

Supersedes Section 380 Page 404
Dated January 2001

# 2 x 2 x 9B SERIES 380

ENCLOSED IMPELLER

**SIZE : 2x2x9B** **TYPE : 382** **IMPELLER : Enclosed** **R. P. M. : 1750**




3PC-116277

**1750** R.P.M

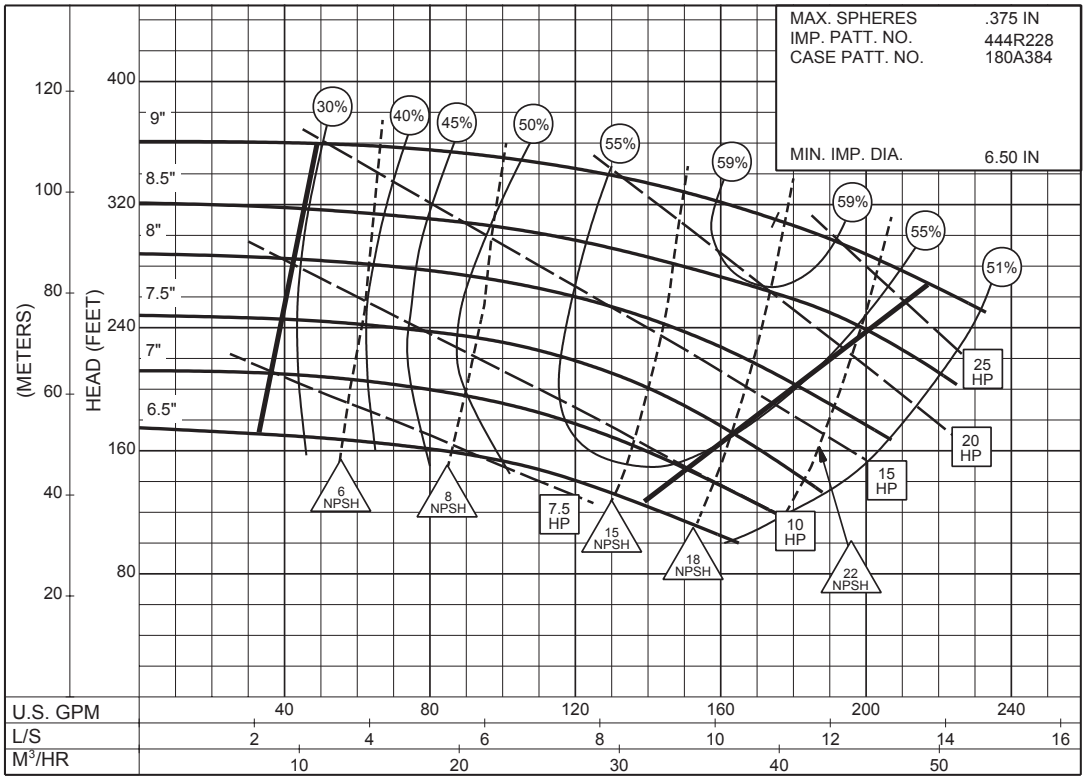
AURORA®
Pentair Pump Group

# 2 x 2 x 9C SERIES 380

ENCLOSED IMPELLER

Supersedes Section 380 Page 405
Dated January 2001

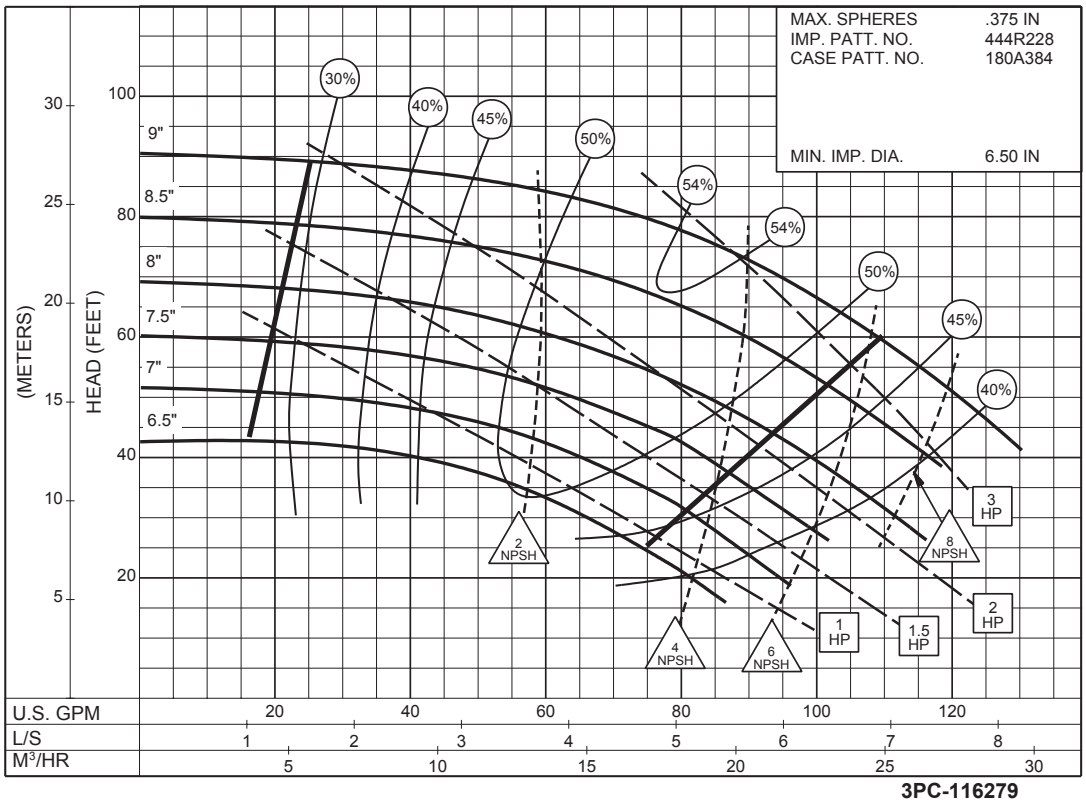
**SIZE : 2x2x9C** **TYPE : 382** **IMPELLER : Enclosed** **R. P. M. : 3500**




**3PC-159191**

**3500 R.P.M**

**SIZE : 2x2x9C** **TYPE : 382** **IMPELLER : Enclosed** **R. P. M. : 1750**




**3PC-116279**

**1750 R.P.M**

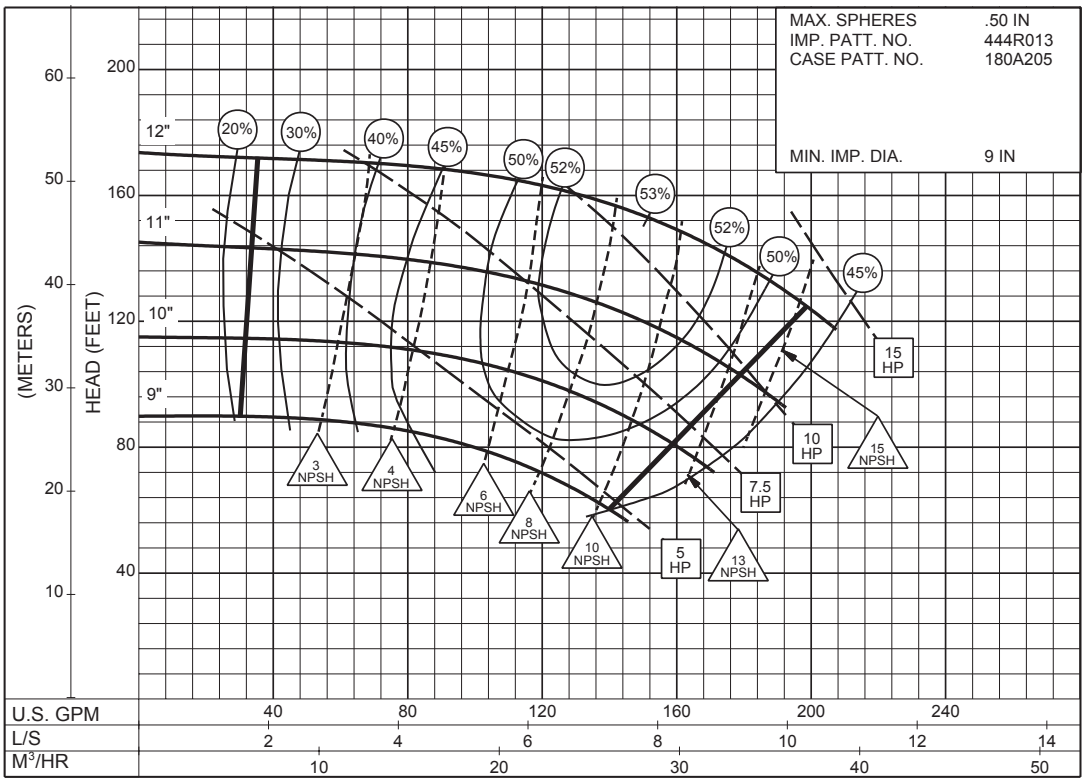
AURORA®
Pentair Pump Group

# 2 x 2 x 12 SERIES 380

## ENCLOSED IMPELLER

**1750 R.P.M**

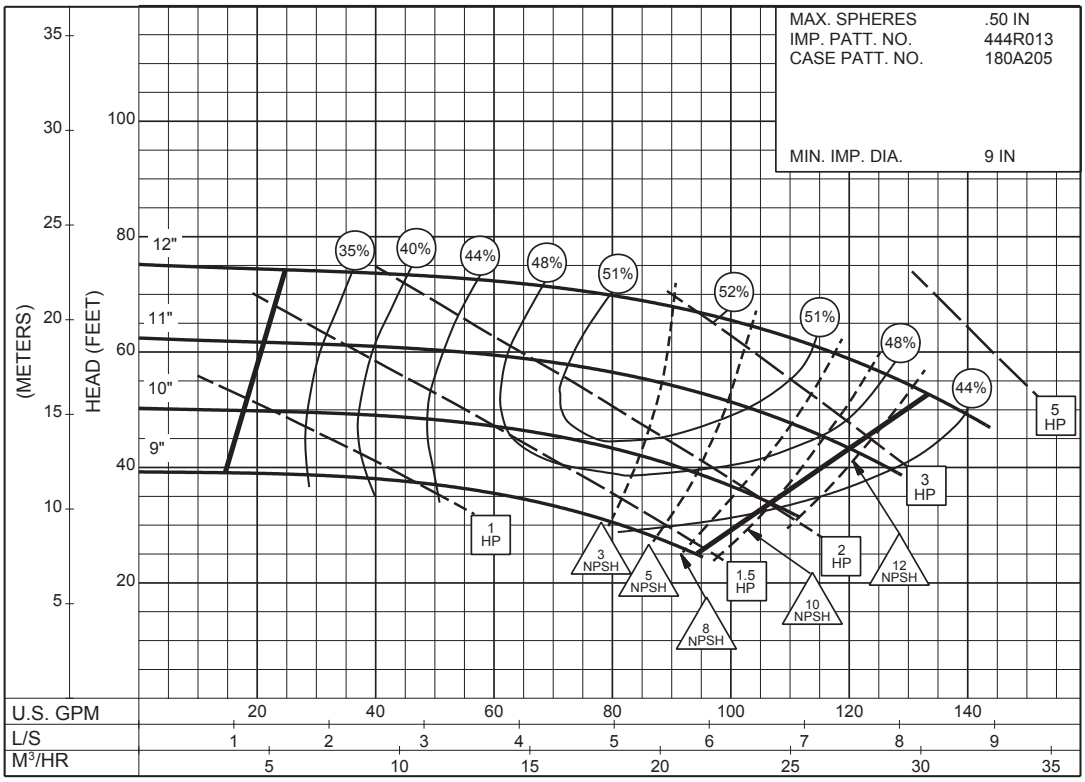
**SIZE : 2x2x12** **TYPE : 382** **IMPELLER : Enclosed** **R. P. M. : 1750**




3PC-116280A

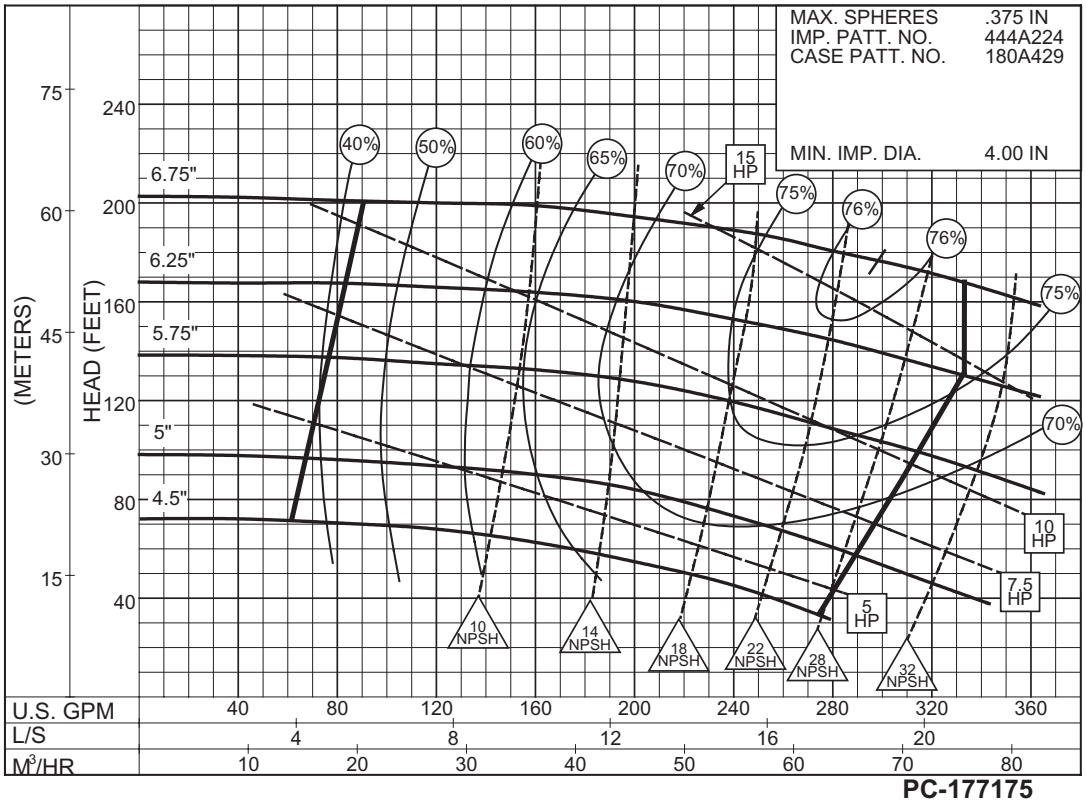
**1150 R.P.M**

**SIZE : 2x2x12** **TYPE : 382** **IMPELLER : Enclosed** **R. P. M. : 1150**




3PC-116281A

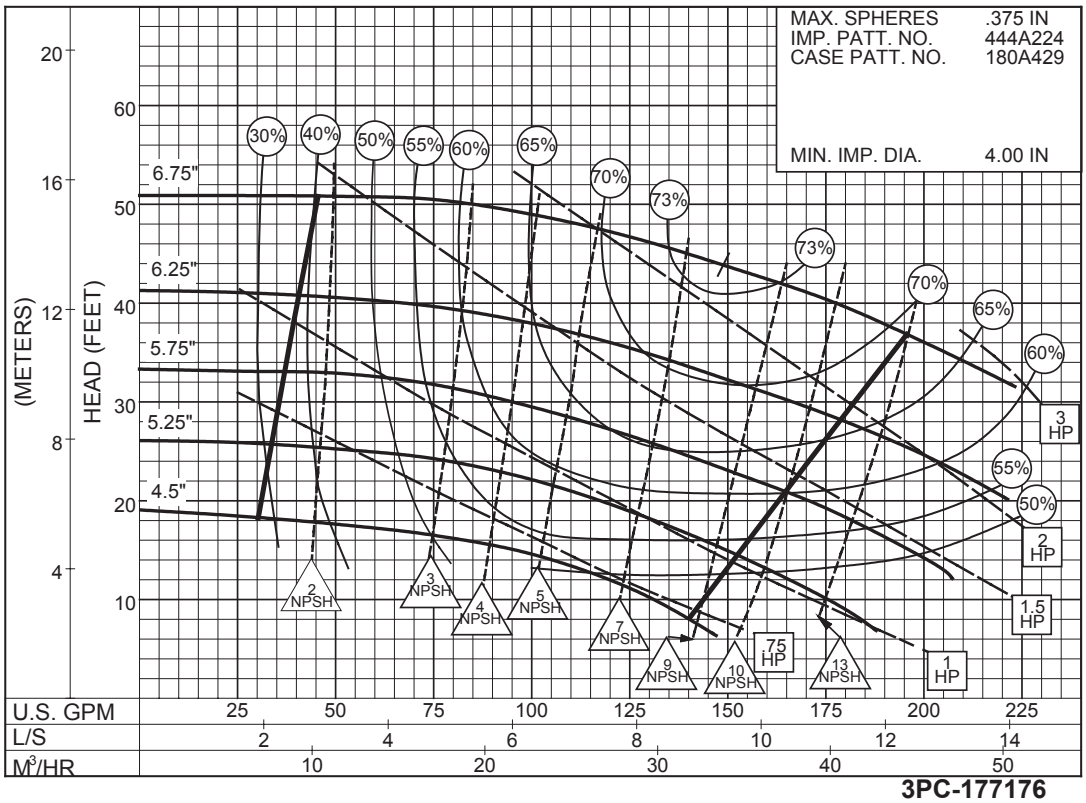
**SIZE : 2-1/2x2-1/2x7 TYPE : 382 IMPELLER : Enclosed R. P. M. : 3500**




**PC-177175**

**3500 R.P.M**

**SIZE : 2-1/2x2-1/2x7 TYPE : 382 IMPELLER : Enclosed R. P. M. : 1750**




**3PC-177176**

**1750 R.P.M**

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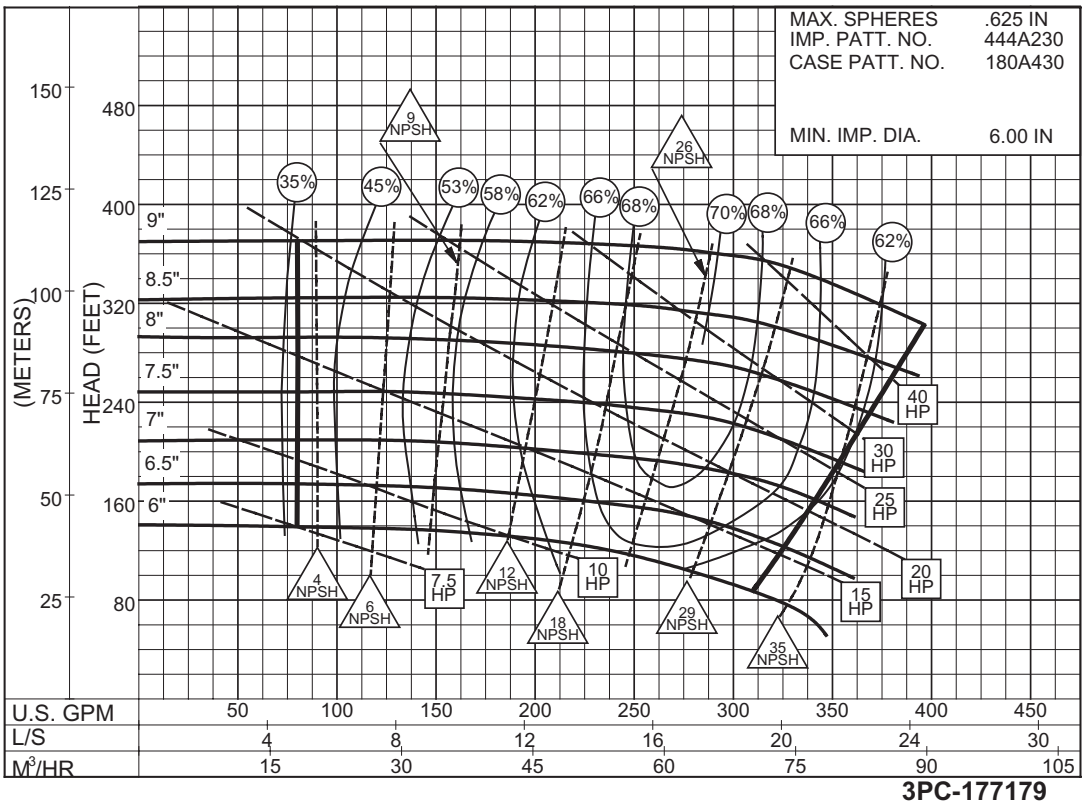
# 2.5 x 2.5 x 9 SERIES 380

ENCLOSED IMPELLER

Supersedes Section 380 Page 408
Dated January 2001

**3500 R.P.M**

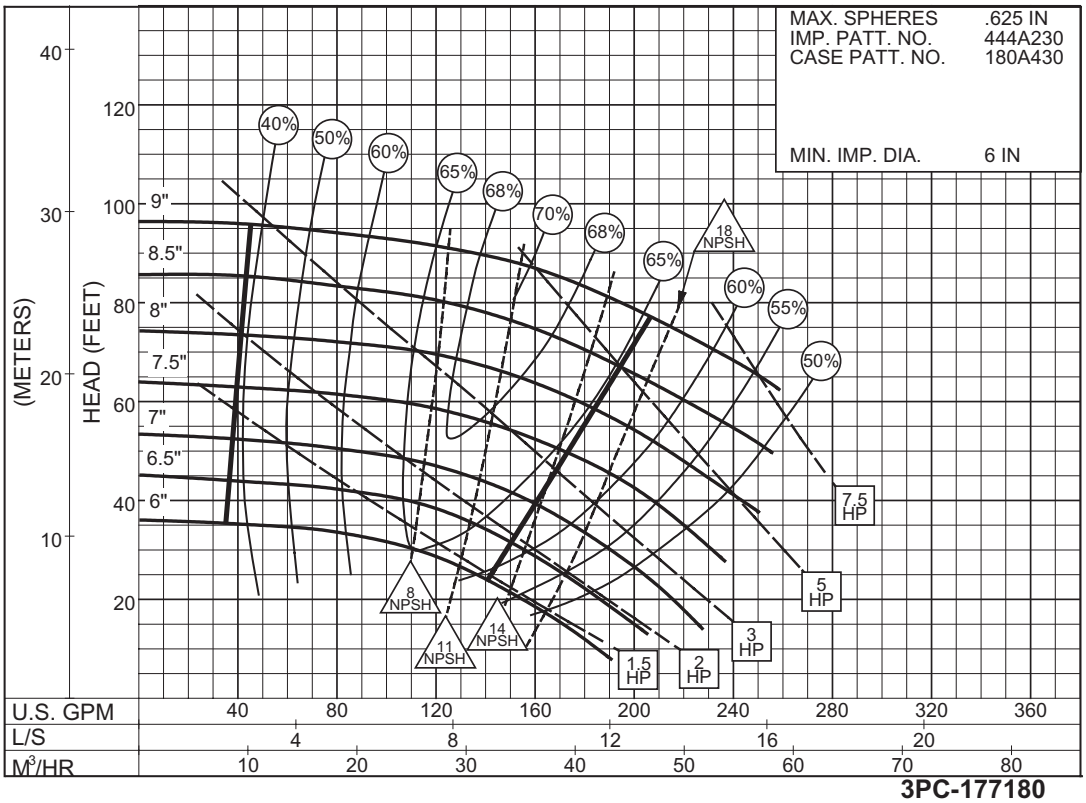
**SIZE : 2-1/2x2-1/2x9 TYPE : 382 IMPELLER : Enclosed R. P. M. : 3500**




**3PC-177179**

**1750 R.P.M**

**SIZE : 2-1/2x2-1/2x9 TYPE : 382 IMPELLER : Enclosed R. P. M. : 1750**



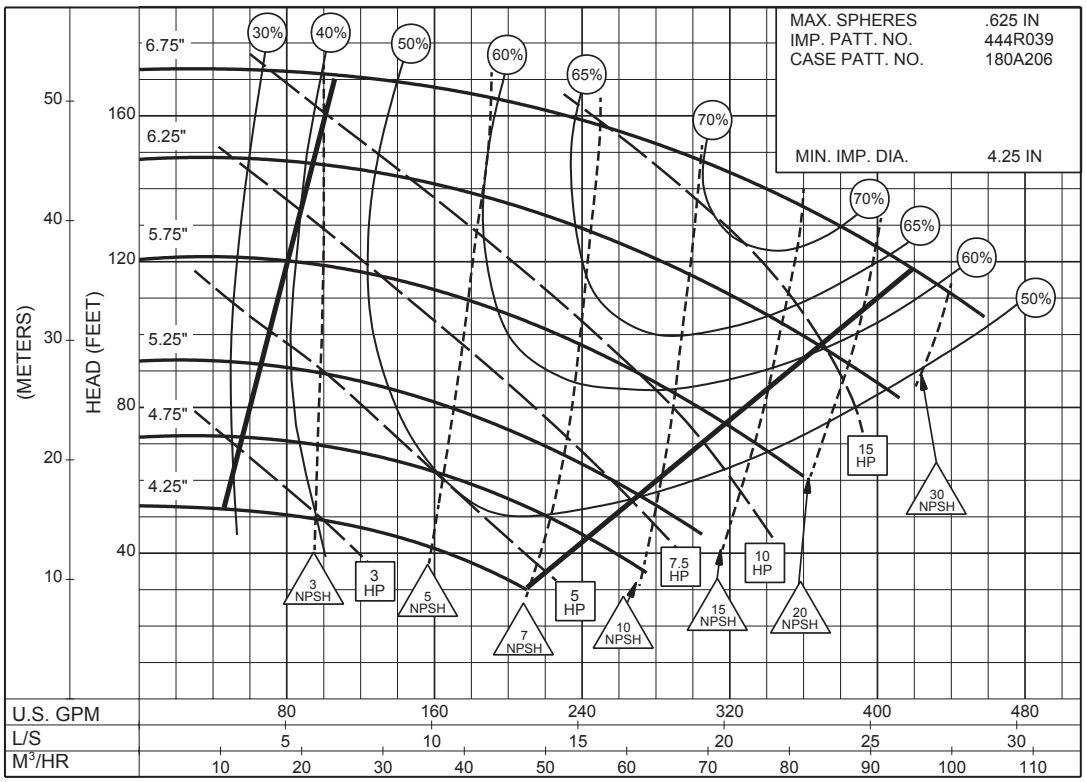

**3PC-177180**

# 3 x 3 x 7A SERIES 380

ENCLOSED IMPELLER

Supersedes Section 380 Page 409
Dated January 2001

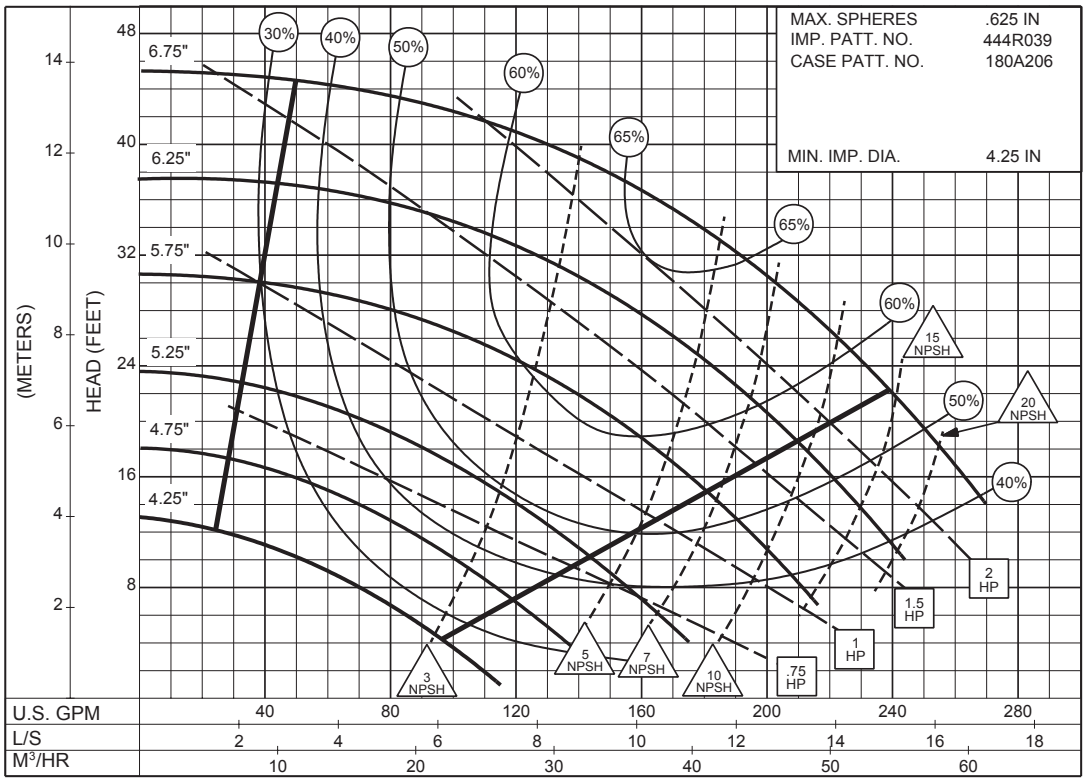
**SIZE : 3x3x7A** **TYPE : 382** **IMPELLER : Enclosed** **R. P. M. : 3500**




3PC-116290

**3500 R.P.M**

**SIZE : 3x3x7A** **TYPE : 382** **IMPELLER : Enclosed** **R. P. M. : 1750**




3PC-116291

**1750 R.P.M**

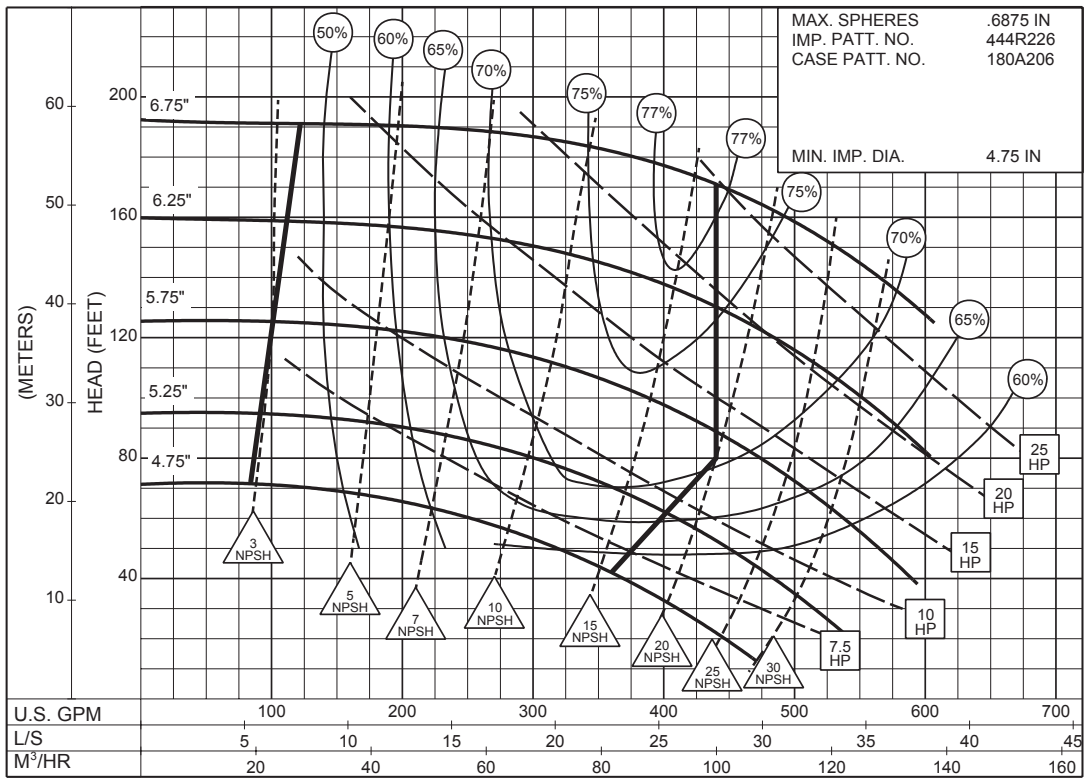
# 3 x 3 x 7B SERIES 380

## ENCLOSED IMPELLER

Supersedes Section 380 Page 410
Dated January 2001

**3500 R.P.M**

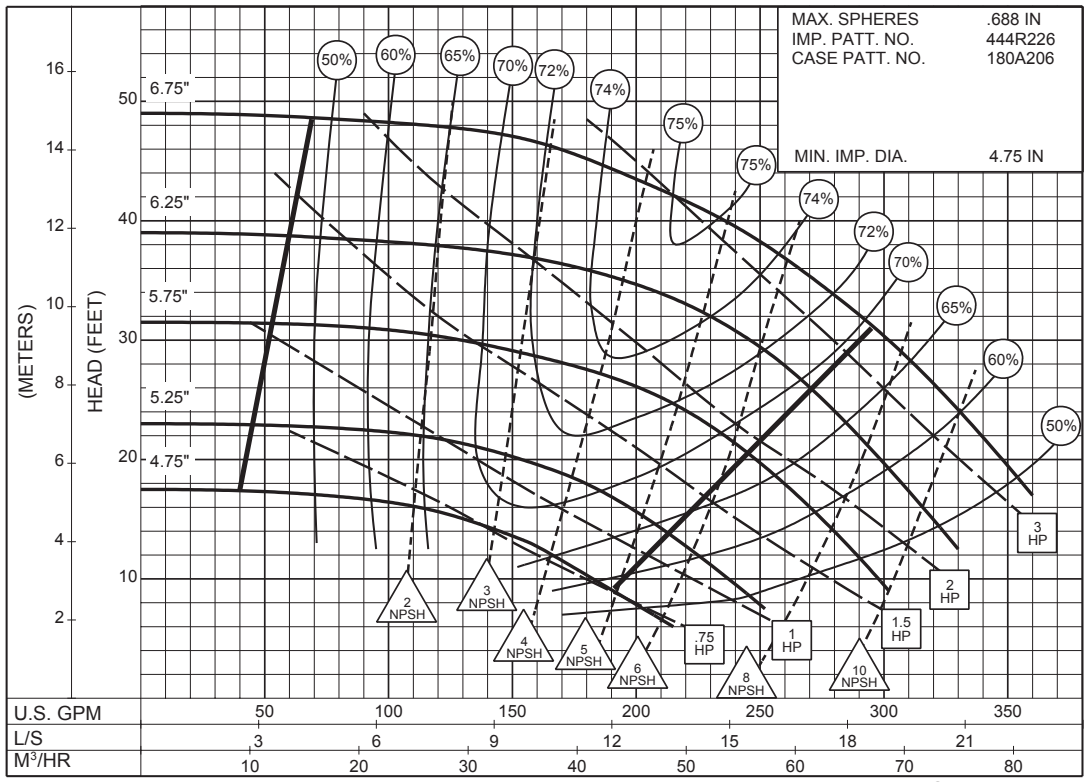
**SIZE : 3x3x7B** **TYPE : 382** **IMPELLER : Enclosed** **R. P. M. : 3500**




3PC-116292

**1750 R.P.M**

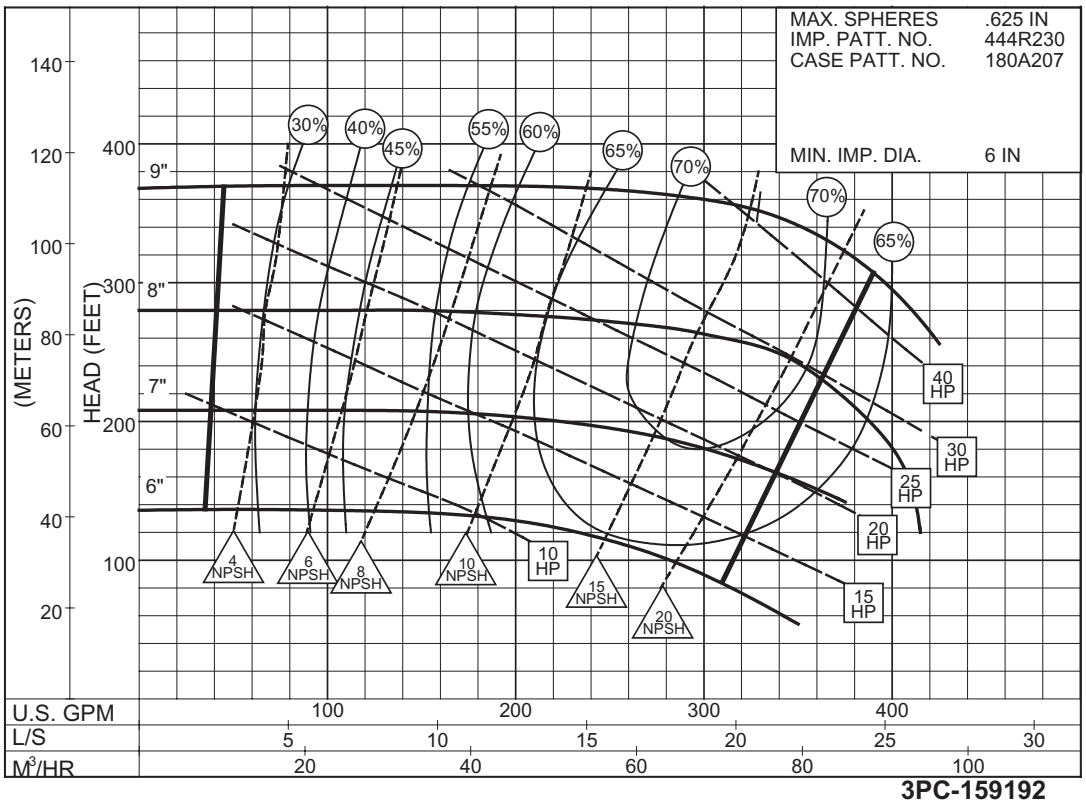
**SIZE : 3x3x7B** **TYPE : 382** **IMPELLER : Enclosed** **R. P. M. : 1750**




3PC-116293

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Pentair Pump Group

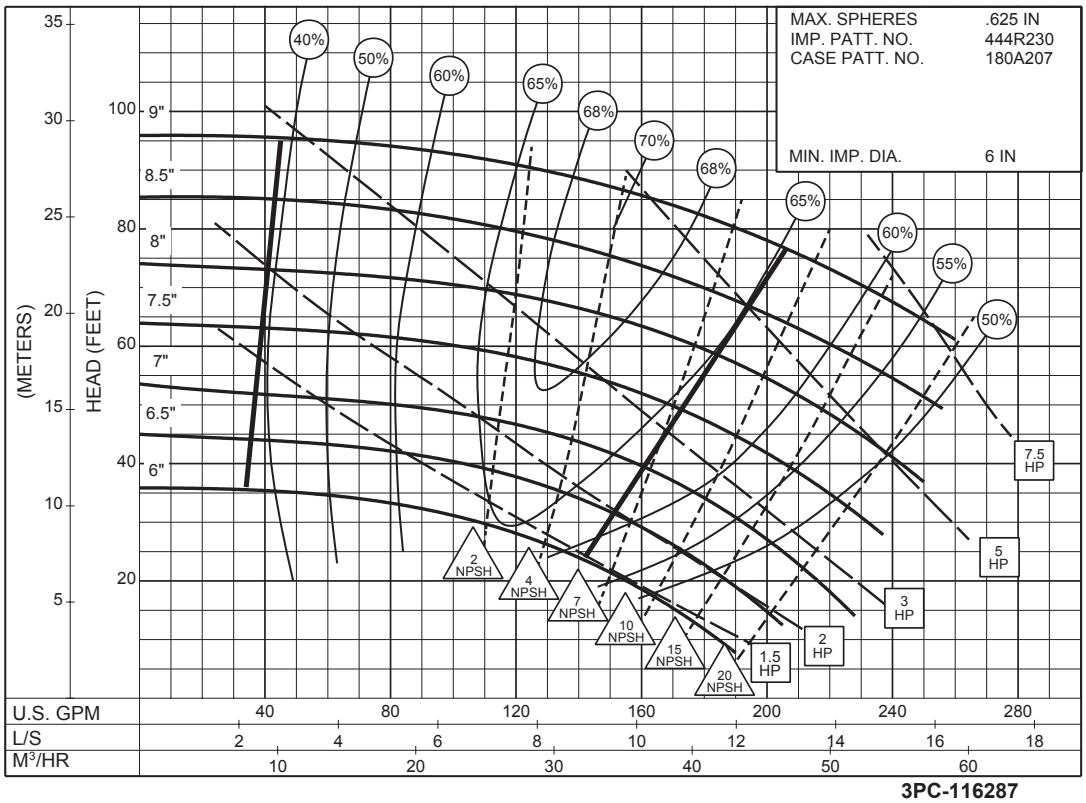
**SIZE : 3x3x9A TYPE : 382 IMPELLER : Enclosed R. P. M. : 3500**




3PC-159192

3500 R.P.M

**SIZE : 3x3x9A TYPE : 382 IMPELLER : Enclosed R. P. M. : 1750**




3PC-116287

1750 R.P.M

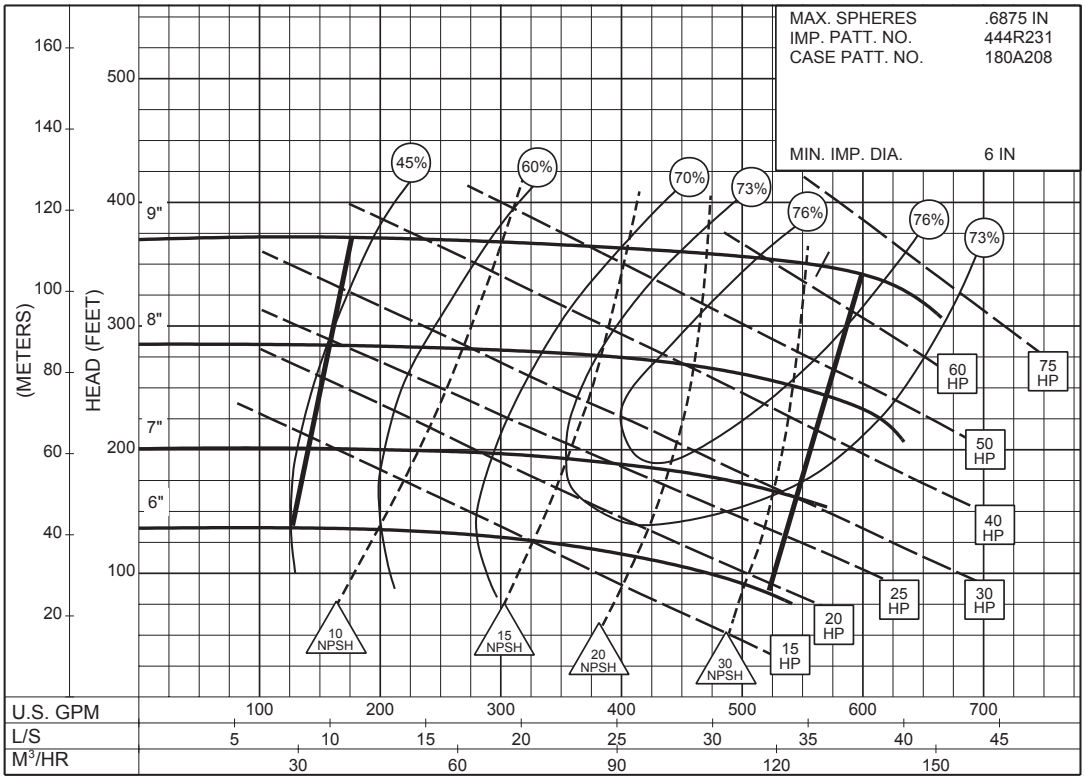
# 3 x 3 x 9B SERIES 380

## ENCLOSED IMPELLER

Supersedes Section 380 Page 412
Dated January 2001

**3500 R.P.M**

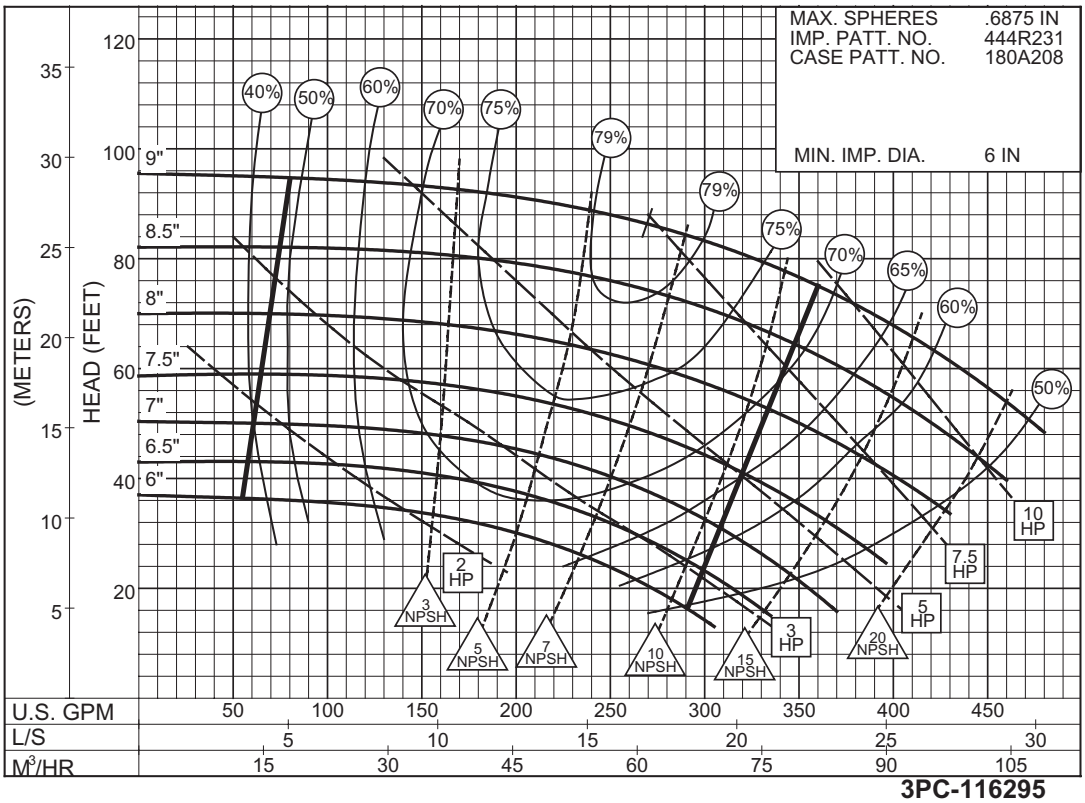
**SIZE : 3x3x9B TYPE : 382 IMPELLER : Enclosed R. P. M. : 3500**




**3PC-140728**

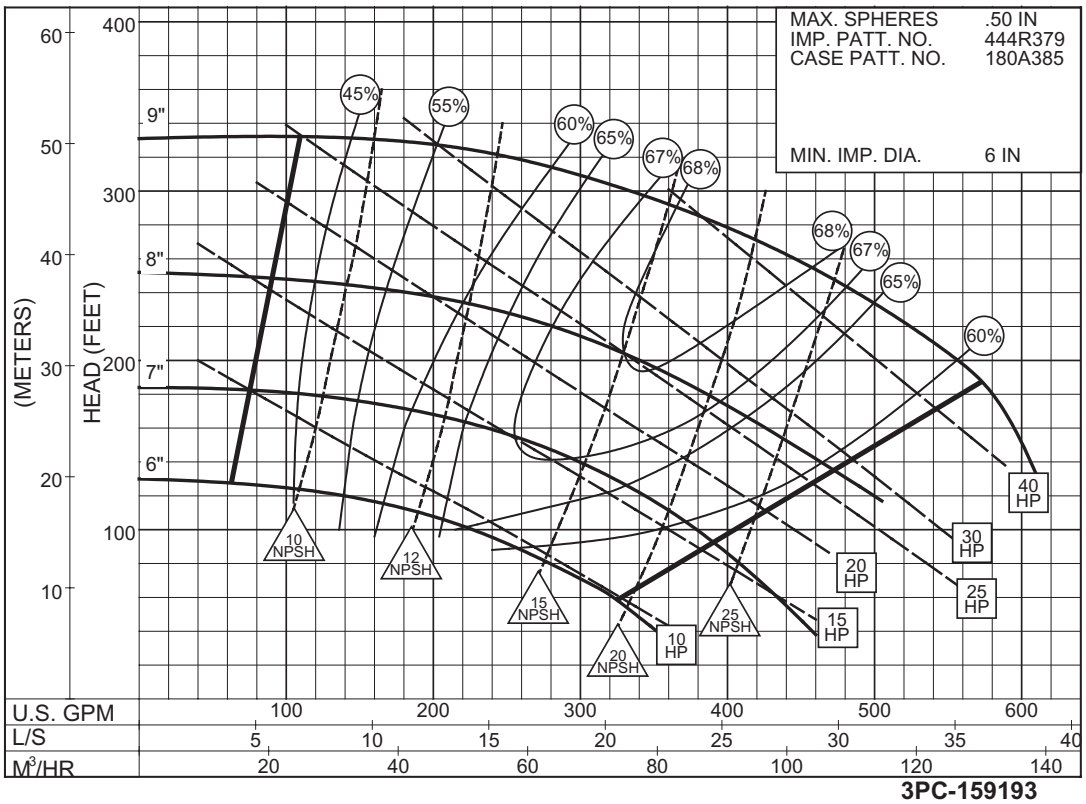
**1750 R.P.M**

**SIZE : 3x3x9B TYPE : 382 IMPELLER : Enclosed R. P. M. : 1750**




**3PC-116295**

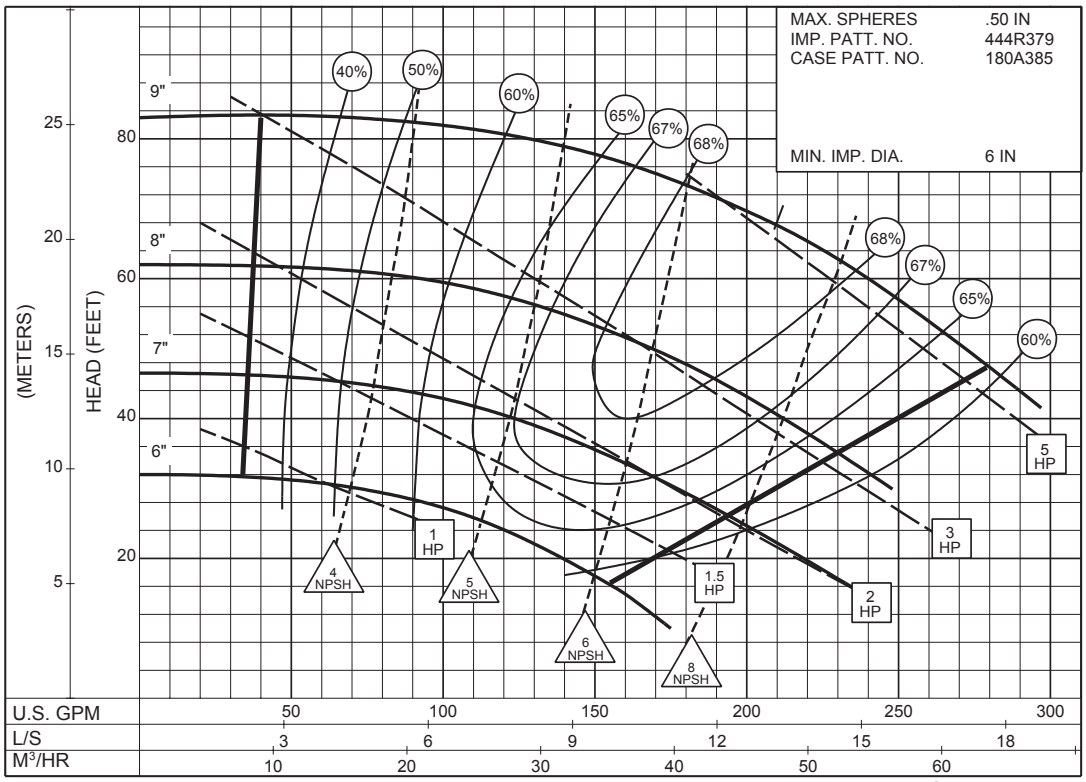
**SIZE : 3X4X9** **TYPE : 382** **IMPELLER : Enclosed** **R. P. M. : 3500**




3PC-159193

3500 R.P.M

**SIZE : 3x4x9** **TYPE : 382** **IMPELLER : Enclosed** **R. P. M. : 1750**




3PC-159194

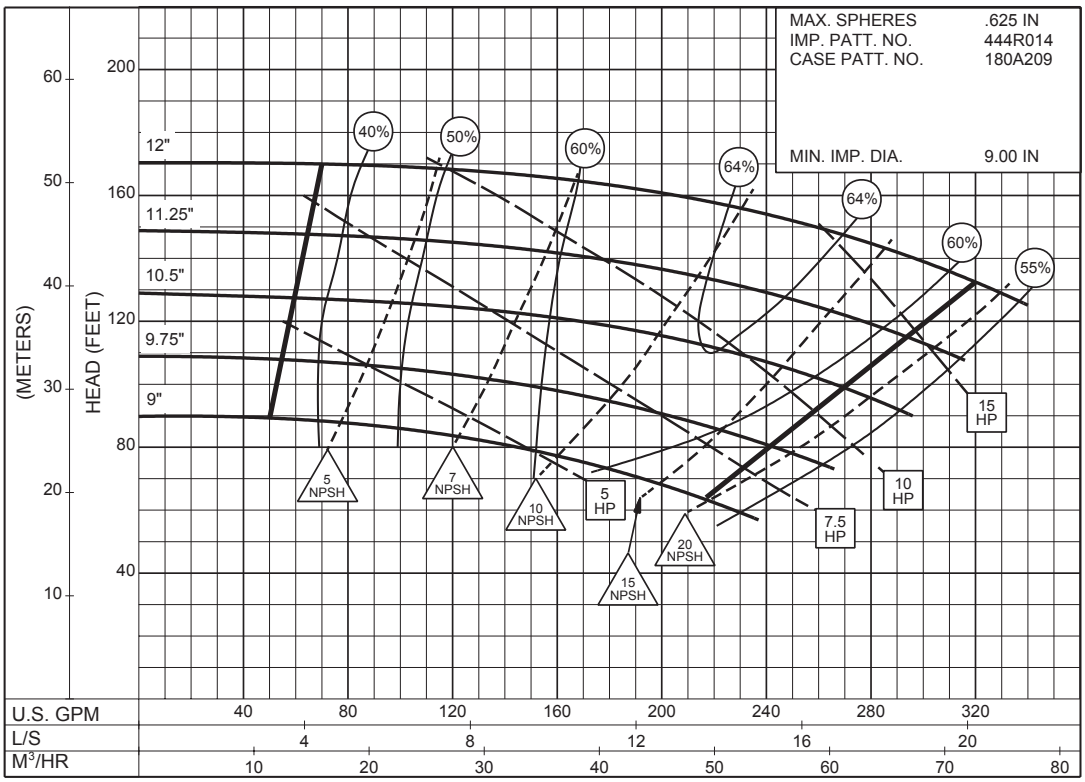
1750 R.P.M

# 3 x 3 x 12 SERIES 380

## ENCLOSED IMPELLER

**1750 R.P.M**

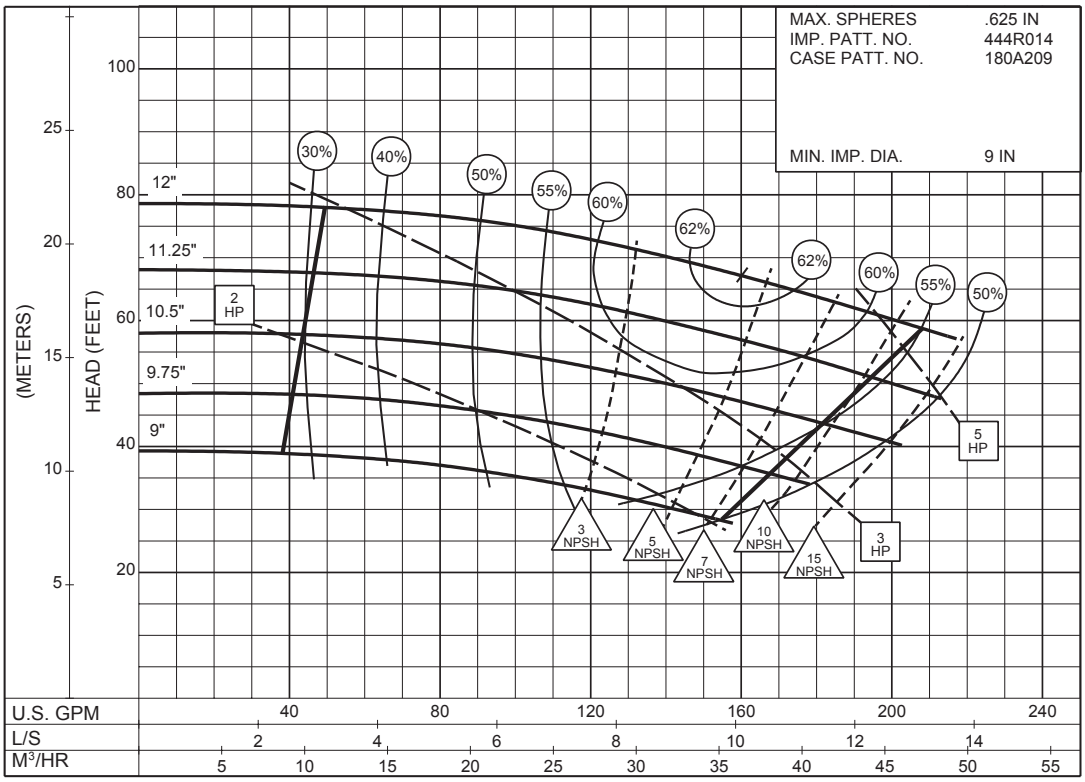
**SIZE : 3x3x12** **TYPE : 382** **IMPELLER : Enclosed** **R. P. M. : 1750**




**3PC-116288**

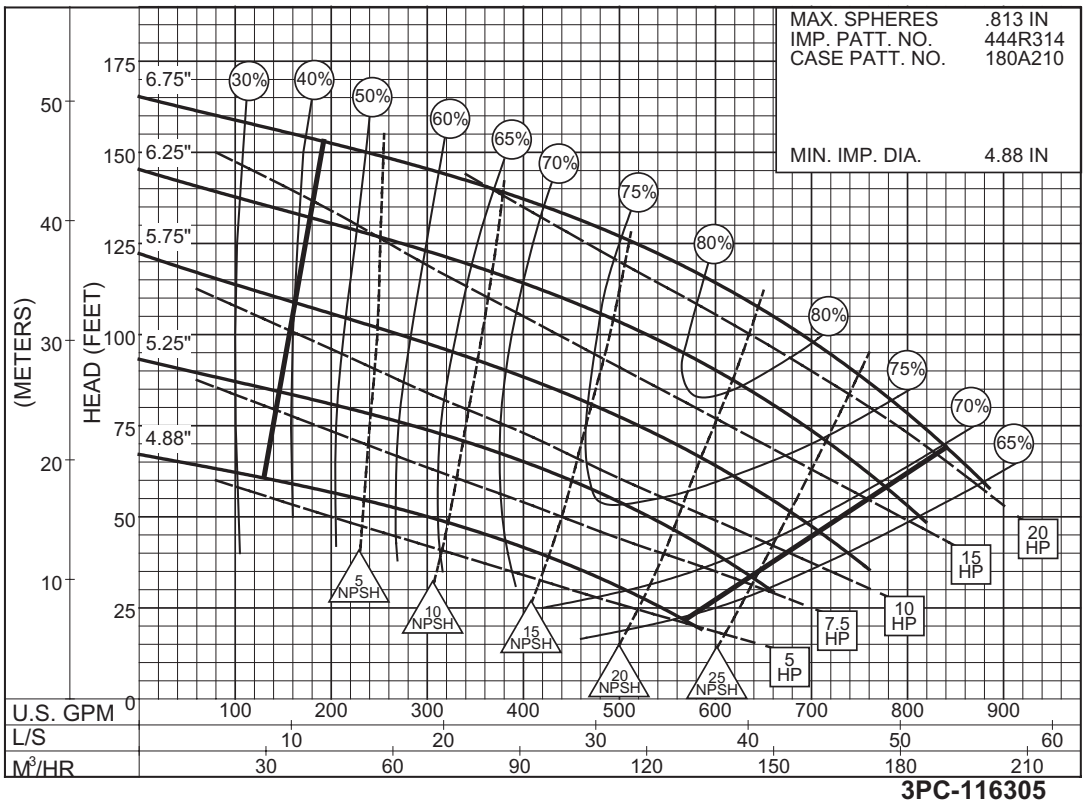
**1150 R.P.M**

**SIZE : 3x3x12** **TYPE : 382** **IMPELLER : Enclosed** **R. P. M. : 1150**




**3PC-116289**

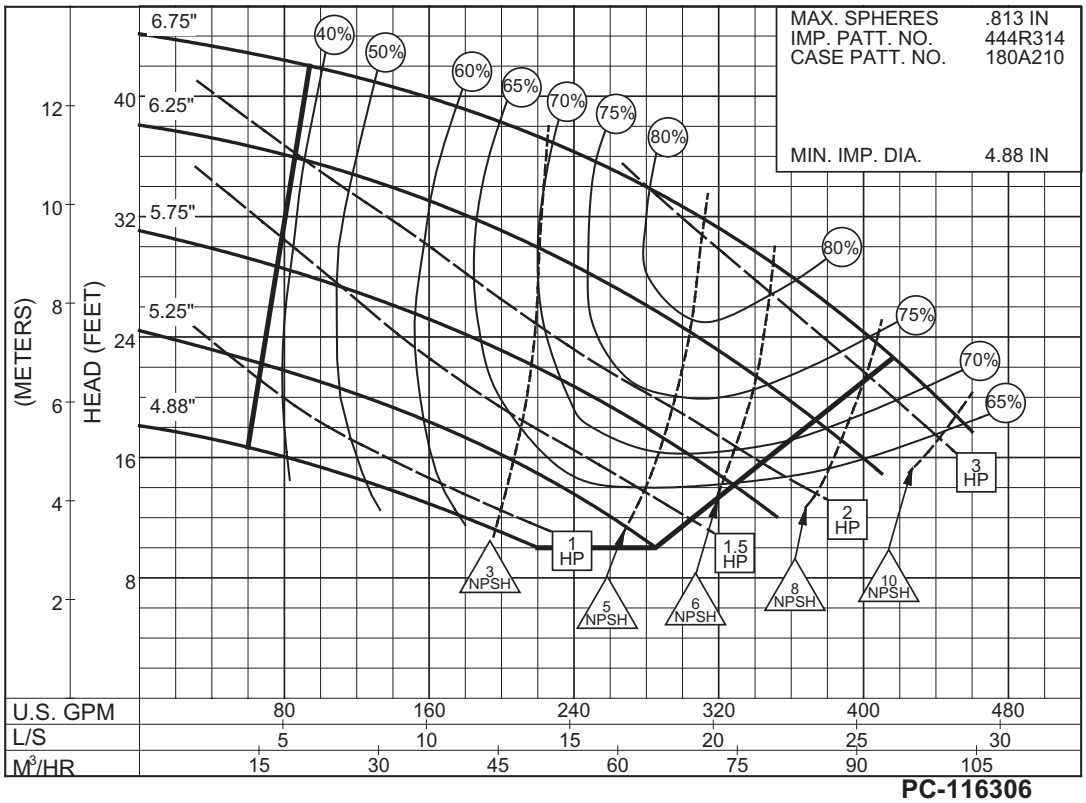
**SIZE : 4x4x7A TYPE : 382 IMPELLER : Enclosed R. P. M. : 3500**




**3PC-116305**

**3500 R.P.M**

**SIZE : 4x4x7A TYPE : 382 IMPELLER : Enclosed R. P. M. : 1750**




**PC-116306**

**1750 R.P.M**

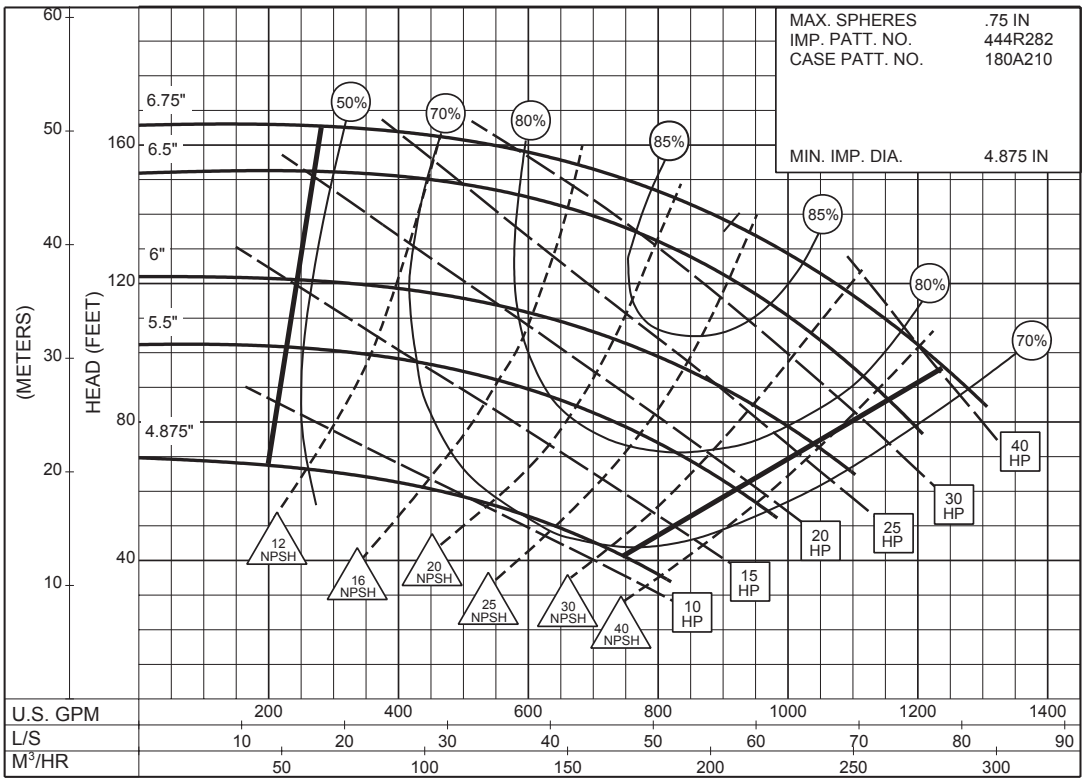
# 4 x 4 x 7B SERIES 380

ENCLOSED IMPELLER

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Dated January 2001

**3500** R.P.M

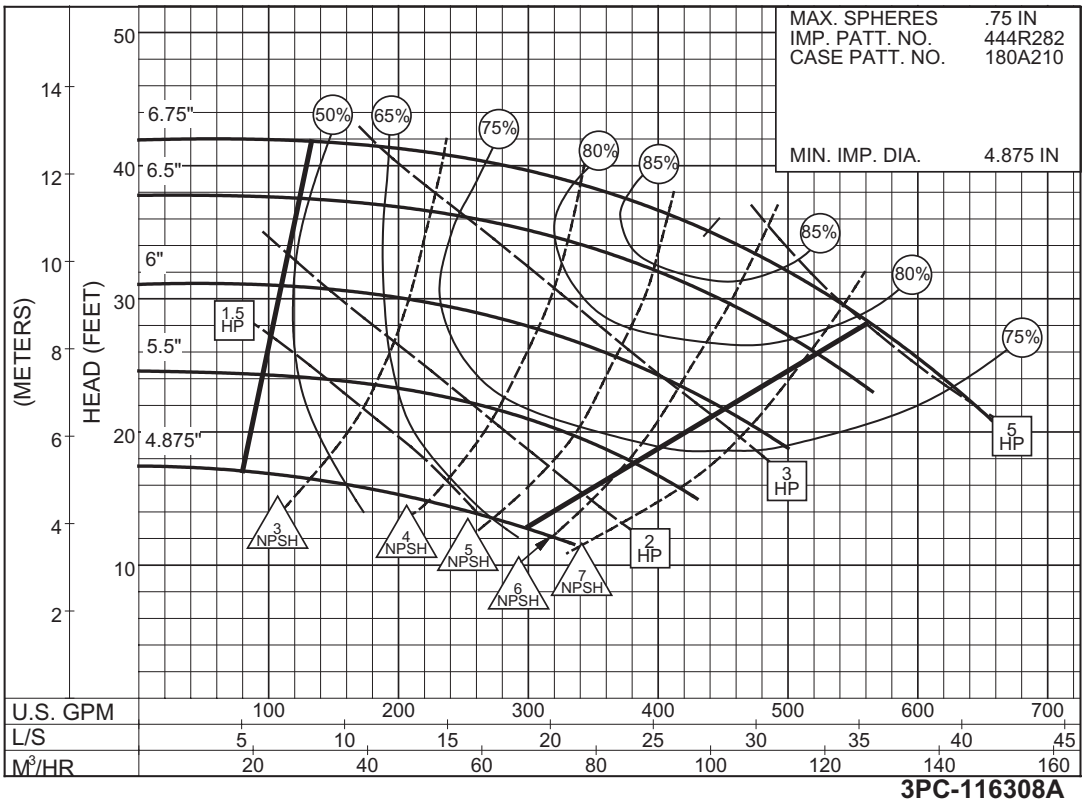
**SIZE : 4x4x7B** **TYPE : 382** **IMPELLER : Enclosed** **R. P. M. : 3500**




3PC-116307A

**1750** R.P.M

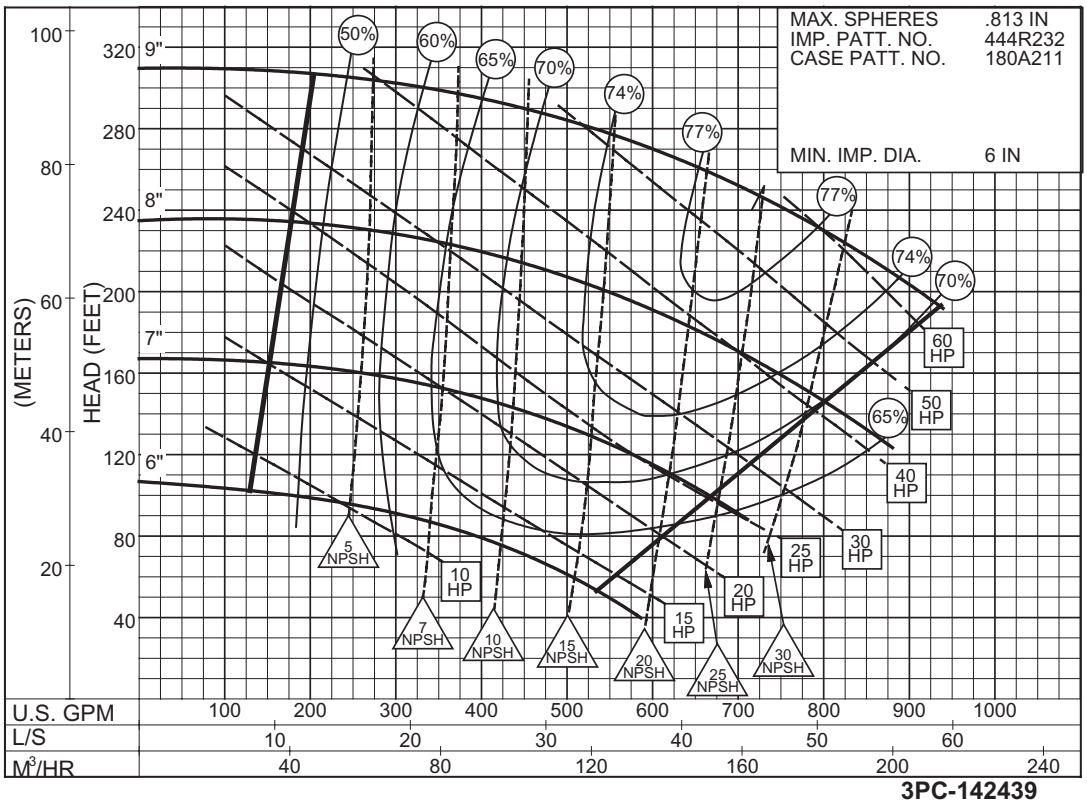
**SIZE : 4x4x7B** **TYPE : 382** **IMPELLER : Enclosed R. P. M. : 1750**




3PC-116308A

AURORA®
Pentair Pump Group

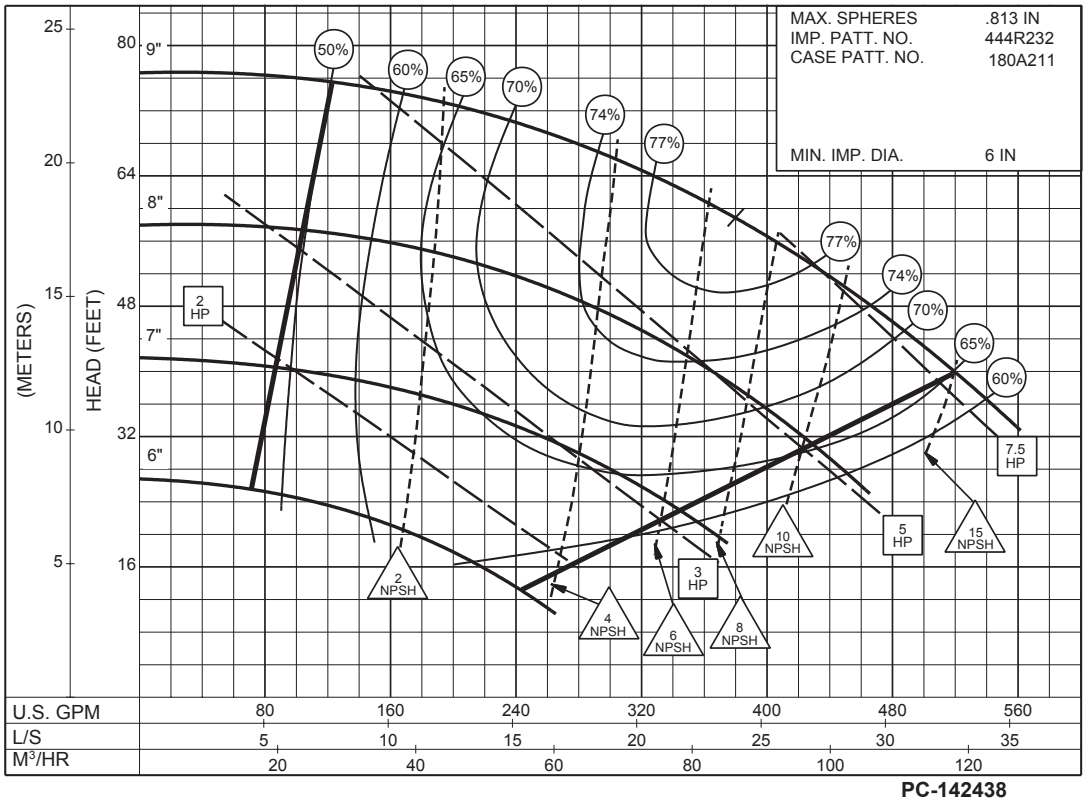
**SIZE : 4x4x9A TYPE : 382 IMPELLER : Enclosed R. P. M. : 3500**




**3PC-142439**

**3500 R.P.M**

**SIZE : 4x4x9A TYPE : 382 IMPELLER : Enclosed R. P. M. : 1750**




**PC-142438**

**1750 R.P.M**

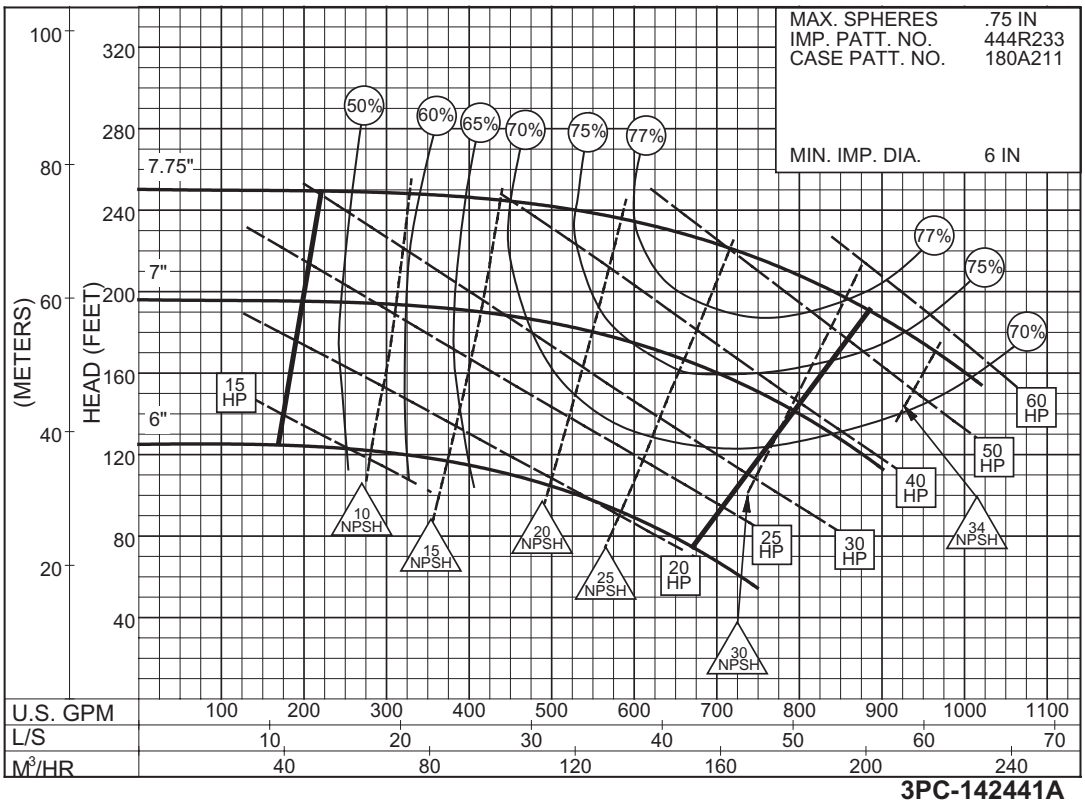
# 4 x 4 x 9B SERIES 380

## ENCLOSED IMPELLER

Supersedes Section 380 Page 418
Dated January 2001

**3500 R.P.M**

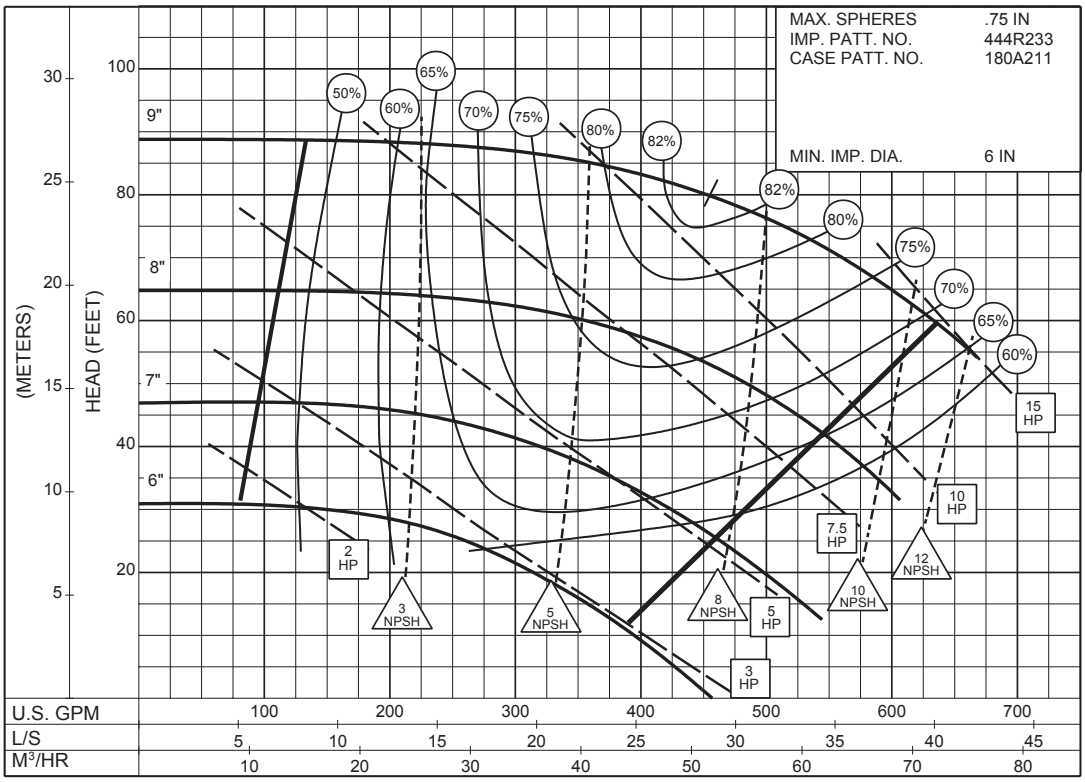
**SIZE : 4x4x9B TYPE : 382 IMPELLER : Enclosed R. P. M. : 3500**




3PC-142441A

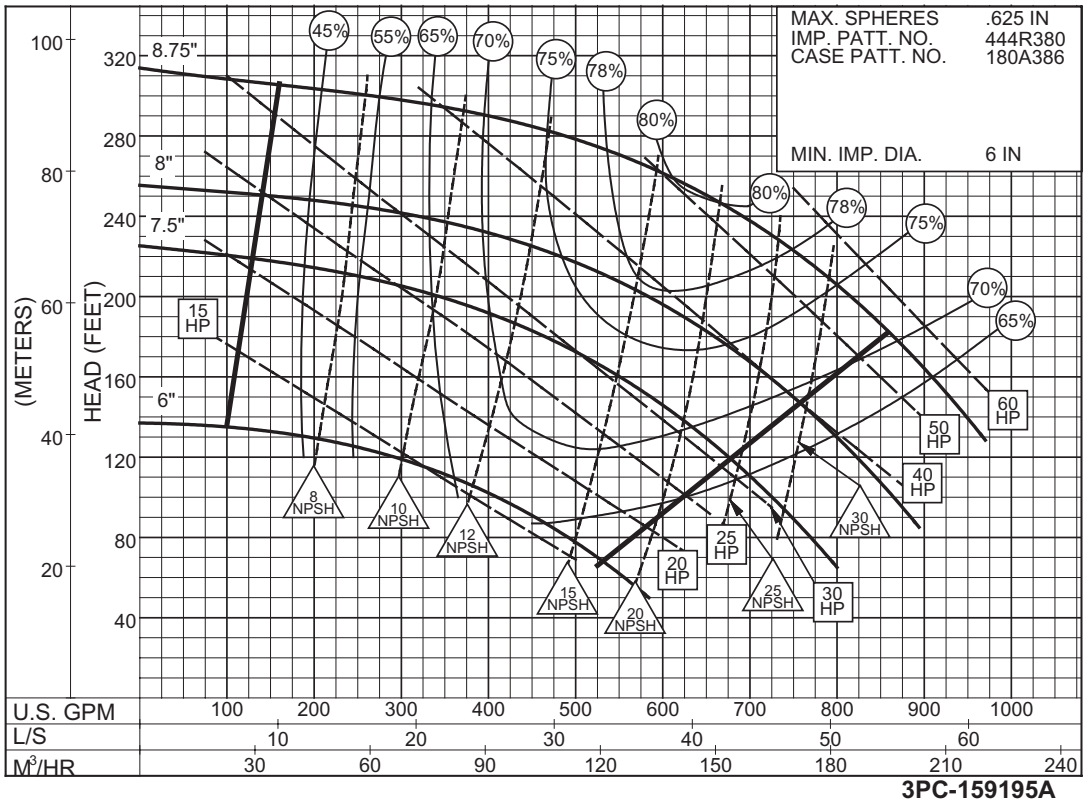
**1750 R.P.M**

**SIZE : 4x4x9B TYPE : 382 IMPELLER : Enclosed R. P. M. : 1750**




3PC-142440

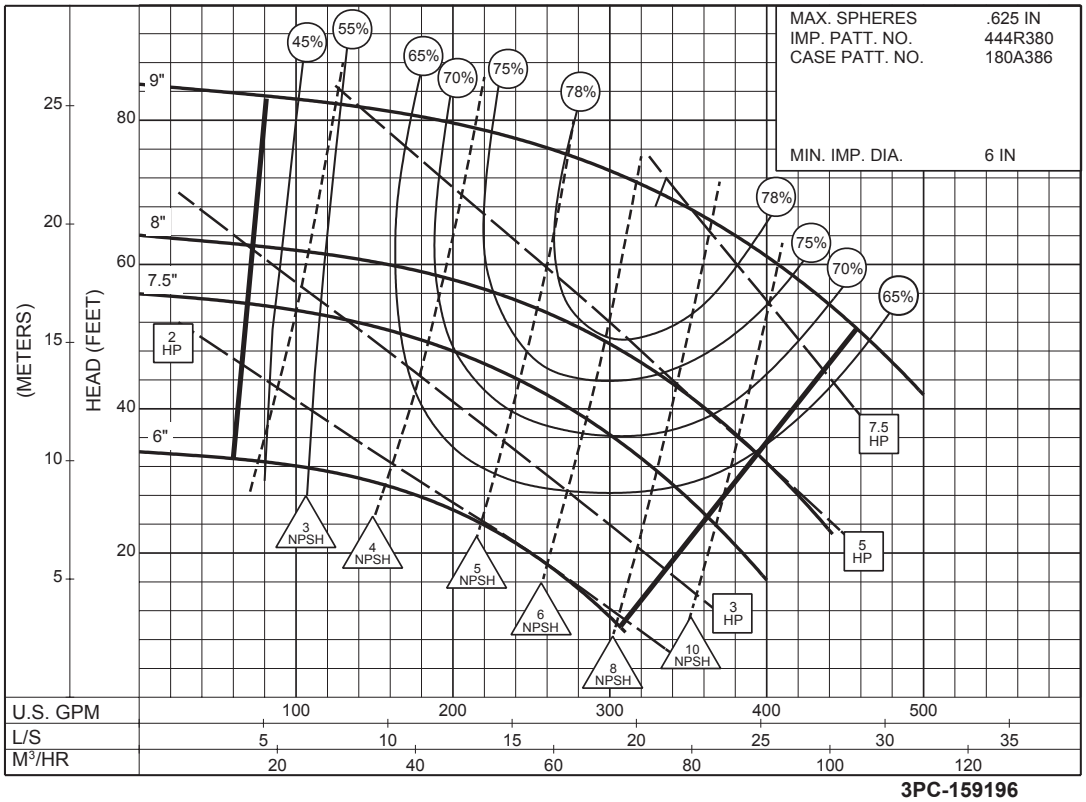
**SIZE : 4x5x9** **TYPE : 382** **IMPELLER : Enclosed** **R. P. M. : 3500**




3PC-159195A

**3500** R.P.M

**SIZE : 4x5x9** **TYPE : 382** **IMPELLER : Enclosed** **R. P. M. : 1750**




3PC-159196

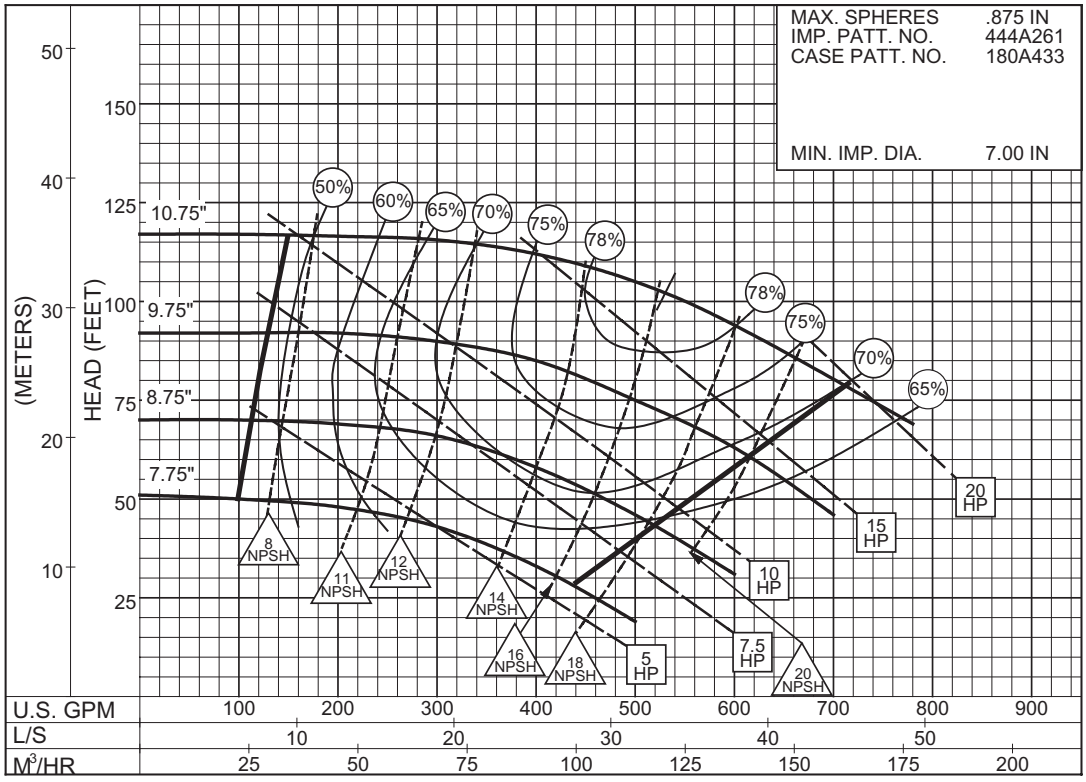
**1750** R.P.M

# 4 x 4 x 11 SERIES 380

ENCLOSED IMPELLER

**SIZE : 4x4x11 TYPE : 382 IMPELLER : Enclosed R. P. M. : 1760**

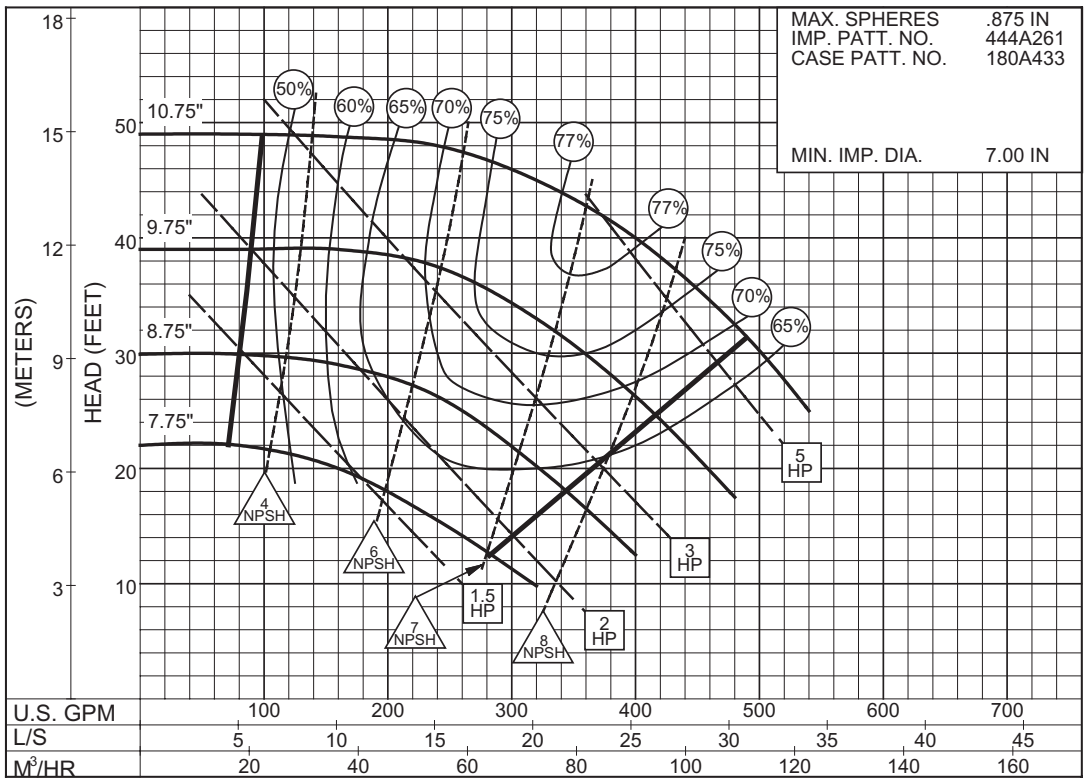
**1760 R.P.M**




PC-177189

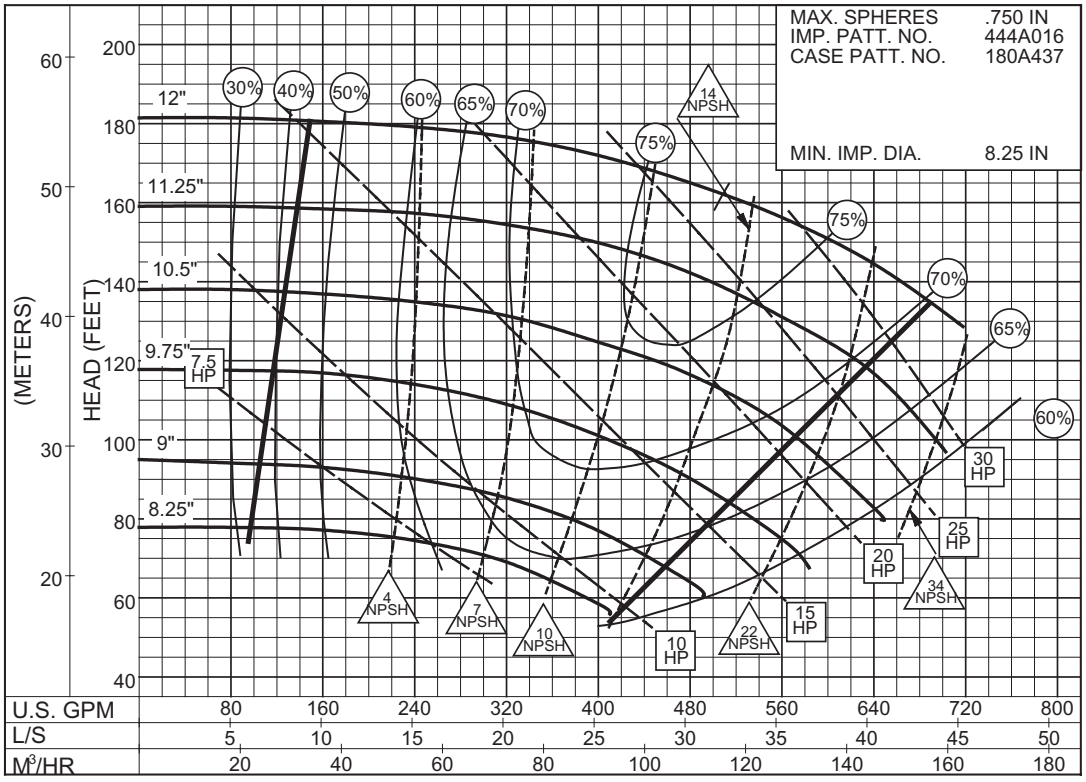
**SIZE : 4x4x11 TYPE : 382 IMPELLER : Enclosed R. P. M. : 1150**

**1150 R.P.M**




PC-177190

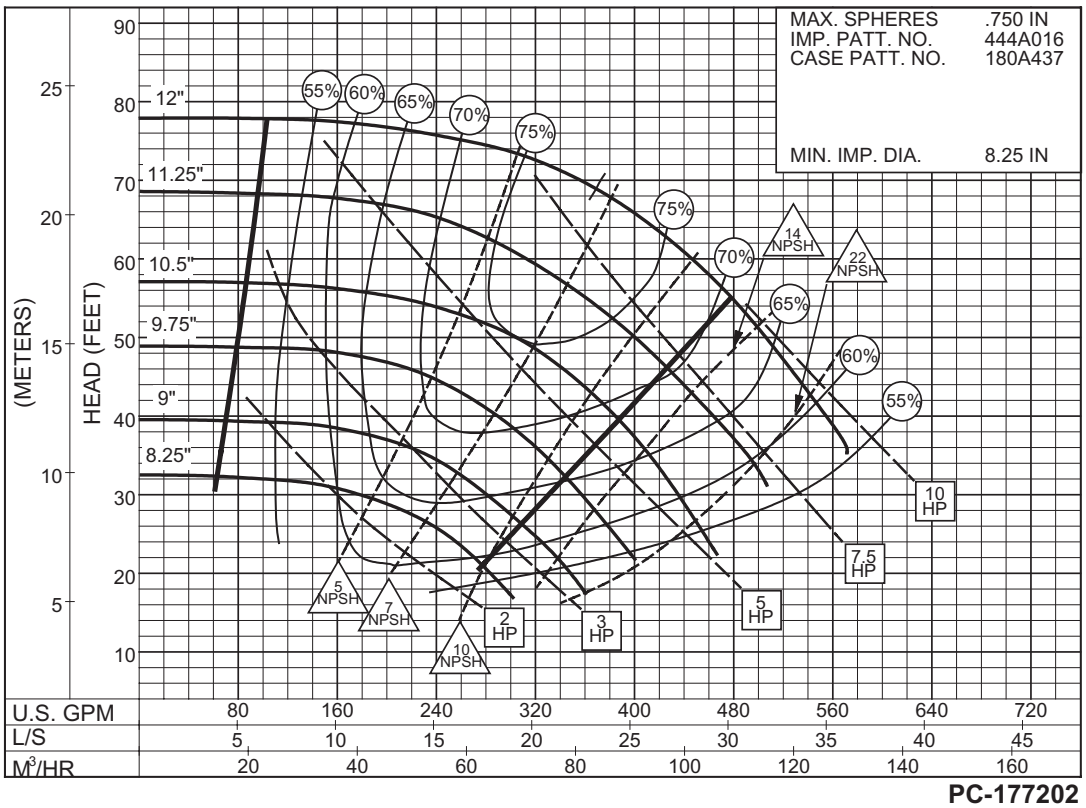
**SIZE : 4x4x12 TYPE : 382 IMPELLER : Enclosed R. P. M. : 1760**




PC-177201

**1760 R.P.M**

**SIZE : 4x4x12 TYPE : 382 IMPELLER : Enclosed R. P. M. : 1150**




PC-177202

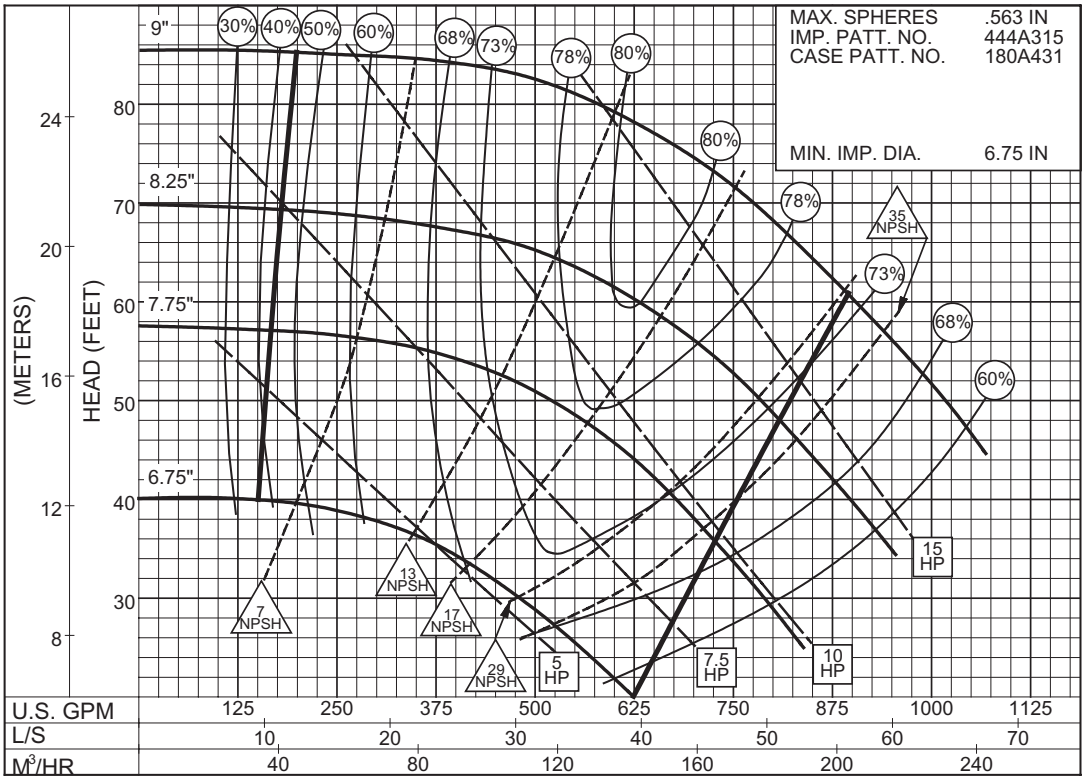
**1150 R.P.M**

# 5 x 5 x 9 SERIES 380

ENCLOSED IMPELLER

**1750 R.P.M**

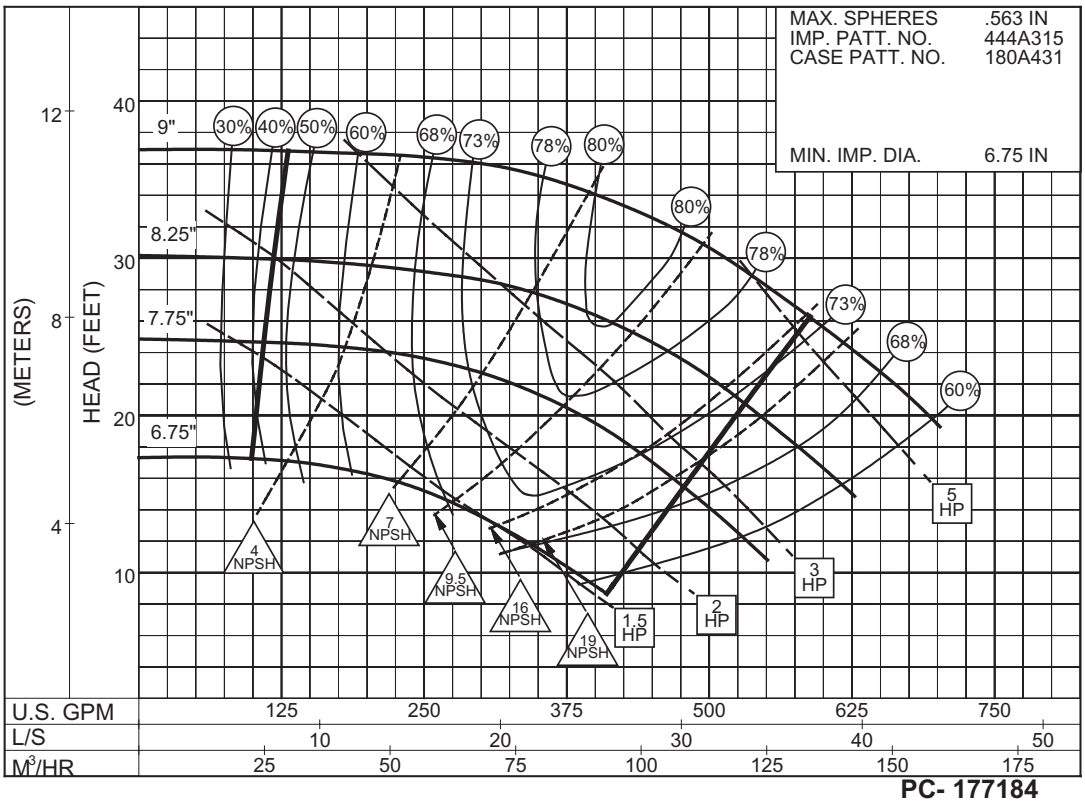
**SIZE : 5x5x9 TYPE : 382 IMPELLER : Enclosed R. P. M. : 1750**




PC-177183

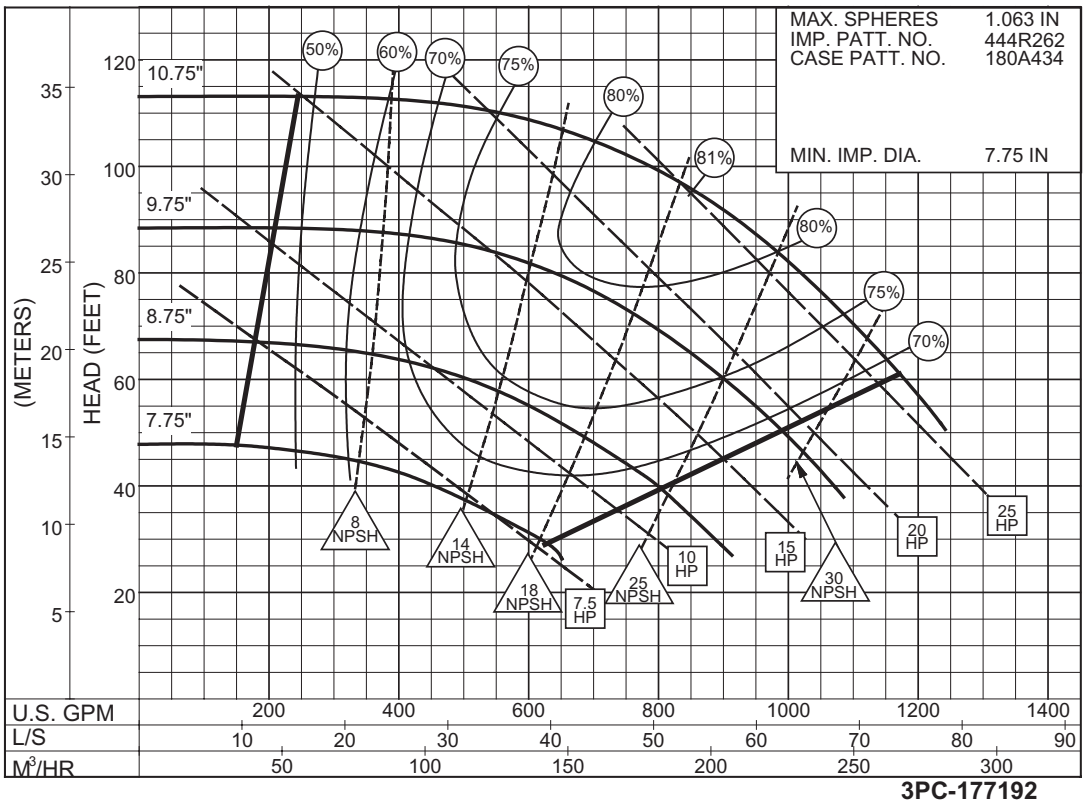
**1150 R.P.M**

**SIZE : 5x5x9 TYPE : 382 IMPELLER : Enclosed R. P. M. : 1150**




PC- 177184

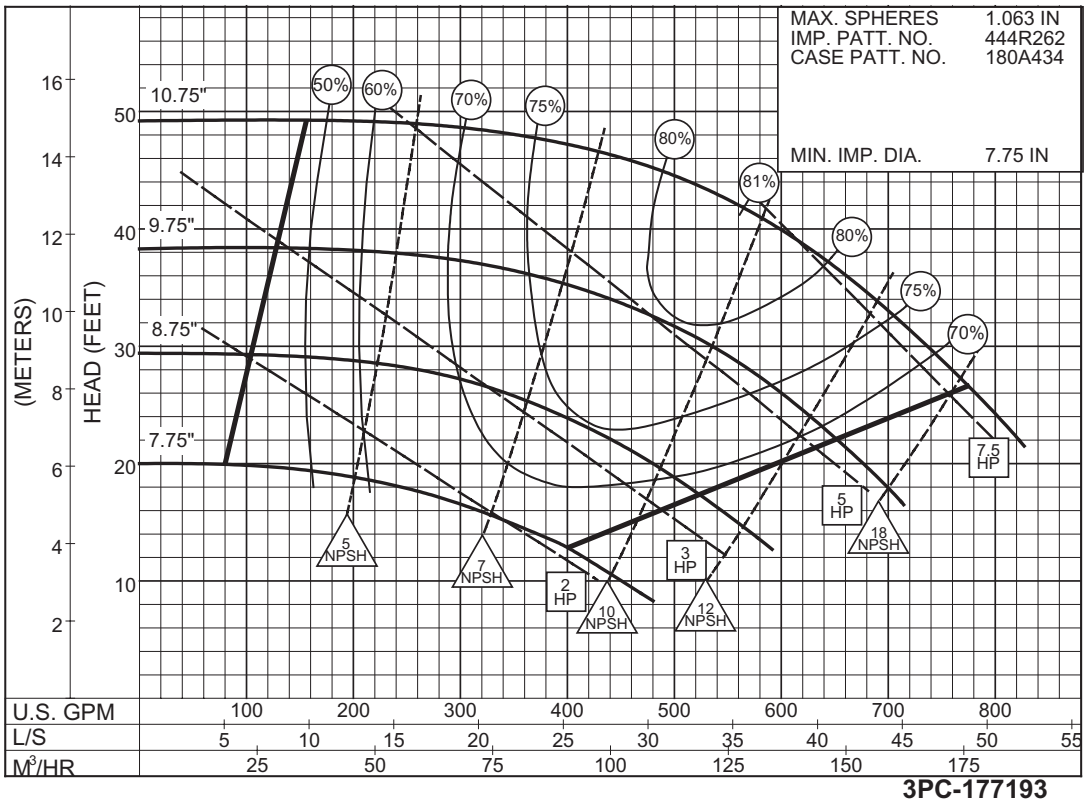
**SIZE : 5x5x11 TYPE : 382 IMPELLER : Enclosed R. P. M. : 1760**




3PC-177192

**1760 R.P.M**

**SIZE : 5x5x11 TYPE : 382 IMPELLER : Enclosed R. P. M. : 1150**




3PC-177193

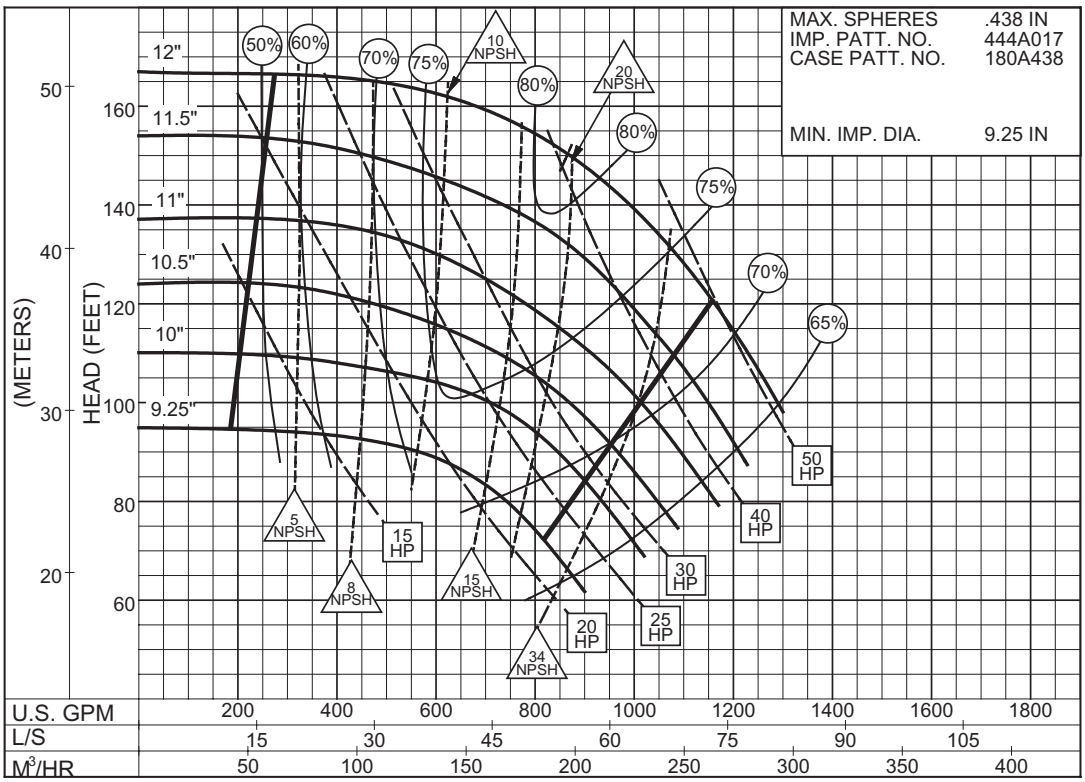
**1150 R.P.M**

# 5 x 5 x 12 SERIES 380

ENCLOSED IMPELLER

**SIZE : 5x5x12** **TYPE : 382** **IMPELLER : Enclosed R. P. M. : 1760**

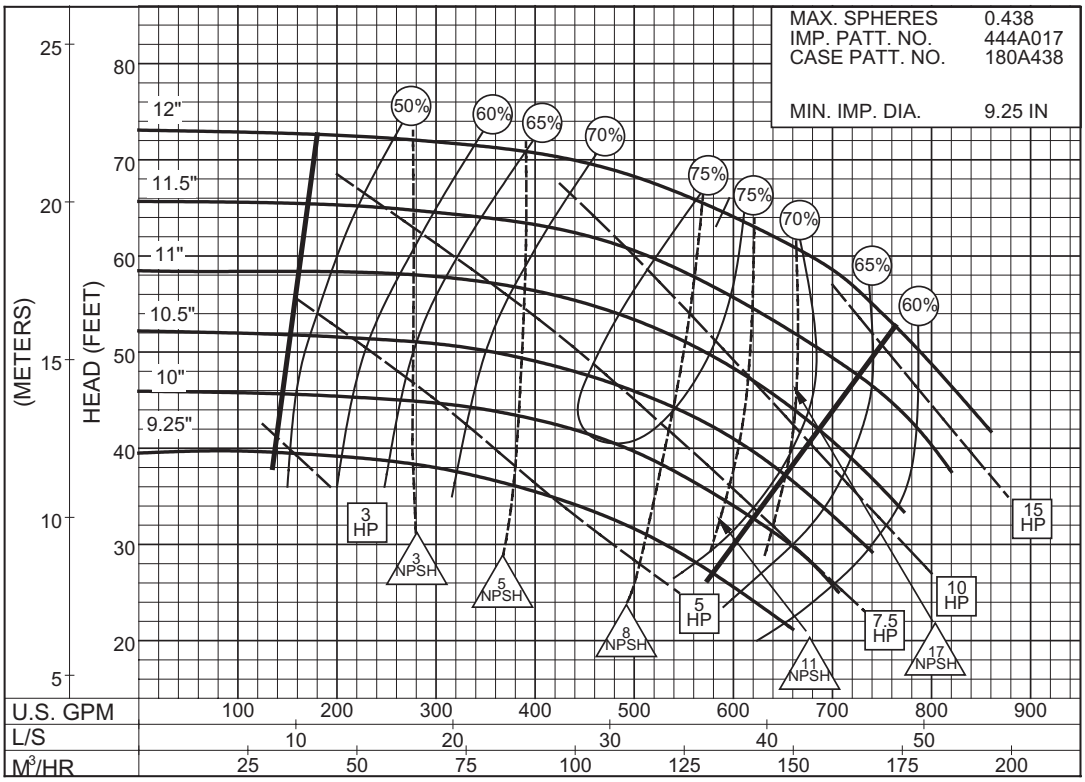
**1760**
R.P.M




**PC-177204**

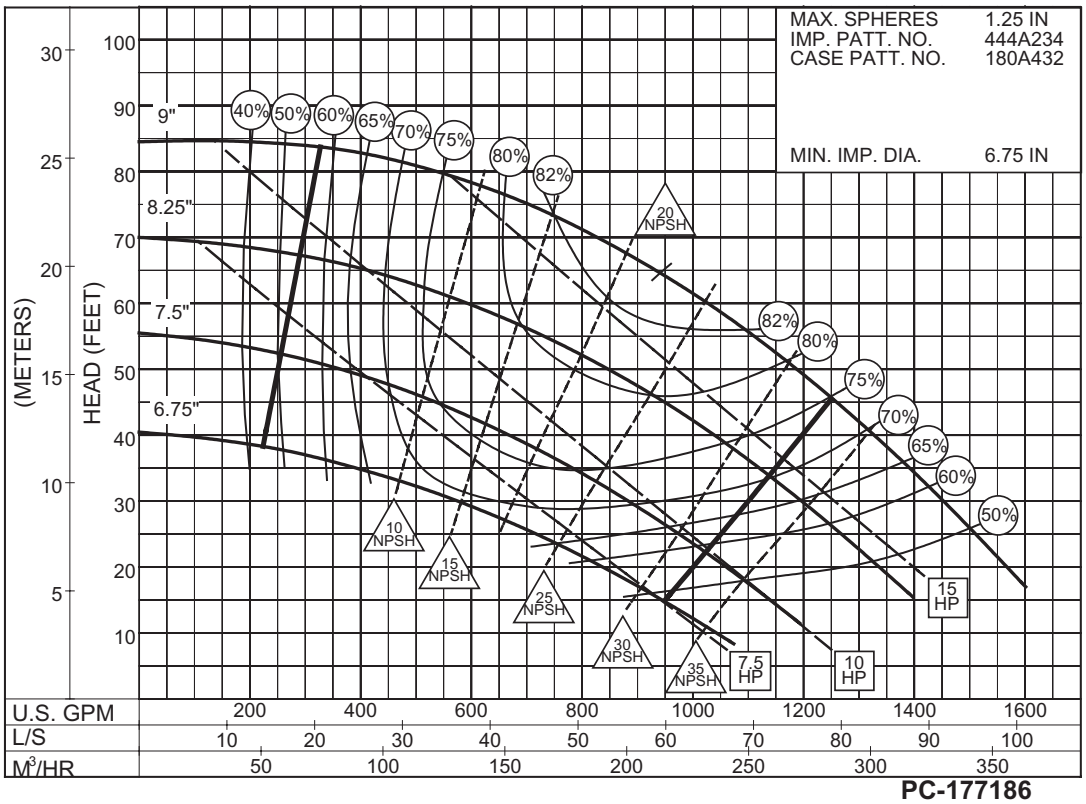
**SIZE : 5x5x12** **TYPE : 382** **IMPELLER : Enclosed R. P. M. : 1150**

**1150**
R.P.M




**PC-177205**

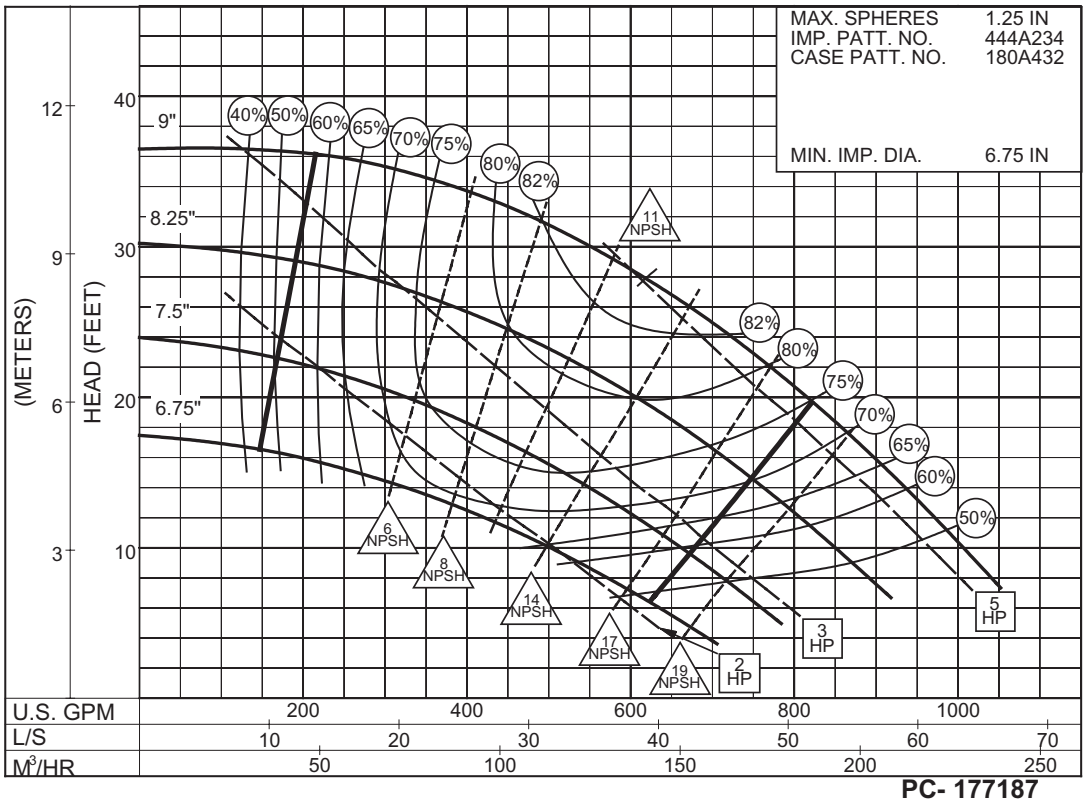
**SIZE : 6x6x9 TYPE : 382 IMPELLER : Enclosed R. P. M. : 1750**




PC-177186

**1750 R.P.M**

**SIZE : 6x6x9 TYPE : 382 IMPELLER : Enclosed R. P. M. : 1150**




PC- 177187

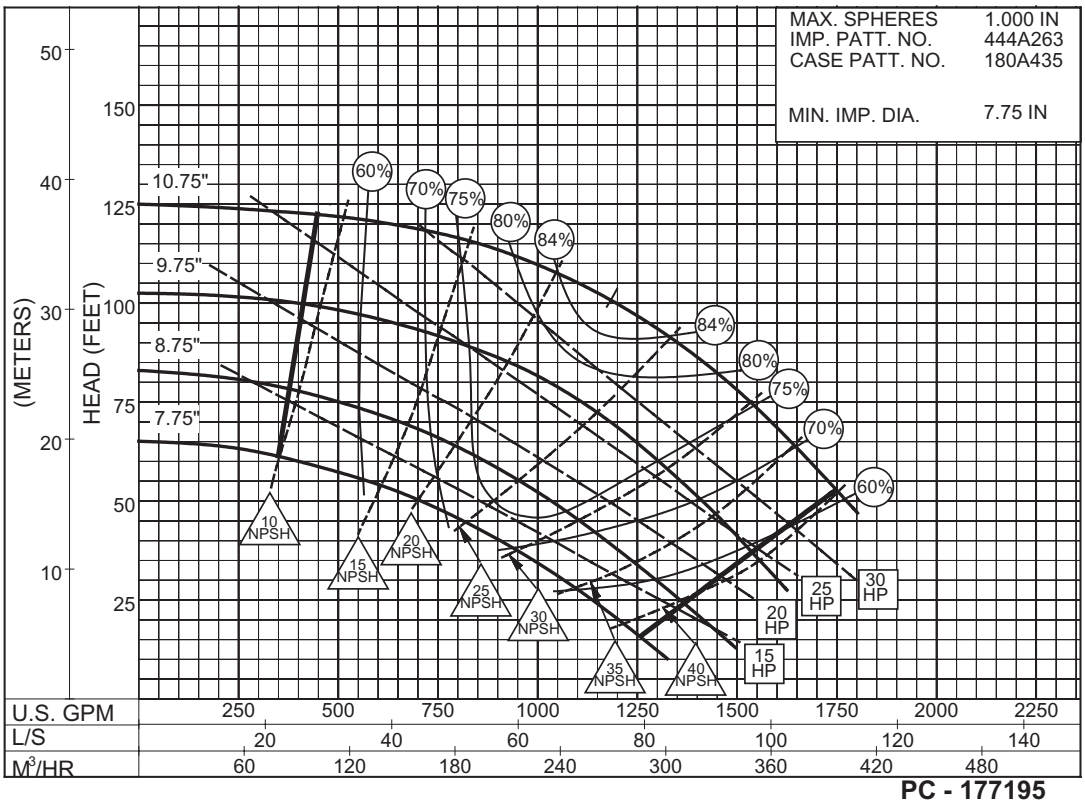
**1150 R.P.M**

# 6 x 6 x 11 SERIES 380

ENCLOSED IMPELLER

**SIZE : 6x6x11** **TYPE : 382** **IMPELLER : Enclosed R. P. M. : 1760**

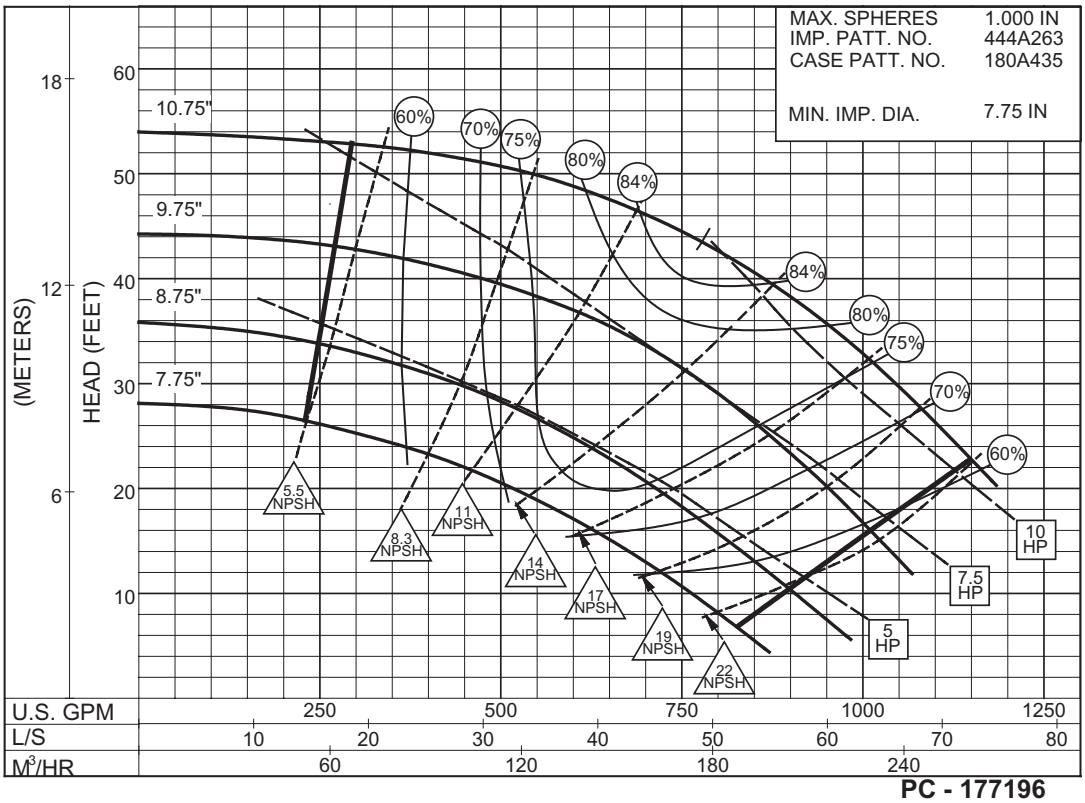
**1760 R.P.M**




**PC - 177195**

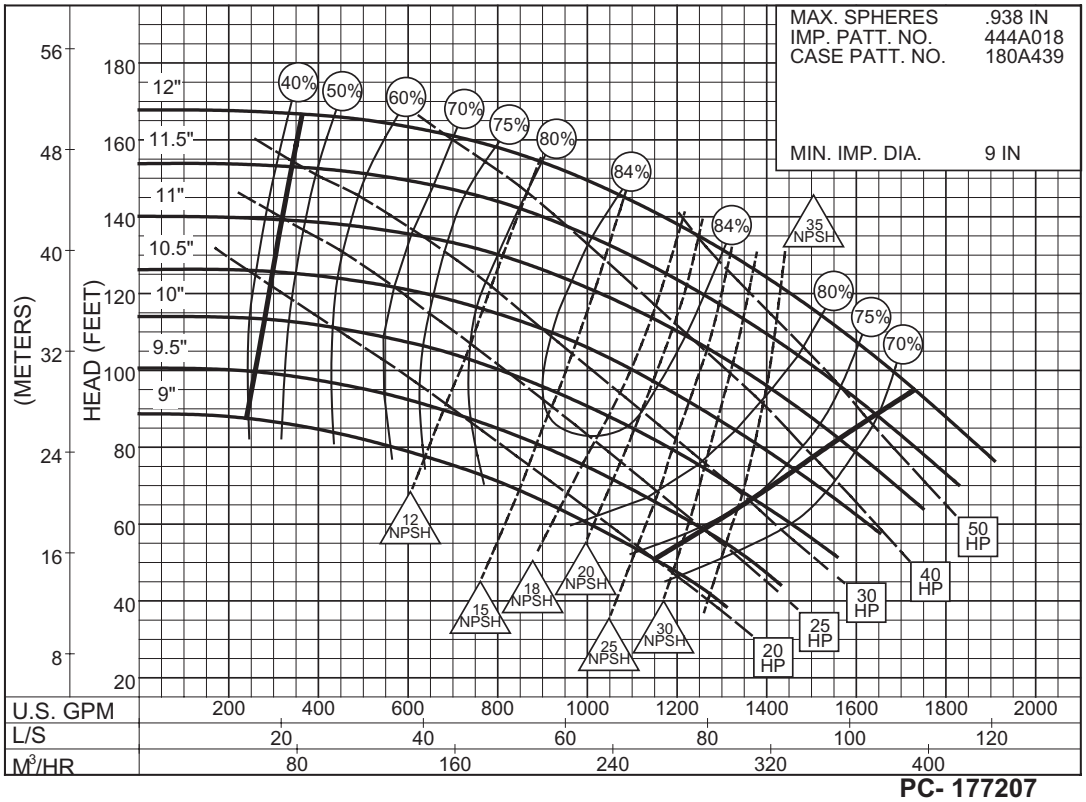
**SIZE : 6x6x11** **TYPE : 382** **IMPELLER : Enclosed R. P. M. : 1150**

**1150 R.P.M**




**PC - 177196**

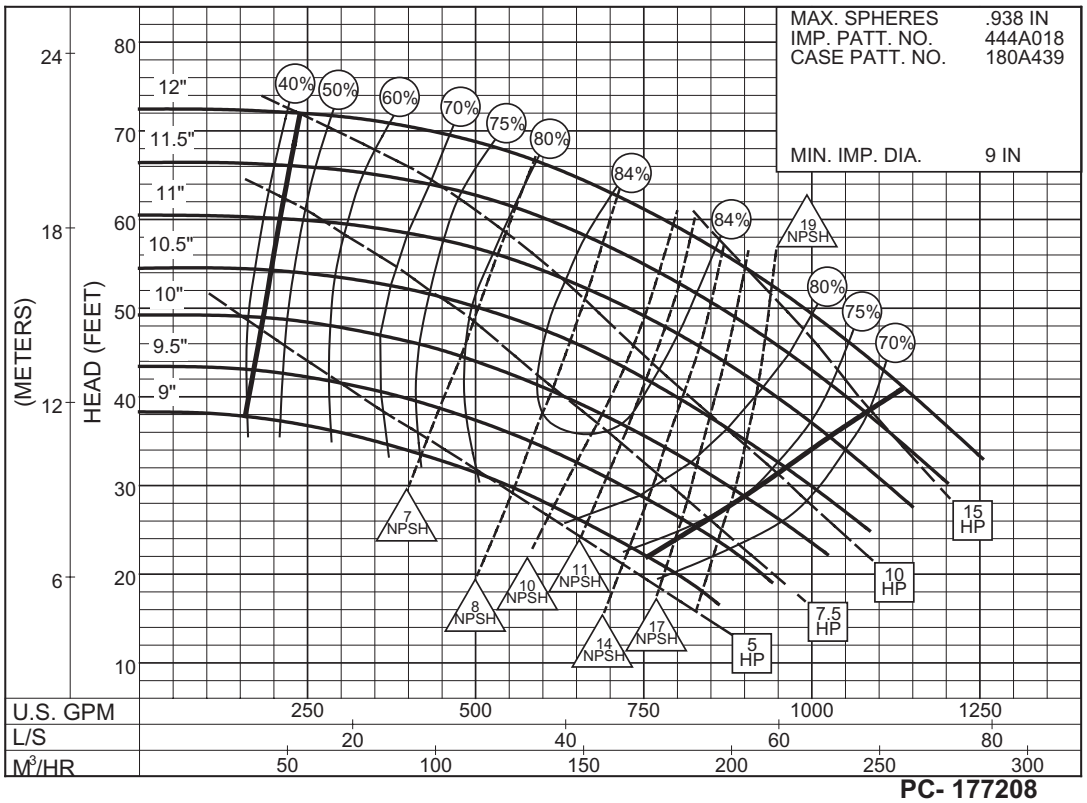
**SIZE : 6x6x12 TYPE : 382A IMPELLER : Enclosed R. P. M. : 1760**




PC- 177207

**1760 R.P.M**

**SIZE : 6x6x12 TYPE : 382A IMPELLER : Enclosed R. P. M. : 1150**




PC- 177208

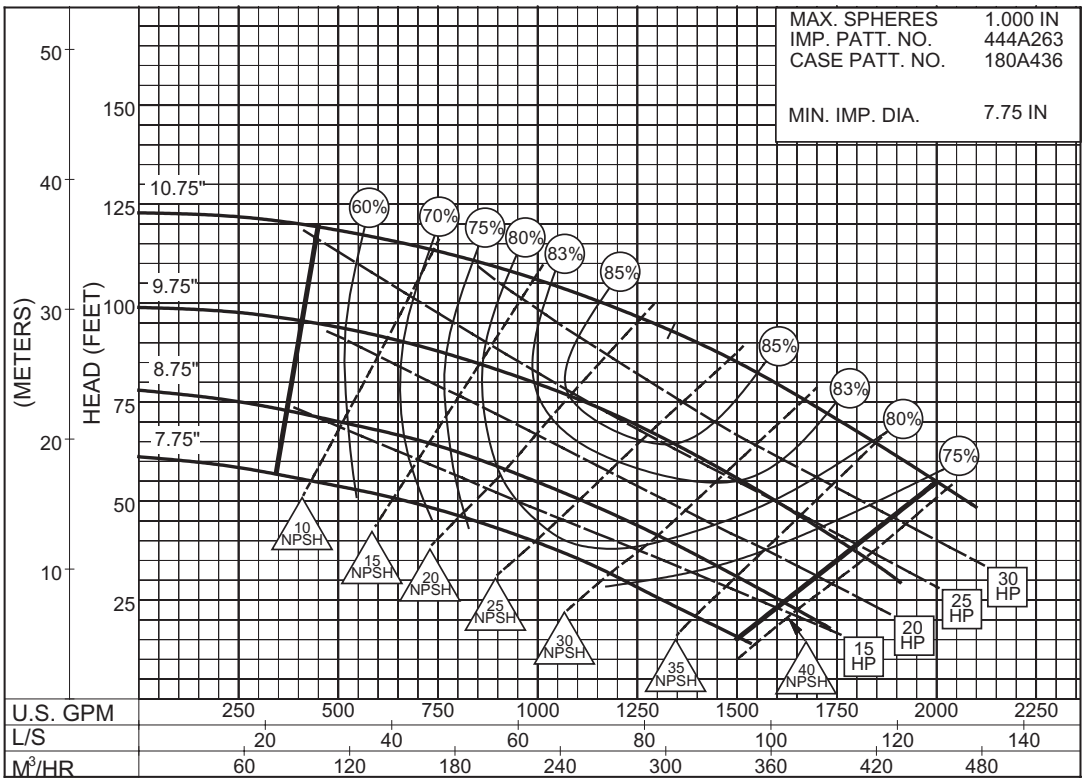
**1150 R.P.M**

# 8 x 8 x 11 SERIES 380

ENCLOSED IMPELLER

**SIZE : 8x8x11 TYPE : 382 IMPELLER : Enclosed R. P. M. : 1760**

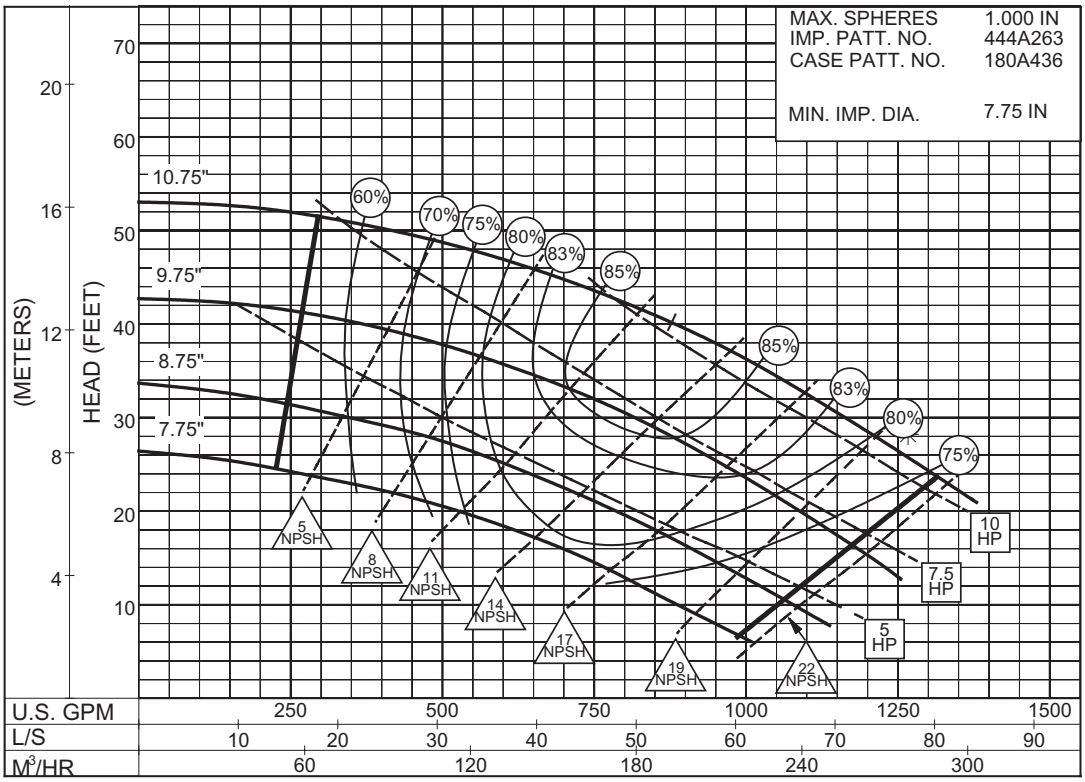
**1760 R.P.M**




**PC-177198**

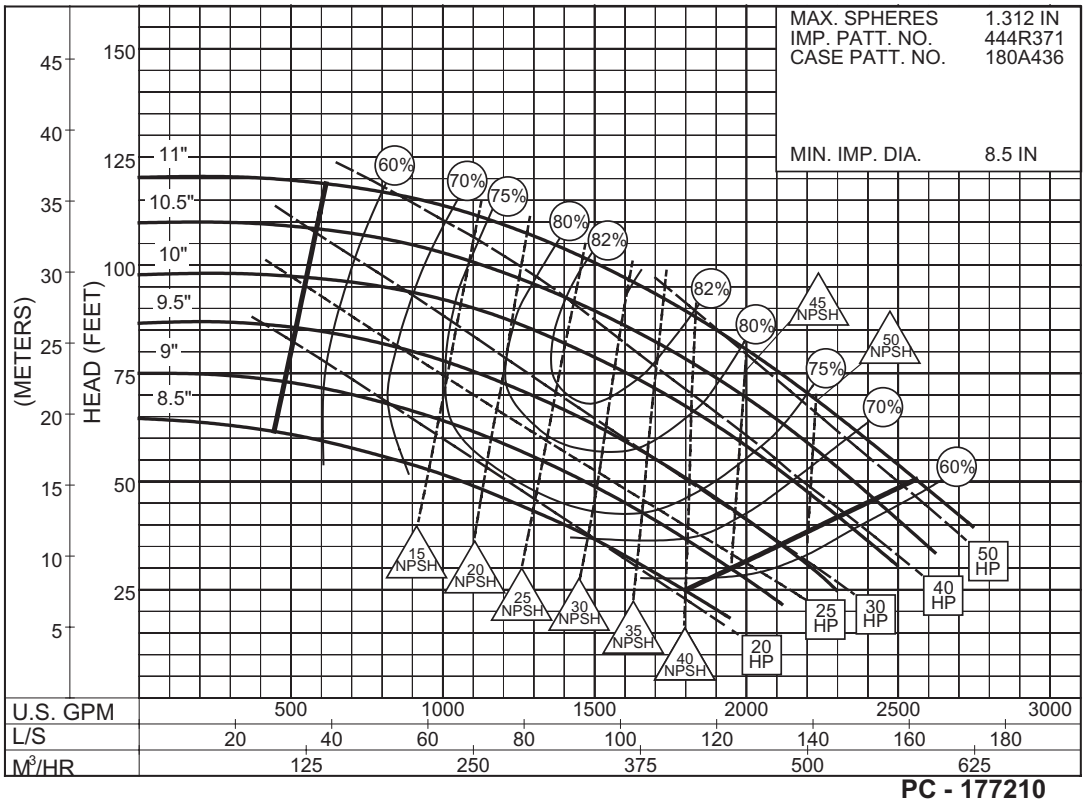
**SIZE : 8x8x11 TYPE : 382 IMPELLER : Enclosed R. P. M. : 1150**

**1150 R.P.M**




**PC-177199**

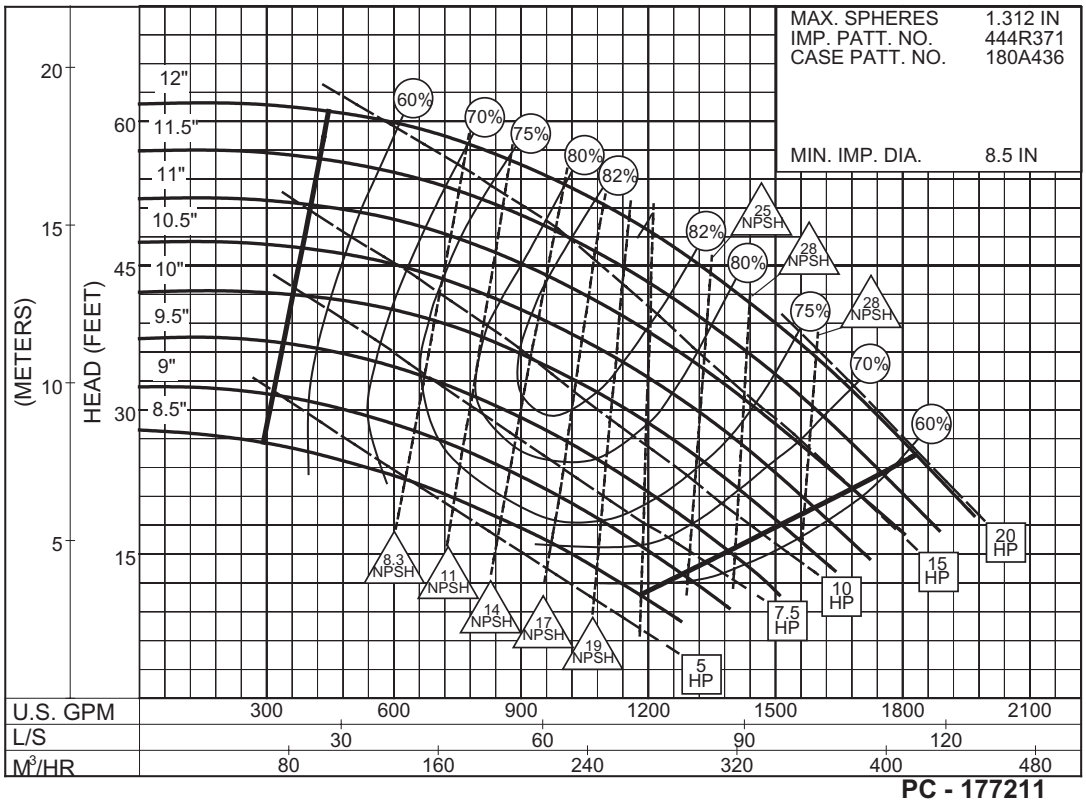
**SIZE : 8x8x12 TYPE : 382 IMPELLER : Enclosed R. P. M. : 1760**




**PC - 177210**

**1760 R.P.M**

**SIZE : 8x8x12 TYPE : 382 IMPELLER : Enclosed R. P. M. : 1150**




**PC - 177211**

**1150 R.P.M**

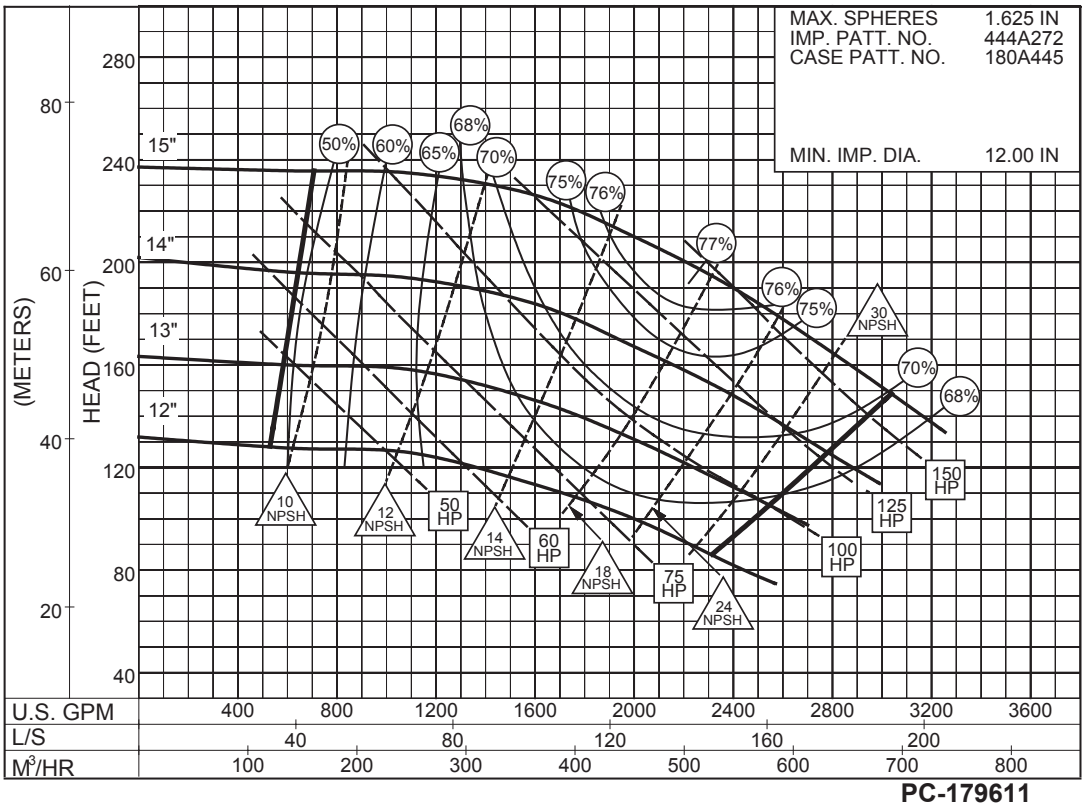
# 8 x 8 x 15 SERIES 380

ENCLOSED IMPELLER

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Dated May 2002

**1775 R.P.M**

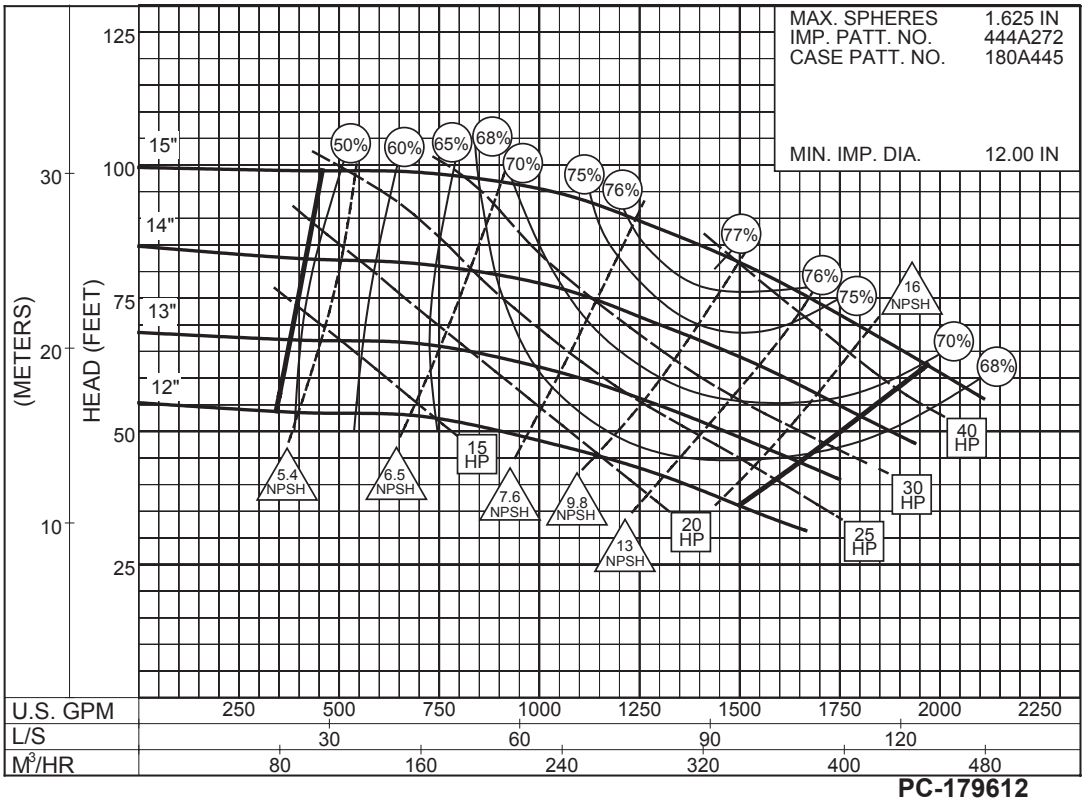
**SIZE : 8x8x15 TYPE : 382 IMPELLER : Enclosed R. P. M. : 1775**




**PC-179611**

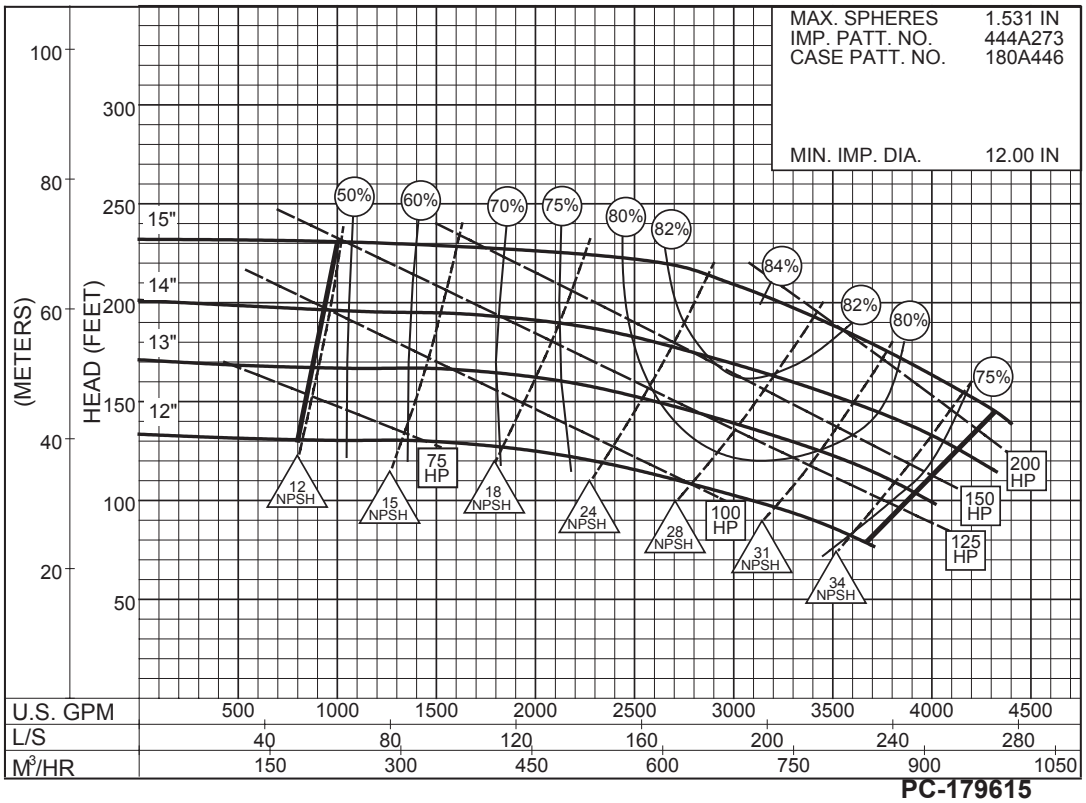
**1150 R.P.M**

**SIZE : 8x8x15 TYPE : 382 IMPELLER : Enclosed R. P. M. : 1150**




**PC-179612**

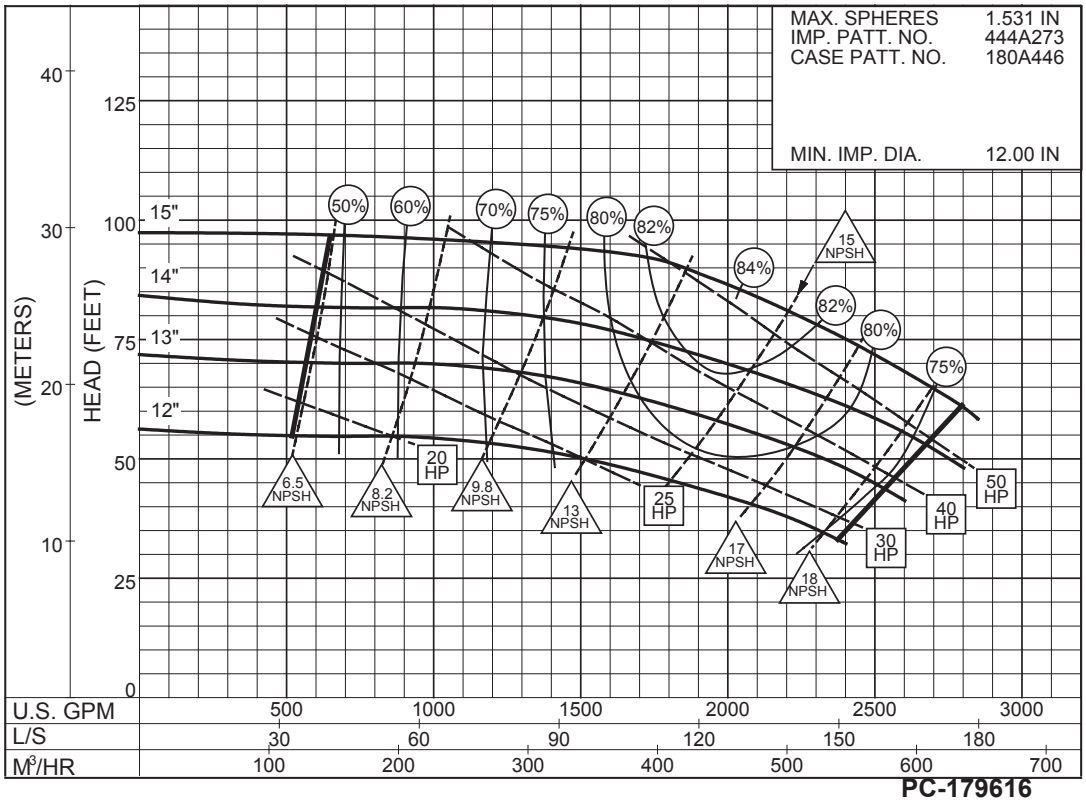
**SIZE : 10x10x15 TYPE : 382A IMPELLER : Enclosed R. P. M. : 1775**




**PC-179615**

**1775 R.P.M**

**SIZE : 10x10x15 TYPE : 382A IMPELLER : Enclosed R. P. M. : 1150**

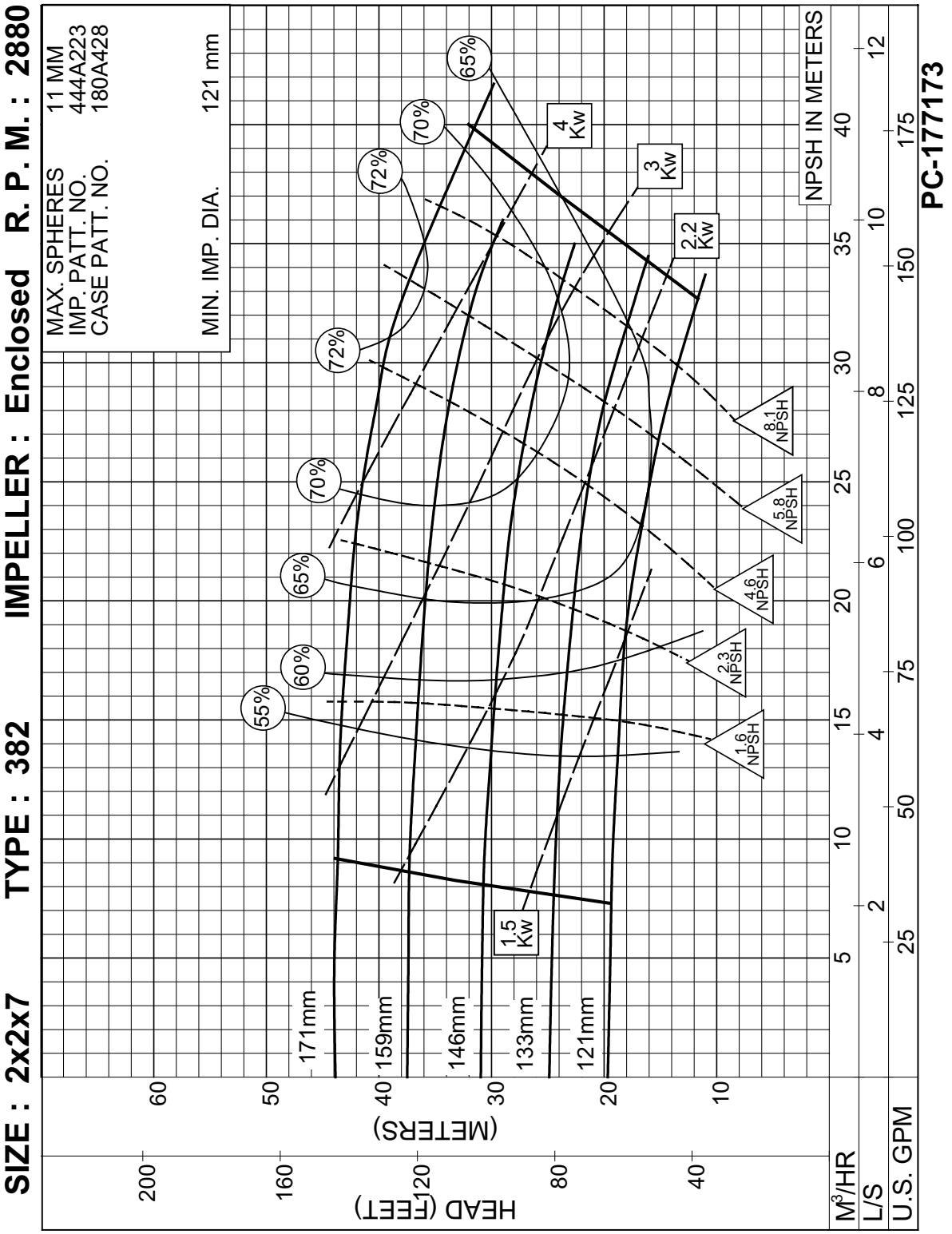



**PC-179616**

**1150 R.P.M**

# Performance Curves for the 380 Series (50 Hz)

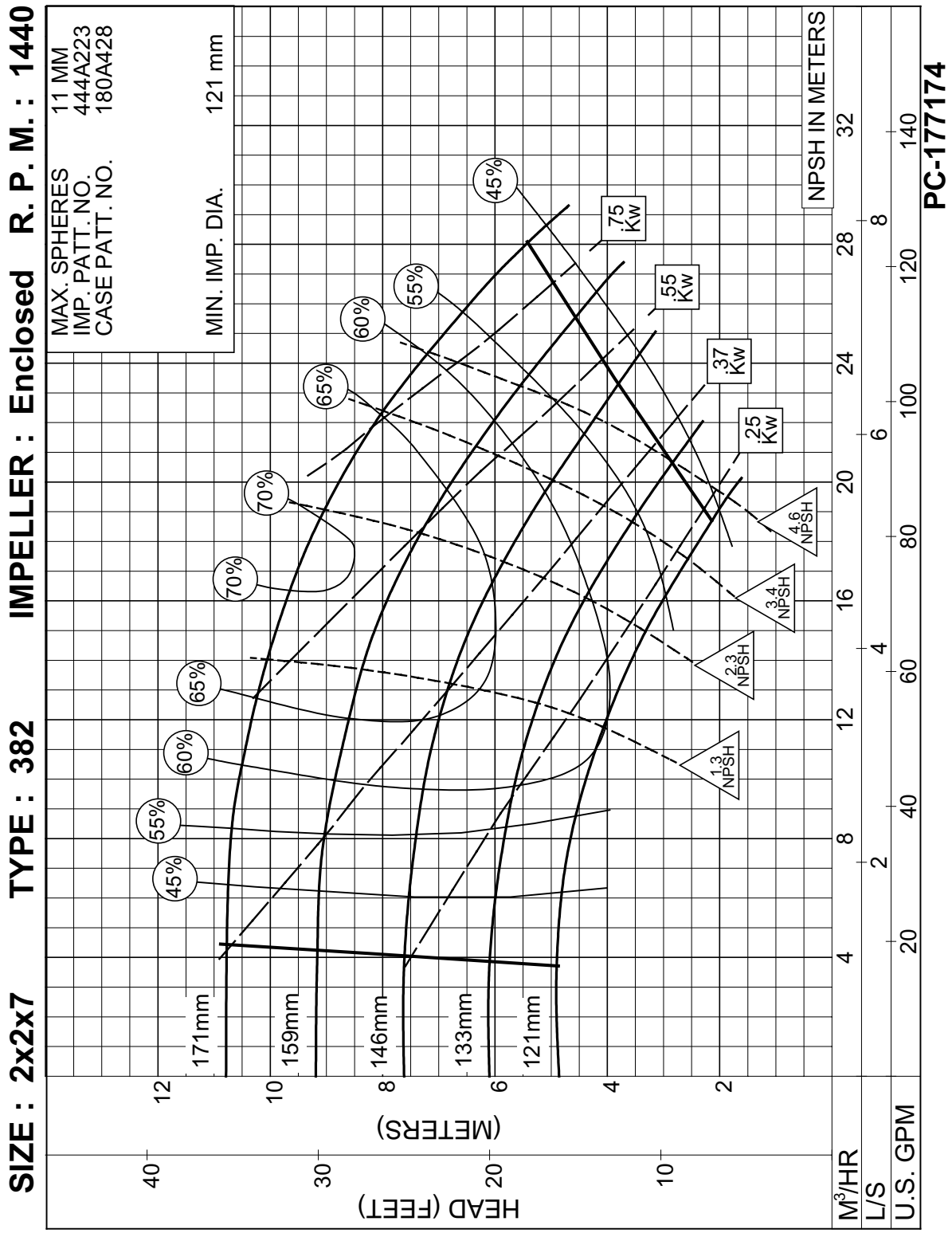
| MODEL/SIZE | R.P.M. | PDF PAGE |
|---|---|---|
| 2x2x7 | 2880 | 2 |
| 2x2x7 | 1440 | 3 |
| 2-1/2x2-1/2x7 | 2880 | 4 |
| 2-1/2x2-1/2x7 | 1440 | 5 |
| 2-1/2x2-1/2x9 | 2880 | 6 |
| 2-1/2x2-1/2x9 | 1440 | 7 |
| 4x4x11 | 1440 | 8 |
| 4x4x11 | 960 | 9 |
| 4x4x12 | 1440 | 10 |
| 4x4x12 | 960 | 11 |
| 5x5x9 | 1440 | 12 |
| 5x5x11 | 1440 | 13 |
| 5x5x11 | 960 | 14 |
| 5x5x12 | 1440 | 15 |
| 5x5x12 | 960 | 16 |
| 6x6x9 | 1440 | 17 |
| 6x6x11 | 1440 | 18 |
| 6x6x11 | 960 | 19 |
| 6x6x12 | 1440 | 20 |
| 6x6x12 | 960 | 21 |
| 8x8x11 | 1440 | 22 |
| 8x8x11 | 960 | 23 |
| 8x8x12 | 1440 | 24 |
| 8x8x12 | 960 | 25 |
| 8x8x15 | 1475 | 26 |
| 8x8x15 | 960 | 27 |
| 10x10x15 | 1475 | 28 |
| 10x10x15 | 960 | 29 |

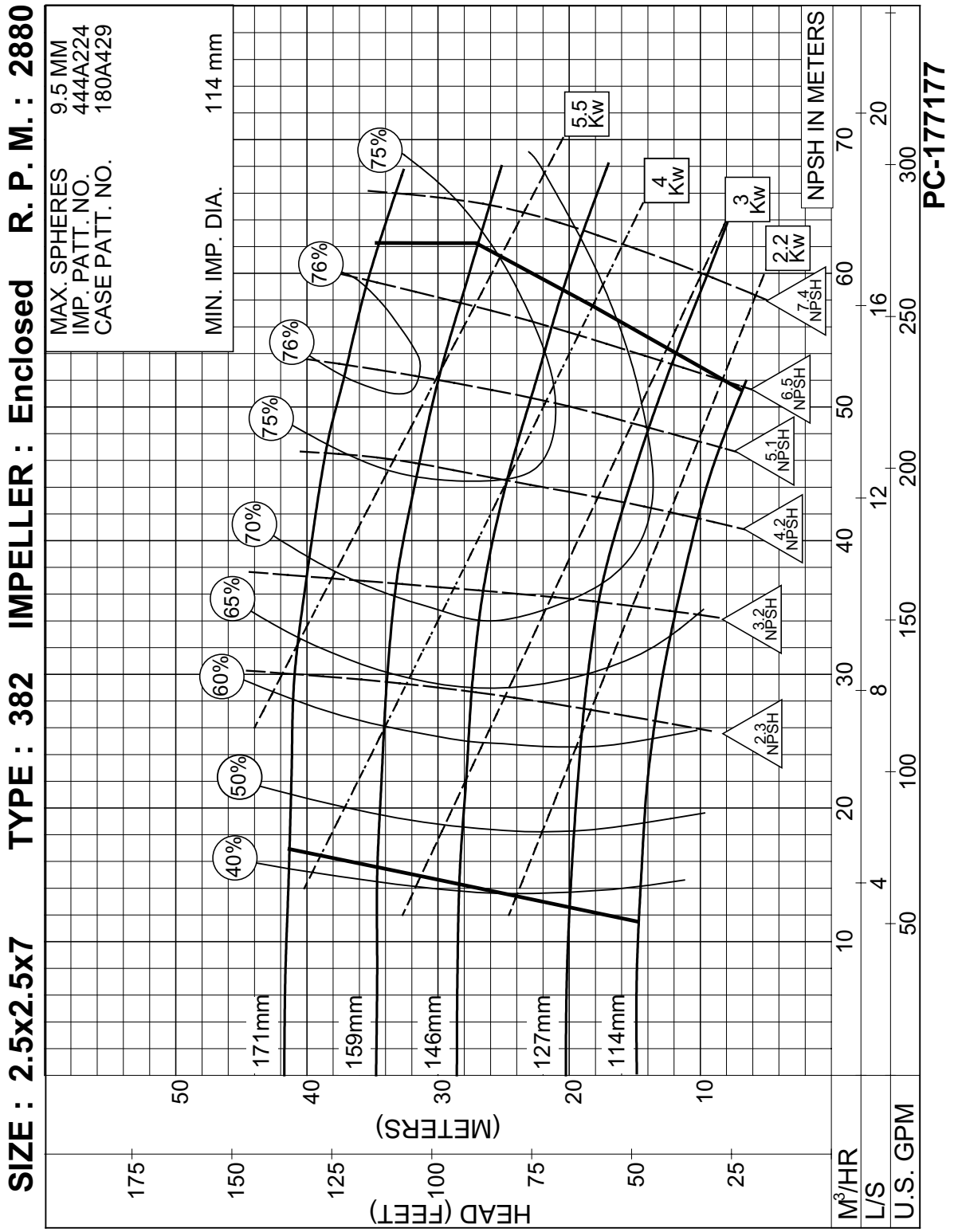

SIZE : 2x2x7 TYPE : 382 IMPELLER : Enclosed R. P. M. : 2880
MAX. SPHERES 11 MM
IMP. PATT. NO. 444A223
CASE PATT. NO. 180A428
MIN. IMP. DIA. 121 mm
PC-177173
HEAD (FEET)
(METERS)
NPSH IN METERS
M³/HR
L/S
U.S. GPM
65%
70%
72%
72%
70%
65%
60%
55%
4 Kw
3 Kw
2.2 Kw
1.5 Kw
8.1 NPSH
5.8 NPSH
4.6 NPSH
2.3 NPSH
1.6 NPSH
171mm
159mm
146mm
133mm
121mm

2880
R.P.M

# 2 x 2 x 7 SERIES 380
## ENCLOSED IMPELLER

1440 R.P.M



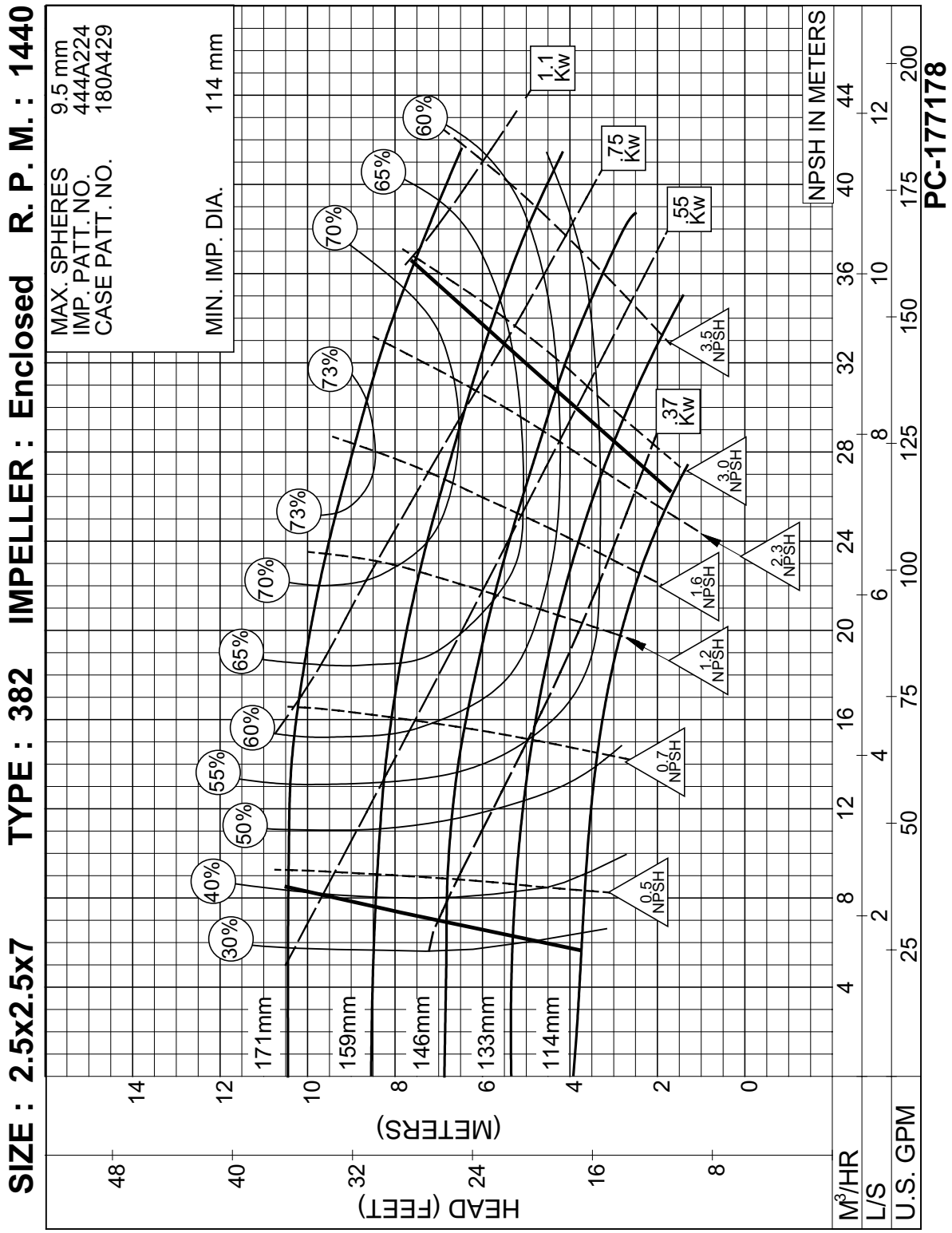

SIZE : 2.5x2.5x7 TYPE : 382 IMPELLER : Enclosed R. P. M. : 2880
MAX. SPHERES 9.5 MM
IMP. PATT. NO. 444A224
CASE PATT. NO. 180A429
MIN. IMP. DIA. 114 mm
PC-177177
HEAD (FEET)
(METERS)
M³/HR
L/S
U.S. GPM
NPSH IN METERS
171mm
159mm
146mm
127mm
114mm
40%
50%
60%
65%
70%
75%
76%
5.5 Kw
4 Kw
3 Kw
2.2 Kw
2.3 NPSH
3.2 NPSH
4.2 NPSH
5.1 NPSH
6.5 NPSH
7.4 NPSH

2880
R.P.M

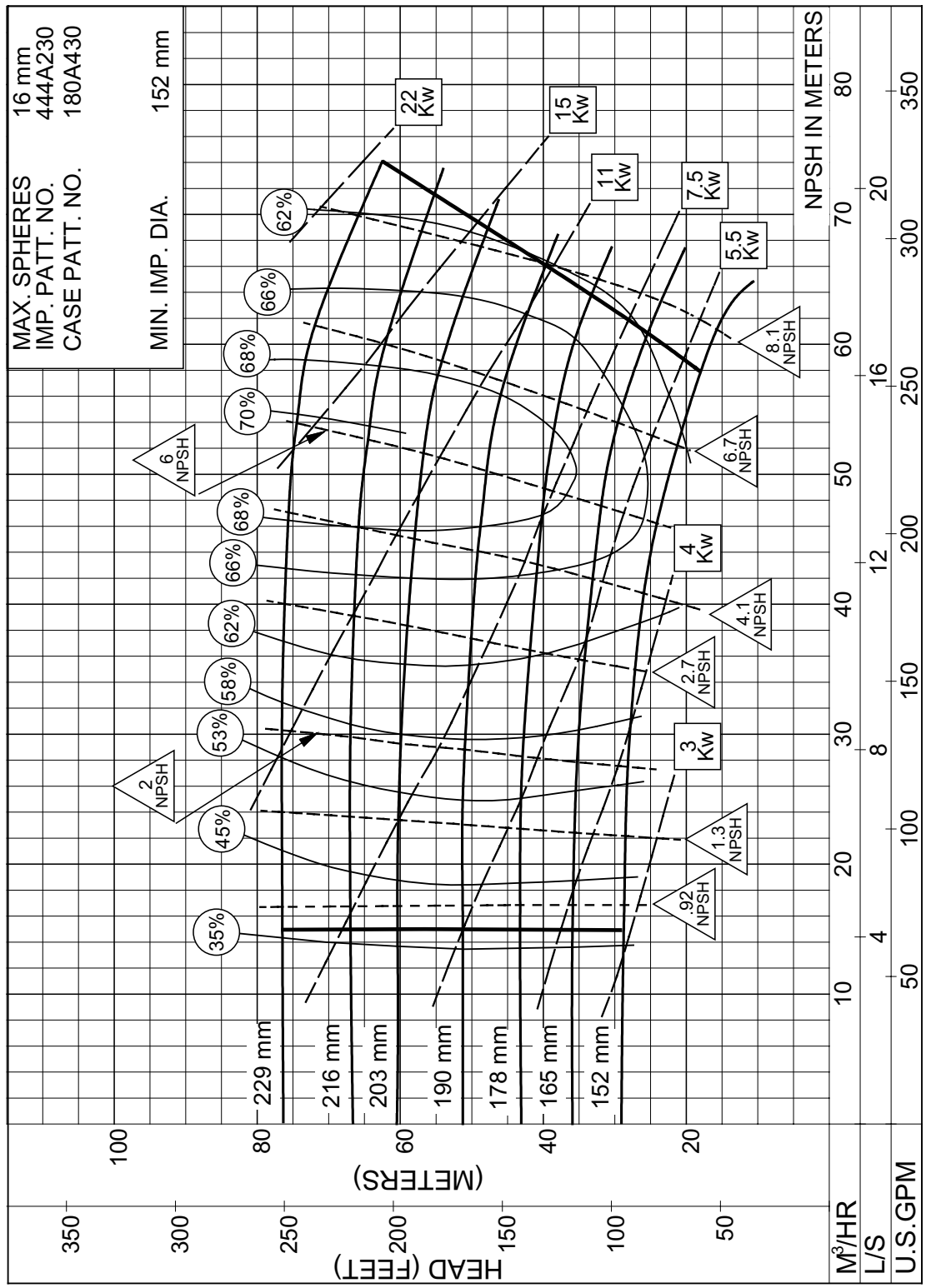
# 2-1/2 x 2-1/2 x 7 SERIES 380

## ENCLOSED IMPELLER

1440 R.P.M




AURORA®
Pentair Pump Group



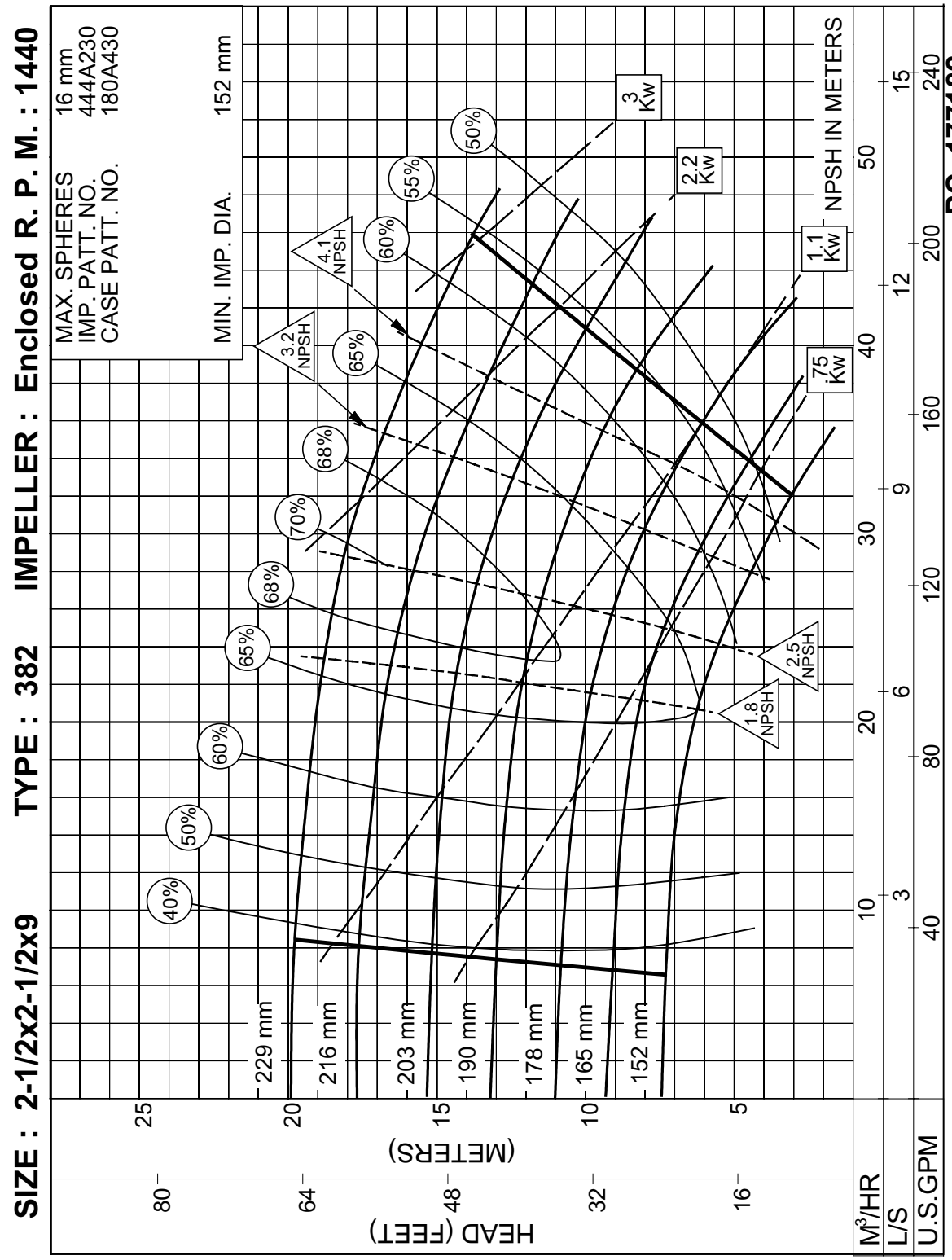

2880 R.P.M

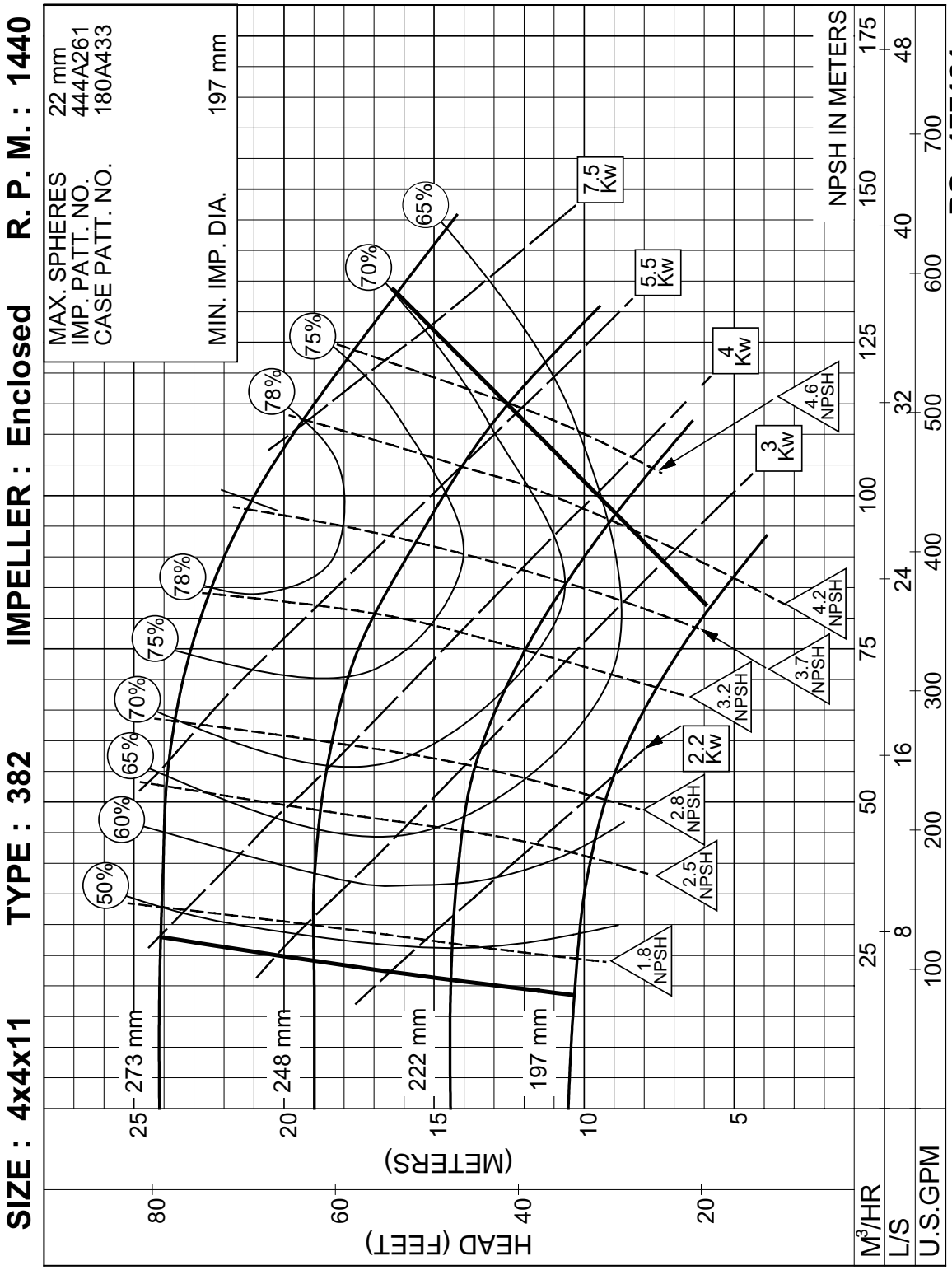
AURORA®
Pentair Pump Group

# 2-1/2 x 2-1/2 x 9 SERIES 380

## ENCLOSED IMPELLER

1440 R.P.M



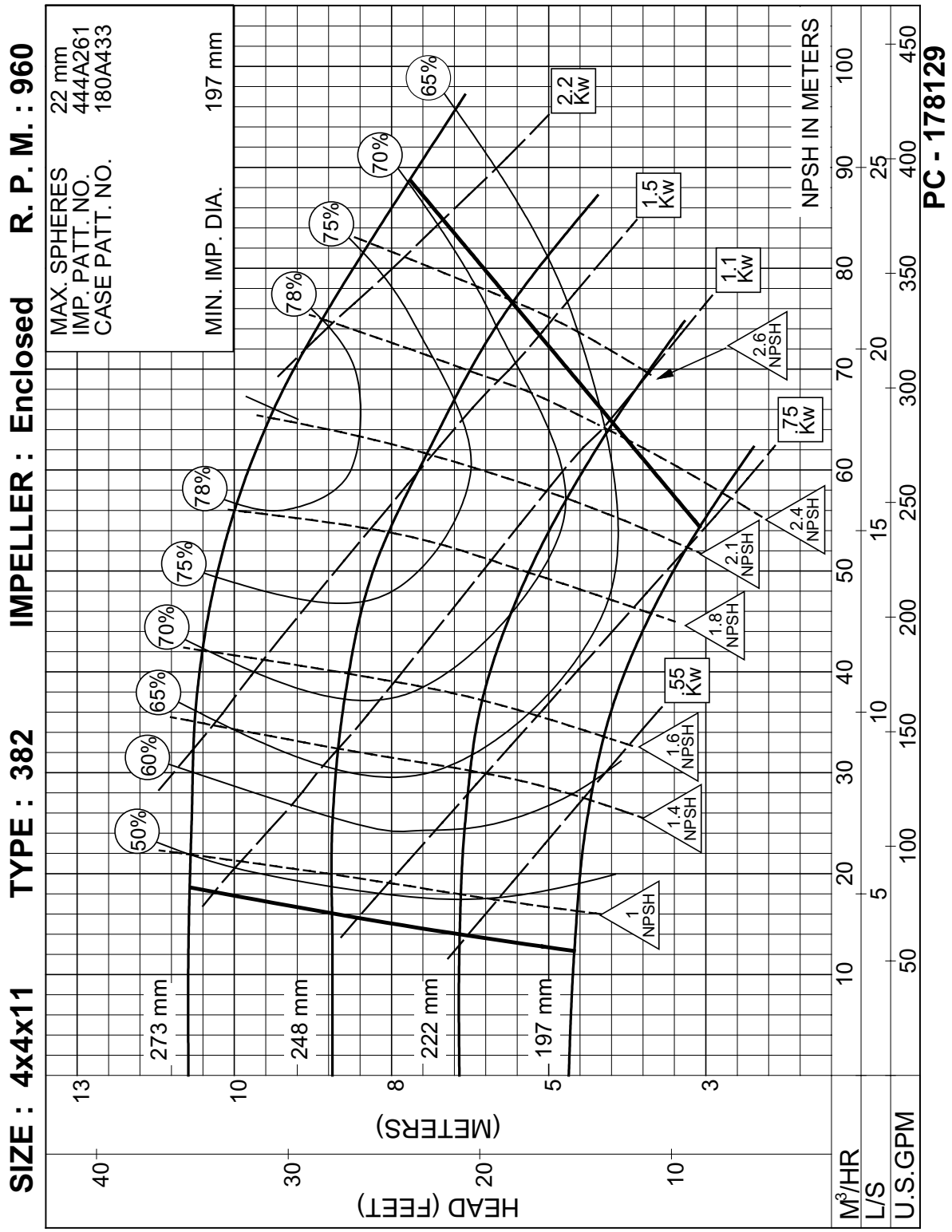

SIZE : 4x4x11 TYPE : 382 IMPELLER : Enclosed R. P. M. : 1440
MAX. SPHERES 22 mm
IMP. PATT. NO. 444A261
CASE PATT. NO. 180A433
MIN. IMP. DIA. 197 mm
PC - 177191
HEAD (FEET)
(METERS)
NPSH IN METERS
M³/HR
L/S
U.S.GPM
273 mm
248 mm
222 mm
197 mm
50%
60%
65%
70%
75%
78%
7.5 kw
5.5 kw
4 kw
3 kw
2.2 kw
1.8 NPSH
2.5 NPSH
2.8 NPSH
3.2 NPSH
3.7 NPSH
4.2 NPSH
4.6 NPSH

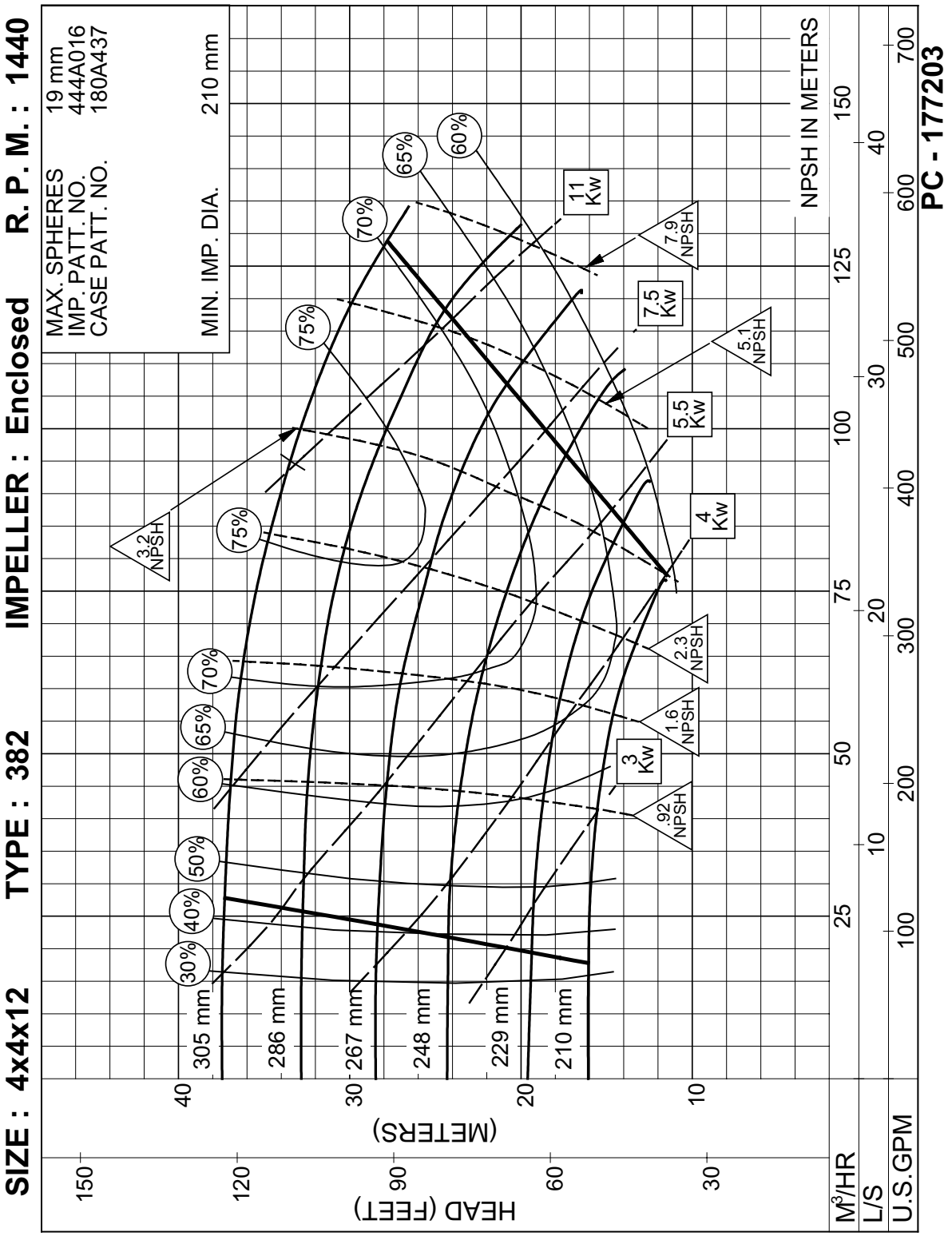
1440
R.P.M

# 4 x 4 x 11 SERIES 380

## ENCLOSED IMPELLER

960 R.P.M



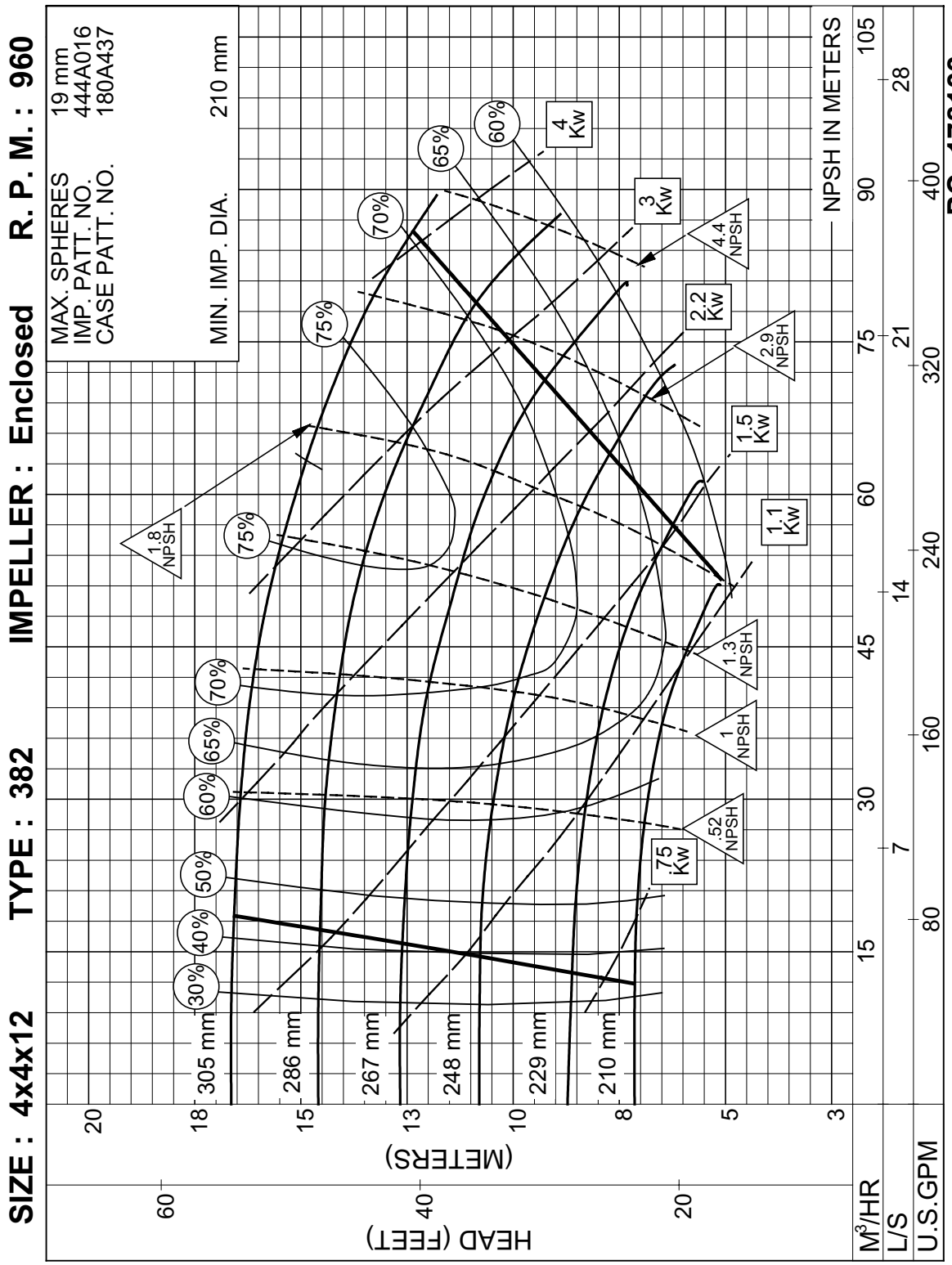

SIZE : 4x4x12 TYPE : 382 IMPELLER : Enclosed R. P. M. : 1440
PC - 177203
MAX. SPHERES 19 mm
IMP. PATT. NO. 444A016
CASE PATT. NO. 180A437
MIN. IMP. DIA. 210 mm
HEAD (FEET)
(METERS)
NPSH IN METERS
M³/HR
L/S
U.S.GPM
305 mm
286 mm
267 mm
248 mm
229 mm
210 mm
30%
40%
50%
60%
65%
70%
75%
11 Kw
7.5 Kw
5.5 Kw
4 Kw
3 Kw
7.9 NPSH
5.1 NPSH
3.2 NPSH
2.3 NPSH
1.6 NPSH
.92 NPSH

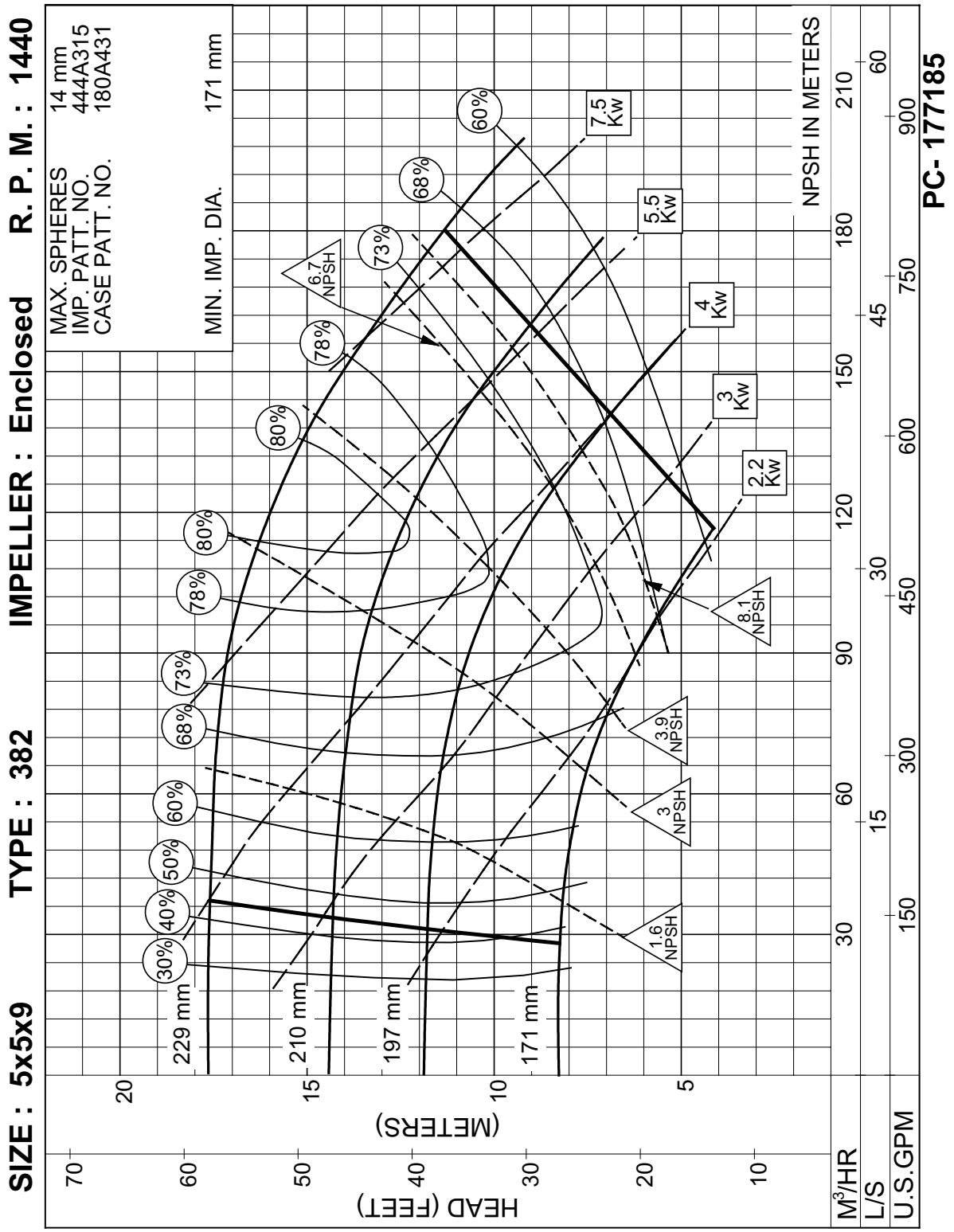
1440
R.P.M

# 4 x 4 x 12 SERIES 380

## ENCLOSED IMPELLER

960 R.P.M



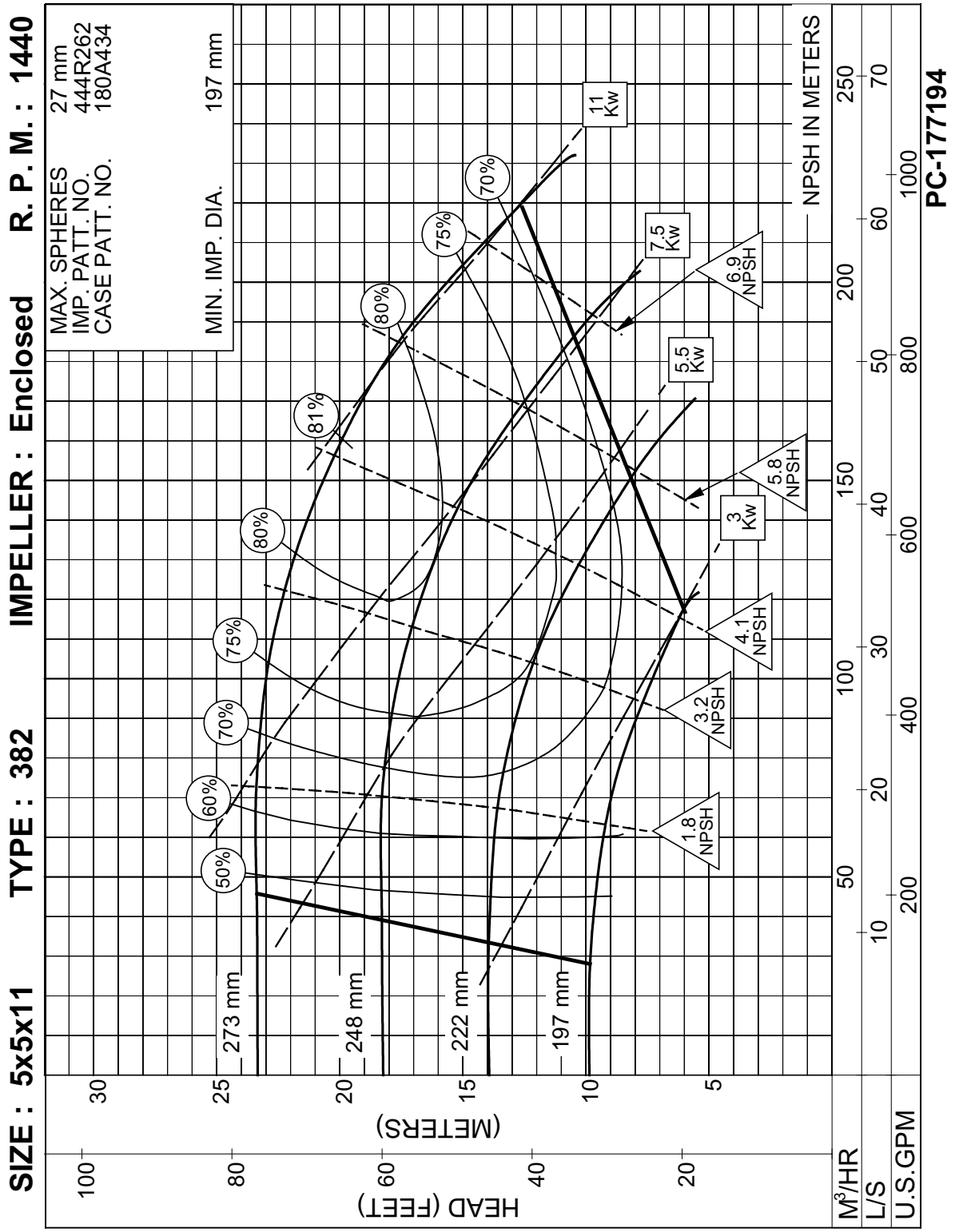

SIZE : 5x5x9 TYPE : 382 IMPELLER : Enclosed R. P. M. : 1440
MAX. SPHERES 14 mm
IMP. PATT. NO. 444A315
CASE PATT. NO. 180A431
MIN. IMP. DIA. 171 mm
HEAD (FEET)
(METERS)
NPSH IN METERS
M³/HR
L/S
U.S.GPM
229 mm
210 mm
197 mm
171 mm
30%
40%
50%
60%
68%
73%
78%
80%
7.5 Kw
5.5 Kw
4 Kw
3 Kw
2.2 Kw
6.7 NPSH
8.1 NPSH
3.9 NPSH
3 NPSH
1.6 NPSH
PC- 177185

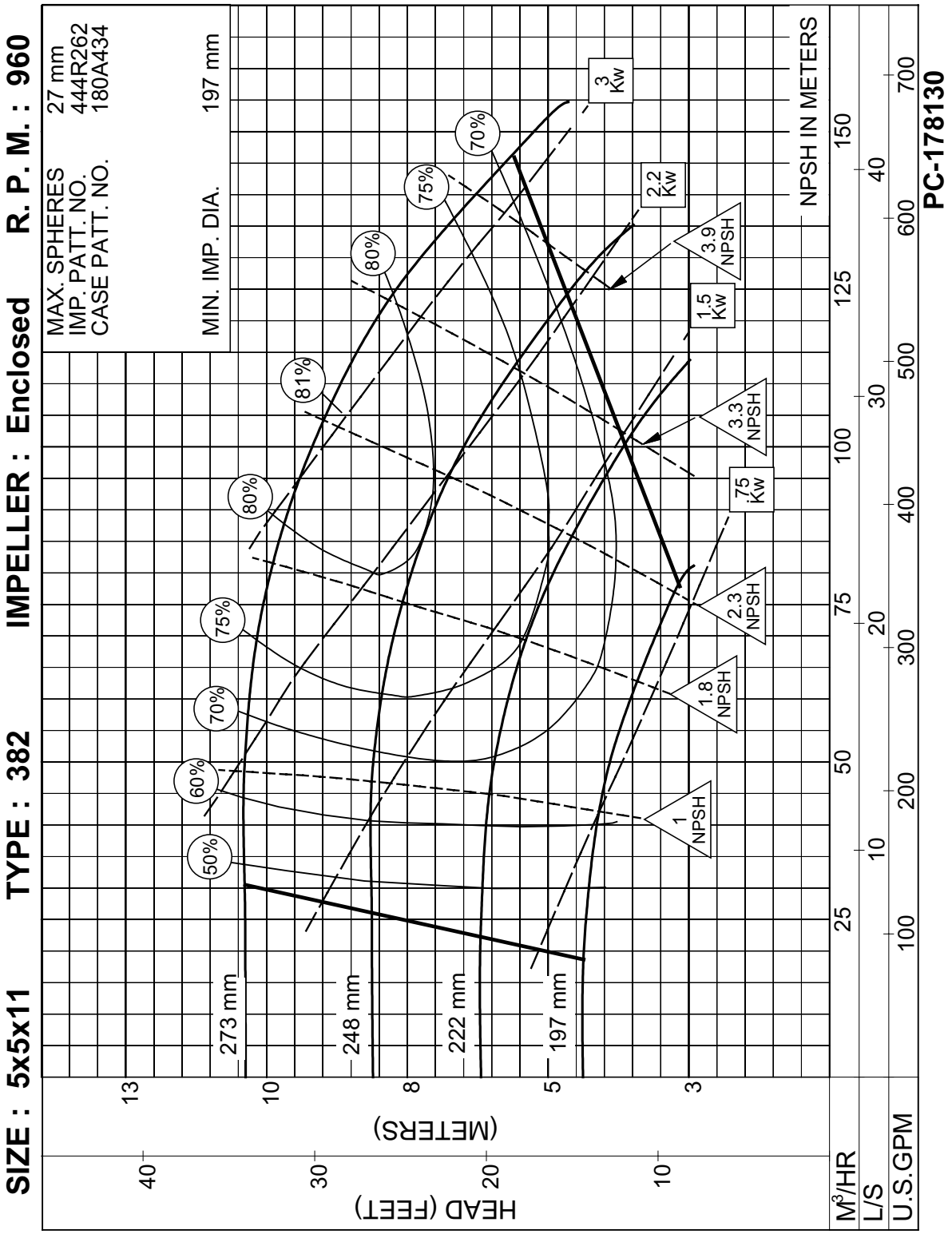
1440
R.P.M

# 5 x 5 x 11 SERIES 380

## ENCLOSED IMPELLER

1440 R.P.M





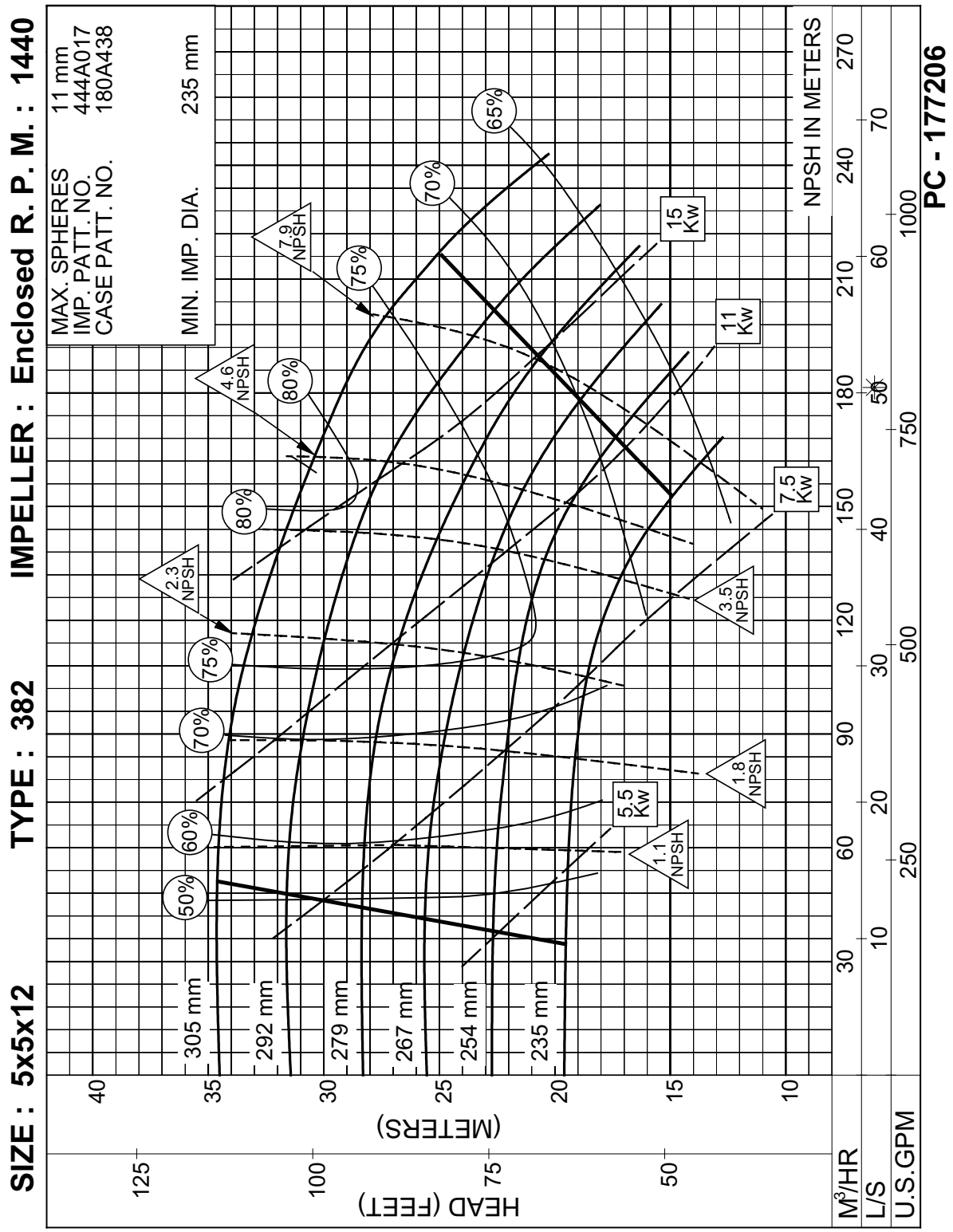

960
R.P.M

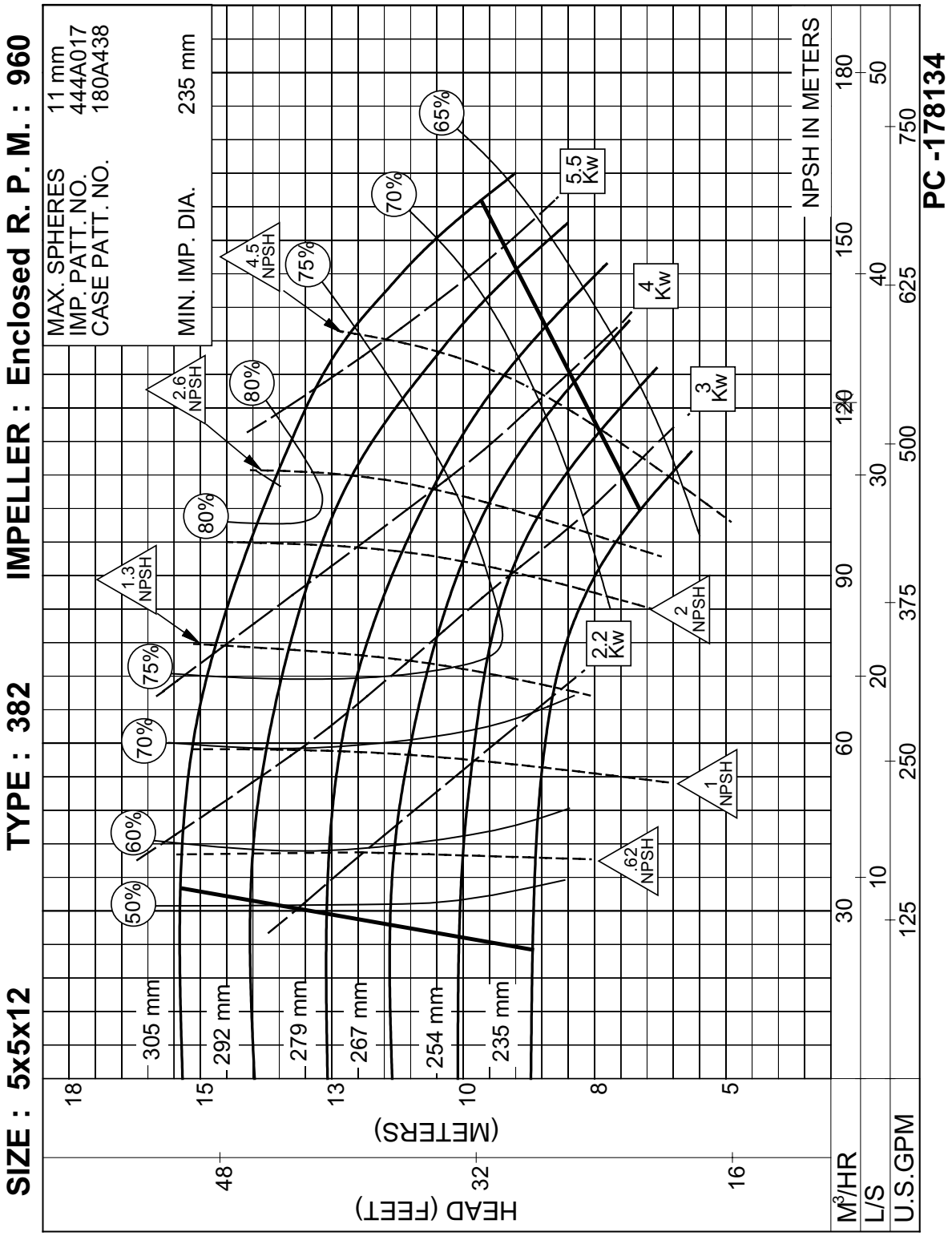
AURORA®
Pentair Pump Group

# 5 x 5 x 12 SERIES 380

## ENCLOSED IMPELLER

1440 R.P.M



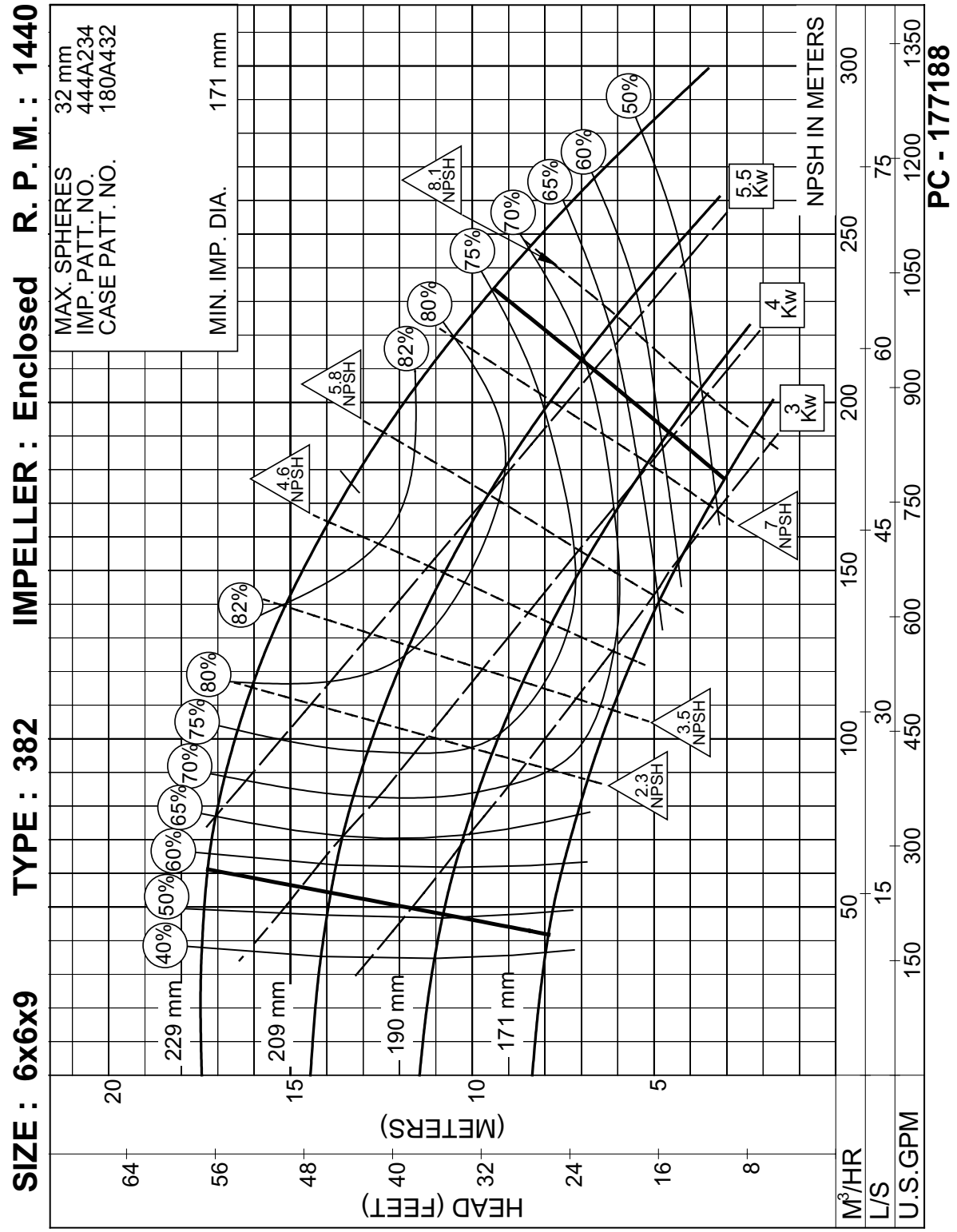

SIZE : 5x5x12
TYPE : 382
IMPELLER : Enclosed R. P. M. : 960
MAX. SPHERES 11 mm
IMP. PATT. NO. 444A017
CASE PATT. NO. 180A438
MIN. IMP. DIA. 235 mm
HEAD (FEET)
(METERS)
NPSH IN METERS
M³/HR
L/S
U.S.GPM
305 mm
292 mm
279 mm
267 mm
254 mm
235 mm
50%
60%
70%
75%
80%
65%
70%
75%
80%
1.3 NPSH
2.6 NPSH
4.5 NPSH
62 NPSH
1 NPSH
2 NPSH
2.2 Kw
3 Kw
4 Kw
5.5 Kw
PC -178134

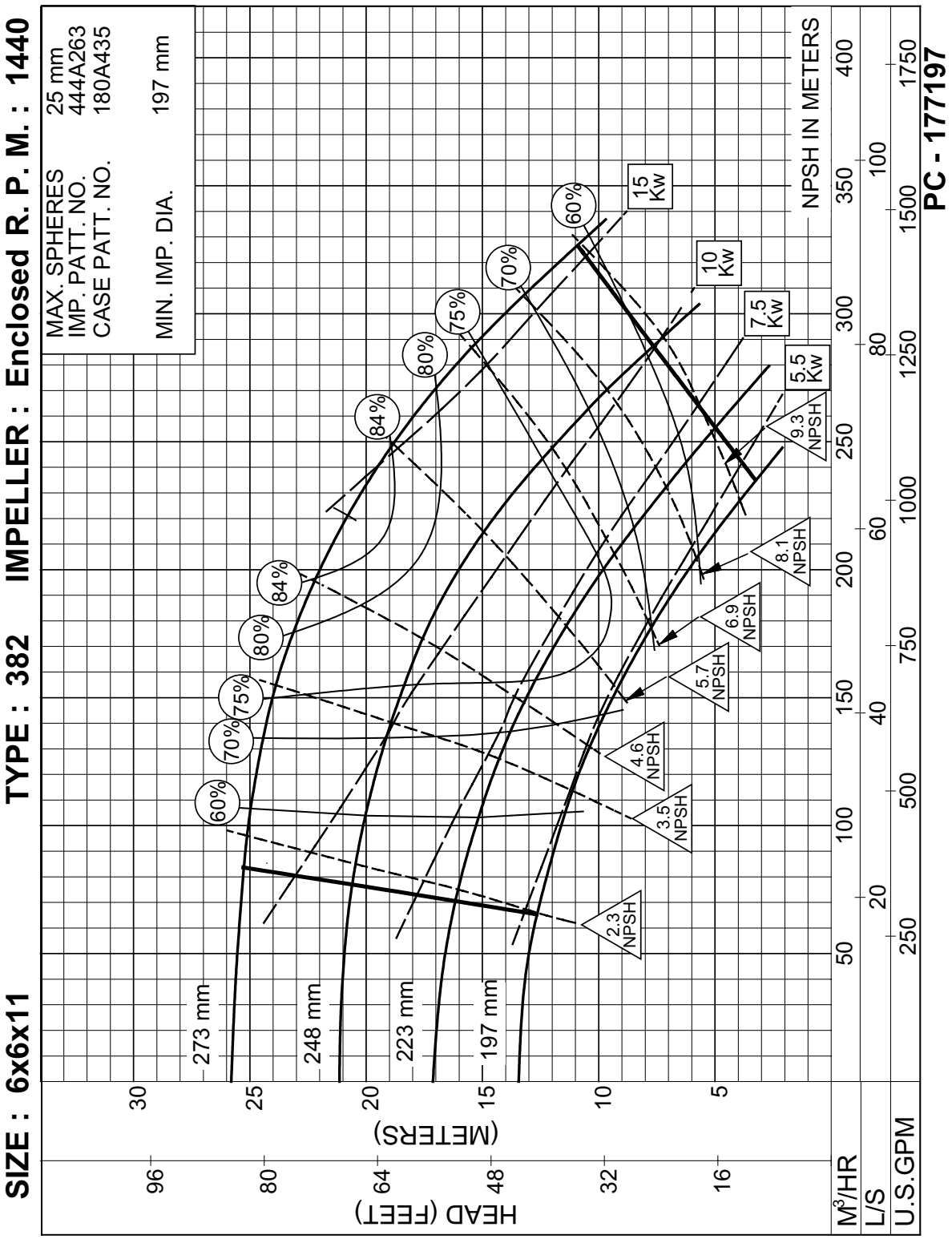
960
R.P.M

# 6 x 6 x 9 SERIES 380

## ENCLOSED IMPELLER

1440 R.P.M



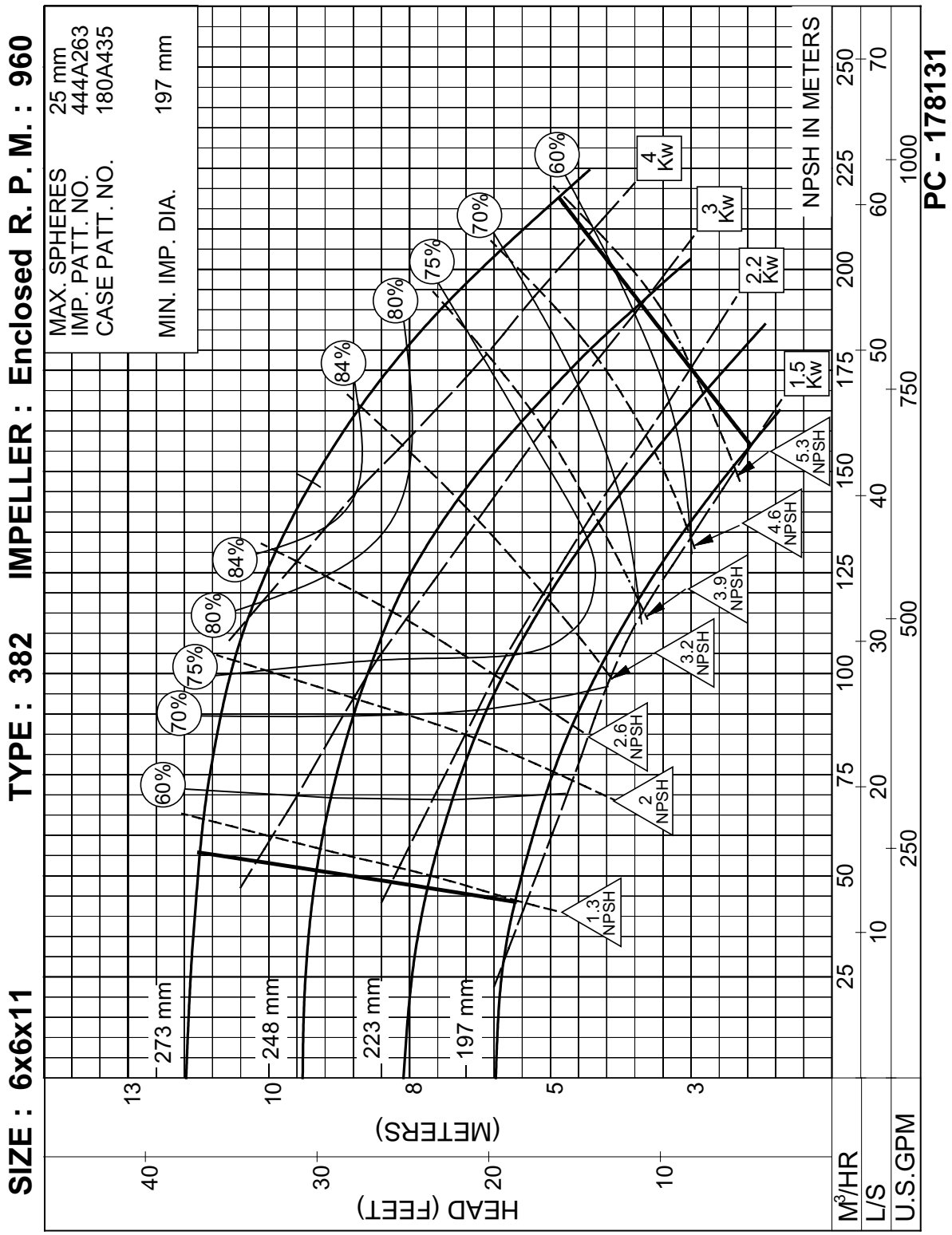

SIZE : 6x6x11
TYPE : 382
IMPELLER : Enclosed R. P. M. : 1440
PC - 177197
MAX. SPHERES 25 mm
IMP. PATT. NO. 444A263
CASE PATT. NO. 180A435
MIN. IMP. DIA. 197 mm
HEAD (FEET)
(METERS)
NPSH IN METERS
M³/HR
L/S
U.S.GPM
273 mm
248 mm
223 mm
197 mm
60%
70%
75%
80%
84%
15 Kw
10 Kw
7.5 Kw
5.5 Kw
2.3 NPSH
3.5 NPSH
4.6 NPSH
5.7 NPSH
6.9 NPSH
8.1 NPSH
9.3 NPSH

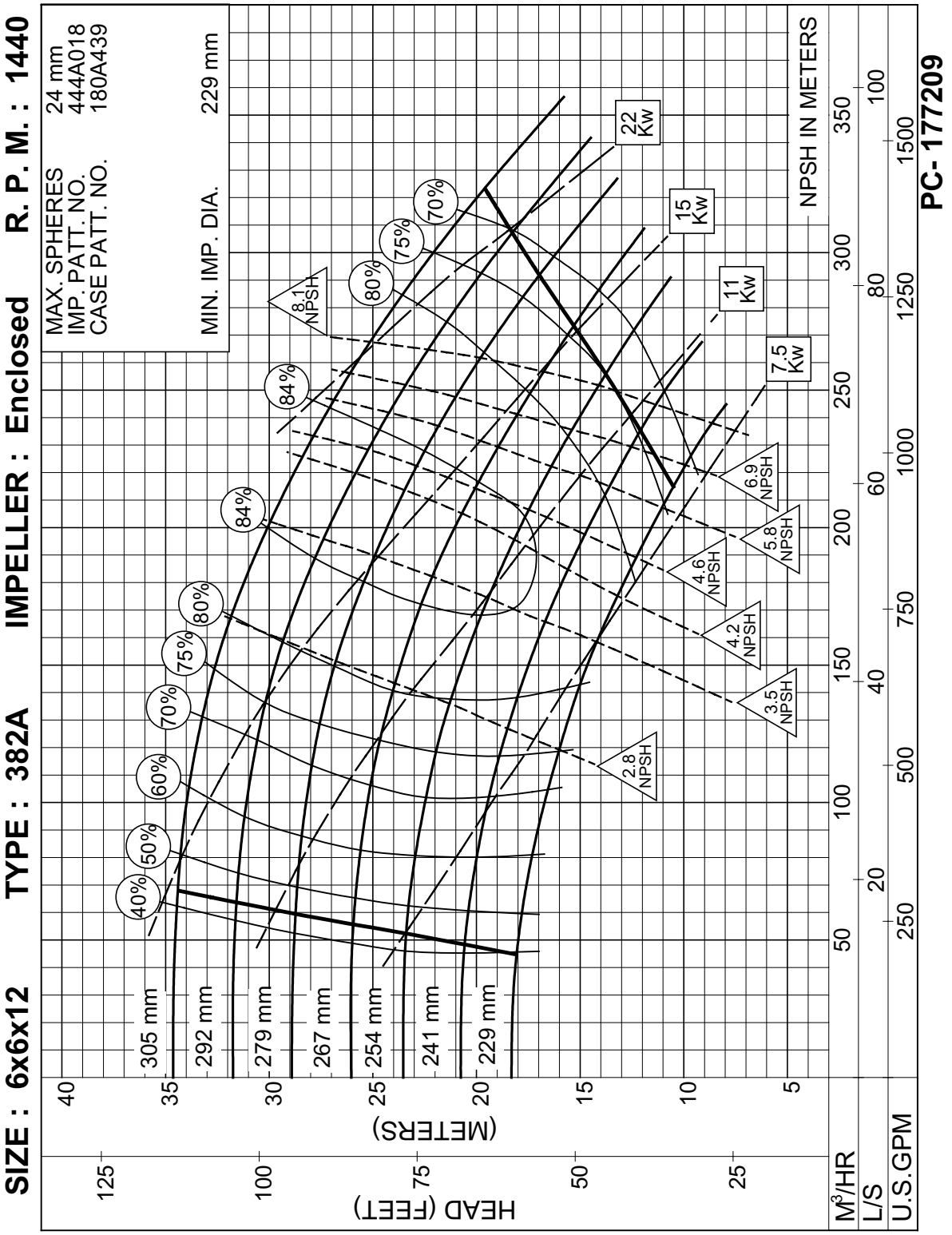
1440
R.P.M

# 6 x 6 x 11 SERIES 380

## ENCLOSED IMPELLER

960 R.P.M



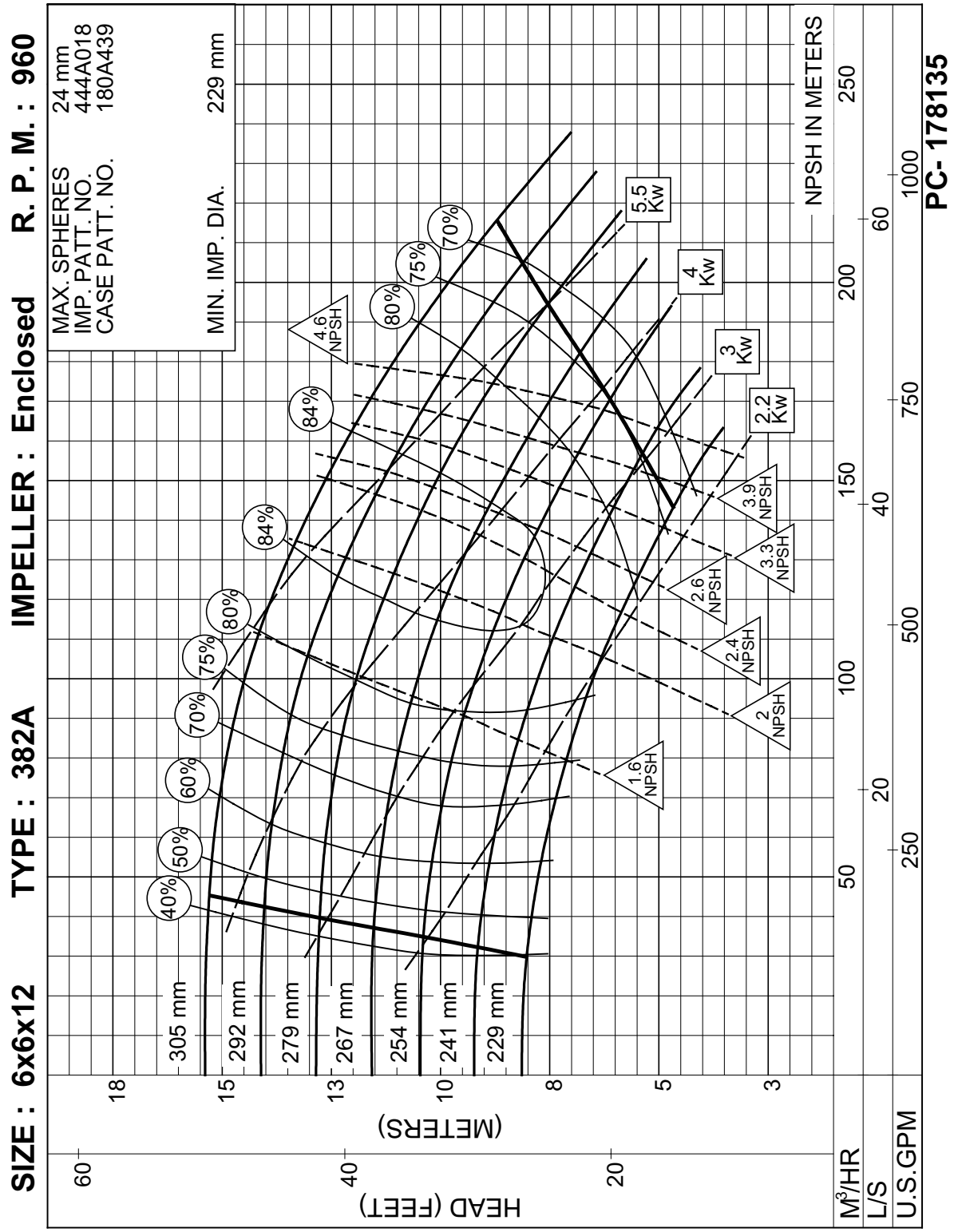

SIZE : 6x6x12 TYPE : 382A IMPELLER : Enclosed R. P. M. : 1440
MAX. SPHERES 24 mm
IMP. PATT. NO. 444A018
CASE PATT. NO. 180A439
MIN. IMP. DIA. 229 mm
HEAD (FEET)
(METERS)
NPSH IN METERS
M³/HR
L/S
U.S.GPM
305 mm
292 mm
279 mm
267 mm
254 mm
241 mm
229 mm
40%
50%
60%
70%
75%
80%
84%
22 Kw
15 Kw
11 Kw
7.5 Kw
8.1 NPSH
6.9 NPSH
5.8 NPSH
4.6 NPSH
4.2 NPSH
3.5 NPSH
2.8 NPSH
PC- 177209

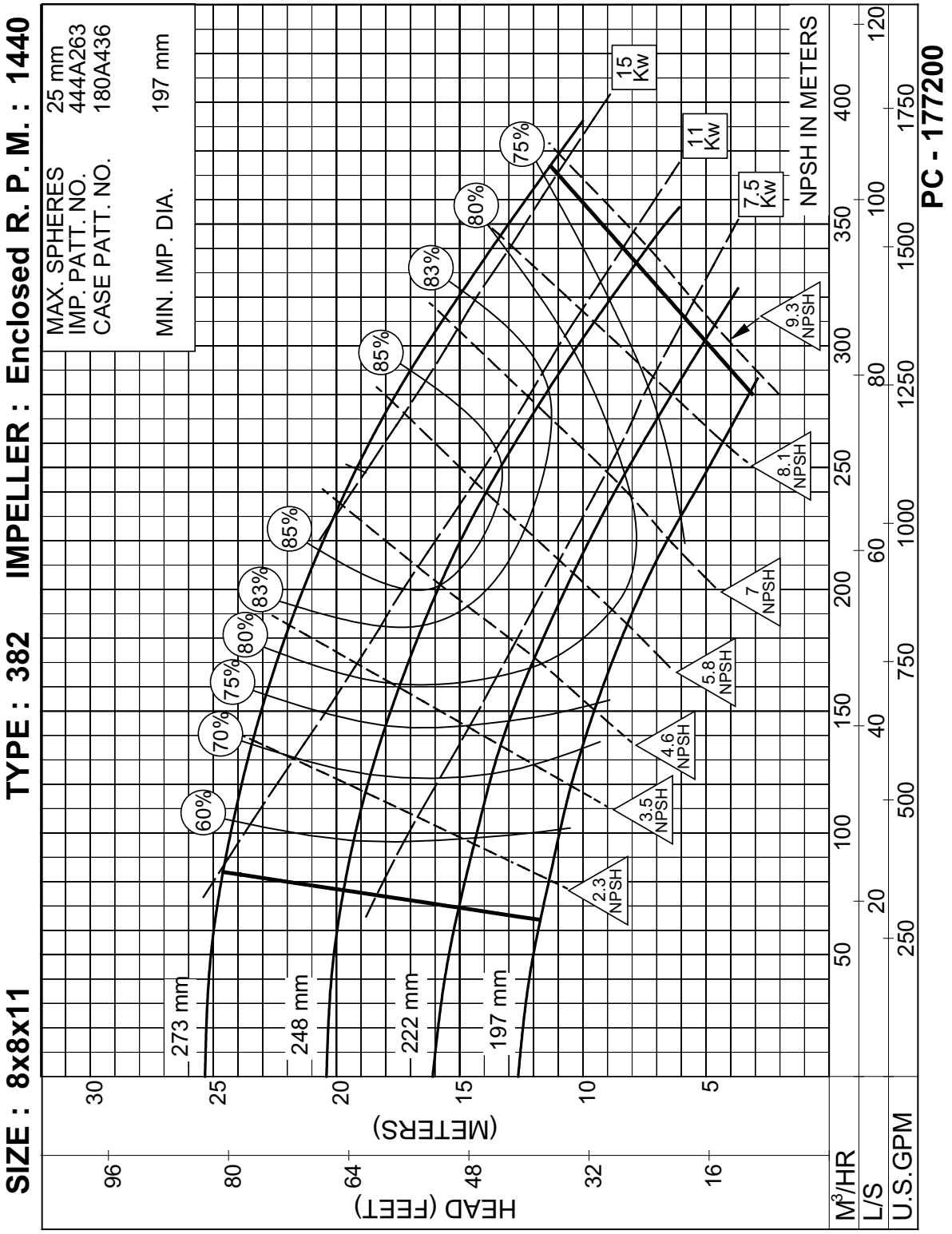
1440
R.P.M

# 6 x 6 x 12 SERIES 380

## ENCLOSED IMPELLER

960 R.P.M



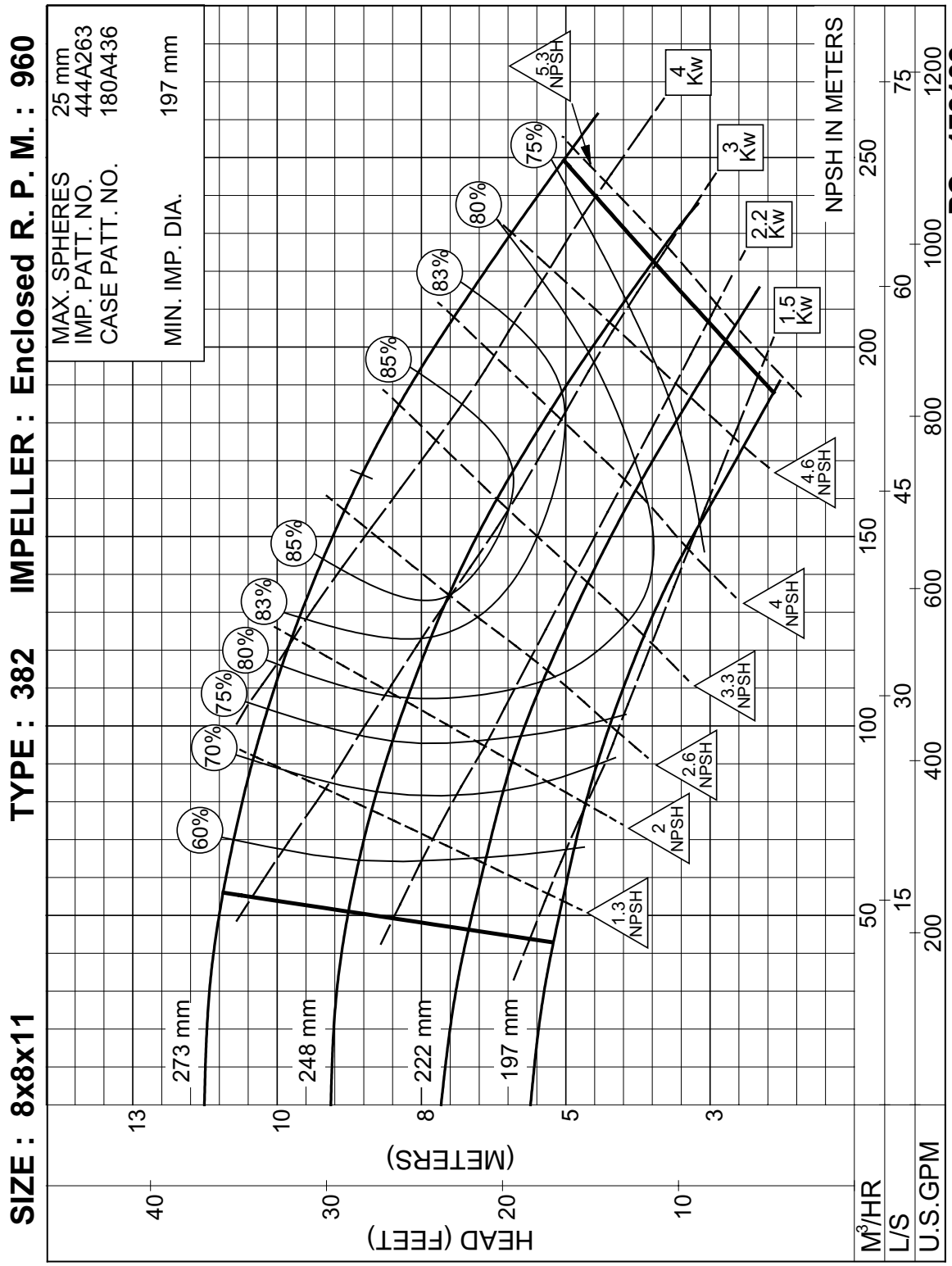

SIZE : 8x8x11
TYPE : 382
IMPELLER : Enclosed R. P. M. : 1440
PC - 177200
MAX. SPHERES 25 mm
IMP. PATT. NO. 444A263
CASE PATT. NO. 180A436
MIN. IMP. DIA. 197 mm
HEAD (FEET)
(METERS)
NPSH IN METERS
M³/HR
L/S
U.S.GPM
273 mm
248 mm
222 mm
197 mm
15 Kw
11 Kw
7.5 Kw
60%
70%
75%
80%
83%
85%
2.3 NPSH
3.5 NPSH
4.6 NPSH
5.8 NPSH
7 NPSH
8.1 NPSH
9.3 NPSH

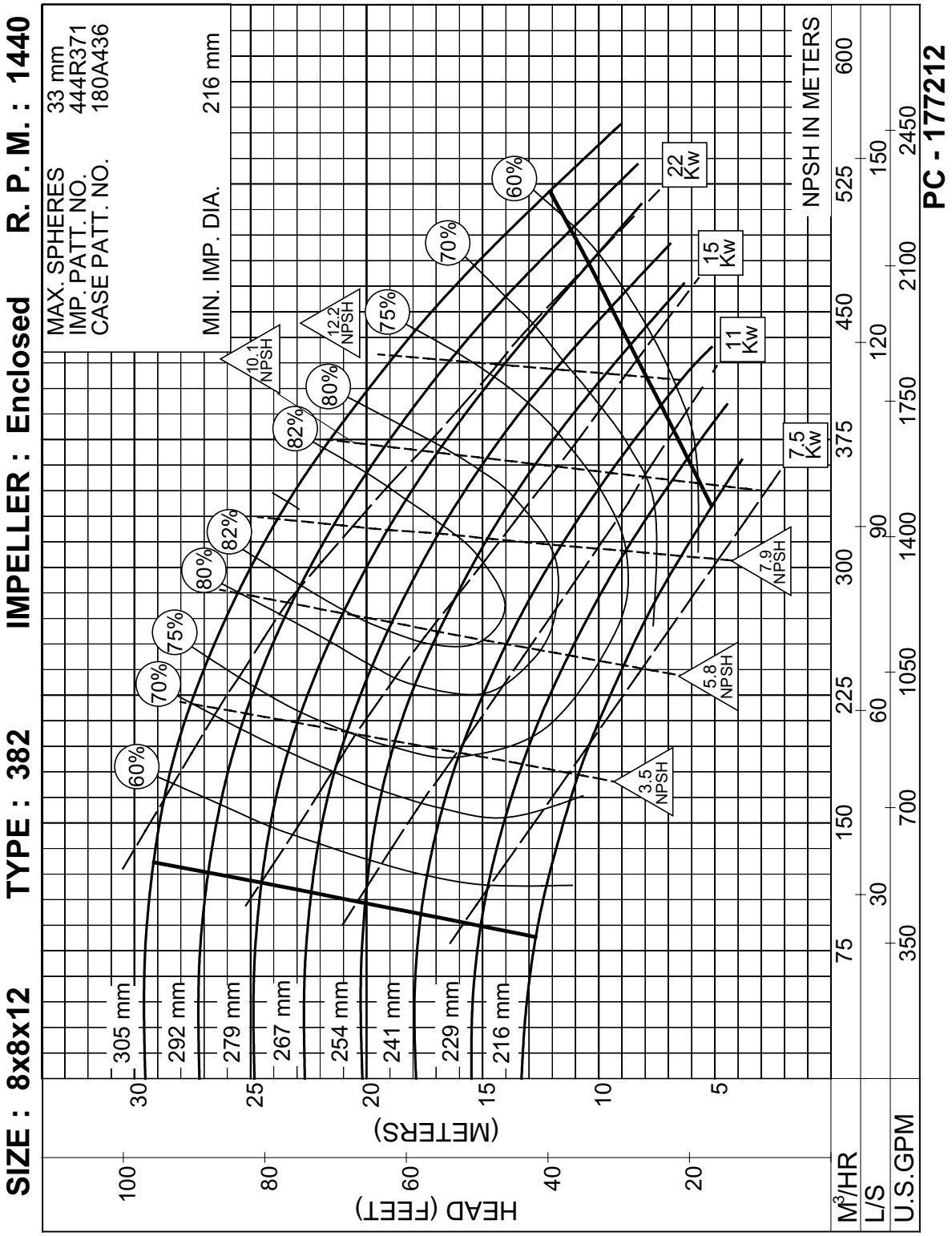
1440
R.P.M

# 8 x 8 x 11 SERIES 380

## ENCLOSED IMPELLER

960
R.P.M



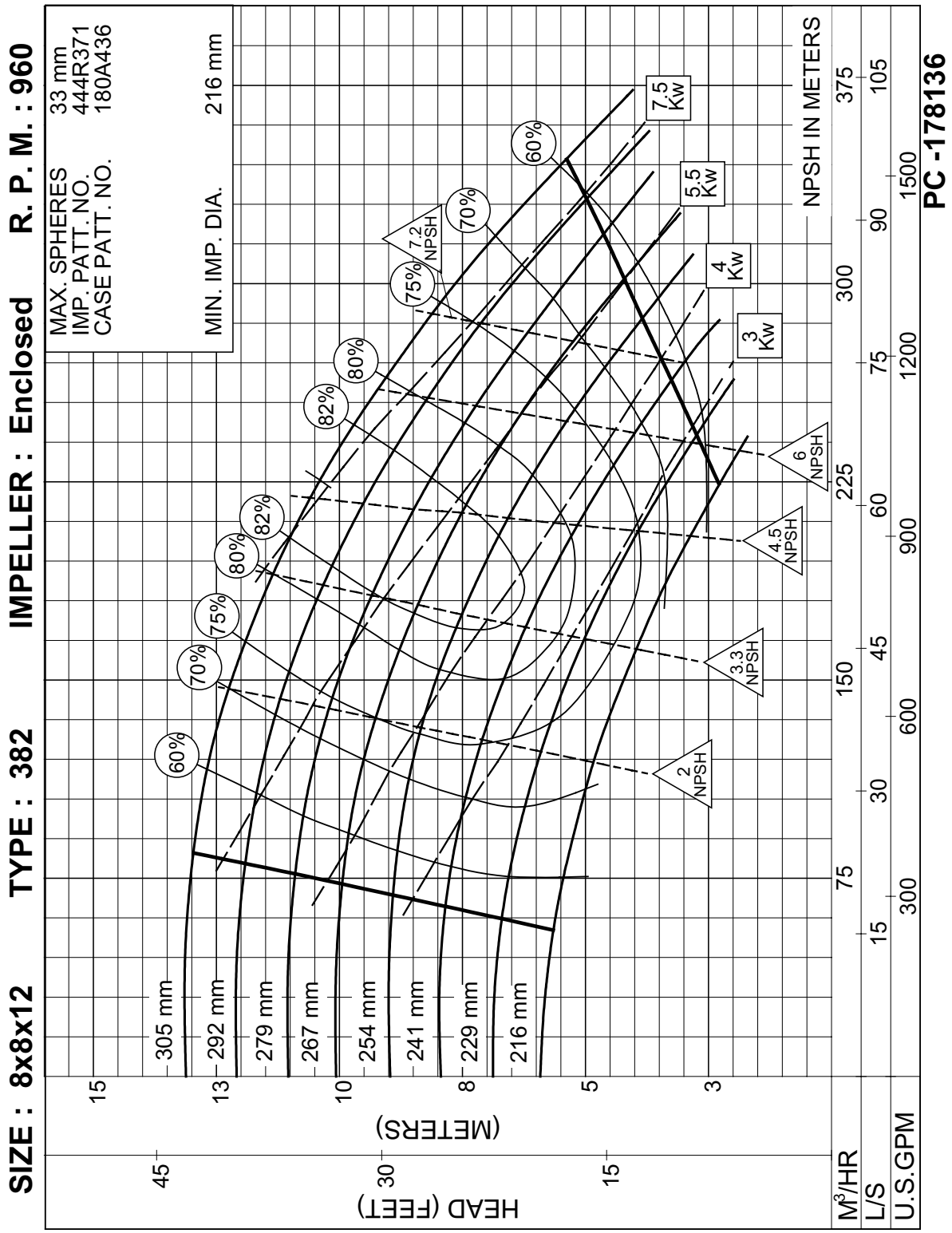

SIZE : 8x8x12 TYPE : 382 IMPELLER : Enclosed R. P. M. : 1440
MAX. SPHERES 33 mm
IMP. PATT. NO. 444R371
CASE PATT. NO. 180A436
MIN. IMP. DIA. 216 mm
PC - 177212
HEAD (FEET)
(METERS)
NPSH IN METERS
M³/HR
L/S
U.S.GPM
305 mm
292 mm
279 mm
267 mm
254 mm
241 mm
229 mm
216 mm
60%
70%
75%
80%
82%
10.1 NPSH
12.2 NPSH
7.9 NPSH
5.8 NPSH
3.5 NPSH
22 Kw
15 Kw
11 Kw
7.5 Kw

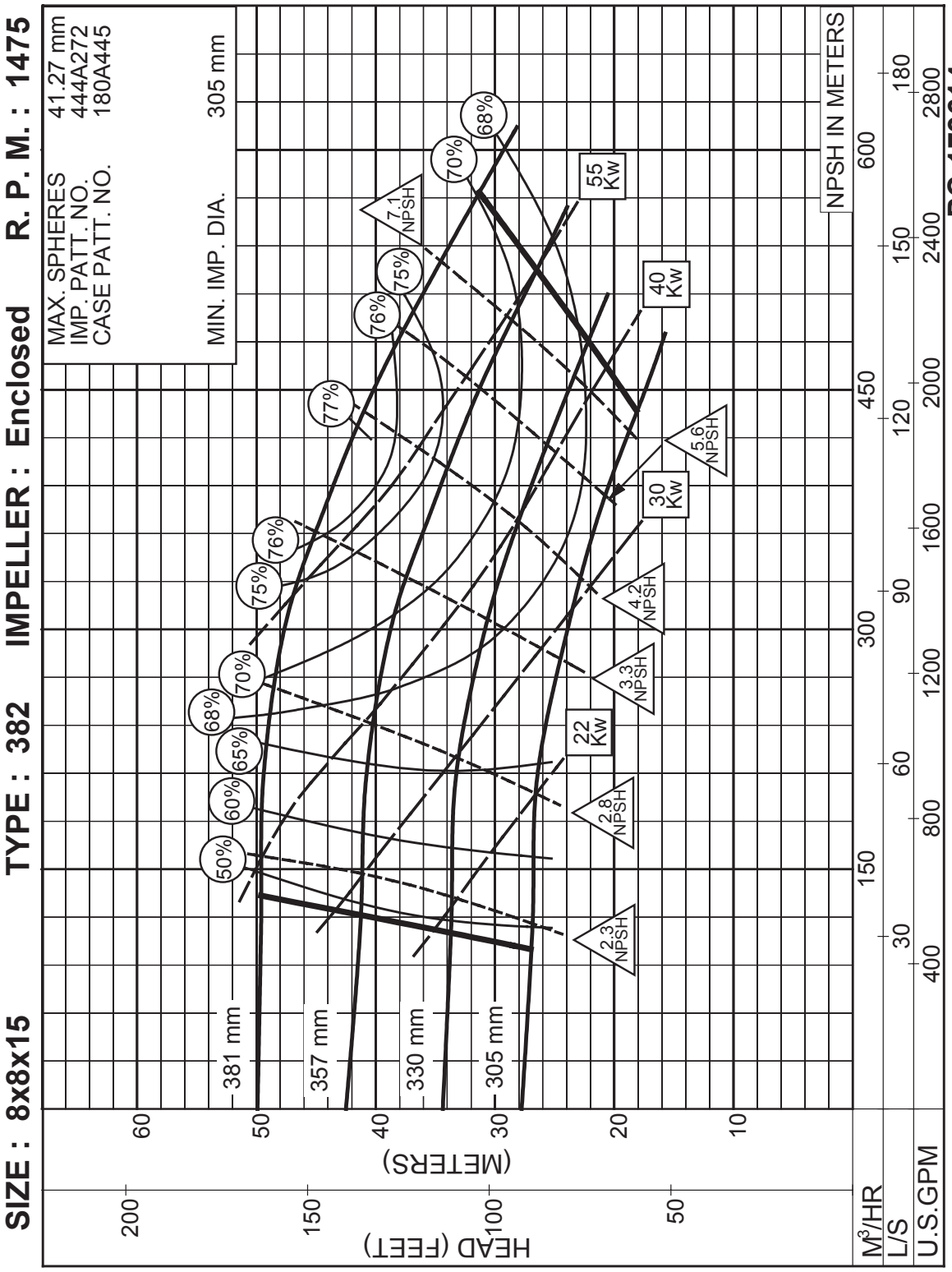
1440
R.P.M

# 8 x 8 x 12 SERIES 380

## ENCLOSED IMPELLER

960 R.P.M



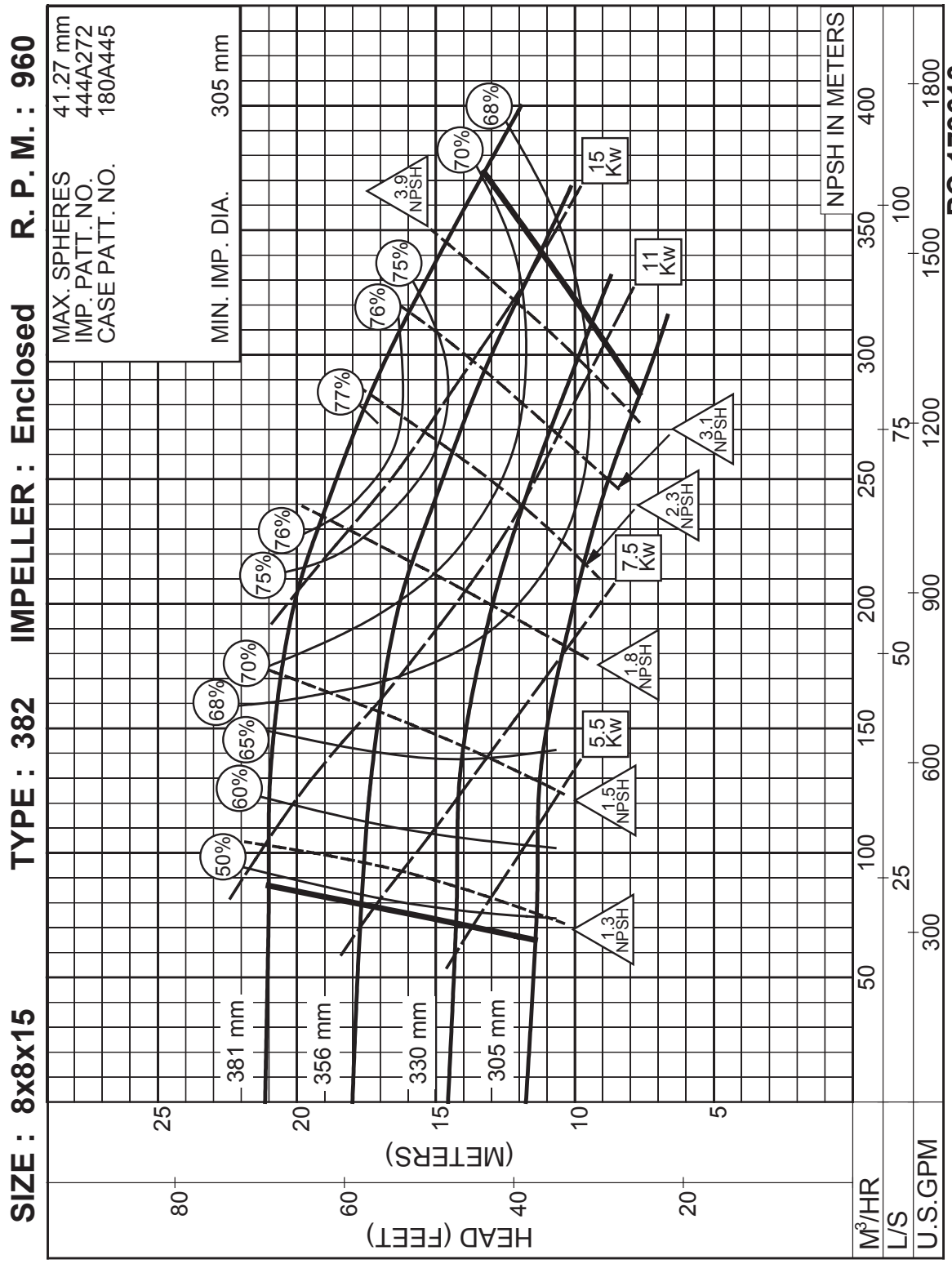

SIZE : 8x8x15 TYPE : 382 IMPELLER : Enclosed R. P. M. : 1475
MAX. SPHERES 41.27 mm
IMP. PATT. NO. 444A272
CASE PATT. NO. 180A445
MIN. IMP. DIA. 305 mm
PC-179614
HEAD (FEET)
(METERS)
M³/HR
L/S
U.S.GPM
NPSH IN METERS
381 mm
357 mm
330 mm
305 mm
50%
60%
65%
68%
70%
75%
76%
77%
68%
70%
75%
76%
55 KW
40 KW
30 KW
22 KW
2.3 NPSH
2.8 NPSH
3.3 NPSH
4.2 NPSH
5.6 NPSH
7.1 NPSH

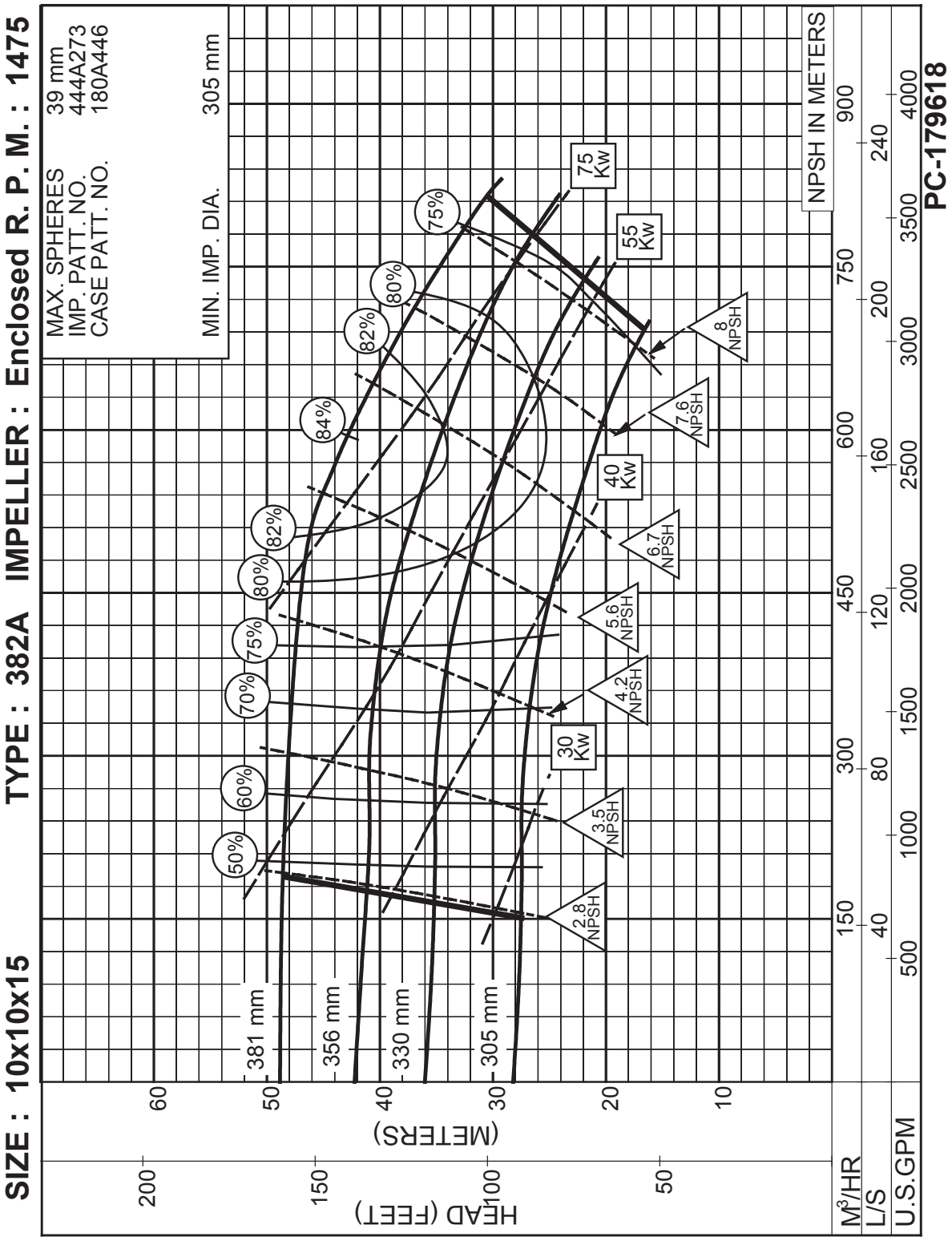
**1475**
R.P.M

# 8 x 8 x 15 SERIES 380

ENCLOSED IMPELLER

**960**
R.P.M

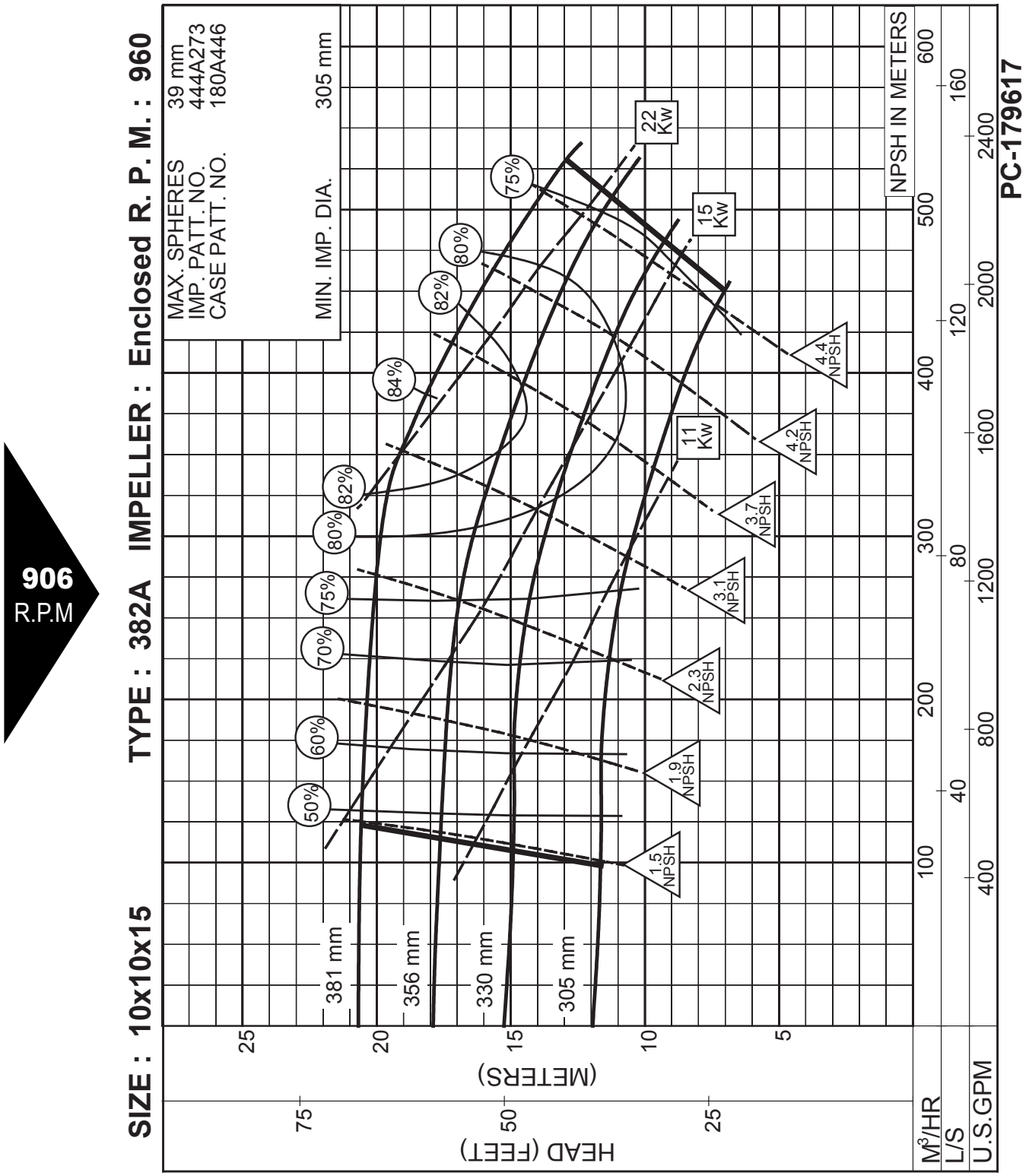



SIZE : 10x10x15
TYPE : 382A IMPELLER : Enclosed R. P. M. : 1475
MAX. SPHERES 39 mm
IMP. PATT. NO. 444A273
CASE PATT. NO. 180A446
MIN. IMP. DIA. 305 mm
PC-179618
HEAD (FEET)
(METERS)
NPSH IN METERS
M³/HR
L/S
U.S.GPM
381 mm
356 mm
330 mm
305 mm
75 Kw
55 Kw
40 Kw
30 Kw
75%
80%
82%
84%
82%
80%
75%
70%
60%
50%
8 NPSH
7.6 NPSH
6.7 NPSH
5.6 NPSH
4.2 NPSH
3.5 NPSH
2.8 NPSH

**1475**
R.P.M

# 10 x 10 x 15 SERIES 380

ENCLOSED IMPELLER



# 390 Series
# Multi-Stage Vertical In-Line Centrifugal Pumps

- *Capacities to 400 G.P.M. (91 $M^3$/HR)*
- *Heads to 800 Feet (243 Meters)*
- *Temperatures to 250°F (120°C)*

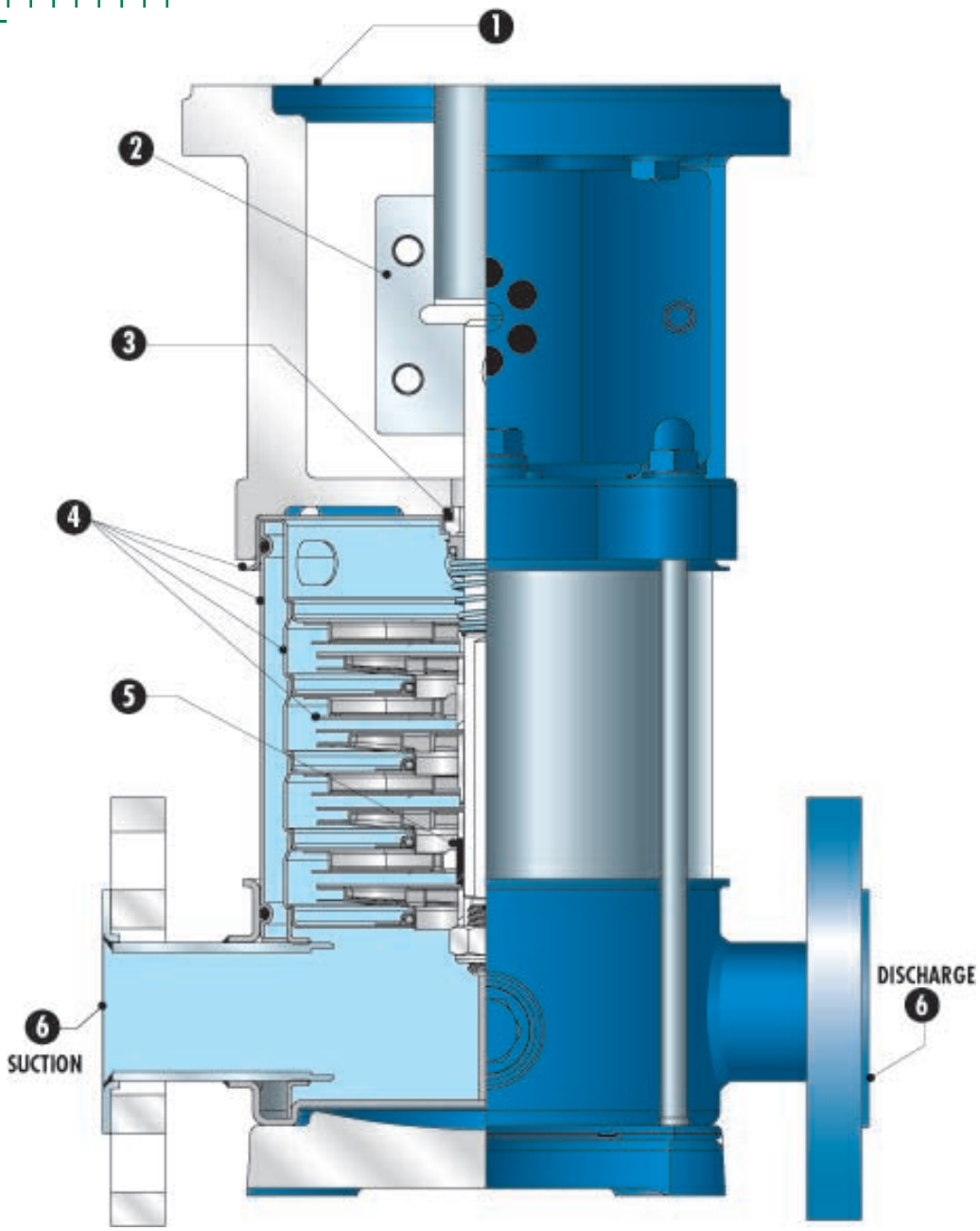




AURORA®
Pentair Pump Group

## Aurora 390 Pump

Aurora's line of stainless steel stackable pumps are ideal for high pressure applications which require a minimum amount of floor space. The vertical design is ideal for both new and existing applications. All of the pumps' hydraulic components are of 304 stainless steel. All casings are made of 304 stainless steel. The Nema C motor face and rigid coupling design allows the pump to operate at low noise levels, high efficiency, and long working life with minimal maintenance. Mechanical seals of carbon against silicon carbide, interstage pump bushings of tungsten carbide vs. ceramic, and O-rings of EPDM allow pumps to operate at temperatures to 250°F.




**MODELS 391, 392, 393 & 394**

## BENEFITS

FLOOR SAVING DESIGN: Small base footprint and inline construction minimizes space requirements.

COST EFFECTIVE: Stamped Stainless Steel construction provides big pump performance at a small pump cost.

LOW OPERATING COST: High hydraulic efficiency as well as excellent NPSH requirements saves money.

EASY TO MAINTAIN: Design facilitates quick repair time and in-stock kits for seals and hydraulic components minimize down time.

LOW NOISE LEVEL: Superior design limits noise and vibration.

## KEY FEATURES

1 NEMA C-FACE MOTOR REGISTER.

2 ALL METAL RIGID COUPLING.

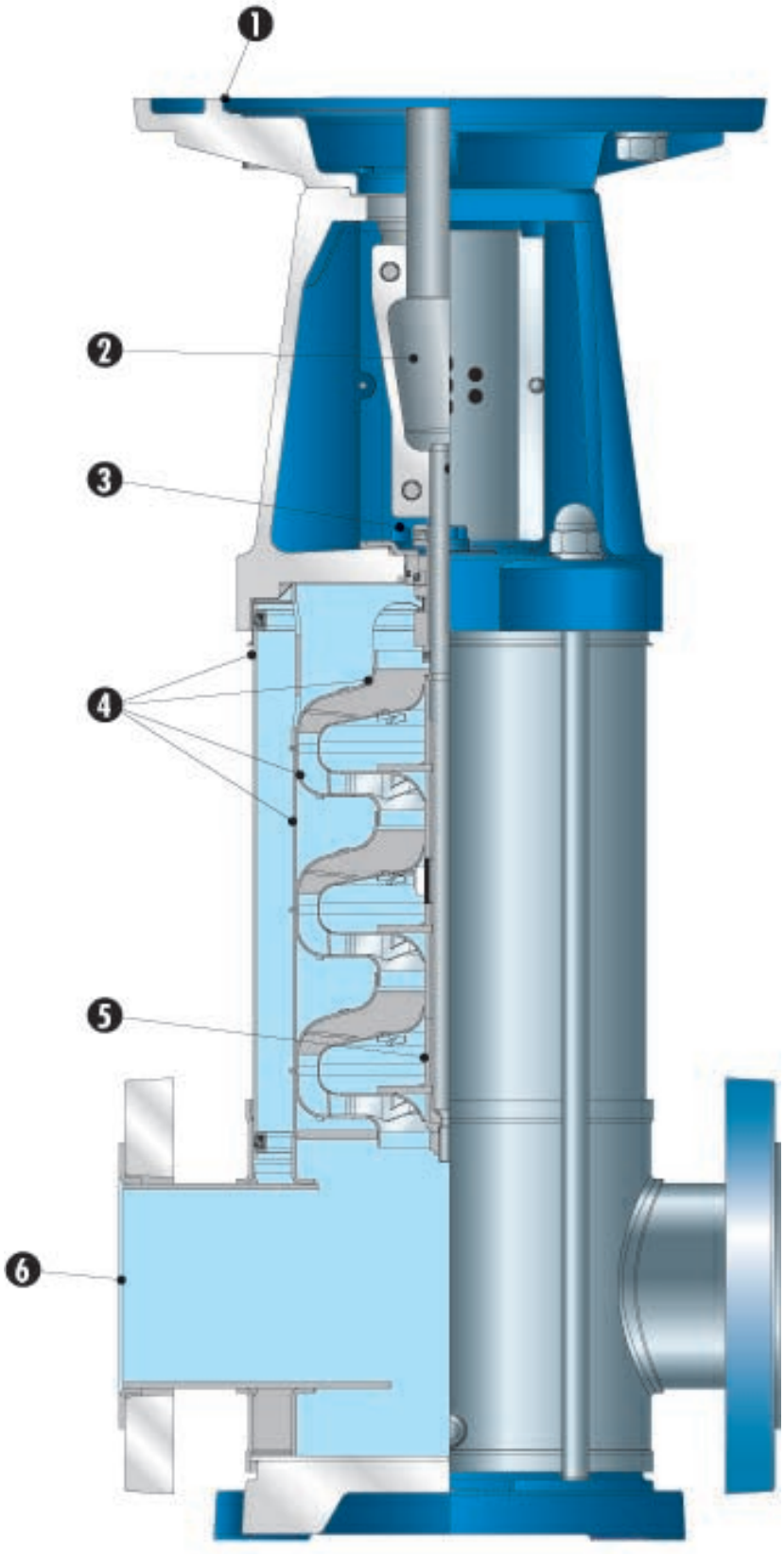
3 HIGH TEMP/HIGH PRESSURE MECHANICAL SEAL as standard for low maintenance.

4 ALL WETTED COMPONENTS OF AISI 303/304 STAINLESS STEEL for corrosion resistance.

5 TUNGSTEN CARBIDE VS CERAMIC BUSHINGS for long life at high temperatures.

6 DUCTILE IRON SLIP RING FLANGES for easy piping assembly.

## Features




**MODELS 395A, 396A & 397**

## BENEFITS

FLOOR SAVING DESIGN: Small base footprint and inline construction minimizes space requirements.

COST EFFECTIVE: Stamped Stainless Steel construction provides big pump performance at a small pump cost.

LOW OPERATING COST: High hydraulic efficiency as well as excellent NPSH requirements saves money.

EASY TO MAINTAIN: Design facilitates quick repair time and in-stock kits for seals minimize down time.

LOW NOISE LEVEL: Superior design limits noise and vibration.

## KEY FEATURES

1 NEMA C-Face MOTOR REGISTER.

2 ALL METAL RIGID COUPLING.

3 HIGH TEMP/HIGH PRESSURE MECHANICAL SEAL. Cartridge Design allows replacing seal with out removing the motor.

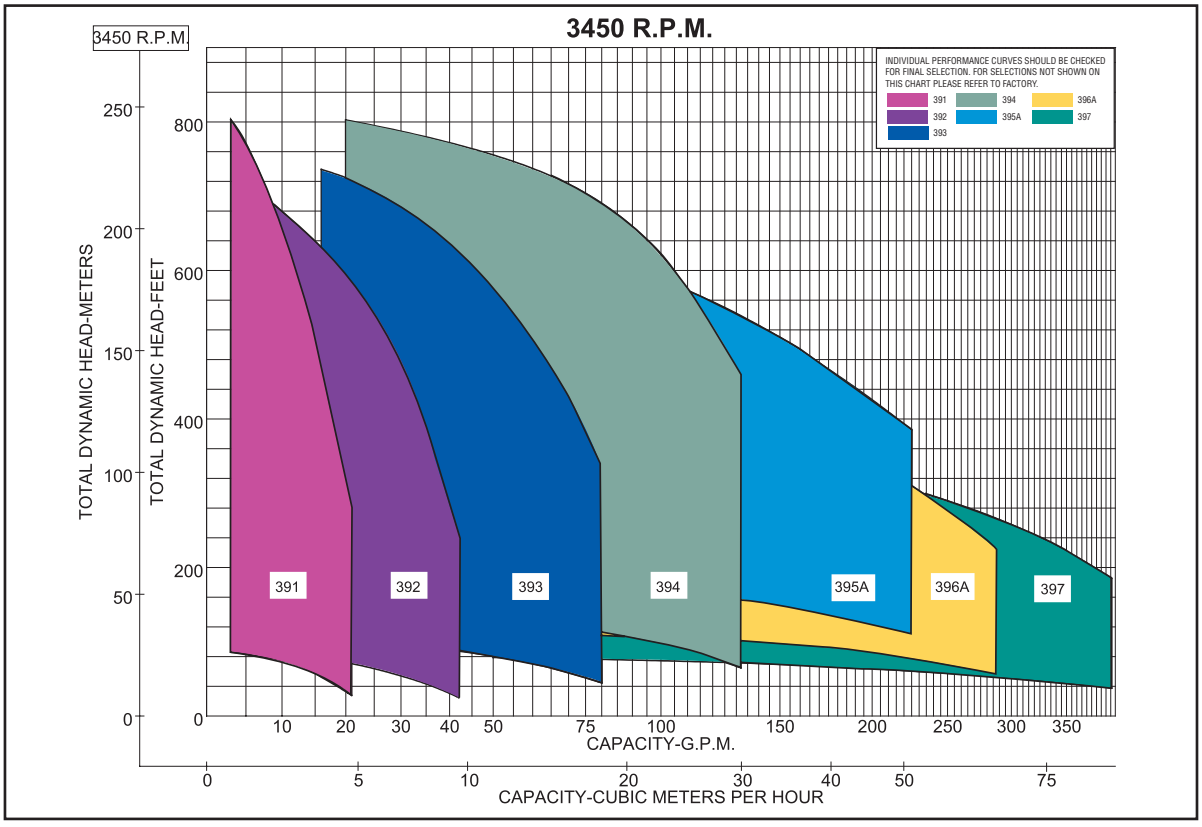
4 ALL WETTED COMPONENTS OF AISI 303/304 STAINLESS STEEL for corrosion resistance.

5 TUNGSTEN CARBIDE VS CERAMIC BUSHINGS for long life at high temperatures.

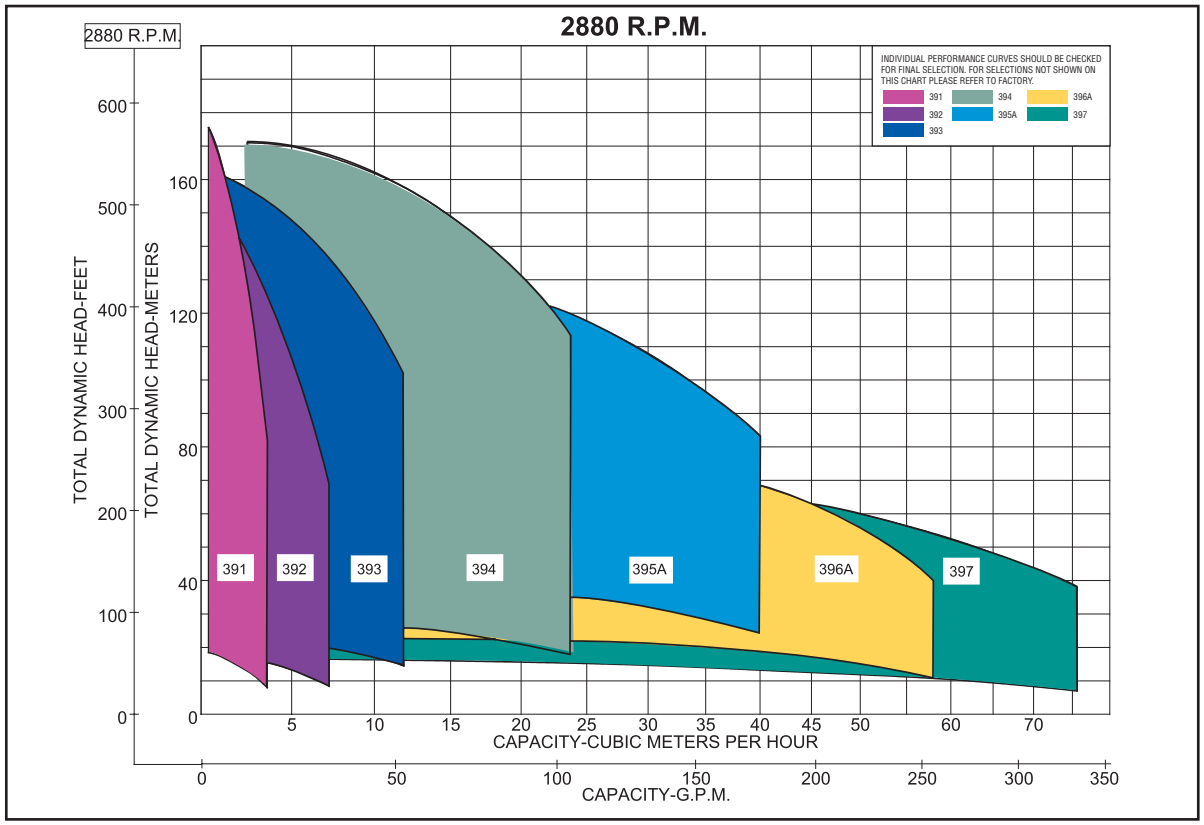
6 CAST IRON SLIP RING FLANGES for easy piping assembly.

# 390 Range Chart

## 3450 RPM




## 2880 RPM



# 390 Dimensions

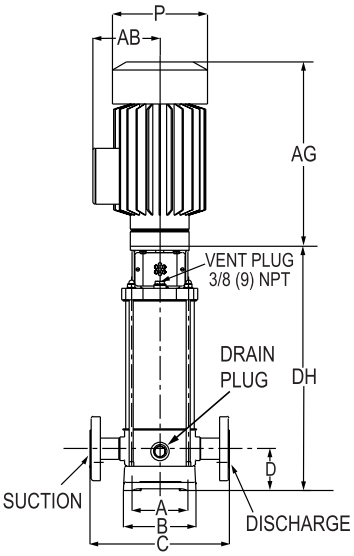
391

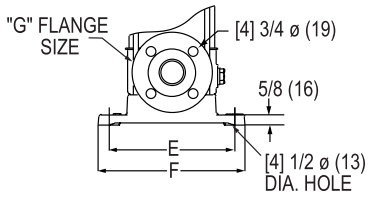
| MODEL | # OF STAGES | HP 60HZ | HP 50HZ | FRAME | P | AB | AG | DH | WEIGHT [PUMP ONLY] |
|---|---|---|---|---|---|---|---|---|---|
| 391-2 | 2 | 0.75 | .33 | 56C | 7.38 (187) | 5.75 (146) | 11.82 (300) | 11.25 (286) | 20 (9) |
| 391-3 | 3 | 0.75 | .33 | 56C | 7.38 (187) | 5.75 (146) | 11.82 (300) | 12 (305) | 21 (9) |
| 391-4 | 4 | 1 | .5 | 56C | 7.38 (187) | 5.75 (146) | 11.82 (300) | 12.75 (324) | 22 (10) |
| 391-5 | 5 | 1.5 | 1 | 143TC | 7.38 (187) | 6.19 (157) | 11.76 (299) | 13.75 (349) | 23 (10) |
| 391-6 | 6 | 1.5 | 1 | 143TC | 7.38 (187) | 6.19 (157) | 11.76 (299) | 14.50 (368) | 24 (10) |
| 391-7 | 7 | 1.5 | 1 | 143TC | 7.38 (187) | 6.19 (157) | 11.76 (299) | 15.25 (387) | 25 (11) |
| 391-8 | 8 | 2 | 1 | 145TC | 7.38 (187) | 6.19 (157) | 11.76 (299) | 16 (406) | 26 (11) |
| 391-9 | 9 | 2 | 1 | 145TC | 7.38 (187) | 6.19 (157) | 11.76 (299) | 17 (432) | 27 (12) |
| 391-10 | 10 | 3 | 2 | 182TC | 9.88 (251) | 7.84 (199) | 16.5 (419) | 18.63 (473) | 28 (12) |
| 391-11 | 11 | 3 | 2 | 182TC | 9.88 (251) | 7.84 (199) | 16.5 (419) | 19.50 (495) | 28 (12) |
| 391-13 | 13 | 3 | 2 | 182TC | 9.88 (251) | 7.84 (199) | 16.5 (419) | 21.13 (537) | 28 (12) |
| 391-15 | 15 | 5 | 2 | 184TC | 9.88 (251) | 7.84 (199) | 16.5 (419) | 22.81 (579) | 28 (12) |
| 391-16 | 16 | 5 | 2 | 184TC | 9.88 (251) | 7.84 (199) | 16.5 (419) | 23.75 (603) | 39 (17) |
| 391-18 | 18 | 5 | 2 | 184TC | 9.88 (251) | 7.84 (199) | 16.5 (419) | 25.25 (641) | 41 (18) |

392

| MODEL | # OF STAGES | HP 60HZ | HP 50HZ | FRAME | P | AB | AG | DH | WEIGHT [PUMP ONLY] |
|---|---|---|---|---|---|---|---|---|---|
| 392-2 | 2 | .75 | .33 | 56C | 7.38 (187) | 5.75 (146) | 11.82 (300) | 11.25 (286) | 22 (10) |
| 392-3 | 3 | 1 | .5 | 56C | 7.38 (187) | 5.75 (146) | 11.82 (300) | 12 (305) | 23 (10) |
| 392-4 | 4 | 1.5 | 1 | 143TC | 7.38 (187) | 6.19 (157) | 11.76 (299) | 12.75 (324) | 24 (11) |
| 392-5 | 5 | 1.5 | 1 | 143TC | 7.38 (187) | 6.19 (157) | 11.76 (299) | 13.63 (346) | 25 (11) |
| 392-6 | 6 | 2 | 1 | 145TC | 7.38 (187) | 6.19 (157) | 11.76 (299) | 14.5 (368) | 26 (11) |
| 392-7 | 7 | 3 | 2 | 182TC | 9.88 (251) | 7.84 (199) | 16.5 (419) | 16.25 (413) | 35 (15) |
| 392-8 | 8 | 3 | 2 | 182TC | 9.88 (251) | 7.84 (199) | 16.5 (419) | 17 (432) | 35 (15) |
| 392-9 | 9 | 3 | 2 | 182TC | 9.88 (251) | 7.84 (199) | 16.5 (419) | 17.88 (454) | 35 (15) |
| 392-10 | 10 | 5 | 2 | 184TC | 9.88 (251) | 7.84 (199) | 16.5 (419) | 18.63 (473) | 35 (15) |
| 392-11 | 11 | 5 | 2 | 184TC | 9.88 (251) | 7.84 (199) | 16.5 (419) | 19.5 (495) | 36 (16) |
| 392-13 | 13 | 5 | 3 | 184TC | 9.88 (251) | 7.84 (199) | 16.5 (419) | 21.13 (537) | 38 (17) |
| 392-15 | 15 | 5 | 3 | 184TC | 9.88 (251) | 7.84 (199) | 16.5 (419) | 22.75 (578) | 40 (18) |
| 392-16 | 16 | 7.5 | 3 | 184TC | 9.88 (251) | 7.84 (199) | 16.5 (419) | 23.63 (600) | 41 (18) |

| | MODEL | |
|---|---|---|
| | 391 | 392 |
| A | 3.94 (100) | 3.94 (100) |
| B | 5.12 (130) | 5.12 (130) |
| C | 9.84 (250) | 9.84 (250) |
| D | 3.00 (75) | 3.00 (75) |
| E | 7.08 (180) | 7.08 (180) |
| F | 8.27 (210) | 8.27 (210) |
| G | 1.25 (31) | 1.25 (31) |



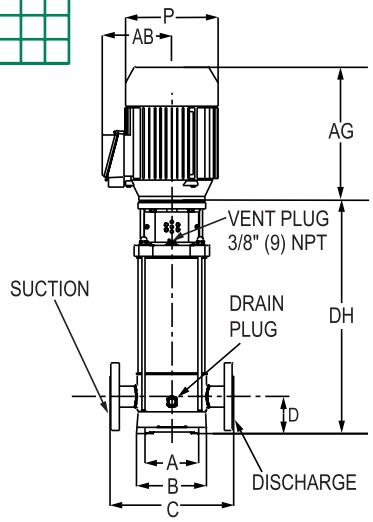



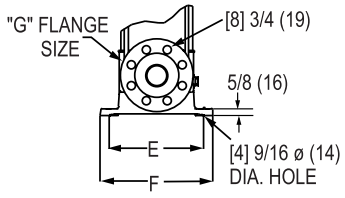

MODEL 391 & 392
ANSI 250 LB.
SLIP RING FLANGE

NOTES:

1. All dimensions are in inches (mm) and may vary ± 1/4 (6).
2. Not for construction purposes unless certified.
3. Motor dimensions are representative and will vary by enclosure and manufacturer.

# Dimensions




MODEL 393 & 394
ANSI 250 LB.
SLIP RING FLANGE

| | MODEL | |
|---|---|---|
| | 393 | 394 |
| A | 5.12 (130) | 5.12 (130) |
| B | 6.69 (170) | 6.69 (170) |
| C | 11.81 (300) | 11.81 (300) |
| D | 3.50 (90) | 3.50 (90) |
| E | 8.46 (215) | 8.46 (215) |
| F | 10.04 (255) | 10.04 (255) |
| G | 2 (51) | 2 (51) |

393

| MODEL | # OF STAGES | HP 60HZ | HP 50HZ | FRAME | P | AB | AG | DH | WEIGHT [PUMP ONLY] |
|---|---|---|---|---|---|---|---|---|---|
| 393-2 | 2 | 1.5 | 1 | 143TC | 7.38 (187) | 6.19 (157) | 11.76 (299) | 13.63 (346) | 35 (15.9) |
| 393-3 | 3 | 3 | 2 | 182TC | 9.88 (251) | 7.84 (199) | 16.5 (419) | 15.5 (394) | 37 (16.6) |
| 393-4 | 4 | 3 | 2 | 182TC | 9.88 (251) | 7.84 (199) | 16.5 (419) | 16.63 (422) | 38 (17.3) |
| 393-5 | 5 | 5 | 2 | 184TC | 9.88 (251) | 7.84 (199) | 16.5 (419) | 17.63 (448) | 45 (20.2) |
| 393-6 | 6 | 5 | 3 | 184TC | 9.88 (251) | 7.84 (199) | 16.5 (419) | 18.5 (470) | 46 (20.9) |
| 393-7 | 7 | 7.5 | 3 | 184TC | 9.88 (251) | 7.84 (199) | 16.5 (419) | 19.75 (502) | 48 (21.6) |
| 393-8 | 8 | 7.5 | 3 | 184TC | 9.88 (251) | 7.84 (199) | 16.5 (419) | 20.88 (530) | 49 (22.3) |
| 393-10 | 10 | 10 | 7.5 | 215TC | 11.5 (292) | 9.31 (236) | 19.5 (495) | 23 (584) | 56 (25.5) |
| 393-12 | 12 | 10 | 7.5 | 215TC | 11.5 (292) | 9.31 (236) | 19.5 (495) | 25.5 (648) | 56 (25.5) |
| 393-14 | 14 | 15 | 7.5 | 215TC | 11.5 (292) | 9.31 (236) | 19.5 (495) | 27.5 (699) | 59 (26.9) |

394

| MODEL | # OF STAGES | HP 60HZ | HP 50HZ | FRAME | P | AB | AG | DH | WEIGHT [PUMP ONLY] |
|---|---|---|---|---|---|---|---|---|---|
| 394-2 | 2 | 5 | 3 | 184TC | 9.88 (251) | 7.84 (199) | 16.5 (419) | 15.13 (384) | 42 (19.2) |
| 394-3 | 3 | 7.5 | 3 | 184TC | 9.88 (251) | 7.84 (199) | 16.5 (419) | 16.38 (416) | 44 (20.1) |
| 394-4 | 4 | 7.5 | 5 | 184TC | 9.88 (251) | 7.84 (199) | 16.5 (419) | 17.75 (451) | 46 (21.0) |
| 394-5 | 5 | 10 | 7.5 | 215TC | 11.5 (292) | 9.31 (236) | 19.5 (495) | 19.5 (495) | 49 (22.3) |
| 394-6 | 6 | 15 | 7.5 | 215TC | 11.5 (292) | 9.31 (236) | 19.5 (495) | 21 (533) | 51 (23.2) |
| 394-7 | 7 | 15 | 10 | 215TC | 11.5 (292) | 9.31 (236) | 19.5 (495) | 22.25 (565) | 53 (24.1) |
| 394-8 | 8 | 15 | 10 | 215TC | 11.5 (292) | 9.31 (236) | 19.5 (495) | 23.5 (597) | 55 (25.0) |
| 394-9 | 9 | 20 | 15 | 254TC | 12.75 (324) | 10.38 (264) | 21.13 (537) | 25.5 (648) | 61 (27.5) |
| 394-10 | 10 | 20 | 15 | 254TC | 12.75 (324) | 10.38 (264) | 21.13 (537) | 27 (686) | 63 (28.4) |
| 394-12 | 12 | 25 | 20 | 284TSC | 15.50 (394) | 13.69 (348) | 23.37 (594) | 28.88 (734) | 71 (32.4) |

NOTES:

1. All dimensions are in inches (mm) and may vary ± 1/4 (6).
2. Not for construction purposes unless certified.
3. Motor dimensions are representative and will vary by enclosure and manufacturer.

# Dimensions

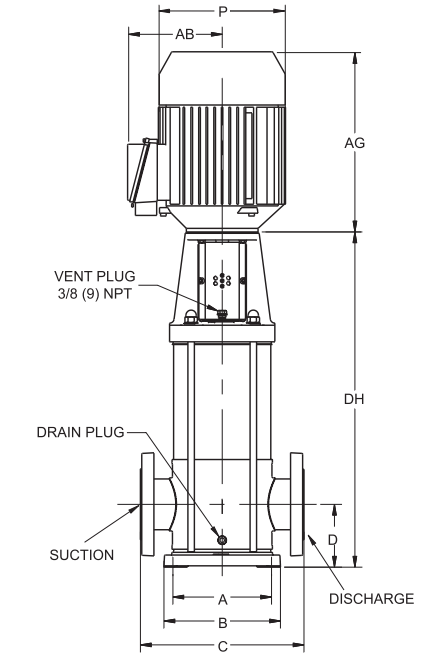
395A

| MODEL | # OF STAGES | HP 60HZ | HP 50HZ | FRAME | P | AB | AG | DH | WEIGHT (PUMP ONLY) |
|---|---|---|---|---|---|---|---|---|---|
| 395A-2 | 2 | 10 | 7.5 | 215TC | 8.86 (225) | 6.61 (168) | 14.53 (369) | 20.71 (526) | 103 (46.7) |
| 395A-3 | 3 | 15 | 7.5 | 215TC | 12.28 (312) | 9.06 (230) | 17.20 (437) | 26.77 (680) | 117 (53.1) |
| 395A-4 | 4 | 20 | 15 | 254TC | 12.28 (312) | 9.06 (230) | 17.20 (437) | 28.66 (728) | 123 (55.8) |
| 395A-5 | 5 | 20 | 15 | 254TC | 12.28 (312) | 9.06 (230) | 17.20 (437) | 30.59 (777) | 130 (59) |
| 395A-6 | 6 | 25 | 20 | 284TSC | 12.28 (312) | 9.06 (230) | 18.78 (477) | 32.48 (825) | 139 (63) |
| 395A-7 | 7 | 30 | 20 | 286TSC | 12.28 (312) | 9.06 (230) | 20.35 (517) | 34.41 (874) | 143 (65) |

| | MODEL | | |
|---|---|---|---|
| | 395A | 396A | 397 |
| A | 7.60 (193) | 7.60 (193) | 8.66 (220) |
| B | 10.24 (260) | 10.24 (260) | 10.24 (260) |
| C | 12.60 (320) | 12.60 (320) | 14.37 (365) |
| D | 4.13 (105) | 4.13 (105) | 5.51 (140) |
| E | 7.60 (193) | 7.60 (193) | 8.66 (220) |
| F | 10.24 (260) | 10.24 (260) | 10.24 (260) |
| G | 2.50 (64) | 3.00 (76) | 4.00 (102) |

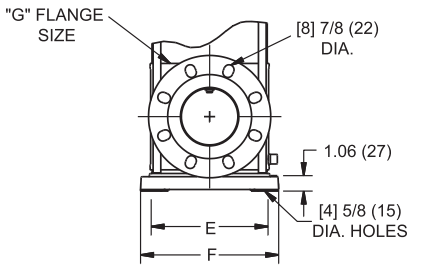
396A

| MODEL | # OF STAGES | HP 60HZ | HP 50HZ | FRAME | P | AB | AG | DH | WEIGHT (PUMP ONLY) |
|---|---|---|---|---|---|---|---|---|---|
| 396A-2 | 1 | 7.5 | 5 | 184TC | 8.82 (224) | 6.61 (168) | 12.72 (323) | 18.03 (458) | 112 (50.8) |
| 396A-3 | 2 | 15 | 7.5 | 215TC | 8.86 (225) | 6.61 (168) | 13.46 (342) | 20.71 (526) | 116 (52.6) |
| 396A-4 | 2 | 15 | 10 | 215TC | 8.86 (225) | 6.61 (168) | 14.53 (369) | 20.71 (526) | 119 (54.0) |
| 396A-5 | 3 | 20 | 15 | 254TC | 12.28 (312) | 9.06 (230) | 17.20 (437) | 26.77 (680) | 123 (55.8) |
| 396A-6 | 3 | 25 | 20 | 284TSC | 12.28 (312) | 9.06 (230) | 17.20 (437) | 26.77 (680) | 128 (58.1) |
| 396A-7 | 4 | 30 | 20 | 286TSC | 12.28 (312) | 9.06 (230) | 17.20 (437) | 28.66 (728) | 132 (59.9) |




397

| MODEL | # OF STAGES | HP 60HZ | HP 50HZ | FRAME | P | AB | AG | DH | WEIGHT (PUMP ONLY) |
|---|---|---|---|---|---|---|---|---|---|
| 397-1 | 1 | 7.5 | 5 | 184TC | 9.88 (251) | 7.84 (199) | 16.5 (419) | 22.4 (570) | 111 (50.4) |
| 397-2 | 2 | 15 | 10 | 215TC | 11.5 (292) | 9.31 (236) | 19.5 (495) | 26.7 (679) | 119 (53.8) |
| 397-3 | 3 | 20 | 15 | 254TC | 12.75 (324) | 10.38 (264) | 21.13 (537) | 30.2 (768) | 126 (57.2) |
| 397-4 | 4 | 25 | 20 | 284TSC | 15.5 (394) | 13.69 (348) | 23.37 (594) | 34.9 (886) | 134 (60.6) |
| 397-5 | 5 | 30 | 20 | 286TSC | 15.5 (394) | 13.69 (348) | 23.37 (594) | 38.4 (975) | 141 (64.0) |




NOTES:

1. All dimensions are in inches (mm) and may vary ± 1/4 (6).
2. Not for construction purposes unless certified.
3. Motor dimensions are representative and will vary by enclosure and manufacturer.

1. MODELS 395A AND 396A USE ANSI 250 LB. SLIP RING FLANGES
2. MODEL 397 USES ANSI 125 LB. SLIP RING FLANGES

# Engineering Specifications

The contractor shall furnish and install (in location as shown on the plans) an Aurora Pump Type 390, Vertical Multi-Stage In-Line Centrifugal Pump. The pump shall have a capacity of ___GPM at ____ft. total head and ____specific gravity. Each pump shall be constructed with 304 Stainless Steel impellers and diffusers, a high temperature mechanical seal with Carbon vs Silicon Carbide, EPDM elastomers through out, Tungsten Carbide against Ceramic pump bushings and a Cast Iron motor bracket. Flanges will be Ductile or Cast Iron in Slip Ring (and isolated from liquid). The pump is to be coupled with a 3500 RPM NEMA motor of ___Hp, ____Phase, ____Voltage and with (TEFC)(ODP) enclosure using a rigid split coupling. Motor bearings shall be sized to allow a 20,000 minimum hour B10 calculated life.

## Engineering Tables

| MODEL | 391 | 392 | 393 | 394 | 395A | 396A | 397 |
|---|---|---|---|---|---|---|---|
| H.P. Range | 3/4 - 5 | 3/4 - 5 | 1-1/2 - 15 | 5 - 25 | 7-1/2 - 30 | 5 - 30 | 7-1/2-30 |
| Suction & Discharge Flanges | Slip Ring 1-1/4 (250 lbs) | Slip Ring 1-1/4 (250 lbs) | Slip Ring 2 (250 lbs) | Slip Ring 2 (250 lbs) | Slip Ring 2-1/2 (250 lbs) | Slip Ring 3 (250 lbs) | Slip Ring 4 (125 lbs) |
| Flow Range GPM | 3 - 20 | 4 - 42 | 6 - 80 | 16 - 130 | 20 - 200 | 25 - 290 | 50-400 |
| Max Working Pressure | 360 | 360 | 360 | 360 | 360 | 360 | 175 |
| Max Temperature °F | 250 | 250 | 250 | 250 | 250 | 250 | 250 |

## Materials of Construction

| PUMP PART | MODEL 391-394, 395A, 396A & 397 |
|---|---|
| Impellers | AISI 304 Stn Stl |
| Diffusers | AISI 304 Stn Stl |
| Shaft | AISI 303 Stn Stl |
| Pump Sleeve | AISI 304 Stn Stl |
| Upper Casing | AISI 304 Stn Stl Wetted & ASTM 48 Class 35 |
| Lower Casing | AISI 304 Stn Stl Wetted with Iron Flange Rings |
| Mechanical Seal | Carbon vs Silicon Carbide Faces with EPDM Elastomers & AISI 316 Stn Stl Parts |
| O-rings | EPDM |
| Coupling | Aluminum, Steel or Cast Iron Depending on HP Required |
| Pump Bushings | Tungsten Carbide vs Aluminum Oxide Ceramic |
| Plug | AISI 316 |



**NOTE:** Aurora Pump reserves the right to make revisions to its products and their specifications, and to this bulletin and related information, without notice.

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AURORA®
Pentair Pump Group

AP-390 / Rev. B - 1.03

# AURORA 390 SERIES PUMPS

## MULTI-STAGE VERTICAL IN-LINE CENTRIFUGAL PUMP

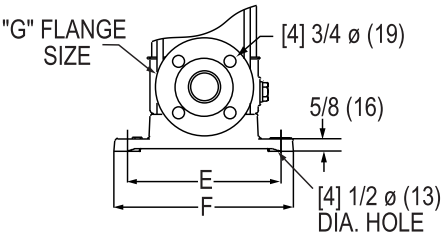
391

| MODEL | # OF STAGES | HP 60HZ | HP 50HZ | FRAME | P | AB | AG | DH | WEIGHT [PUMP ONLY] |
|---|---|---|---|---|---|---|---|---|---|
| 391-2 | 2 | 0.75 | .33 | 56C | 7.38 (187) | 5.75 (146) | 11.82 (300) | 11.25 (286) | 20 (9) |
| 391-3 | 3 | 0.75 | .33 | 56C | 7.38 (187) | 5.75 (146) | 11.82 (300) | 12 (305) | 21 (9) |
| 391-4 | 4 | 1 | .5 | 56C | 7.38 (187) | 5.75 (146) | 11.82 (300) | 12.75 (324) | 22 (10) |
| 391-5 | 5 | 1.5 | 1 | 143TC | 7.38 (187) | 6.19 (157) | 11.76 (299) | 13.75 (349) | 23 (10) |
| 391-6 | 6 | 1.5 | 1 | 143TC | 7.38 (187) | 6.19 (157) | 11.76 (299) | 14.50 (368) | 24 (10) |
| 391-7 | 7 | 1.5 | 1 | 143TC | 7.38 (187) | 6.19 (157) | 11.76 (299) | 15.25 (387) | 25 (11) |
| 391-8 | 8 | 2 | 1 | 145TC | 7.38 (187) | 6.19 (157) | 11.76 (299) | 16 (406) | 26 (11) |
| 391-9 | 9 | 2 | 1 | 145TC | 7.38 (187) | 6.19 (157) | 11.76 (299) | 17 (432) | 27 (12) |
| 391-10 | 10 | 3 | 2 | 182TC | 9.88 (251) | 7.84 (199) | 16.5 (419) | 18.63 (473) | 28 (12) |
| 391-11 | 11 | 3 | 2 | 182TC | 9.88 (251) | 7.84 (199) | 16.5 (419) | 19.50 (495) | 28 (12) |
| 391-13 | 13 | 3 | 2 | 182TC | 9.88 (251) | 7.84 (199) | 16.5 (419) | 21.13 (537) | 28 (12) |
| 391-15 | 15 | 5 | 2 | 184TC | 9.88 (251) | 7.84 (199) | 16.5 (419) | 22.81 (579) | 28 (12) |
| 391-16 | 16 | 5 | 2 | 184TC | 9.88 (251) | 7.84 (199) | 16.5 (419) | 23.75 (603) | 39 (17) |
| 391-18 | 18 | 5 | 2 | 184TC | 9.88 (251) | 7.84 (199) | 16.5 (419) | 25.25 (641) | 41 (18) |

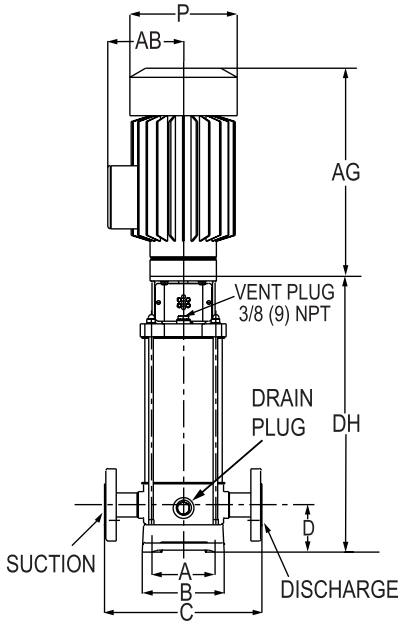
392

| MODEL | # OF STAGES | HP 60HZ | HP 50HZ | FRAME | P | AB | AG | DH | WEIGHT [PUMP ONLY] |
|---|---|---|---|---|---|---|---|---|---|
| 392-2 | 2 | .75 | .33 | 56C | 7.38 (187) | 5.75 (146) | 11.82 (300) | 11.25 (286) | 22 (10) |
| 392-3 | 3 | 1 | .5 | 56C | 7.38 (187) | 5.75 (146) | 11.82 (300) | 12 (305) | 23 (10) |
| 392-4 | 4 | 1.5 | 1 | 143TC | 7.38 (187) | 6.19 (157) | 11.76 (299) | 12.75 (324) | 24 (11) |
| 392-5 | 5 | 1.5 | 1 | 143TC | 7.38 (187) | 6.19 (157) | 11.76 (299) | 13.63 (346) | 25 (11) |
| 392-6 | 6 | 2 | 1 | 145TC | 7.38 (187) | 6.19 (157) | 11.76 (299) | 14.5 (368) | 26 (11) |
| 392-7 | 7 | 3 | 2 | 182TC | 9.88 (251) | 7.84 (199) | 16.5 (419) | 16.25 (413) | 35 (15) |
| 392-8 | 8 | 3 | 2 | 182TC | 9.88 (251) | 7.84 (199) | 16.5 (419) | 17 (432) | 35 (15) |
| 392-9 | 9 | 3 | 2 | 182TC | 9.88 (251) | 7.84 (199) | 16.5 (419) | 17.88 (454) | 35 (15) |
| 392-10 | 10 | 5 | 2 | 184TC | 9.88 (251) | 7.84 (199) | 16.5 (419) | 18.63 (473) | 35 (15) |
| 392-11 | 11 | 5 | 2 | 184TC | 9.88 (251) | 7.84 (199) | 16.5 (419) | 19.5 (495) | 36 (16) |
| 392-13 | 13 | 5 | 3 | 184TC | 9.88 (251) | 7.84 (199) | 16.5 (419) | 21.13 (537) | 38 (17) |
| 392-15 | 15 | 5 | 3 | 184TC | 9.88 (251) | 7.84 (199) | 16.5 (419) | 22.75 (578) | 40 (18) |
| 392-16 | 16 | 7.5 | 3 | 184TC | 9.88 (251) | 7.84 (199) | 16.5 (419) | 23.63 (600) | 41 (18) |

| MODELS 391 & 392 | 60HZ 3450 RPM |
|---|---|
| | 50HZ 2880 RPM |




MODEL 391 & 392
ANSI 250 LB.
SLIP RING FLANGE



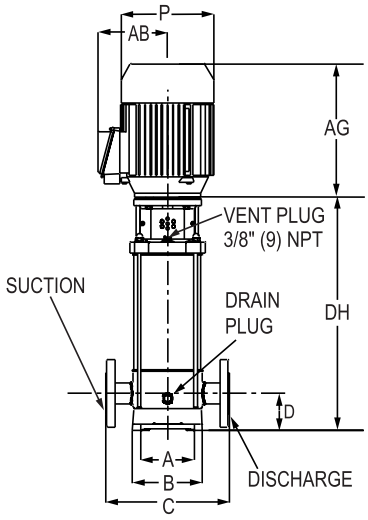

| | MODEL 391 | MODEL 392 |
|---|---|---|
| A | 3.94 (100) | 3.94 (100) |
| B | 5.12 (130) | 5.12 (130) |
| C | 9.84 (250) | 9.84 (250) |
| D | 3.00 (75) | 3.00 (75) |
| E | 7.08 (180) | 7.08 (180) |
| F | 8.27 (210) | 8.27 (210) |
| G | 1.25 (31) | 1.25 (31) |

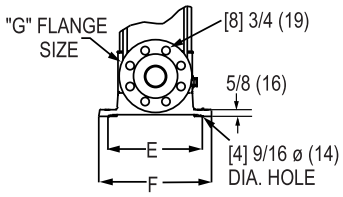
NOTES:
1. All dimensions are in inches (mm) and may vary ± 1/4 (6).
2. Not for construction purposes unless certified.
3. Motor dimensions are representative and will vary by enclosure and manufacturer.

# AURORA 390 SERIES PUMPS

## MULTI-STAGE VERTICAL IN-LINE CENTRIFUGAL PUMP

| MODELS 393 & 394 | 60HZ 3450 RPM |
|---|---|
| | 50HZ 2880 RPM |




MODEL 393 & 394
ANSI 250 LB.
SLIP RING FLANGE

| | MODEL | |
|---|---|---|
| | 393 | 394 |
| A | 5.12 (130) | 5.12 (130) |
| B | 6.69 (170) | 6.69 (170) |
| C | 11.81 (300) | 11.81 (300) |
| D | 3.50 (90) | 3.50 (90) |
| E | 8.46 (215) | 8.46 (215) |
| F | 10.04 (255) | 10.04 (255) |
| G | 2 (51) | 2 (51) |

393

| MODEL | # OF STAGES | HP 60HZ | HP 50HZ | FRAME | P | AB | AG | DH | WEIGHT [PUMP ONLY] |
|---|---|---|---|---|---|---|---|---|---|
| 393-2 | 2 | 1.5 | 1 | 143TC | 7.38 (187) | 6.19 (157) | 11.76 (299) | 13.63 (346) | 35 (15.9) |
| 393-3 | 3 | 3 | 2 | 182TC | 9.88 (251) | 7.84 (199) | 16.5 (419) | 15.5 (394) | 37 (16.6) |
| 393-4 | 4 | 3 | 2 | 182TC | 9.88 (251) | 7.84 (199) | 16.5 (419) | 16.63 (422) | 38 (17.3) |
| 393-5 | 5 | 5 | 2 | 184TC | 9.88 (251) | 7.84 (199) | 16.5 (419) | 17.63 (448) | 45 (20.2) |
| 393-6 | 6 | 5 | 3 | 184TC | 9.88 (251) | 7.84 (199) | 16.5 (419) | 18.5 (470) | 46 (20.9) |
| 393-7 | 7 | 7.5 | 3 | 184TC | 9.88 (251) | 7.84 (199) | 16.5 (419) | 19.75 (502) | 48 (21.6) |
| 393-8 | 8 | 7.5 | 3 | 184TC | 9.88 (251) | 7.84 (199) | 16.5 (419) | 20.88 (530) | 49 (22.3) |
| 393-10 | 10 | 10 | 7.5 | 215TC | 11.5 (292) | 9.31 (236) | 19.5 (495) | 23 (584) | 56 (25.5) |
| 393-12 | 12 | 10 | 7.5 | 215TC | 11.5 (292) | 9.31 (236) | 19.5 (495) | 25.5 (648) | 56 (25.5) |
| 393-14 | 14 | 15 | 7.5 | 215TC | 11.5 (292) | 9.31 (236) | 19.5 (495) | 27.5 (699) | 59 (26.9) |

394

| MODEL | # OF STAGES | HP 60HZ | HP 50HZ | FRAME | P | AB | AG | DH | WEIGHT [PUMP ONLY] |
|---|---|---|---|---|---|---|---|---|---|
| 394-2 | 2 | 5 | 3 | 184TC | 9.88 (251) | 7.84 (199) | 16.5 (419) | 15.13 (384) | 42 (19.2) |
| 394-3 | 3 | 7.5 | 3 | 184TC | 9.88 (251) | 7.84 (199) | 16.5 (419) | 16.38 (416) | 44 (20.1) |
| 394-4 | 4 | 7.5 | 5 | 184TC | 9.88 (251) | 7.84 (199) | 16.5 (419) | 17.75 (451) | 46 (21.0) |
| 394-5 | 5 | 10 | 7.5 | 215TC | 11.5 (292) | 9.31 (236) | 19.5 (495) | 19.5 (495) | 49 (22.3) |
| 394-6 | 6 | 15 | 7.5 | 215TC | 11.5 (292) | 9.31 (236) | 19.5 (495) | 21 (533) | 51 (23.2) |
| 394-7 | 7 | 15 | 10 | 215TC | 11.5 (292) | 9.31 (236) | 19.5 (495) | 22.25 (565) | 53 (24.1) |
| 394-8 | 8 | 15 | 10 | 215TC | 11.5 (292) | 9.31 (236) | 19.5 (495) | 23.5 (597) | 55 (25.0) |
| 394-9 | 9 | 20 | 15 | 254TC | 12.75 (324) | 10.38 (264) | 21.13 (537) | 25.5 (648) | 61 (27.5) |
| 394-10 | 10 | 20 | 15 | 254TC | 12.75 (324) | 10.38 (264) | 21.13 (537) | 27 (686) | 63 (28.4) |
| 394-12 | 12 | 25 | 20 | 284TSC | 15.50 (394) | 13.69 (348) | 23.37 (594) | 28.88 (734) | 71 (32.4) |

NOTES:
1. All dimensions are in inches (mm) and may vary ± 1/4 (6).
2. Not for construction purposes unless certified.
3. Motor dimensions are representative and will vary by enclosure and manufacturer.

# AURORA 390 SERIES PUMPS

## MULTI-STAGE VERTICAL IN-LINE CENTRIFUGAL PUMP

| MODELS 395A, 396A & 397 | 60HZ 3450 RPM |
|---|---|
| | 50HZ 2880 RPM |

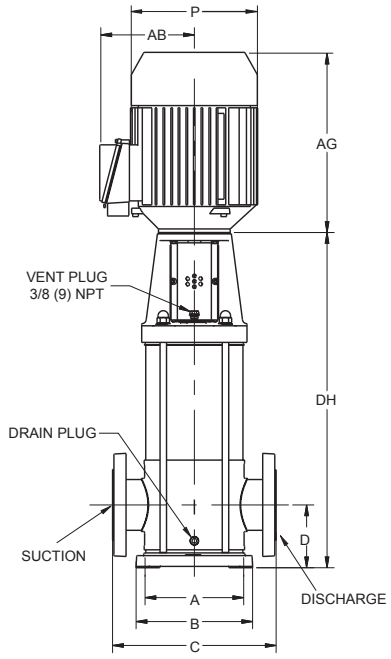
| | MODEL | | |
|---|---|---|---|
| | 395A | 396A | 397 |
| A | 7.60 (193) | 7.60 (193) | 8.66 (220) |
| B | 10.24 (260) | 10.24 (260) | 10.24 (260) |
| C | 12.60 (320) | 12.60 (320) | 14.37 (365) |
| D | 4.13 (105) | 4.13 (105) | 5.51 (140) |
| E | 7.60 (193) | 7.60 (193) | 8.66 (220) |
| F | 10.24 (260) | 10.24 (260) | 10.24 (260) |
| G | 2.50 (64) | 3.00 (76) | 4.00 (102) |

395A

| MODEL | # OF STAGES | HP 60HZ | HP 50HZ | FRAME | P | AB | AG | DH | WEIGHT (PUMP ONLY) |
|---|---|---|---|---|---|---|---|---|---|
| 395A-2 | 2 | 10 | 7.5 | 215TC | 8.86 (225) | 6.61 (168) | 14.53 (369) | 20.71 (526) | 103 (46.7) |
| 395A-3 | 3 | 15 | 7.5 | 215TC | 12.28 (312) | 9.06 (230) | 17.20 (437) | 26.77 (680) | 117 (53.1) |
| 395A-4 | 4 | 20 | 15 | 254TC | 12.28 (312) | 9.06 (230) | 17.20 (437) | 28.66 (728) | 123 (55.8) |
| 395A-5 | 5 | 20 | 15 | 254TC | 12.28 (312) | 9.06 (230) | 17.20 (437) | 30.59 (777) | 130 (59) |
| 395A-6 | 6 | 25 | 20 | 284TSC | 12.28 (312) | 9.06 (230) | 18.78 (477) | 32.48 (825) | 139 (63) |
| 395A-7 | 7 | 30 | 20 | 286TSC | 12.28 (312) | 9.06 (230) | 20.35 (517) | 34.41 (874) | 143 (65) |

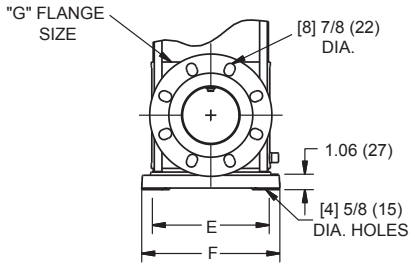
396A

| MODEL | # OF STAGES | HP 60HZ | HP 50HZ | FRAME | P | AB | AG | DH | WEIGHT (PUMP ONLY) |
|---|---|---|---|---|---|---|---|---|---|
| 396A-2 | 1 | 7.5 | 5 | 184TC | 8.82 (224) | 6.61 (168) | 12.72 (323) | 18.03 (458) | 112 (50.8) |
| 396A-3 | 2 | 15 | 7.5 | 215TC | 8.86 (225) | 6.61 (168) | 13.46 (342) | 20.71 (526) | 116 (52.6) |
| 396A-4 | 2 | 15 | 10 | 215TC | 8.86 (225) | 6.61 (168) | 14.53 (369) | 20.71 (526) | 119 (54.0) |
| 396A-5 | 3 | 20 | 15 | 254TC | 12.28 (312) | 9.06 (230) | 17.20 (437) | 26.77 (680) | 123 (55.8) |
| 396A-6 | 3 | 25 | 20 | 284TSC | 12.28 (312) | 9.06 (230) | 17.20 (437) | 26.77 (680) | 128 (58.1) |
| 396A-7 | 4 | 30 | 20 | 286TSC | 12.28 (312) | 9.06 (230) | 17.20 (437) | 28.66 (728) | 132 (59.9) |




397

| MODEL | # OF STAGES | HP 60HZ | HP 50HZ | FRAME | P | AB | AG | DH | WEIGHT (PUMP ONLY) |
|---|---|---|---|---|---|---|---|---|---|
| 397-1 | 1 | 7.5 | 5 | 184TC | 9.88 (251) | 7.84 (199) | 16.5 (419) | 22.4 (570) | 111 (50.4) |
| 397-2 | 2 | 15 | 10 | 215TC | 11.5 (292) | 9.31 (236) | 19.5 (495) | 26.7 (679) | 119 (53.8) |
| 397-3 | 3 | 20 | 15 | 254TC | 12.75 (324) | 10.38 (264) | 21.13 (537) | 30.2 (768) | 126 (57.2) |
| 397-4 | 4 | 25 | 20 | 284TSC | 15.5 (394) | 13.69 (348) | 23.37 (594) | 34.9 (886) | 134 (60.6) |
| 397-5 | 5 | 30 | 20 | 286TSC | 15.5 (394) | 13.69 (348) | 23.37 (594) | 38.4 (975) | 141 (64.0) |




1. MODELS 395A AND 396A USE ANSI 250 LB. SLIP RING FLANGES
2. MODEL 397 USES ANSI 125 LB. SLIP RING FLANGES

NOTES:
1. All dimensions are in inches (mm) and may vary ± 1/4 (6).
2. Not for construction purposes unless certified.
3. Motor dimensions are representative and will vary by enclosure and manufacturer.

SECTION **6** ITEM **390**
DATED **JANUARY 2003**

SUPERSEDES SECTION 6 ITEM 390
DATED OCTOBER 2000

# INSTRUCTION AND REPAIR MANUAL
## SERIES 390

**6**

The 390 Series is a superior commercial Multi-Stage Vertical In-Line Centrifugal Pump. These stainless steel stackable pumps are ideal for high pressure applications which require a minimum amount of floor space. Pumping applications include: Boiler Feed, Condensate Return, Deaeration, Water Booster Applications, Jockey Pump for Fire Protection, Irrigation, Carwash, Chemical Feed System, Pressure Injection and Washdown Systems.

| **OPERATIONAL LIMITS** | **Models 391-396A** | **Model 397** |
|---|---|---|
| Max. Operating Pressure: | 360 psi (25 bar) | 175 psi (12 bar) |
| Max. Operating Temp.: | 250°F (120°C) | 250°F (120°C) |

**ATTENTION: SAFETY WARNINGS:**

Read and understand all warnings before installation or servicing pump.

**ELECTRICAL SAFETY:**

**⚠ Warning:** Electrical Shock Hazard

All electrical connections are to be made by a qualified electrician in accordance with all codes and ordinances. Failure to follow these instructions could result in serious personal injury, death or property damage.

**⚠ Warning:** Electrical Overload Hazard

Insure all motors have properly sized overload protection. Failure to follow these instructions could result in serious personal injury, death or property damage.

**⚠ Warning:** Sudden Start-Up Hazard

Disconnect and lockout power source before servicing. Failure to follow these instructions could result in serious personal injury, death or property damage.

**HIGH TEMPERATURE SAFETY:**

**⚠ Warning:** Hot Surface Hazard

If pumping hot water, insure guards or proper insulation is installed to protect against skin contact to hot piping or pump components. Failure to follow these instructions could result in serious personal injury, death or property damage.

**⚠ Warning:** Spraying Water Hazard

When servicing pump replace all gaskets and seals. Do not re-use old gaskets or seals. Failure to follow these instructions could result in serious personal injury, death or property damage.

**HIGH PRESSURE SAFETY:**

**⚠ Warning:** High Pressure Hazard

The pump is rated at a maximum of 360 psi (340 psi at 250°F) for models 391-396A and 175 psi for model 397. Do not exceed this pressure. Install properly sized pressure relief valves in system. Failure to follow these instructions could result in serious personal injury, death or property damage.

**⚠ Warning:** Expansion Hazard

Water expands when heated. Install properly sized thermal expansion tanks and relief valves. Failure to follow these instructions could result in serious personal injury, death or property damage.

**ELECTRICAL CONNECTIONS:**

**⚠ Warning:** Electrical Shock Hazard

All electrical connections are to be made by a qualified electrician in accordance with all codes and ordinances. Failure to follow these instructions could result in serious personal injury, death or property damage.

**⚠ Warning:** Electrical Overload Hazard

Insure all motors have properly sized overload protection. Failure to follow these instructions could result in serious personal injury, death or property damage.

**⚠ Warning:** Sudden Start-Up Hazard

Disconnect and lockout power source before servicing. Failure to follow these instructions could result in serious personal injury, death or property damage.

**⚠ Warning:** Hot Surface Hazard

If pumping hot water, insure guards or proper insulation is installed to protect against skin contact to hot piping or pump components. Failure to follow these instructions could result in serious personal injury, death or property damage.

**⚠ Warning:** Spraying Water Hazard

When servicing pump, replace all gaskets and seals. Do not re-use old gaskets or seals. Failure to follow these instructions could result in serious personal injury, death or property damage.

**INSTALLATION:**

Before placing a model 390 Series Multi-Stage Vertical In-Line Pump in operation, we suggest that you investigate the following points that will help to insure that you will have a "Satisfied" pump.

1. Check for proper initial venting to assure pump is not running dry. See that all air vapor is vented from pump before starting. An air pocket at the mechanical seal may cause the seal to run dry, overheat and possibly be fractured by thermal shock when liquid reaches the seal. (Solution: Loosen or remove vent plug prior to start up and confirm that water is coming out of the vent. Replace/tighten plug before starting pump.)

2. Be sure there is adequate by-pass flow at shut-off. Insufficient flow can result in rapid temperature rise in the pump that can lead to flashing and potential seal damage and failure. (Solution: Install properly sized orifice by pass from the pump discharge)

3. Clean water is highly desirable. Dirty water with suspended solids can collect on the casing "O" rings causing a build up that can interfere with normal movement during rise and fall of pressure and temperature. This solids build up can result in leakage at the "O" rings when the pump is not running. (Solution: Strainers and filters can clean water in closed loop systems.)

4. Sufficient NPSH must be available. If available NPSH is below required NPSH, at any point during operation, cavitation will result and may lead to premature first stage impeller/diffuser failure. Vibration in the impeller, due to cavitation, can lead to fatigue failure of welds and extensive pump damage. Always supply a "safety factor" NPSH of 2 feet over required. (Solution: Lower pump, reduce inlet piping friction losses, lower water temperature or reduce maximum flow of pump)

5. Use modulating valves on discharge during continuous operation. Quick closing valves can cause shock loading that may result in pump damage. (Solution: Remove quick closing valves from discharge side of piping and replace with modulating valve.)

6. Motor bearing re-lubrication. Due to the high temperature and vertical installation, motor bearing lubrication is highly important. Re-lubricate bearings (on motors with lubrication points) after 1000 hours operating time and be sure that the grease vent plug is open for at least one hour after resuming pump operation. (Solution: Run timers or posted lubrication schedules can assist in maintaining proper lubrication intervals.)

7. Check for reverse operation. Failure of a check valve at the discharge may result in reverse rotation of the pump during shut down. This might lead to excessive shaft stress and possible shaft failure when the motor restarts during reverse rotation. (Solution: Observe pump during shut off, confirm check valves are in place and functioning)

8. Proper coupling adjustment. The correct setting of the coupling is at 1/2 the total internal vertical movement of the shaft. Setting the correct height assures proper adjustment for the entire impeller and diffuser stack, the tungsten carbide sleeve bushings and the mechanical seal. (Solution: Read instructions prior to start up).

9. Coupling bolt tightness. Tighten the coupling bolts to the prescribed torque settings to prevent shaft slippage during operation. (Solution: Use torque wrench when tightening coupling bolts).

10. Check for pipe strain. Pipe strain might deform the casing resulting in "O" ring leakage. (Solution: Install flexible piping connectors on at least one side of pump).

Each of these points can play a major role in the life of a 390 pump in boiler feed service.

**INSTALLATION:**

## READ AND UNDERSTAND ALL SAFETY WARNINGS AT THE BEGINNING OF THE MANUAL BEFORE BEGINNING INSTALLATION OR ANY REPAIR WORK.

The Aurora Series 390 pump should be installed in an area where sufficient room is available for inspection and repair. We recommend that shut off valves be installed on both the suction and the discharge side of the pump to facilitate repair/replacement of the pump. Suction side valve must be of the gate, butterfly or ball type design to prevent excess pressure drop. The pump should not be located near any sound sensitive area and special precautions may be required to avoid sound and/or vibration transmission. Consult a vibration/sound specialist if applicable. Insure the pump is bolted down securely to a flat and level foundation.

Insure that proper hydronic accessories such as pressure relief valves, thermal expansion tanks and flow/pressure control devices are installed in the system. Consult the responsible party for your system to insure these devises are installed and of the proper size.

To prevent excessive temperature rise a minimum flow must be allowed through the pump. Refer to the pump curves for the minimum flow for each pump model. Install a bypass if the pump has any possibility of operating below minimum flow.

Insure that at least 5 diameters of straight pipe is present between the suction flange and the first pipe fitting. This allows a smooth and quite entrance of the pumped liquid into the pump.

Avoid all situations where pipe strain may be transferred to the pump casing. Expansion fittings, pipe hangers and (recommended) flexible piping located close to the pump may be required. **Never** force the piping to match the pump suction and discharge flanges. Re-cut piping to avoid this situation. When tightening the suction and discharge flanges be sure to tighten each of the bolts equally to allow the flange faces to match squarely and the gaskets to seal correctly. **Never** allow a cantilever load to develop across the flange face (possible when bolting against fix raised face flanges) or the flanges may crack.

All electrical connections are to be completed by a qualified electrician. Insure properly sized overload protection is installed.

**START UP:**

The pump must be filled with water and vented of air before start up or the mechanical seal will not be lubricated and will fail. Loosen vent plug on pump casing to insure all air is vented from casing and the casing is filled with water. After venting pump of all air, close vent plug. Jog motor to confirm motor rotation.

**OPERATING:**

Insure the system is filled with water and vented prior to pump start up. The pump rotation is clockwise when viewed from the back of the motor. Do not run the pump dry or the mechanical seal will be destroyed.

**MAINTENANCE AND SERVICE TO THE PUMP:**

The 390 pump requires no regular service except for motor bearing lubrication.

Depending on motor manufacturer and motor frame size the motor bearings may be permanently lubricated (requiring no further maintenance) or they may require re-lubrication. If no lubrication fittings (zirk fittings) or plugged ports (for lubrication fittings) are present then the motor has permanently lubricated bearings. If lubrication fittings are visible or plugs are present at the lubrication points, then the bearings can be re-lubricated and it is up to the end user to install lubrication fittings as required and to follow a regular maintenance schedule of motor bearing lubrication.

In dry locations, each bearing will need lubrication at least after every

2,000 hours of running time or 3-6 months whichever is more frequent. In wet locations (exposed to dripping water, to the weather or to heavy condensation found in unheated or poorly ventilated underground locations) or when pumping fluids in excess of 180ºF every 1,000 hours or every 1-1/2 to 3 months whichever is more frequent.

The amount of lubrication to add depends upon the motor manufacturer and the motor frame/bearing size. Please refer to the motor manufacturers recommendations as to the volume of grease to add and any special re-greasing instructions. Use a Polyurea NGLI grade 2 grease such as Chevron SRI#2 for re-lubrication.

A periodic inspection must be performed looking for seal leaks indicating the mechanical seal may be worn out and any unusual noise or vibration that will indicate other pump components require service/repair.

**PUMP DISASSEMBLY AND REPAIR:**

**READ AND UNDERSTAND ALL SAFETY WARNINGS AT THE BEGINNING OF THE MANUAL BEFORE BEGINNING INSTALLATION OR ANY REPAIR WORK.**

Refer to the exploded pump diagrams for item description for specific models.
There are two sections in the repair instructions below.

1. **Models 391 to 394:** Replacement of the hydraulic stack kit and mechanical seal. When impellers, diffusers or tungsten carbide bushings wear to the point where replacement is required the entire stack kit is replaced. The stack kit consists of all internal hydraulic components fully assembled and ready to install. When the mechanical seal (a wear item) has worn to the point of leaking then the seal and all gaskets need to be replaced. A mechanical seal kit contains the seal as well as all required gaskets.

   **Model 395A, 396A, 397:** When impellers, diffusers or tungsten carbide bushings wear to the point where replacement is required the individual components or the entire stack kit can be replaced. Only an experienced technician should attempt to replace individual components in a stack kit as part location is critical and if parts are positioned incorrectly then major damage can occur to costly pump components. When the mechanical seal requires replacement then a cartridge seal replacement is used, the motor does not need to be removed from the pump and only a minimum of gaskets require replacement.

**⚠ Warning:** Sudden Start-Up Hazard

Disconnect and lockout power source before servicing. Failure to follow these instructions could result in serious personal injury, death or property damage.

**⚠ Warning:** Hot Surface Hazard

If pumping hot water insure guards or proper insulation is installed to protect against skin contact to hot piping or pump components. Failure to follow these instructions could result in serious personal injury, death or property damage.

**⚠ Warning:** High Pressure Hazard

The pump is rated at a maximum of 360 psi (340 psi at 250°F) for models 391-396A and 175 psi for model 397. Do not exceed this pressure. Install properly sized pressure relief valves in system. Failure to follow these instructions could result in serious personal injury, death or property damage.

**⚠ Warning:** Spraying Water Hazard

When servicing pump, replace all gaskets and seals. Do not re-use old gaskets or seals. Failure to follow these instructions could result in serious personal injury, death or property damage.

2. Replacement of drive motor. When replacing the motor, the instructions for coupling setting must be adhered to or the impellers will not be set correctly in relation to the diffusers. Failure to follow the instructions carefully will result in instant pump failure upon start up.

NOTE

The pump and motor can be heavy and if proper lifting equipment is not available the end user should never hesitate to pull the entire pump and motor combination from the piping system. All required work should then be performed with the pump and motor in the horizontal position. **Safety is critical** and the small amount of time spent in reconnecting the piping is always minimal in comparison to the risk of injury and damage to pump components.

NOTE

Refer to Table 1 on page 5 for a list of required tools.

Refer to Table 2 on page 5 for a list of tightening torques.

Refer to the exploded views on page 6 for the 391 to 394 units and page 7 for 395A, 396A, 397 units. In the written instructions the item number listed on the exploded views is placed after the item description.

**Section 1**

**Replacement of the hydraulic Stack kit and Mechanical Seal For Models 391 to 394:**

1. Insure the electrical power is locked out, the system pressure has been lowered to 0 psig and the temperature of the unit is at a safe level.
2. Isolate the pump from the system by closing the valves that should be located on the suction and the discharge side of the pumps. Remove the vent plug from the top bracket, loosen the drain plug in the casing and allow the unit to drain.
3. Remove the coupling guard (1) from the top bracket (14) and loosen the coupling (4).
4. Remove the 4 bolts holding the motor to the top bracket (14). Using properly sized lifting equipment pull the motor from the top bracket (14).
5. Remove the coupling halves (4)and coupling pin (5).
6. Remove the 4 tie rod nuts(15S). Pull the top bracket (14) off the sleeve (24S). Careful use of a wooden block and rubber mallet may be required to break loose this connection.
7. Clean the shaft (26S) of any paint and after lubricating the shaft with soapy water pull off the mechanical seal (25S).
8. By pulling up on the shaft (a 5mm, 3/16" hole through the top of the shaft can be equipped with a hook/pin to aid disassembly) the entire stack kit can be removed from the pump. Insure the bottom stage (plate) (33S) is also out of the suction discharge casing (18S).
9. If the sleeve gaskets (23S) are to be replaced (recommended) lubricate the junction between the sleeve and the suction/discharge casing and pull the sleeve out of the casing. If required, a rubber mallet may be needed to tap the casing loose while the sleeve is held rigidly.
10. Replace sleeve gaskets (23S) as required and after lubricating the

O-Ring place the sleeve (24S) into the suction/discharge casing (18S).

11. Place the new stack kit into the sleeve and insure the bottom stage/plate is firmly in place in the suction/discharge casing.

12. Remove the top plate (13) from the top bracket (14) and remove the stationary seat of the mechanical seal. Replace the 0-Ring (12) around the vent plug. Press the top plate back into the top bracket. Replace the stationary ring of the mechanical seal.

13. Reassemble the remaining pump components in the reverse order paying special attention insure the tie rod nuts are tightened in a crosswise fashion and to the listed torque value (see table 2) . Refer to section 2 for coupling setting instructions.

**Model 395A, 396A & 397**

The 395A-397 utilize a cartridge type seal and this seal can be replaced with out removing the motor or major pump disassembly. Replacing the mechanical seal is outlined in the steps 1 to 17. To replace individual hydraulic components or the entire stack kit first remove the mechanical seal as noted in steps 1 to 6 and then follow steps 18 to 24.

1. Insure the electrical power is locked out, the system pressure has been lowered to 0 psig and the temperature of the unit is at a safe level.

2. Isolate the pump from the system by closing the valves that should be located on the suction and the discharge side of the pumps. Remove the vent plug from the top bracket, loosen the drain plug in the casing and allow the unit to drain.

3. Remove the coupling guard (1) from the top bracket (11).

4. Disassemble the coupling halves (4) and the coupling pin (5).

5. Unscrew the three set screws (18) partly and the four bolts (20) completely.

6. Place a screwdriver between the seal disc (21) and the top bracket (11) and lift the cartridge seal from the shaft (30).

7. Unscrew the bolts (18) completely and remove the cartridge ring (19) and the seal disc (21) from the cartridge bushing (43).

8. Remove the stationary seat of the mechanical seal (23) from the seal disc (21). Wet the seal disc (21) with a soap solution and press in the new stationary seat.

9. Remove the rotating head of the mechanical seal (23) from the cartridge bushing (43). Clean the cartridge bushing and check for damage.

10. Wet the cartridge bushing (43) with a soap solution and place the new rotating head of the mechanical seal (23) on to the cartridge bushing (43)

11. Remove the O-rings (24, 22) from the cartridge bushing (43) and the seal disc (21) and replace them with new ones.

12. Slide the seal disc (21) on the cartridge bushing (43) followed by the cartridge ring (19) and screw down the set screws (18) partly.

13. Wet the shaft (30) with a soap solution and place the new cartridge seal assembly onto the shaft (30). Screw the four bolts (20) down to the required torque.

14. Make sure that the shaft (30) is in its bottom position, and tighten the three set screws (18).

15. Assemble coupling pin (5) and coupling halves (4) on the shaft (30). Tighten the coupling bolts and nuts (3, 2) loosely by hand.

16. The pump shaft (30) and coupling (4) can move vertically approximately 3/16" (5 mm) and must be set in the middle of its total travel range to properly set the impellers and mechanical seal.

17. Refer to step 7 in section 2 for illustrations and instructions on properly setting the coupling.

**Full pump disassembly**

18. After removing the mechanical seal as noted above. Remove the tie rot nuts (15) and washers (16).

19. Using a rubber mallet tap on the bottom of the top bracket (11) until it can be removed. If the top plate (13) remains on the sleeve (27) remove it by tapping on its edge with a wooden block being careful not the dent the surfaces.

20. Pull out the stack kit from the sleeve casing assembly.

21. Remove the sleeve (27) from the lower casing (44) by tapping on the casing (44) with a rubber mallet while holding the sleeve (27) firmly.

22. Replace both sleeve O-rings (26).

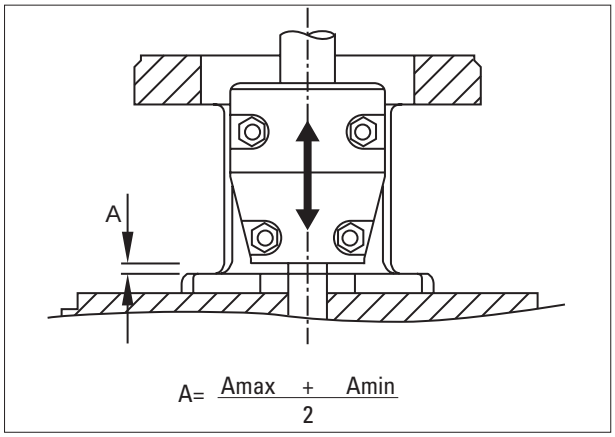
23. If the entire stack kit is to be replaced then press in the sleeve (27) into the lower casing (44) and lower into this assembly the new stack kit. Reassemble in reverse order the remaining components referring to table 2 for tightening torques.

24. If the stack kit is to broken down into components for evaluation and review then prepare a long table as a work surface. Remove the impeller nut (41) and carefully slide each component off the shaft (30) and place these parts on the work surface IN THE ORDER THEY WERE REMOVED. Each model pump had different component combinations and many look similar. Identify which parts need replacement and order by referencing the part numbers in the parts list. When rebuilding the stack kit the components must be reassembled onto the shaft in the same order and direction as they were removed.

**Section 2**

**Replacement of the electric motor and coupling setting instructions.**

1. Insure the electrical power is locked out, the system pressure has been lowered to 0 psig and the temperature of the unit is at a safe level.




2. Remove the 4 bolts holding the motor to the top bracket. Using properly sized lifting equipment pull the motor from the top bracket.

3. Remove the coupling halves (4) and coupling pin (5).

4. Replace coupling and/or pin as required. Insure the coupling is loose on the pump shaft so the motor shaft can slide easily into place.

5. Using properly sized lifting equipment place the motor onto the top bracket insuring the motor register holes align with the top bracket

holes and the motor shaft slides easily into the coupling.

6. Tighten the 4 motor connecting bolts insuring the motor register is fully engaged with the top bracket register.

7. Adjusting the height of the coupling is critical to successful pump operation. The shaft and coupling can move vertically approximately 3/16" (5 mm) and must be set to the middle of its total travel range to properly set the impellers and mechanical seal.

8. Using a large flat blade screwdriver as a lever lift up the coupling by the bottom (the pump shaft will move with the coupling) to the top of its movement. Allow the coupling to lower and note the total range of travel by the coupling. Raise the coupling one half of its total movement range and tighten the socket head coupling bolts (in a crosswise pattern) sufficiently to prevent the coupling from further movement on the motor shaft.

9. Using a torque wrench and hex bit socket tighten the coupling bolts to the required torque value. Tighten coupling bolts in crosswise pattern insuring gap between coupling halves is even. Recheck all coupling bolt torques a second time before replacing the coupling guards.

Read the installation section prior to pump start up.

**Table 1**

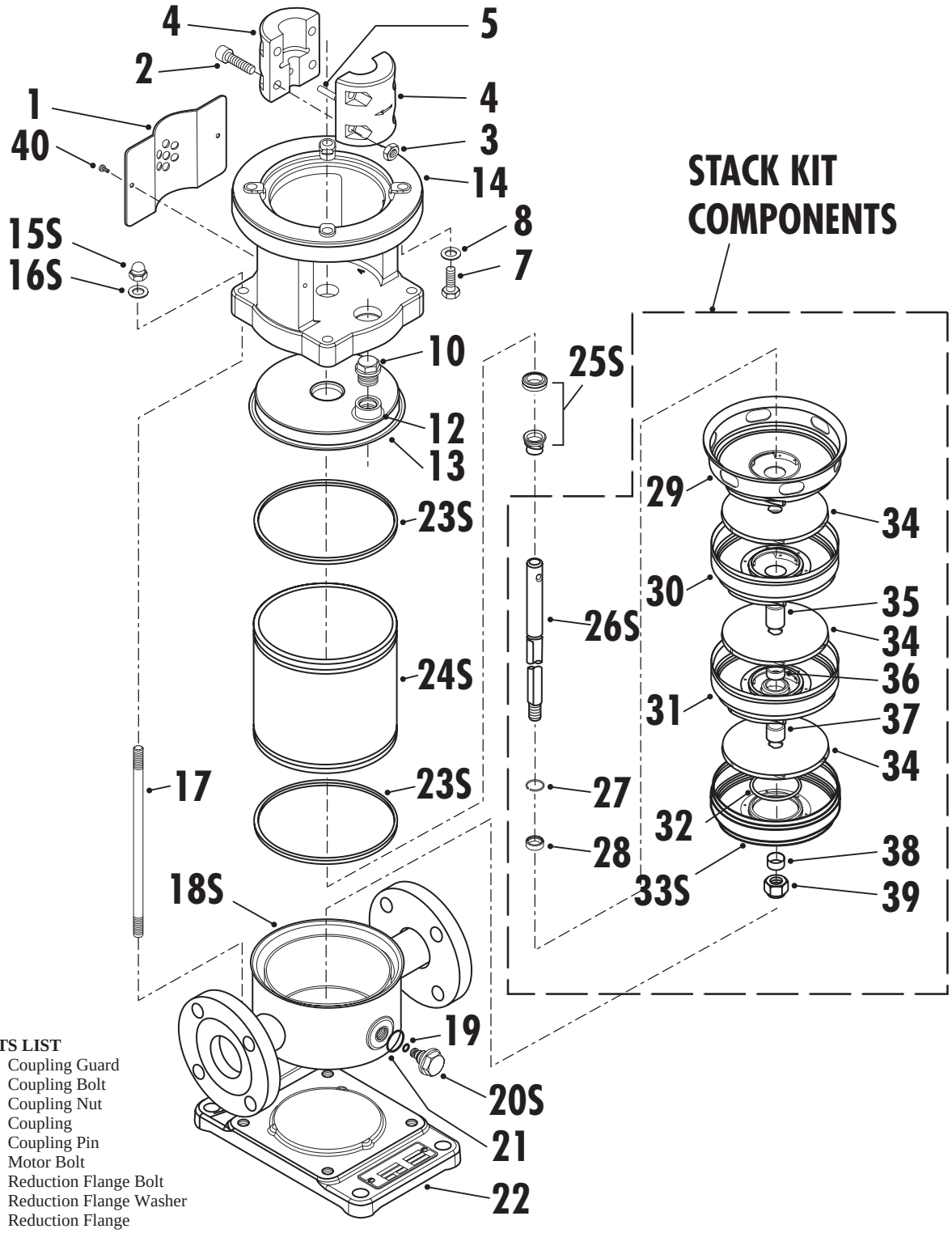
| | TOOL SIZE FOR SPECIFIC MODELS | | | |
|---|---|---|---|---|
| **TOOL** | **391 & 392** | **393 & 394** | **395A, 396A & 397** | **USED ON** |
| Torque Wrench | Up to 275 in-lbs | Up to 55 ft-lbs | up to 55 ft-lbs | Tie Rods & Coupling |
| Hex Bit Socket (1) | 6 mm | 6 mm or 8 mm | 6 mm or 8 mm | Coupling |
| Drive Socket | 13 mm | 17 mm | 24 mm | Tie Rod Nuts |
| Drive Socket | 7 mm | 7 mm | 7 mm | Coupling Guard |
| Adjustable Wrench | 1" min | 1" min | 1" min | Vent & Drain Plugs |
| Rubber Mallet | 12 oz | 12 oz | 12 oz | As Required |
| Wood Block | 2 x 4 x 4 | 2 x 4 x 4 | 2 x 4 x 4 | As Required |
| Box Wrench | 9/16" | N/R | 3/4" | Motor Bolts |
| Allen Wrench | N/R | 3/8" | N/R | Motor Bolts |
| Flat Blade Screw Driver | 12" | 12" | 12" | Lifting Coupling |

**Table 2**

| TIGHTENING TORQUES FOR TIE RODS | | | |
|---|---|---|---|
| Pump Model | 391& 392 | 393 & 394 | 395A,396A & 397 |
| Tightening Torque | 100 in-lbs | 225 in-lbs | 50 ft-lbs |

| TIGHTENING TORQUES FOR COUPLINGS | | | |
|---|---|---|---|
| Coupling Material | Aluminum | Cast Iron (Small) | Cast Iron (Large) |
| Bolt Size | 8mm | 8mm | 10mm |
| Hex Bit Socket Size | 6mm | 6mm | 8mm |
| Tightening Torque | 200 in-lbs | 275 in-lbs | 55 ft-lbs |

(1) Note: Coupling size is dependent on HP.




**PARTS LIST**

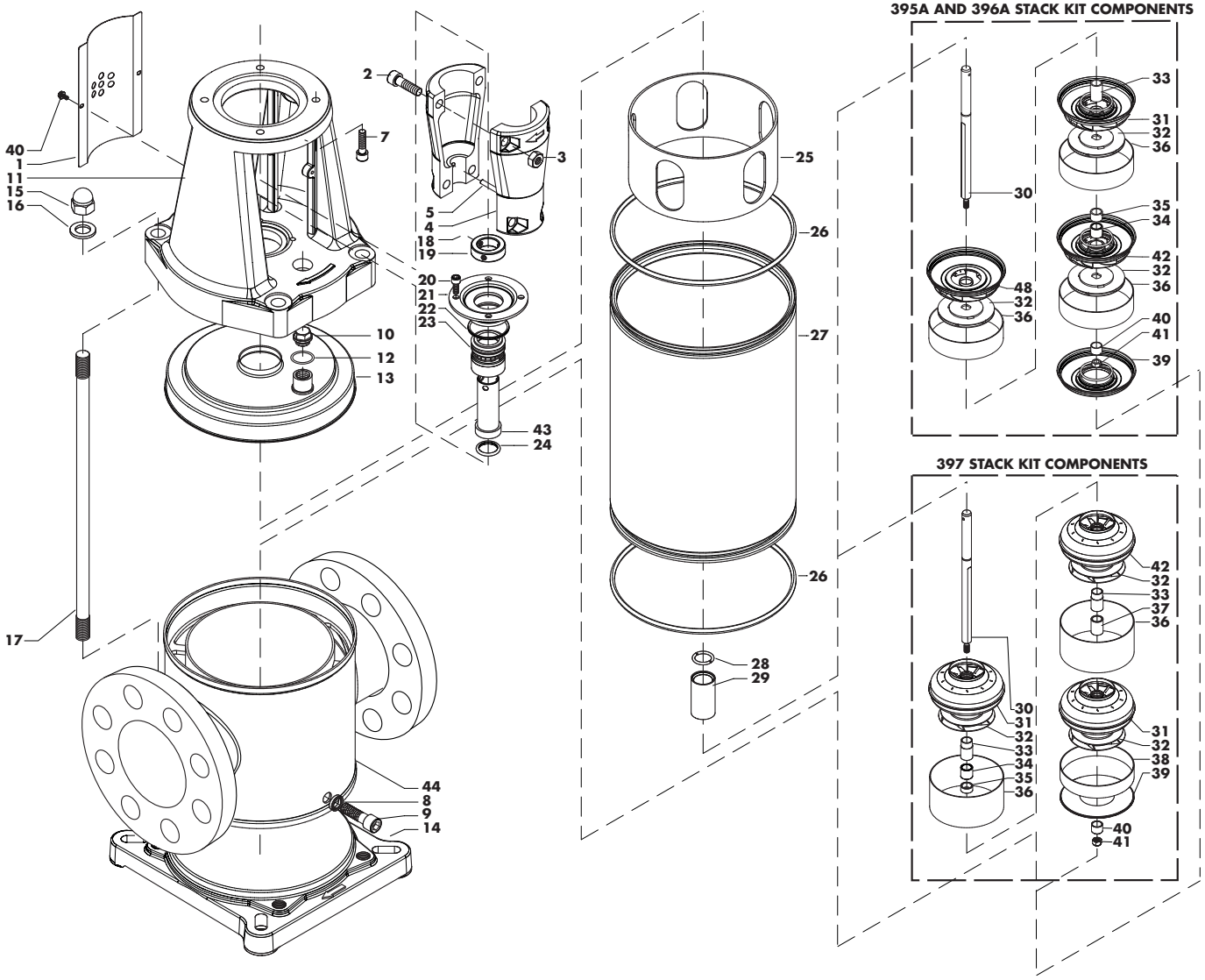
1 Coupling Guard
2 Coupling Bolt
3 Coupling Nut
4 Coupling
5 Coupling Pin
6 Motor Bolt
7 Reduction Flange Bolt
8 Reduction Flange Washer
9 Reduction Flange
10 Plug
12 Gasket, Plug
13 Top Plate
14 Top Bracket
15S Tie Rod Nut
16S Tie Rod Washer
17 Tie Rod
18S Suction/Discharge Casing
19 Gasket, Drain
20S Plug
21 O-Ring, Drain
22 Support Base
23S Sleeve O-Ring
24S Sleeve
25S Mechanical Seal
26 Shaft
27 Fixing Ring
28 Seal Bushing
29 Upper Diffuser
30 Diffuser w/out Bushing
31 Diffuser with Bushing
32 Diffuser O-Ring
33S Bottom Stage
34 Impeller
35 Shaft Protection Bushing, Long
36 Shaft Protection Bushing, Short
37 Shaft Bushing, Tungsten
38 Shaft Protection Bushing, Middle
39 Shaft Nut
40 Hex Head Screw

Items not shown: Motor, Pc No. 6 - Motor Bolts, Pc No. 9 - Reduction Flange

**PARTS LIST**

1 Coupling Guard
2 Coupling Bolt
3 Coupling Nut
4 Coupling
5 Coupling Pin
6 Motor Bolt
7 Reduction Flange Bolt
8 Gasket, Plug
9 Plug, Drain
10 Plug 1/4 NPT
11 Top Bracket
12 Gasket, Plug
13 Top Plate
14 Support Base
15 Tie-rod Nut
16 Tie-rod Washer
17 Tie-rod
18 Set Screw
19 Cartridge Ring
20 Bolt
21 Seal Disk
23 Mechanical Seal
24 O-Ring
25 Fixing Ring
26 Sleeve O-Ring
27 Sleeve
28 Ring
29 Bushing
30 Shaft
31 Diffuser w/o Bushing
32 Impeller
33 Shaft Protection Bushing, Long
34 Shaft Bushing, Tung Carb
35 Shaft Protection Bushing, Short
36 Diffuser Sleeve
37 Shaft Protection Bushing
38 Distance Ring
39 Bottom Plate
40 Spacer Bushing
41 Impeller Nut
42 Diffuser w/Bushing
43 Cartridge Bushing
44 Lower Casing
45 Motor Adapter
46 Hex Head Screw

**NOT SHOWN: ITEM #6 MOTOR BOLT**
**ITEM #45 REDUCTION FLANGE**

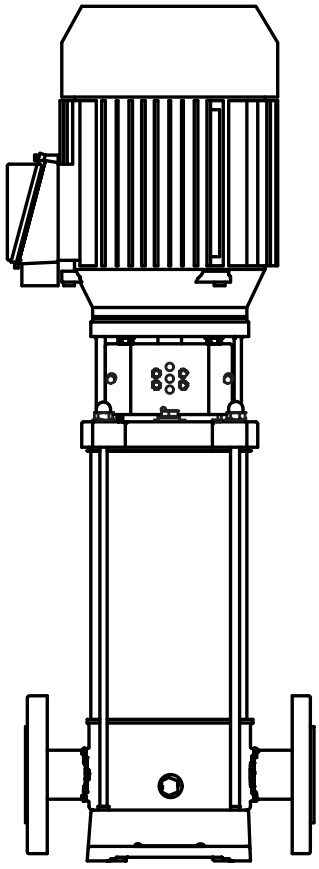


AURORA®
Pentair Pump Group

**NOTE:**
Aurora Pump reserves the right to make revisions to its products and their specifications, and to this bulletin and related information without notice.

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# 390 SERIES
# REPAIR PARTS INDEX



READ AND UNDERSTAND THE PUMP AND MOTOR
INSTRUCTIONS BEFORE ATTEMPTING TO INSTALL,
DISASSEMBLE OR REPAIR THE PUMP

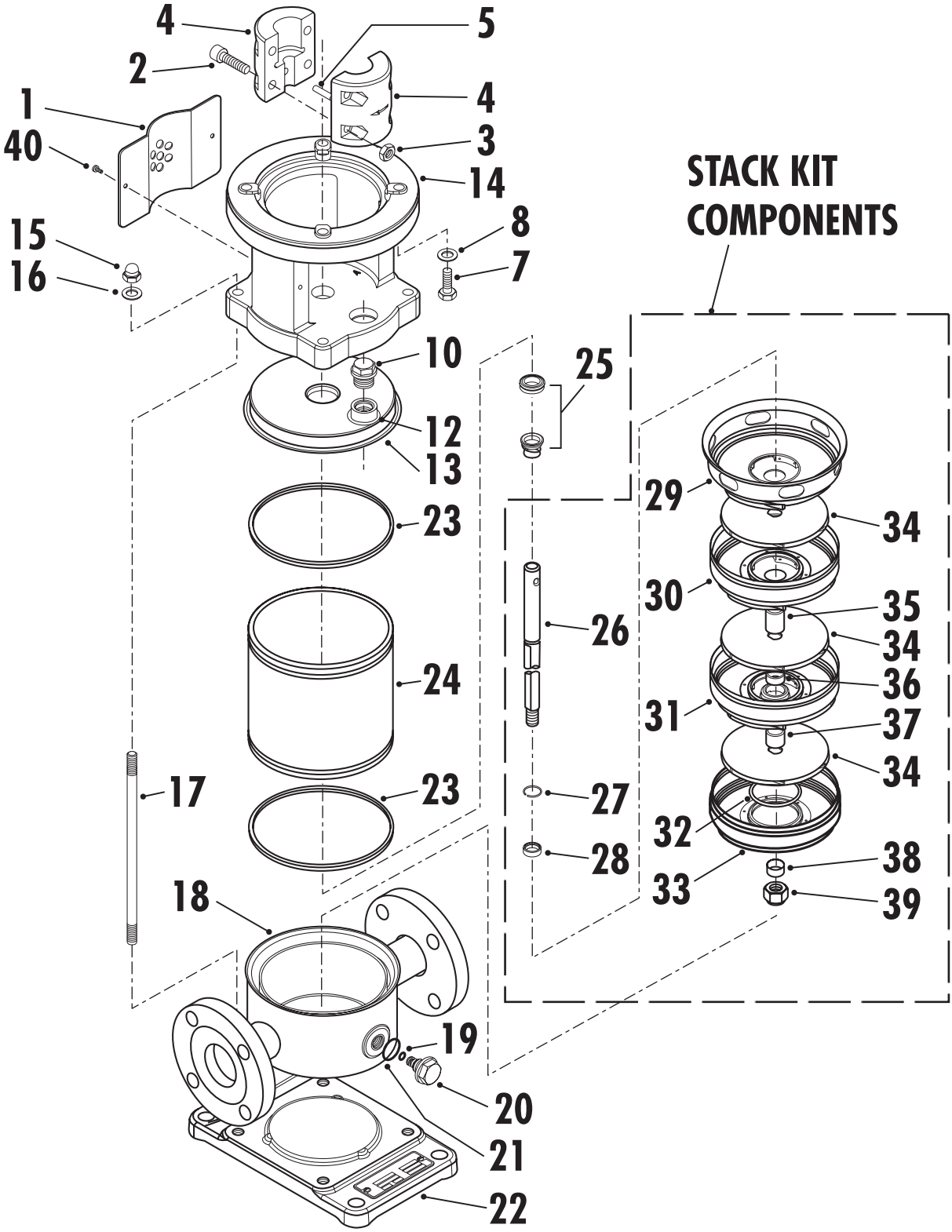
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Pentair Pump Group

# 390 SERIES
# MODELS 391 - 397

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| 395A-397 | EXPLODED VIEW AND PIECE NUMBERS | 7 |
| 395A-397 | PARTS LIST | 8 -10 |

# MODELS 391 - 394
# PIECE NUMBERS




Items not shown: Motor, Pc No. 6 - Motor Bolts,
Pc No. 9 - Reduction Flange

# 390 SERIES

## MODELS 391 - 394
## PIECE NUMBERS

| PIECE NO. | DESCRIPTION | QTY | PART NO. |
|---|---|---|---|
| 1 | COUPLING GUARD, 391 & 392 | 2 | 392-0523-114 |
| | COUPLING GUARD, 393 & 394 | 2 | 392-0524-114 |
| 2 | COUPLING BOLT (.5-5 HP) | 6 | 168-1082-080 |
| | COUPLING BOLT (7.5-15 HP) | 4 | 168-1083-080 |
| | COUPLING BOLT (20-30 HP) | 4 | 168-0096-080 |
| 3 | COUPLING NUT (.5-5 HP) | 6 | 544-0094-080 |
| | COUPLING NUT (7.5-15 HP) | 4 | 544-0095-080 |
| | COUPLING NUT (20-30 HP) | 4 | 544-0096-080 |
| 4 | COUPLING 391 & 392 VS 56 FRAME | 1 | 256-2819-319 |
| | COUPLING 391 & 392 VS 143-145TC FRAME | 1 | 256-2820-319 |
| | COUPLING 391 & 392 VS 182-184TC FRAME | 1 | 256-2821-319 |
| | COUPLING 393 & 394 VS 143-145TC FRAME | 1 | 256-2823-319 |
| | COUPLING 393 & 394 VS 182-184TC FRAME | 1 | 256-2824-319 |
| | COUPLING 393 & 394 VS 213-215TC FRAME | 1 | 256-2680-010 |
| | COUPLING 393 & 394 VS 254-256TC FRAME | 1 | 256-2681-010 |
| | COUPLING 393 & 394 VS 284-286TSC FRAME | 1 | 256-2832-010 |
| 5 | PIN 391 & 392 CAST IRON COUPLING | 1 | 592-0153-087 |
| | PIN 393 & 394 CAST IRON COUPLING | 1 | 592-0155-087 |
| | PIN 391, 392, 393 & 394 ALUM. COUPLING | 1 | 592-0154-087 |
| 6 | MOTOR BOLT 56C-145TC | 4 | 168-0386-082 |
| | MOTOR BOLT 182TC-286TC | 4 | 168-0153-082 |
| 7 | REDUCTION FLANGE BOLT | 4 | 168-1080-080 |
| 8 | REDUCTION FLANGE WASHER | 4 | 908-0516-080 |
| 9 | REDUCTION FLANGE 182TC-184TC | 1 | 008-0125-010 |
| | REDUCTION FLANGE 213TC-215TC | 1 | 008-0126-010 |
| | REDUCTION FLANGE 254TC-256TC | 1 | 008-0127-010 |
| | REDUCTION FLANGE 284TC-286TC | 1 | 008-0128-010 |

| PIECE NO. | DESCRIPTION | QTY | PART NO. |
|---|---|---|---|
| 10 | PLUG | 1 | 600-0003-104 |
| 12 | GASKET, PLUG | 1 | 364-2150-474 |
| 13 | TOP PLATE, 391 & 392 | 1 | 292-0118-101 |
| | TOP PLATE, 393 & 394 | 1 | 292-0119-101 |
| 14 | TOP BRACKET 391 & 392 | 1 | 116-0534-010 |
| | TOP BRACKET 393 & 394 | 1 | 116-0535-010 |
| 15 | TIE-ROD NUT 391 & 392 | 4 | 544-0343-385 |
| | TIE-ROD NUT 393 & 394 | 4 | 544-0344-385 |
| 16 | TIE-ROD WASHER 391 & 392 | 4 | 908-0514-385 |
| | TIE-ROD WASHER 393 & 394 | 4 | 908-0515-385 |
| 17 | TIE-ROD, 391-2 | 4 | 808-5038-385 |
| | TIE-ROD, 391-3 | 4 | 808-5039-385 |
| | TIE-ROD, 391-4 | 4 | 808-5040-385 |
| | TIE-ROD, 391-5 | 4 | 808-5041-385 |
| | TIE-ROD, 391-6 | 4 | 808-5042-385 |
| | TIE-ROD, 391-7 | 4 | 808-5043-385 |
| | TIE-ROD, 391-8 | 4 | 808-5044-385 |
| | TIE-ROD, 391-9 | 4 | 808-5045-385 |
| | TIE-ROD, 391-10 | 4 | 808-5046-385 |
| | TIE-ROD, 391-11 | 4 | 808-5047-385 |
| | TIE-ROD, 391-13 | 4 | 808-5048-385 |
| | TIE-ROD, 391-15 | 4 | 808-5049-385 |
| | TIE-ROD, 391-16 | 4 | 808-5050-385 |
| | TIE-ROD, 391-18 | 4 | 808-5051-385 |
| | TIE-ROD, 392-2 | 4 | 808-5038-385 |
| | TIE-ROD, 392-3 | 4 | 808-5039-385 |
| | TIE-ROD, 392-4 | 4 | 808-5040-385 |
| | TIE-ROD, 392-5 | 4 | 808-5041-385 |
| | TIE-ROD, 392-6 | 4 | 808-5042-385 |
| | TIE-ROD, 392-7 | 4 | 808-5043-385 |
| | TIE-ROD, 392-8 | 4 | 808-5044-385 |
| | TIE-ROD, 392-9 | 4 | 808-5045-385 |
| | TIE-ROD, 392-10 | 4 | 808-5046-385 |
| | TIE-ROD, 392-11 | 4 | 808-5047-385 |
| | TIE-ROD, 392-13 | 4 | 808-5048-385 |
| | TIE-ROD, 392-15 | 4 | 808-5049-385 |
| | TIE-ROD, 392-16 | 4 | 808-5050-385 |
| | TIE-ROD, 393-2 | 4 | 808-5052-385 |
| | TIE-ROD, 393-3 | 4 | 808-5053-385 |
| | TIE-ROD, 393-4 | 4 | 808-5054-385 |
| | TIE-ROD, 393-5 | 4 | 808-5055-385 |
| | TIE-ROD, 393-6 | 4 | 808-5056-385 |
| | TIE-ROD, 393-7 | 4 | 808-5057-385 |
| | TIE-ROD, 393-8 | 4 | 808-5058-385 |
| | TIE-ROD, 393-10 | 4 | 808-5059-385 |

# MODELS 391 - 394
# PIECE NUMBERS

| PIECE NO. | DESCRIPTION | QTY | PART NO. |
|---|---|---|---|
| 17 | TIE-ROD, 393-12 | 4 | 808-5060-385 |
| | TIE-ROD, 393-14 | 4 | 808-5061-385 |
| | TIE-ROD, 394-2 | 4 | 808-5062-385 |
| | TIE-ROD, 394-3 | 4 | 808-5063-385 |
| | TIE-ROD, 394-4 | 4 | 808-5064-385 |
| | TIE-ROD, 394-5 | 4 | 808-5065-385 |
| | TIE-ROD, 394-6 | 4 | 808-5066-385 |
| | TIE-ROD, 394-7 | 4 | 808-5067-385 |
| | TIE-ROD, 394-8 | 4 | 808-5068-385 |
| | TIE-ROD, 394-9 | 4 | 808-5069-385 |
| | TIE-ROD, 394-10 | 4 | 808-5070-385 |
| | TIE-ROD, 394-12 | 4 | 808-5071-385 |
| 18 | SUCTION/DISCHARGE CASING, 391 & 392 | 1 | 180-2588-101 |
| | SUCTION/DISCHARGE CASING, 393 | 1 | 180-2589-101 |
| | SUCTION/DISCHARGE CASING, 394 | 1 | 180-2590-101 |
| 19 | GASKET, DRAIN | 1 | 364-2152-474 |
| 20 | PLUG | 1 | 600-0141-101 |
| 21 | O-RING, DRAIN | 1 | 364-2151-474 |
| 22 | SUPPORT BASE, 391 & 392 | 1 | 820-1786-010 |
| | SUPPORT BASE, 393 & 394 | 1 | 820-1787-010 |
| 23 | SLEEVE O-RING, 391 & 392 | 2 | 364-2146-474 |
| | SLEEVE O-RING, 393 & 394 | 2 | 364-2147-474 |
| 24 | SLEEVE, 391-2 | 1 | 756-0708-101 |
| | SLEEVE, 391-3 | 1 | 756-0709-101 |
| | SLEEVE, 391-4 | 1 | 756-0710-101 |
| | SLEEVE, 391-5 | 1 | 756-0711-101 |
| | SLEEVE, 391-6 | 1 | 756-0712-101 |
| | SLEEVE, 391-7 | 1 | 756-0713-101 |
| | SLEEVE, 391-8 | 1 | 756-0714-101 |
| | SLEEVE, 391-9 | 1 | 756-0715-101 |
| | SLEEVE, 391-10 | 1 | 756-0716-101 |
| | SLEEVE, 391-11 | 1 | 756-0717-101 |
| | SLEEVE, 391-13 | 1 | 756-0718-101 |
| | SLEEVE, 391-15 | 1 | 756-0719-101 |
| | SLEEVE, 391-16 | 1 | 756-0720-101 |
| | SLEEVE, 391-18 | 1 | 756-0721-101 |
| | SLEEVE, 392-2 | 1 | 756-0708-101 |
| | SLEEVE, 392-3 | 1 | 756-0709-101 |
| | SLEEVE, 392-4 | 1 | 756-0710-101 |

| PIECE NO. | DESCRIPTION | QTY | PART NO. |
|---|---|---|---|
| 24 | SLEEVE, 392-5 | 1 | 756-0711-101 |
| | SLEEVE, 392-6 | 1 | 756-0712-101 |
| | SLEEVE, 392-7 | 1 | 756-0713-101 |
| | SLEEVE, 392-8 | 1 | 756-0714-101 |
| | SLEEVE, 392-9 | 1 | 756-0715-101 |
| | SLEEVE, 392-10 | 1 | 756-0716-101 |
| | SLEEVE, 392-11 | 1 | 756-0717-101 |
| | SLEEVE, 392-13 | 1 | 756-0718-101 |
| | SLEEVE, 392-15 | 1 | 756-0719-101 |
| | SLEEVE, 392-16 | 1 | 756-0720-101 |
| | SLEEVE, 393-2 | 1 | 756-0722-101 |
| | SLEEVE, 393-3 | 1 | 756-0723-101 |
| | SLEEVE, 393-4 | 1 | 756-0724-101 |
| | SLEEVE, 393-5 | 1 | 756-0725-101 |
| | SLEEVE, 393-6 | 1 | 756-0726-101 |
| | SLEEVE, 393-7 | 1 | 756-0727-101 |
| | SLEEVE, 393-8 | 1 | 756-0728-101 |
| | SLEEVE, 393-10 | 1 | 756-0729-101 |
| | SLEEVE, 393-12 | 1 | 756-0730-101 |
| | SLEEVE, 393-14 | 1 | 756-0731-101 |
| | SLEEVE, 394-2 | 1 | 756-0732-101 |
| | SLEEVE, 394-3 | 1 | 756-0733-101 |
| | SLEEVE, 394-4 | 1 | 756-0734-101 |
| | SLEEVE, 394-5 | 1 | 756-0735-101 |
| | SLEEVE, 394-6 | 1 | 756-0736-101 |
| | SLEEVE, 394-7 | 1 | 756-0737-101 |
| | SLEEVE, 394-8 | 1 | 756-0738-101 |
| | SLEEVE, 394-9 | 1 | 756-0739-101 |
| | SLEEVE, 394-10 | 1 | 756-0740-101 |
| | SLEEVE, 394-12 | 1 | 756-0741-101 |
| 25 | MECHANICAL SEAL | 1 | SEE SEAL KITS |
| 26 | SHAFT | * | SEE STACK KITS |
| 27 | FIXING RING | * | SEE STACK KITS |
| 28 | SEAL BUSHING | * | SEE STACK KITS |
| 29 | UPPER DIFFUSER | * | SEE STACK KITS |
| 30 | DIFFUSER W/OUT BUSHING | * | SEE STACK KITS |
| 31 | DIFFUSER WITH BUSHING | * | SEE STACK KITS |
| 32 | DIFFUSER O-RING | * | SEE STACK KITS |
| 33 | BOTTOM STAGE | * | SEE STACK KITS |
| 34 | IMPELLER | * | SEE STACK KITS |

* QTY. DEPENDENT ON MODEL

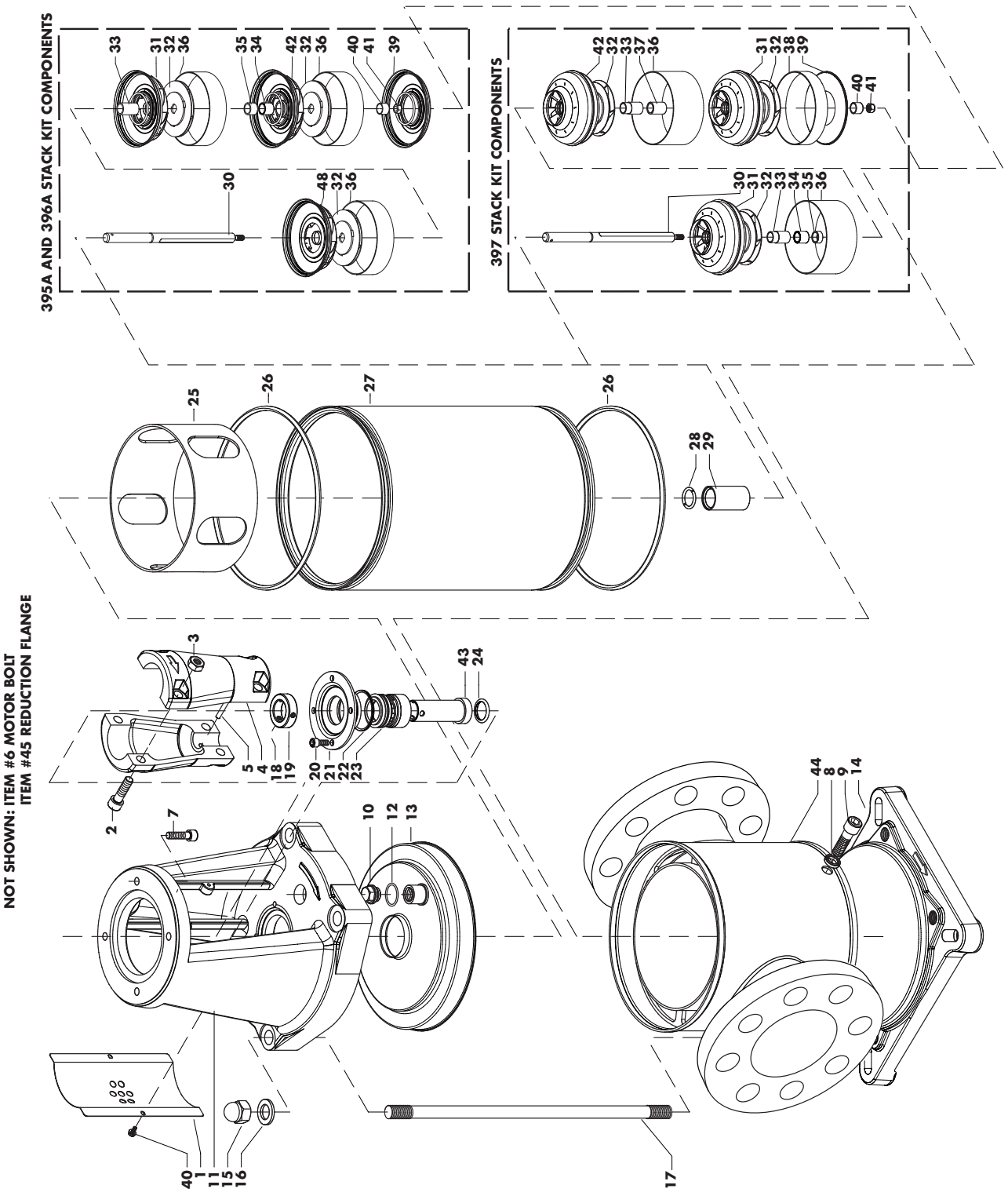
# 390 SERIES

## MODELS 391 - 394
## PIECE NUMBERS

| PIECE NO. | DESCRIPTION | QTY | PART NO. |
|---|---|---|---|
| 35 | SHAFT PROTECTION BUSHING, LONG | * | SEE STACK KITS |
| 36 | SHAFT PROTECTION BUSHING, SHORT | * | SEE STACK KITS |
| 37 | SHAFT BUSHING, TUNGSTEN | * | SEE STACK KITS |
| 38 | SHAFT PROTECTION BUSHING, MIDDLE | * | SEE STACK KITS |
| 39 | SHAFT NUT | * | SEE STACK KITS |
| 40 | HEX HEAD SCREW | 4 | 708-1056-999 |
| | | | |
| | STACK KIT, MODEL 391-2 | 1 | 476-0799-646 |
| | STACK KIT, MODEL 391-3 | 1 | 476-0800-646 |
| | STACK KIT, MODEL 391-4 | 1 | 476-0801-646 |
| | STACK KIT, MODEL 391-5 | 1 | 476-0802-646 |
| | STACK KIT, MODEL 391-6 | 1 | 476-0803-646 |
| | STACK KIT, MODEL 391-7 | 1 | 476-0804-646 |
| | STACK KIT, MODEL 391-8 | 1 | 476-0805-646 |
| | STACK KIT, MODEL 391-9 | 1 | 476-0806-646 |
| | STACK KIT, MODEL 391-10 | 1 | 476-0807-646 |
| | STACK KIT, MODEL 391-11 | 1 | 476-0808-646 |
| | STACK KIT, MODEL 391-13 | 1 | 476-0809-646 |
| | STACK KIT, MODEL 391-15 | 1 | 476-0810-646 |
| | STACK KIT, MODEL 391-16 | 1 | 476-0811-646 |
| | STACK KIT, MODEL 391-18 | 1 | 476-0812-646 |
| | STACK KIT, MODEL 392-2 | 1 | 476-0813-646 |
| | STACK KIT, MODEL 392-3 | 1 | 476-0814-646 |
| | STACK KIT, MODEL 392-4 | 1 | 476-0815-646 |
| | STACK KIT, MODEL 392-5 | 1 | 476-0816-646 |
| | STACK KIT, MODEL 392-6 | 1 | 476-0817-646 |
| | STACK KIT, MODEL 392-7 | 1 | 476-0818-646 |
| | STACK KIT, MODEL 392-8 | 1 | 476-0819-646 |
| | STACK KIT, MODEL 392-9 | 1 | 476-0820-646 |
| | STACK KIT, MODEL 392-10 | 1 | 476-0821-646 |
| | STACK KIT, MODEL 392-11 | 1 | 476-0822-646 |
| | STACK KIT, MODEL 392-13 | 1 | 476-0823-646 |
| | STACK KIT, MODEL 392-15 | 1 | 476-0824-646 |
| | STACK KIT, MODEL 392-16 | 1 | 476-0825-646 |
| | STACK KIT, MODEL 393-2 | 1 | 476-0826-646 |
| | STACK KIT, MODEL 393-3 | 1 | 476-0827-646 |
| | STACK KIT, MODEL 393-4 | 1 | 476-0828-646 |
| | STACK KIT, MODEL 393-5 | 1 | 476-0829-646 |
| | STACK KIT, MODEL 393-6 | 1 | 476-0830-646 |
| | STACK KIT, MODEL 393-7 | 1 | 476-0831-646 |
| | STACK KIT, MODEL 393-8 | 1 | 476-0832-646 |
| | STACK KIT, MODEL 393-10 | 1 | 476-0833-646 |
| | STACK KIT, MODEL 393-12 | 1 | 476-0834-646 |
| | STACK KIT, MODEL 393-14 | 1 | 476-0835-646 |
| | STACK KIT, MODEL 394-2 | 1 | 476-0836-646 |
| | STACK KIT, MODEL 394-3 | 1 | 476-0837-646 |
| | STACK KIT, MODEL 394-4 | 1 | 476-0838-646 |
| | STACK KIT, MODEL 394-5 | 1 | 476-0839-646 |
| | STACK KIT, MODEL 394-6 | 1 | 476-0840-646 |
| | STACK KIT, MODEL 394-7 | 1 | 476-0841-646 |
| | STACK KIT, MODEL 394-8 | 1 | 476-0842-646 |
| | STACK KIT, MODEL 394-9 | 1 | 476-0843-646 |
| | STACK KIT, MODEL 394-10 | 1 | 476-0844-646 |
| | STACK KIT, MODEL 394-12 | 1 | 476-0845-646 |
| | EACH STACK KIT CONSISTS OF ALL HYDRAULIC COMPONENTS MINUS THE MECHANICAL SEAL AND GASKETS. | | |
| | SEAL KIT, MODEL 391 & 392 | 1 | 476-0860-646 |
| | SEAL KIT, MODEL 393 & 394 | 1 | 476-0861-646 |
| | EACH SEAL KIT CONSISTS OF THE MECHANICAL SEAL PLUS TWO SLEEVE O-RINGS, DRAIN AND VENT GASKETS. | | |
| | | | |
| | COMPANION FLANGE KIT, 391 & 392 | 1 | 476-0792-642 |
| | COMPANION FLANGE KIT, 393 & 394 | 1 | 476-0793-642 |
| | EACH FLANGE KIT CONSISTS OF (2) 250 LB FLANGES, (2) FLANGE GASKETS AND BOLTS FOR (2) FLANGES. | | |

* QTY. DEPENDENT ON MODEL

# MODELS 395A, 396A, 397
# PIECE NUMBERS



# 390 SERIES

## MODELS 395A, 396A & 397
## PIECE NUMBERS

| PIECE NO. | DESCRIPTION | QTY | PART NO. |
|---|---|---|---|
| 1 | COUPLING GUARD | 2 | 392-0514-114 |
| 2 | COUPLING BOLT (0.5-5 HP) | 4 | 168-1082-080 |
| | COUPLING BOLT (7.5-15 HP) | 4 | 168-1083-080 |
| | COUPLING BOLT (20-30 HP) | 4 | 168-1084-080 |
| 3 | COUPLING, NUT (0.5-5 HP) | 4 | 544-0094-080 |
| | COUPLING, NUT (7.5-15 HP) | 4 | 544-0095-080 |
| | COUPLING NUT (20-30 HP) | 4 | 544-0096-080 |
| 4 | COUPLING VS 182-184TC | 2 | 256-2852-010 |
| | COUPLING VS 213-215TC | 2 | 256-2853-010 |
| | COUPLING VS 254-256TC | 2 | 256-2854-010 |
| | COUPLING VS 284-286TSC | 2 | 256-2855-010 |
| 5 | COUPLING PIN | 1 | 592-0154-087 |
| 6 | MOTOR BOLT 182TC-286TSC | 4 | 168-0153-082 |
| 7 | REDUCTION FLANGE BOLT | 4 | 168-1080-080 |
| 8 | GASKET, PLUG | 1 | 364-2150-474 |
| 9 | PLUG, DRAIN | 1 | 600-0497-104 |
| 10 | PLUG 3/8 NPT | 1 | 600-0134-104 |
| 11 | TOP BRACKET | 1 | 116-0536-010 |
| 12 | GASKET, PLUG | 1 | 364-2150-474 |
| 13 | TOP PLATES | 1 | 292-0120-101 |
| 14 | SUPPORT PLATE | 1 | 820-1859-010 |
| 15 | TIE-ROD NUT M16 | 4 | 544-2264-385 |
| 16 | TIE-ROD WASHER M16 | 4 | 908-1327-385 |
| 17 | TIE-ROD 395A-2 | 4 | 808-5092-395 |
| | TIE-ROD 395A-3 | 4 | 808-5093-395 |
| | TIE-ROD 395A-4 | 4 | 808-5094-395 |
| | TIE-ROD 395A-5 | 4 | 808-5095-395 |
| | TIE-ROD 395A-6 | 4 | 808-5096-395 |
| | TIE-ROD 395A-7 | 4 | 808-5097-395 |
| | TIE-ROD 396A-2 | 4 | 808-5091-395 |
| | TIE-ROD 396A-3 | 4 | 808-5092-395 |
| | TIE-ROD 396A-4 | 4 | 808-5092-395 |
| | TIE-ROD 396A-5 | 4 | 808-5093-395 |
| | TIE-ROD 396A-6 | 4 | 808-5093-395 |
| | TIE-ROD 396A-7 | 4 | 808-5094-395 |
| | TIE-ROD 397-1 | 4 | 808-0940-385 |
| | TIE-ROD 397-2 | 4 | 808-0941-385 |
| | TIE-ROD 397-3 | 4 | 808-0942-385 |
| | TIE-ROD 397-4 | 4 | 808-0943-385 |
| | TIE-ROD 397-5 | 4 | 808-0944-385 |

| PIECE NO. | DESCRIPTION | QTY | PART NO. |
|---|---|---|---|
| 18 | SET SCREW | 3 | 708-1057-104 |
| 19 | CARTRIDGE RING | 1 | 676-2125-101 |
| 20 | BOLT | 4 | 168-1648-080 |
| 21 | SEAL DISK | 1 | 676-2126-101 |
| 22 | O-RING | 1 | 364-2153-474 |
| 23 | MECHANICAL SEAL | 1 | 712-6482-999 |
| 24 | O-RING | 1 | 364-2154-474 |
| 25 | UPPER DISTANCE RING | 1 | 676-2129-101 |
| 26 | SLEEVE O-RING | | 364-2155-474 |
| 27 | SLEEVE | | |
| | 395A-2 | 1 | 756-0766-101 |
| | 395A-3 | 1 | 756-0767-101 |
| | 395A-4 | 1 | 756-0768-101 |
| | 395A-5 | 1 | 756-0769-101 |
| | 395A-6 | 1 | 756-0770-101 |
| | 395A-7 | 1 | 756-0771-101 |
| | 396A-2 | 1 | 756-0772-101 |
| | 396A-3 | 1 | 756-0766-101 |
| | 396A-4 | 1 | 756-0766-101 |
| | 396A-5 | 1 | 756-0767-101 |
| | 396A-6 | 1 | 756-0767-101 |
| | 396A-7 | 1 | 756-0768-101 |
| | 397-1 | 1 | 756-0757-101 |
| | 397-2 | 1 | 756-0758-101 |
| | 397-3 | 1 | 756-0759-101 |
| | 397-4 | 1 | 756-0760-101 |
| | 397-5 | 1 | 756-0761-101 |
| 28 | FIXING RING | 2 | 676-2127-101 |
| 29 | SEAL BUSHING 395A & 396A | 1 | 136-1667-101 |
| | SEAL BUSHING 397 | 1 | 136-1651-101 |
| 30 | SHAFT 395A-2 | 1 | 728-7355-101 |
| | SHAFT 395A-3 | 1 | 728-7356-101 |
| | SHAFT 395A-4 | 1 | 728-7357-101 |
| | SHAFT 395A-5 | 1 | 728-7358-101 |
| | SHAFT 395A-6 | 1 | 728-7359-101 |
| | SHAFT 395A-7 | 1 | 728-7360-101 |
| | SHAFT 396A-2 | 1 | 728-7361-101 |
| | SHAFT 396A-3 | 1 | 728-7355-101 |
| | SHAFT 396A-4 | 1 | 728-7355-101 |
| | SHAFT 396A-5 | 1 | 728-7356-101 |

# MODELS 395A, 396A & 397
# PIECE NUMBERS

| PIECE NO. | DESCRIPTION | QTY | PART NO. |
|---|---|---|---|
| 30 | SHAFT 396A-6 | 1 | 728-7356-101 |
| | SHAFT 396A-7 | 1 | 728-7357-101 |
| | SHAFT 397-1 | 1 | 728-7294-101 |
| | SHAFT 397-2 | 1 | 728-7295-101 |
| | SHAFT 397-3 | 1 | 728-7296-101 |
| | SHAFT 397-4 | 1 | 728-7297-101 |
| | SHAFT 397-5 | 1 | 728-7298-101 |
| 31 | DIFFUSER W/O BUSHING 395A, 396A | C | 292-0124-101 |
| | DIFFUSER W/O BUSHING 397 | C | 292-0121-101 |
| 32 | IMPELLER 395A | N | 444-2987-101 |
| | IMPELLER 396A (L) | * | 444-2988-101 |
| | IMPELLER 396A (S) | * | 444-2989-101 |
| | IMPELLER 397 | N | 444-2982-101 |
| 33 | SHAF PROTECTION BUSHING LONG 395A & 396A | C | 136-1664-101 |
| | SHAF PROTECTION BUSHING LONG 397 | C-1 | 136-1652-101 |
| 34 | SHAFT BUSHING, TUNG CARB | B | 136-1653-999 |
| 35 | SHAFT BUSHING, SHORT 395A & 396A | B | 136-1665-101 |
| | SHAFT BUSHING, SHORT 397 | B | 136-1654-101 |
| 36 | DIFFUSER SLEEVE 395A & 396A | B | 756-0773-101 |
| | DIFFUSER SLEEVE 397 | B | 756-0762-101 |
| 37 | SHAFT PROTECTION BUSHING 397 | C-1 | 136-1655-101 |
| 38 | DISTANCE RING 397 | 1 | 676-2128-101 |
| 39 | BOTTOM STAGE 395A & 396A | 1 | 292-0126-101 |
| | BOTTOM STAGE 397 | 1 | 292-0123-101 |
| 40 | SPACER BUSHING | 1 | 136-1656-101 |
| 41 | IMPELLER NUT | | 544-2265-101 |
| 42 | DIFFUSER W/ BUSHING 395A & 396A | B | 292-0125-999 |
| | DIFFUSER W/ BUSHING 397 | B | 292-0122-999 |
| 43 | CARTRIDGE BUSHING | 1 | 136-1657-101 |
| 44 | LOWER CASING 395A | 1 | 180-2597-101 |
| | LOWER CASING 396A | 1 | 180-2598-101 |
| | LOWER CASING 397 | 1 | 180-2594-101 |

| PIECE NO. | DESCRIPTION | QTY | PART NO. |
|---|---|---|---|
| 45 | MOTOR ADAPTER | | |
| | 182-184TC | 1 | 008-0125-010 |
| | 213-215TC | 1 | 008-0126-010 |
| | 254-256TC | 1 | 008-0127-010 |
| | 284-286TSC | 1 | 008-0128-010 |
| 46 | HEX HEAD SCREW | 4 | 708-1056-999 |
| 47 | UPPER DIFFUSER | 1 | 292-0126-101 |
| | STACK KIT 395A-2 | 1 | 476-0890-646 |
| | STACK KIT 395A-3 | 1 | 476-0891-646 |
| | STACK KIT 395A-4 | 1 | 476-0892-646 |
| | STACK KIT 395A-5 | 1 | 476-0893-646 |
| | STACK KIT 395A-6 | 1 | 476-0894-646 |
| | STACK KIT 395A-7 | 1 | 476-0895-646 |
| | STACK KIT 396A-2 | 1 | 476-0896-646 |
| | STACK KIT 396A-3 | 1 | 476-0906-646 |
| | STACK KIT 396A-4 | 1 | 476-0907-646 |
| | STACK KIT 396A-5 | 1 | 476-0908-646 |
| | STACK KIT 396A-6 | 1 | 476-0909-646 |
| | STACK KIT 396A-7 | 1 | 476-0910-646 |
| | STACK KIT 397-1 | 1 | 476-0878-646 |
| | STACK KIT 397-2 | 1 | 476-0879-646 |
| | STACK KIT 397-3 | 1 | 476-0880-646 |
| | STACK KIT 397-4 | 1 | 476-0881-646 |
| | STACK KIT 397-5 | 1 | 476-0882-646 |
| | EACH STACK KIT CONSISTS OF ALL HYDRAULIC COMPONENTS MINUS THE MECHANICAL SEALS AND GASKETS | | |
| | SEAL KIT, 395A, 396A, 397 | 1 | 476-0877-646 |
| | SEAL KIT CONSISTS OF THE MECHANICAL SEALS PLUS REQUIRED O-RINGS & GASKETS. | | |
| | COMPANION FLANGE KIT 395A | 1 | 476-0794-642 |
| | COMPANION FLANGE KIT 396A | 1 | 476-0795-642 |
| | COMPANION FLANGE KIT 397 | 1 | 476-0876-642 |
| | EACH FLANGE KIT CONSISTS OF (2) 125 LB FLANGES, (2) FLANGE GASKETS AND BOLTS FOR (2) FLANGES. | | |

| QTY | EXPLANATION |
|---|---|
| N | NUMBER OF STAGES |
| B | NUMBER OF STAGES WITH BEARINGS |
| C | NUMBER OF STAGES WITHOUT BEARINGS |

* See **NOTES** on page 10.

# MODELS 395A, 396A & 397
# PIECE NUMBERS

| MODEL | # OF STAGES | # OF (L) IMPELLERS | #OF (S) IMPELLERS |
|---|---|---|---|
| 396A-2 | 1 | 1 | 0 |
| 396A-3 | 2 | 1 | 1 |
| 396A-4 | 2 | 2 | 0 |
| 396A-5 | 3 | 2 | 1 |
| 396A-6 | 3 | 3 | 0 |
| 396A-7 | 4 | 3 | 1 |

**NOTES:**

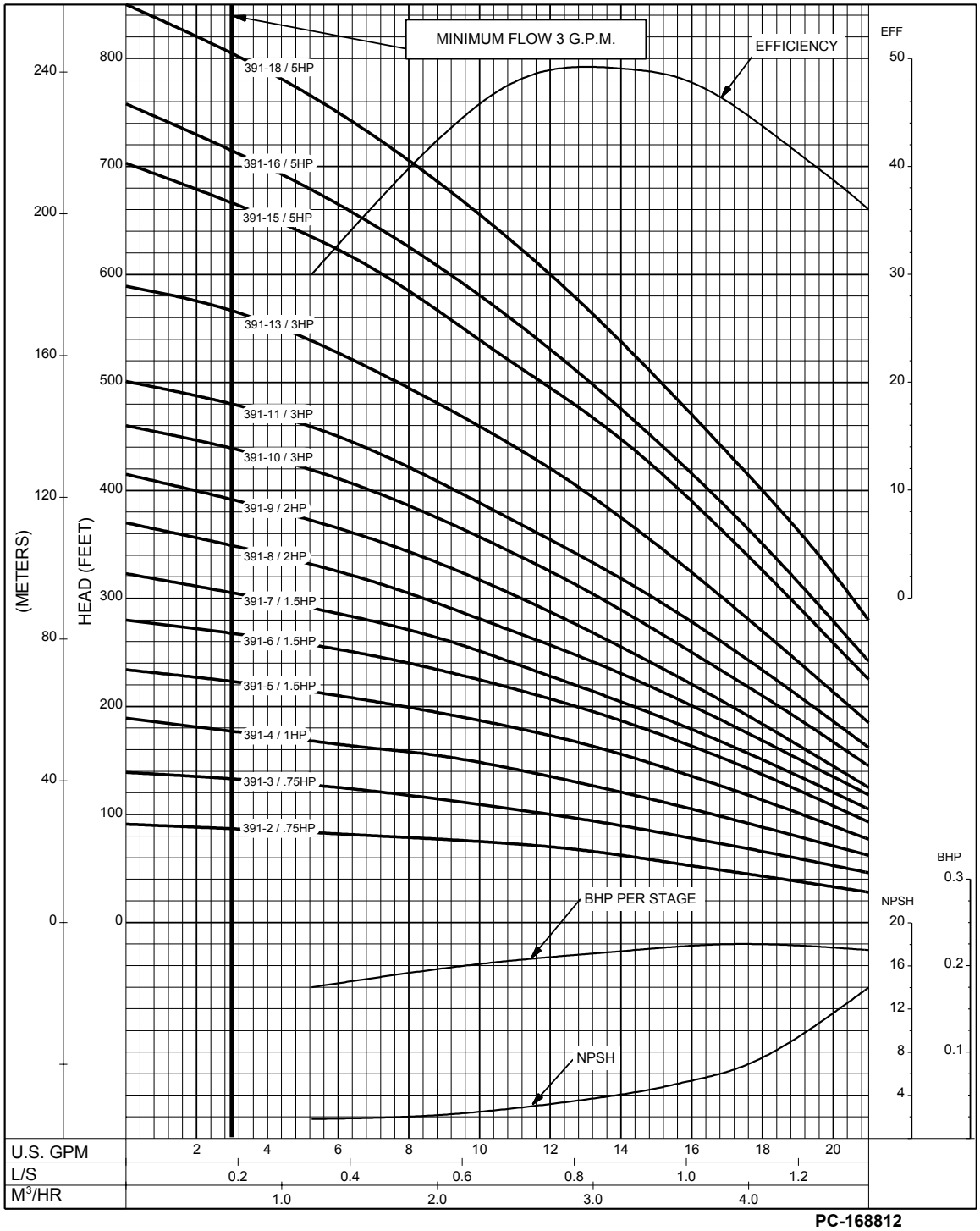
* The 396A pump (unlike all other models) uses a combination of large diameter impellers (L) and small diameter impellers (S) in order to meet performance needs. Left is a list of 396A models and the number of each impeller used.

  395-4 and under have 1 stage with bearing. 395-5 and larger have 2 stages with bearings.

  All 396 pumps have 1 stage with bearing.

  397-3 and under have 1 stage with bearing. 397-4 and larger have 2 stages with bearings.

**SIZE : 391** **TYPE : 390** **R. P. M. : 3450**



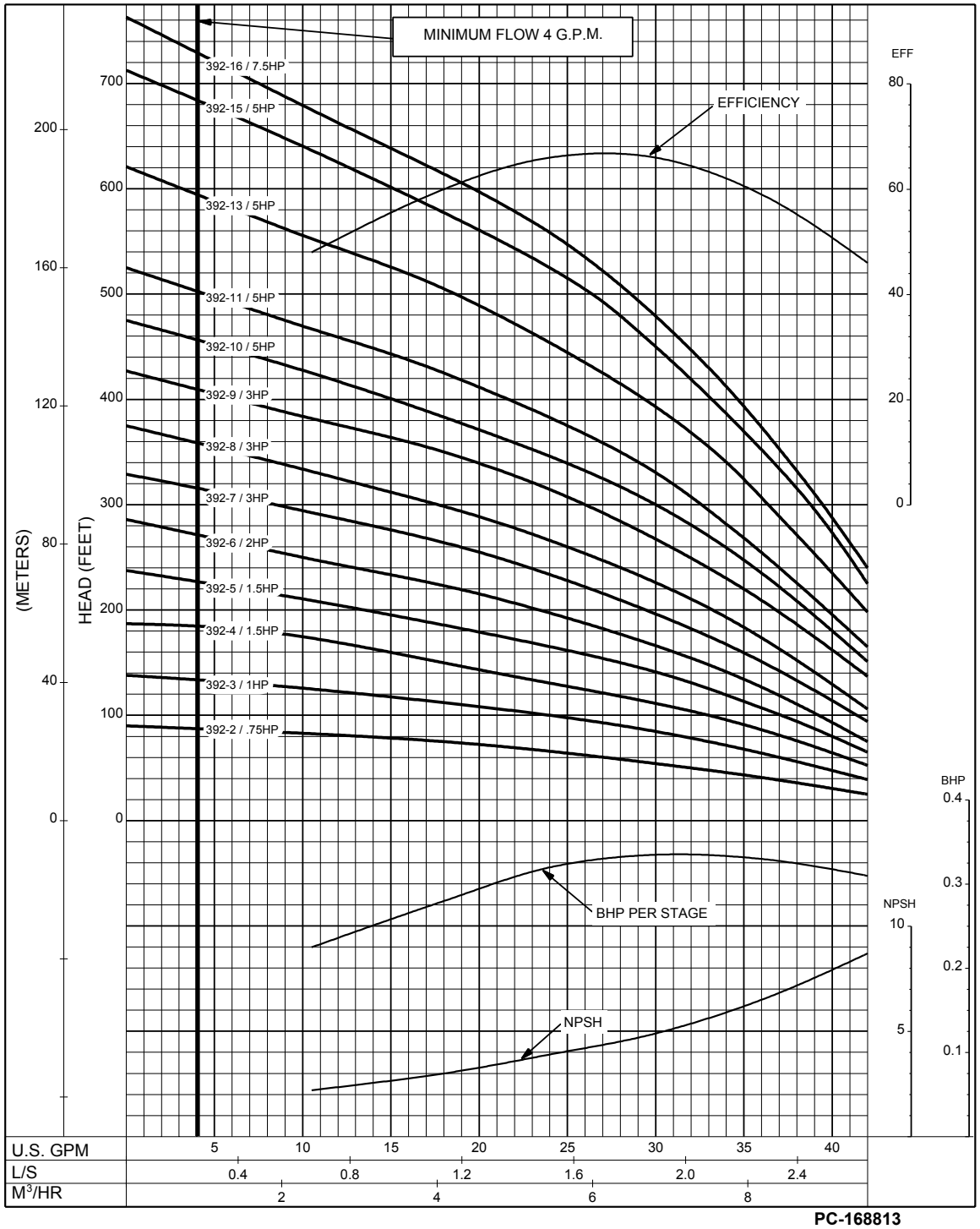

PC-168812

**3450 R.P.M**

# AURORA 390 SERIES

## ENCLOSED IMPELLER

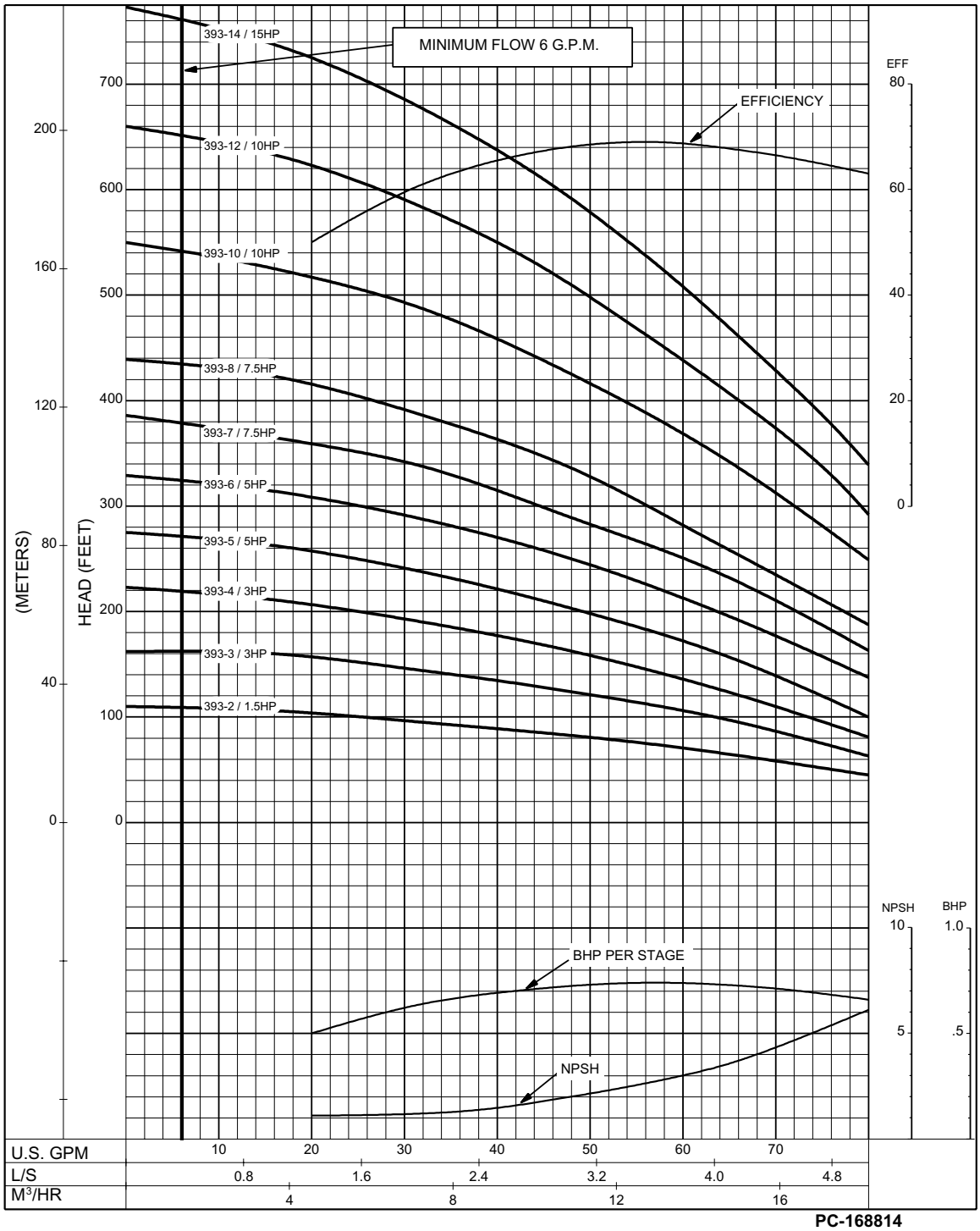
**SIZE : 392** **TYPE : 390** **R. P. M. : 3450**




PC-168813

**3450** R.P.M

**SIZE : 393** **TYPE : 390** **R. P. M. : 3450**



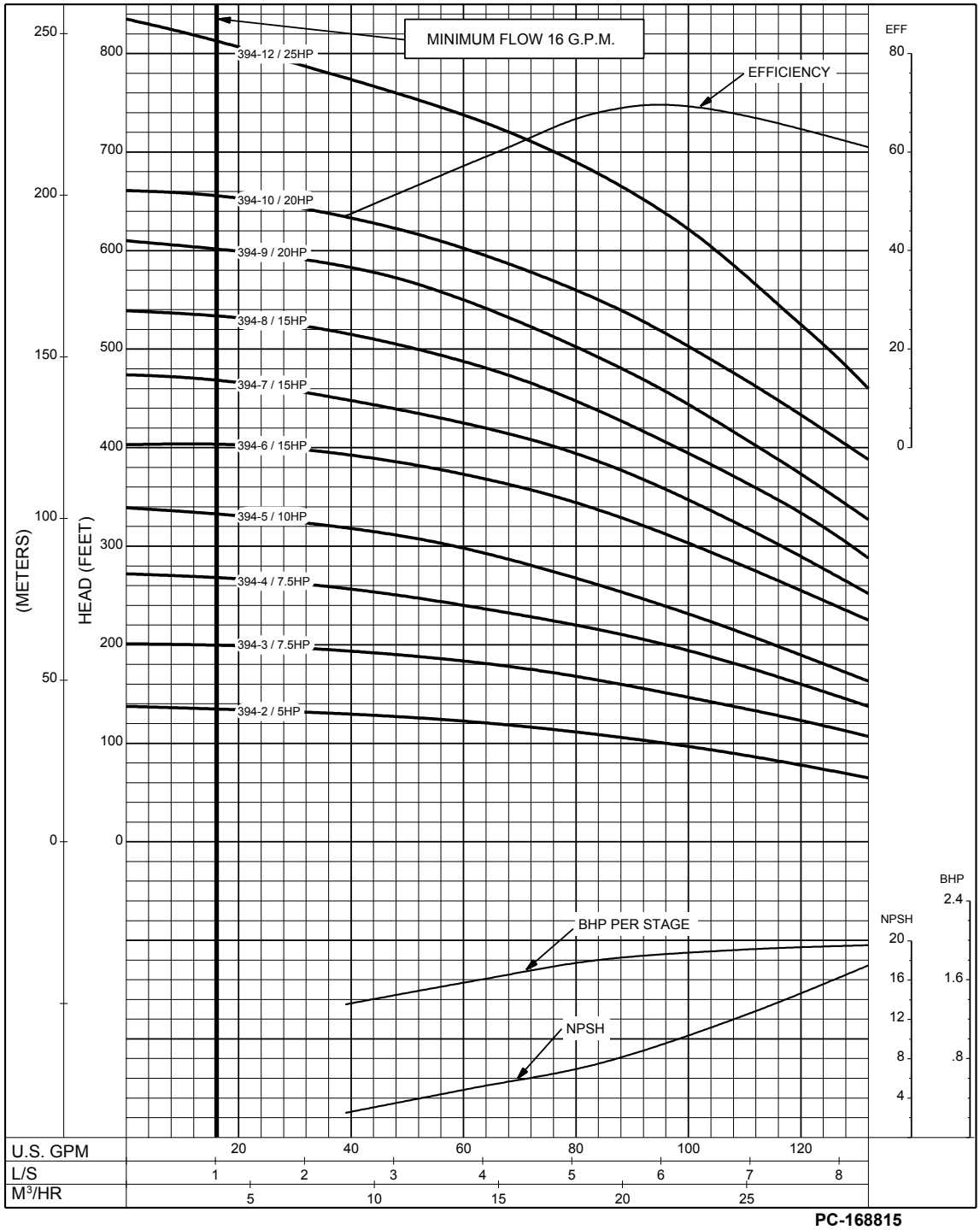

PC-168814

**3450** R.P.M

# AURORA 390 SERIES

ENCLOSED IMPELLER

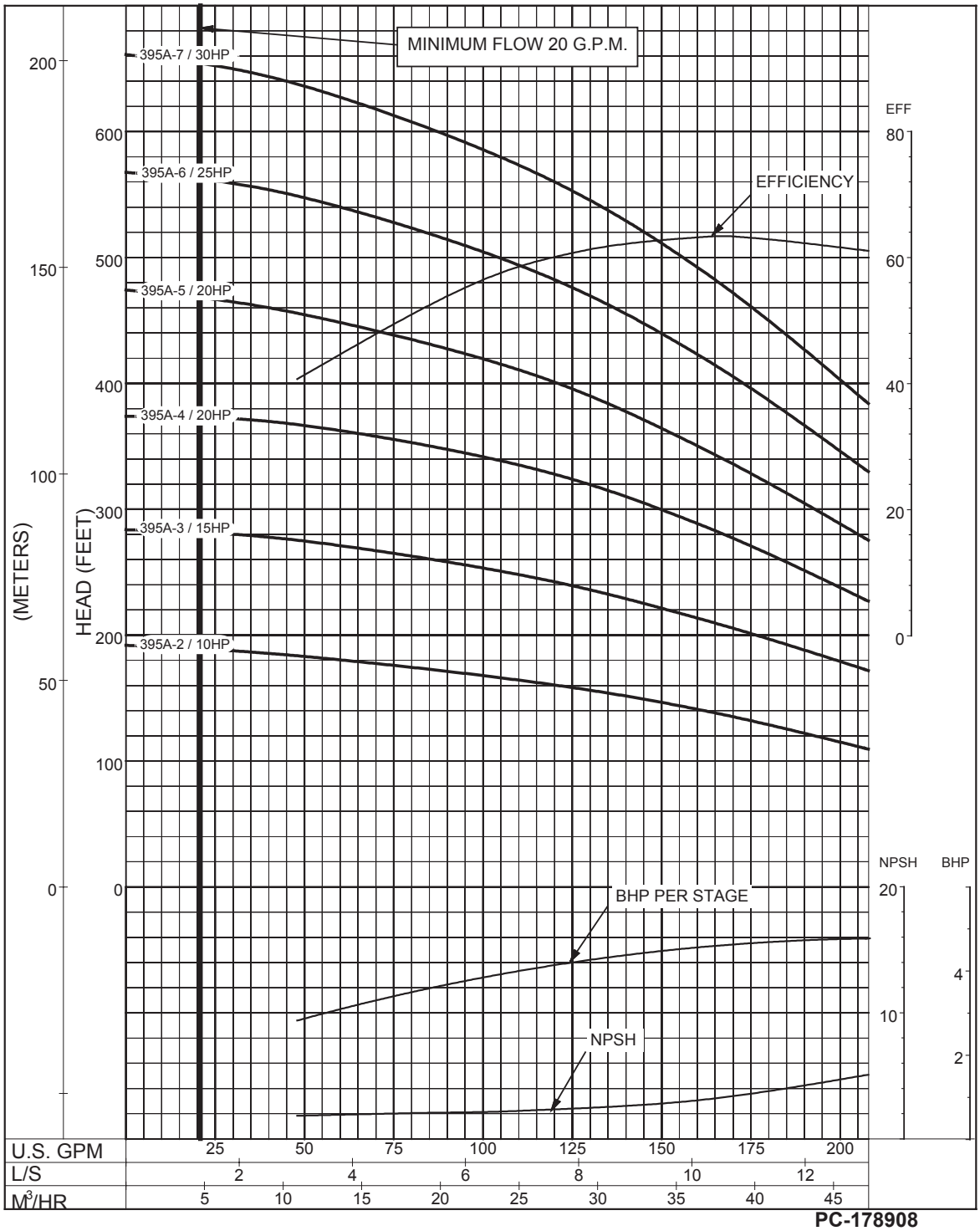
**SIZE : 394** **TYPE : 390** **R. P. M. : 3450**




**3450** R.P.M

**PC-168815**

**SIZE : 395A** **TYPE : 390** **R. P. M. : 3450**




**PC-178908**

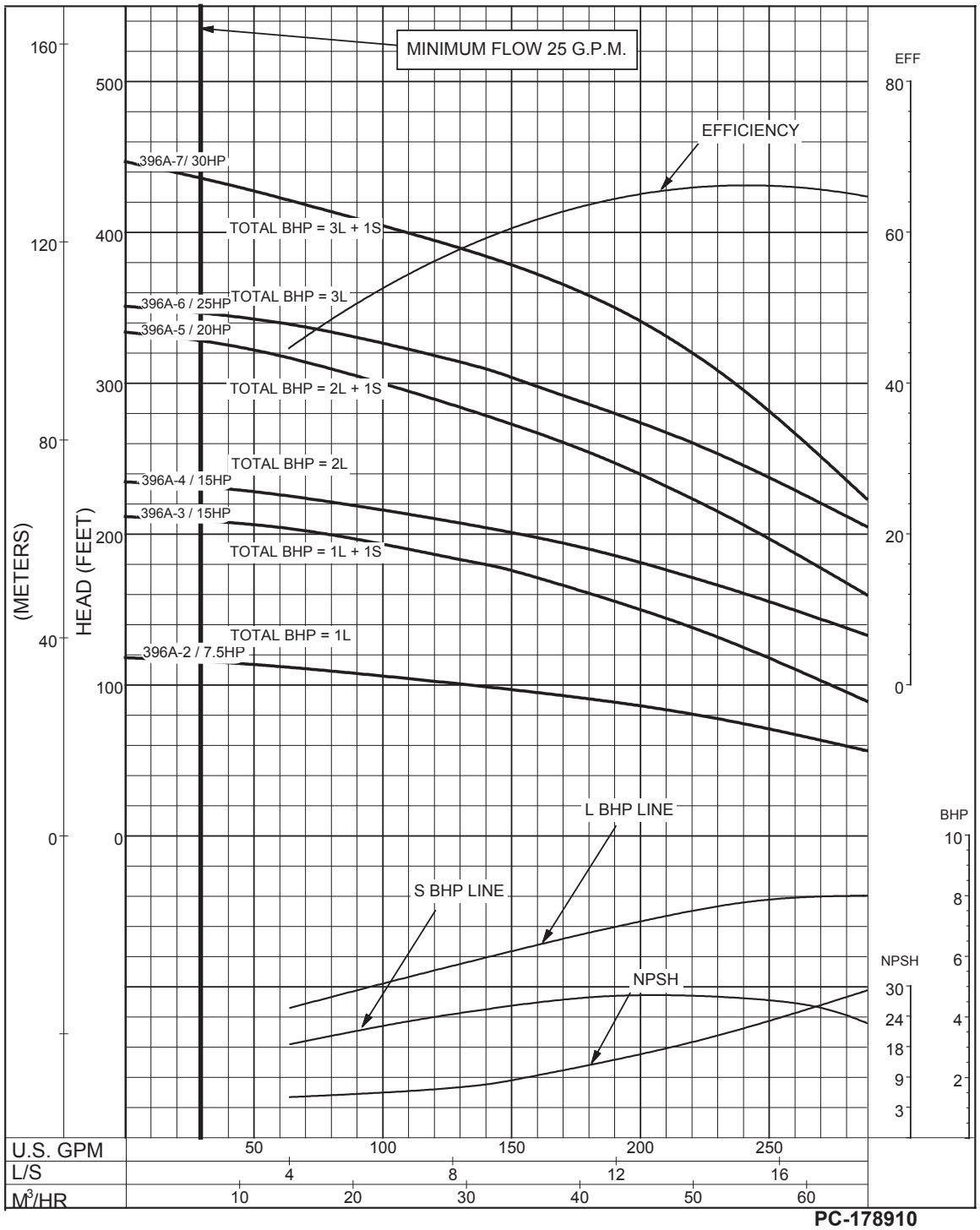
**3450** R.P.M

Supersedes Section 390 Page 406
Dated September 1999

# AURORA 390 SERIES

## ENCLOSED IMPELLER

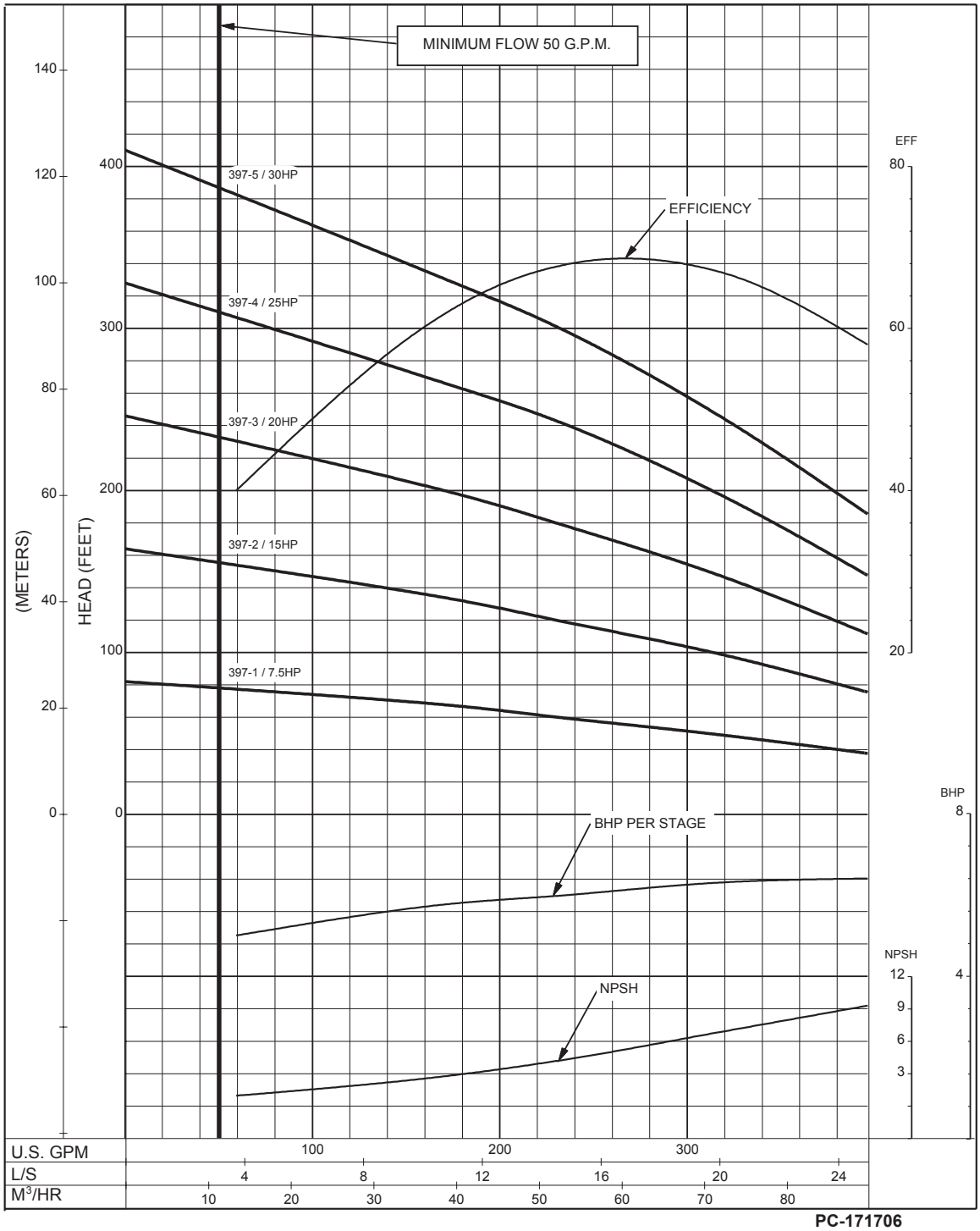
**SIZE : 396A** **TYPE : 390** **R. P. M. : 3450**




**PC-178910**

**3450** R.P.M

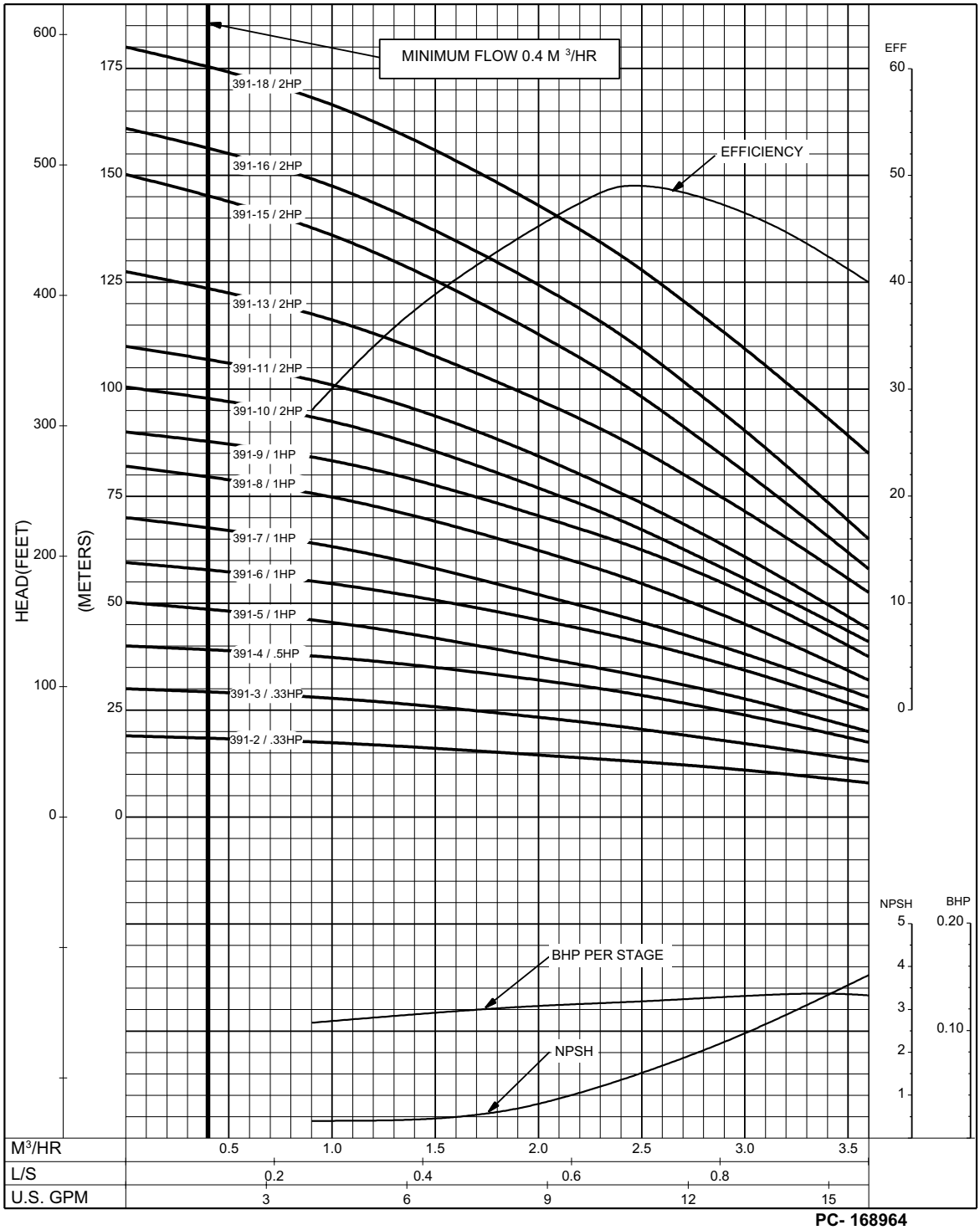
**SIZE : 397** **TYPE : 390** **R. P. M. : 3450**




**PC-171706**

**3450 R.P.M**

**SIZE : 391** **TYPE : 390** **R. P. M. : 2880**



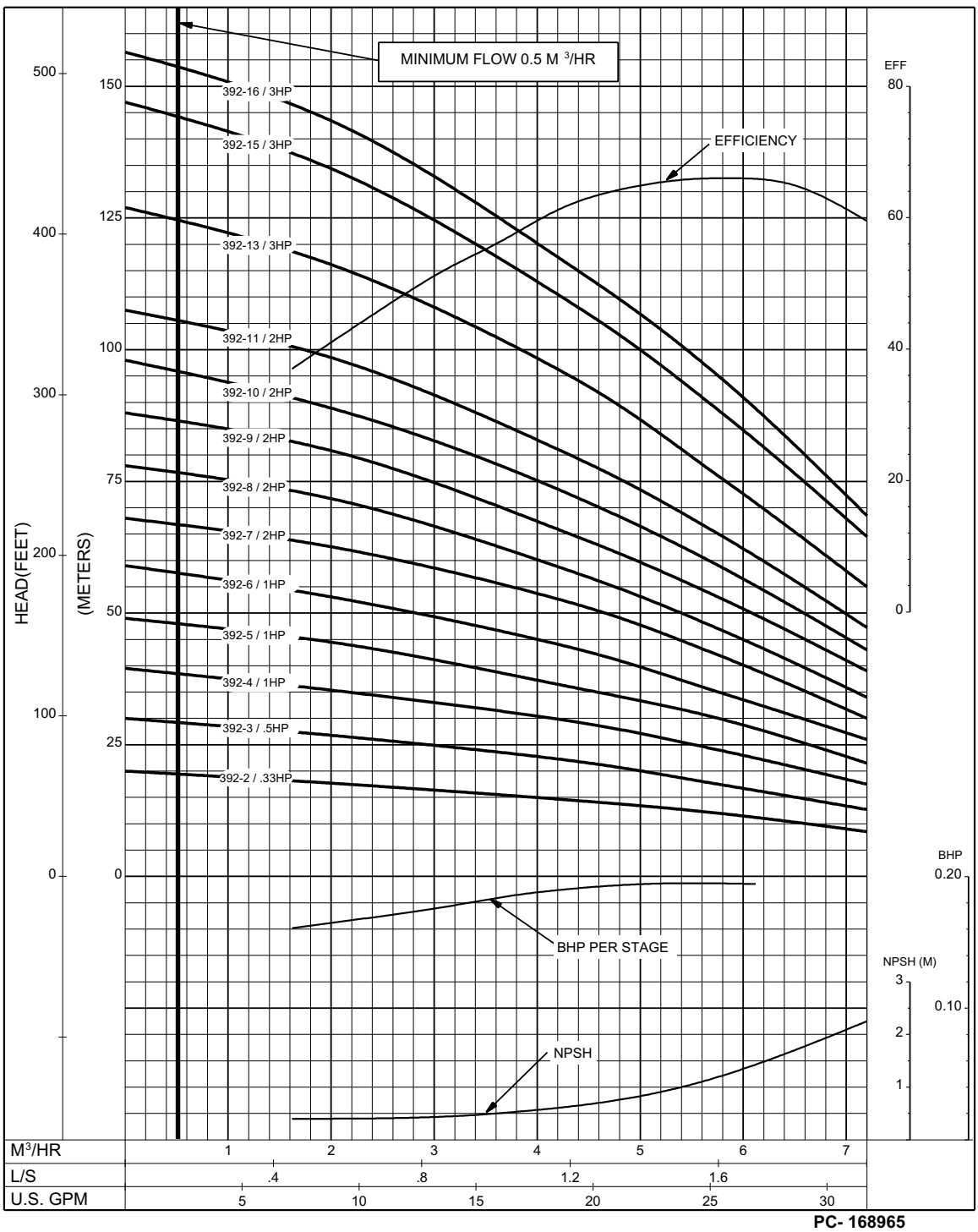

**PC- 168964**

**2880** R.P.M

# AURORA 390 SERIES

## ENCLOSED IMPELLER

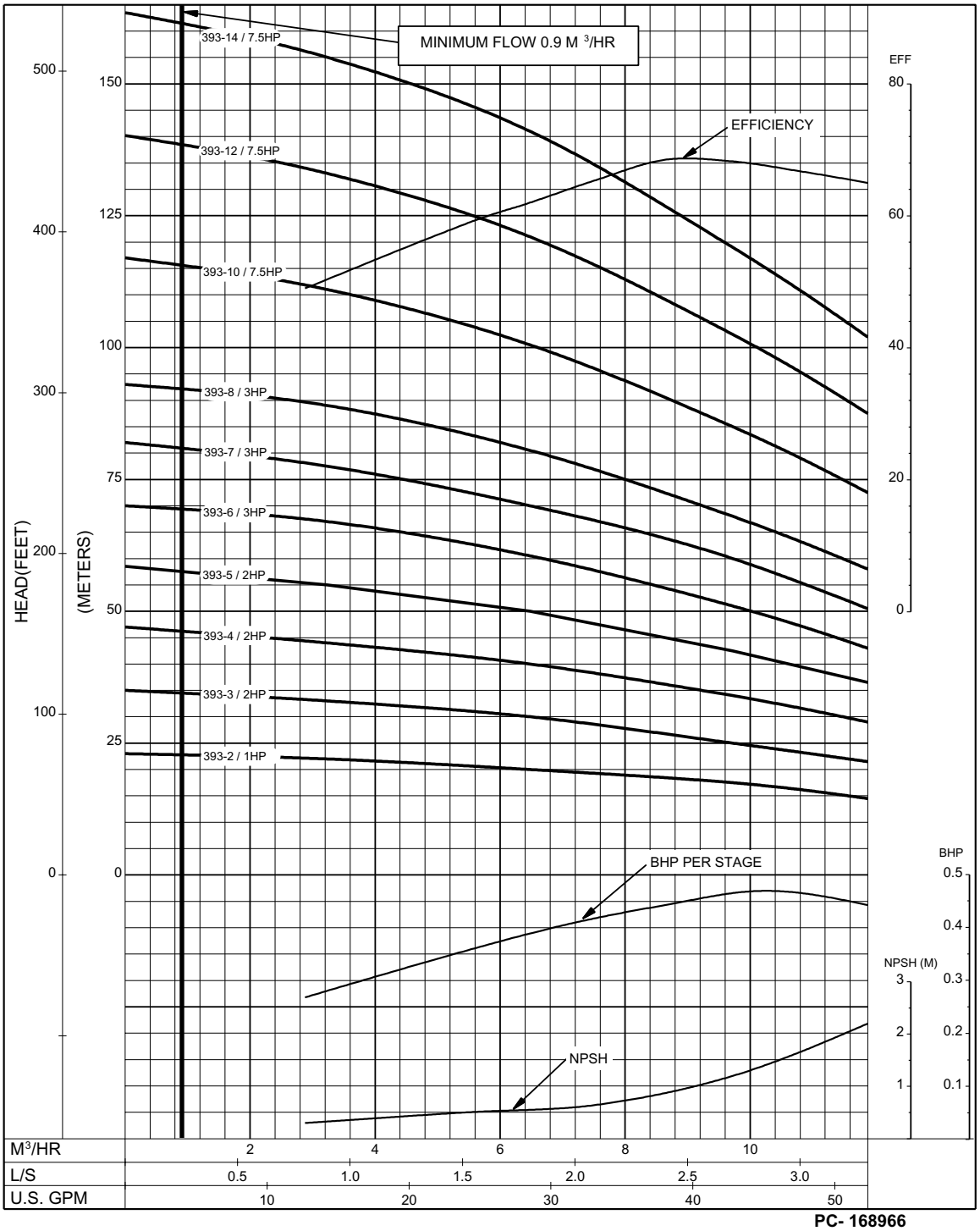
**SIZE : 392** **TYPE : 390** **R. P. M. : 2880**




**PC- 168965**

**2880**
R.P.M

**SIZE : 393** **TYPE : 390** **R. P. M. : 2880**




**PC- 168966**

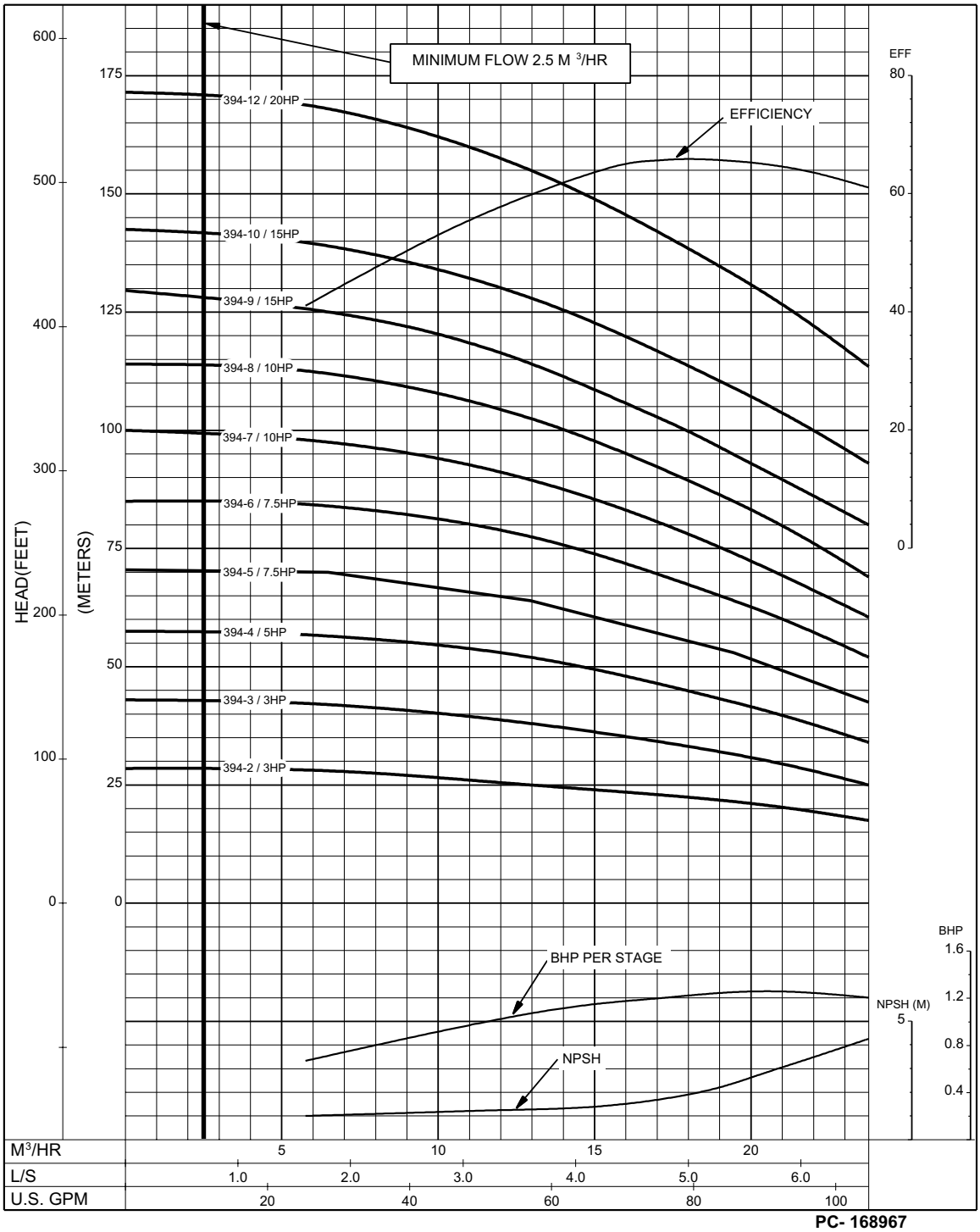
**2880** R.P.M

AURORA®
Pentair Pump Group

# AURORA 390 SERIES

## ENCLOSED IMPELLER

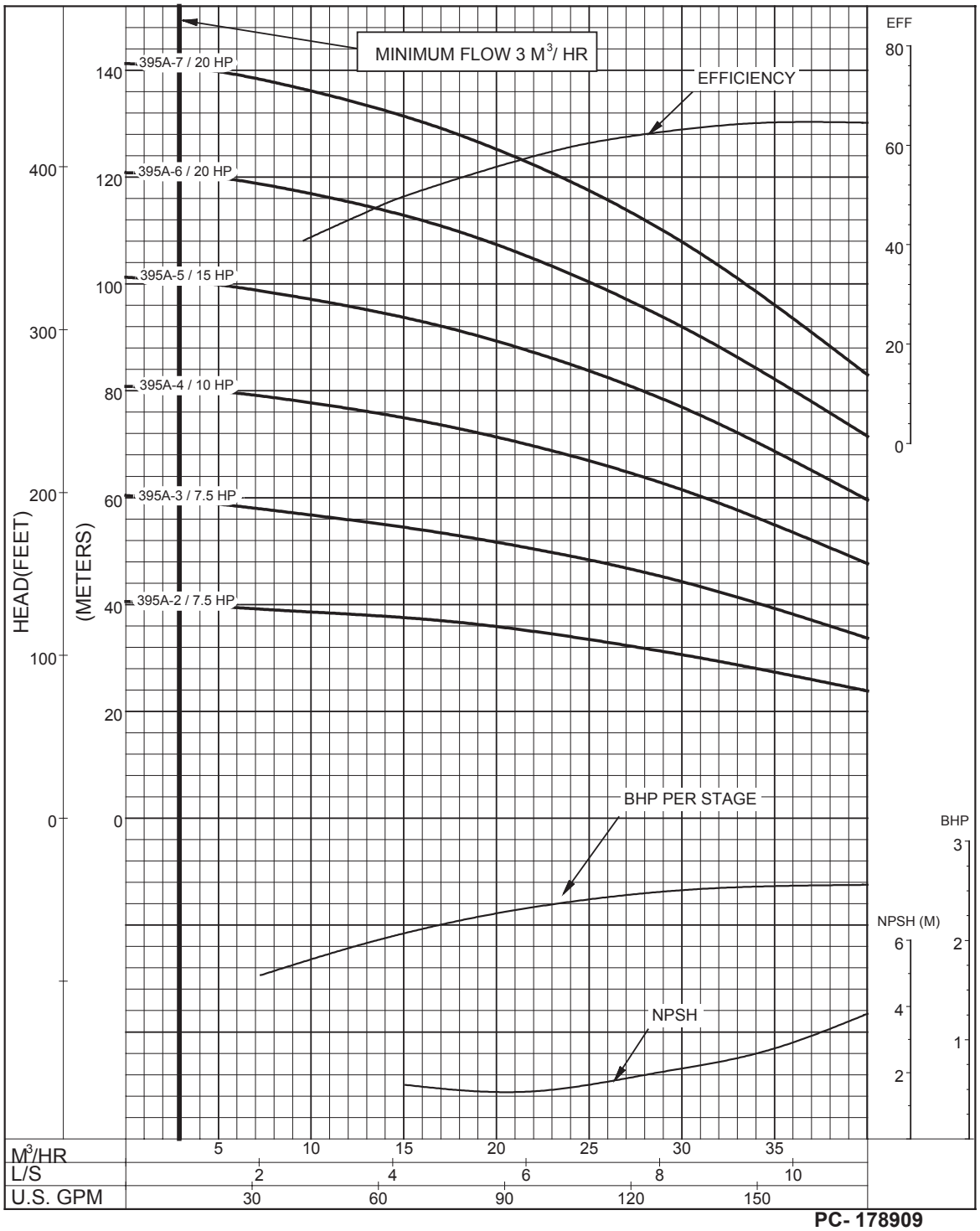
**SIZE : 394** **TYPE : 390** **R. P. M. : 2880**




**PC- 168967**

**2880**
R.P.M

**SIZE : 395A** **TYPE : 390** **R. P. M. : 2880**




**PC- 178909**

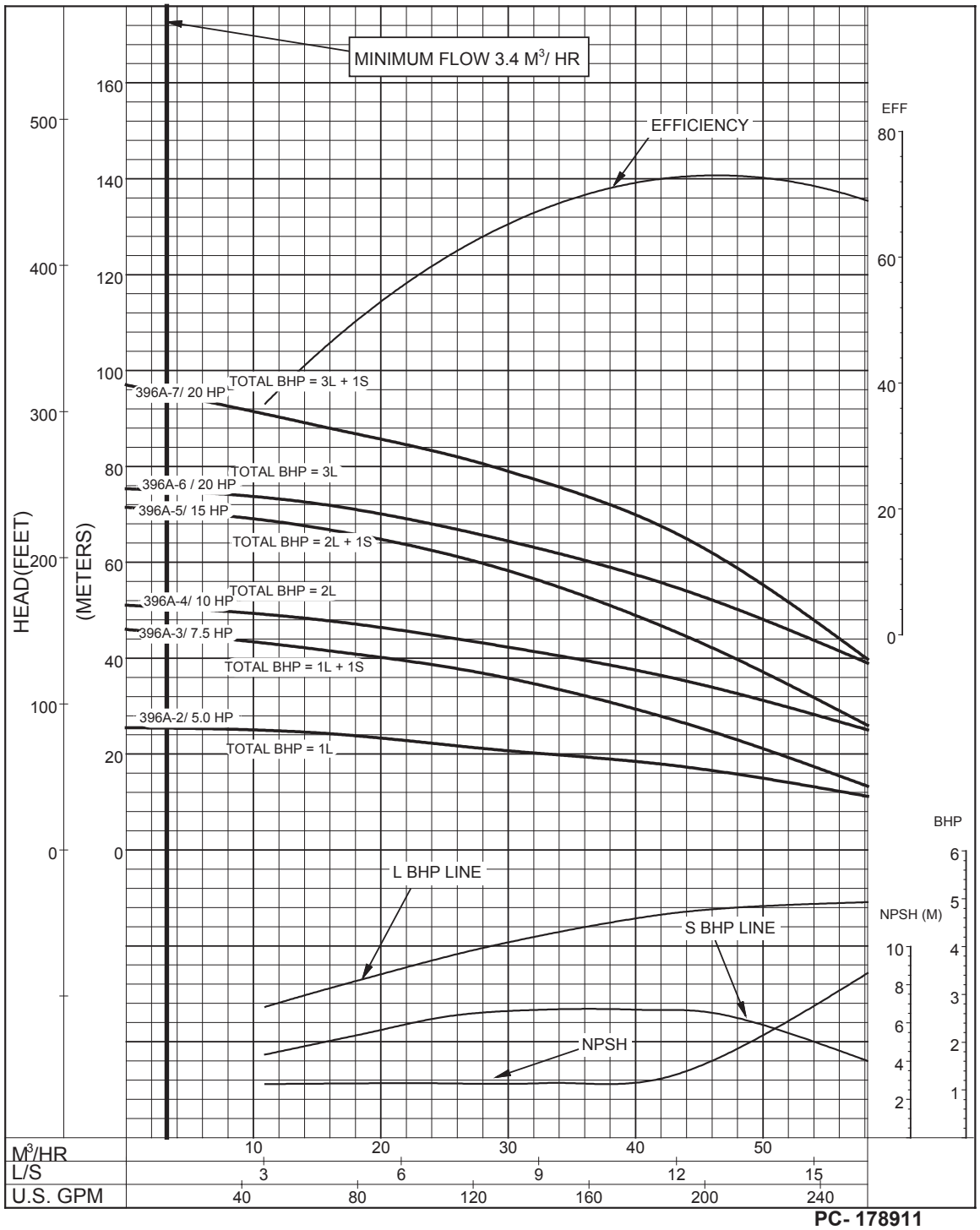
**2880** R.P.M

AURORA®
Pentair Pump Group

# AURORA 390 SERIES

ENCLOSED IMPELLER

**SIZE : 396A** **TYPE : 390** **R. P. M. : 2880**



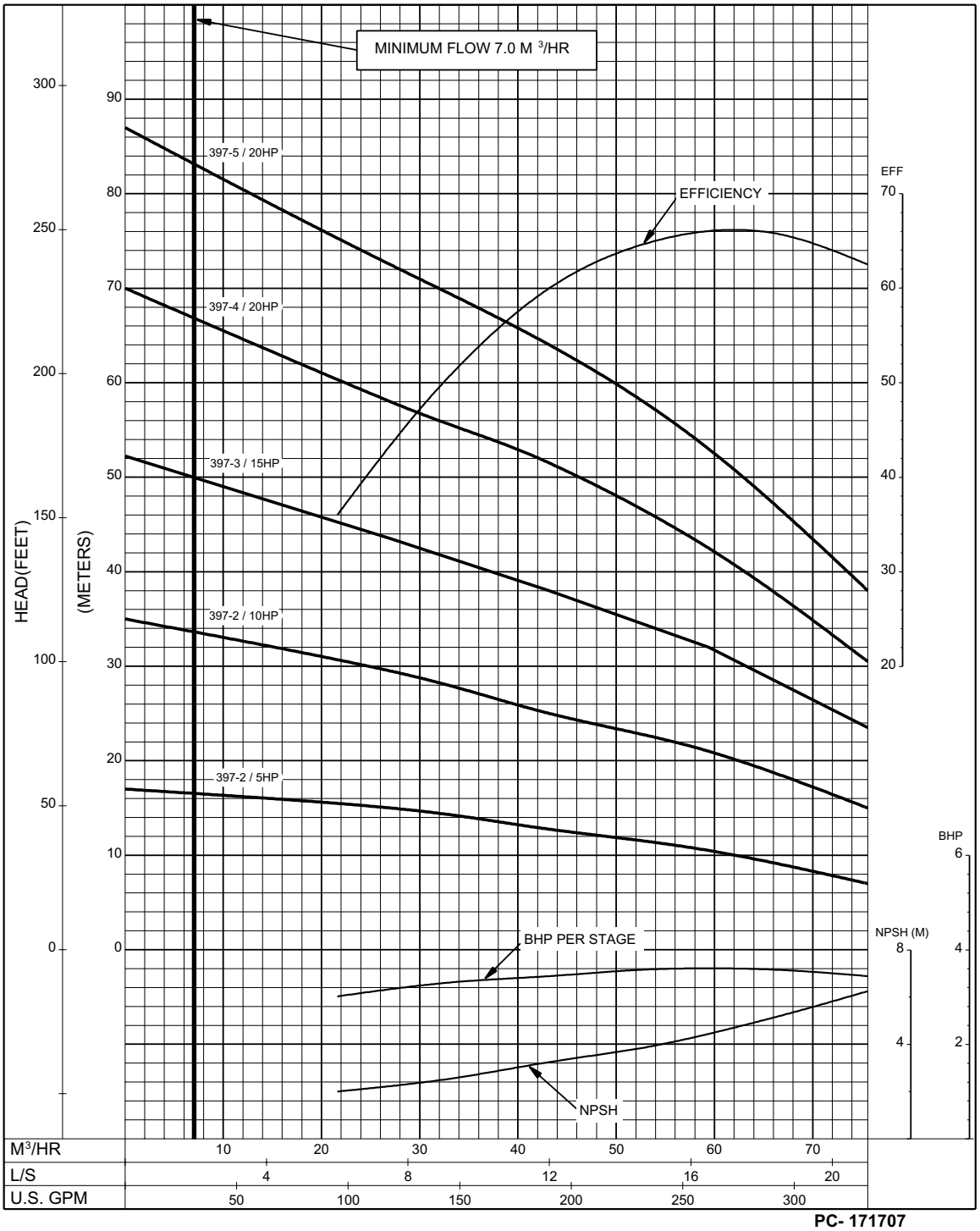

PC- 178911

**2880**
R.P.M

# AURORA 390 SERIES

ENCLOSED IMPELLER

**SIZE : 397** **TYPE : 390** **R. P. M. : 2880**

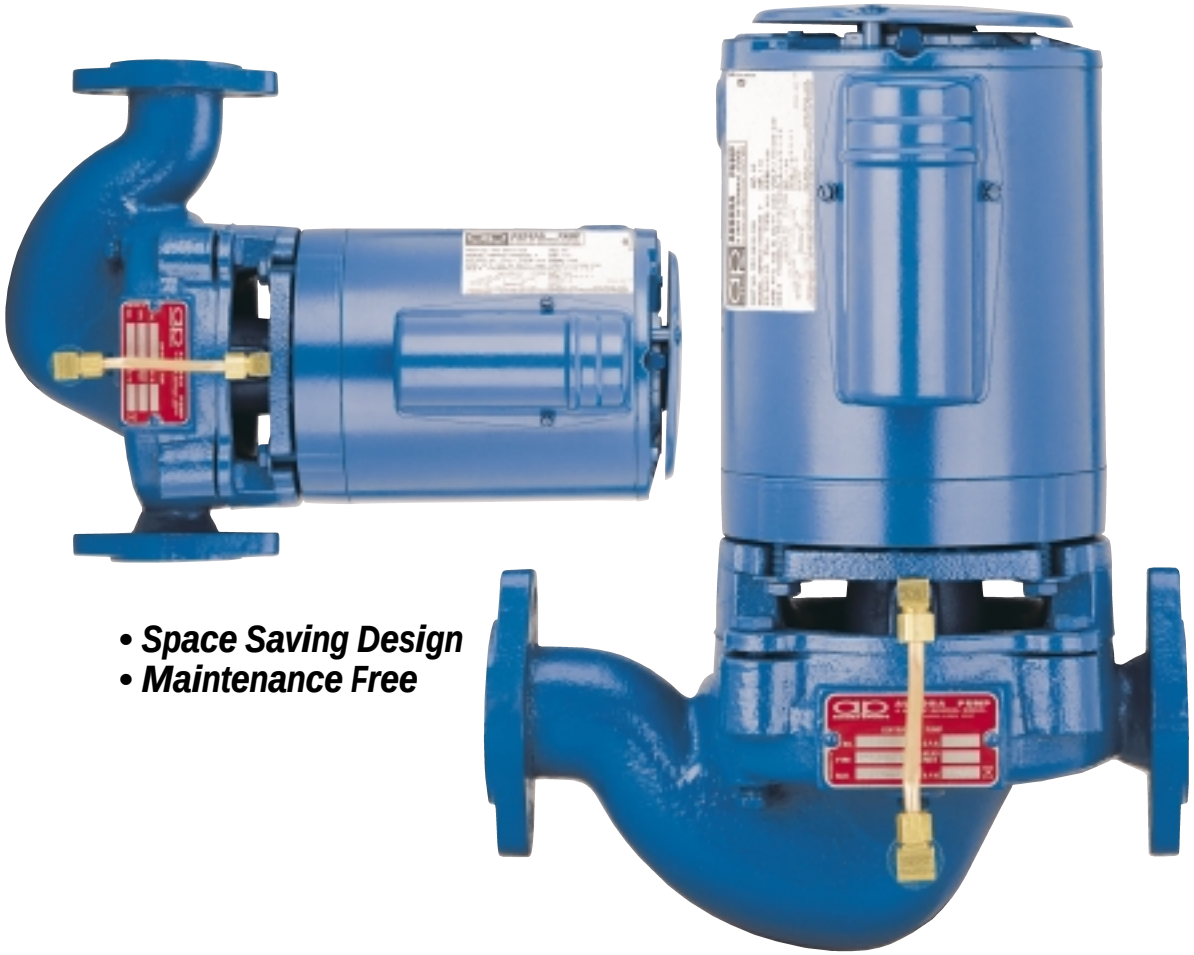



**PC- 171707**

**2880** R.P.M

# 326A Series
# Commercial In-Line Mounted Centrifugal Pump

- *Capacities to 140 G.P.M. (8.8lps)*
- *Heads to 55 Feet (16.8m)*
- *Temperatures to 225°F (107°C)*



- *Space Saving Design*
- *Maintenance Free*

*Universal Flange to Flange Dimensions*

AURORA®
Pentair Pump Group

# Aurora 326A Introduction

A Superior Commercial In-Line pump based on the Aurora Pump 320 series, that we have been manufacturing for over 45 years, has successfully met the severest demands of high temperature condensate service and boiler feed applications. The 326A In-Line's rugged design engineered specifically for commercial applications, giving it the advantage over competitive models.

### COMMERCIAL PUMP UPGRADED DESIGN FEATURES

- Quieter operation with pump inlet straightening vane and Aurora Pump's unique low vibration and low noise engineered motor.
- Direct flange-to-flange compatibility allows installer to replace competitors pumps without time consuming piping and companion flange modifications.
- Hydrostatic tested pump casing to 1.5 times the maximum operating pressure.
- This compact pump is supported by the in-line piping thus allowing quick installation.
- Vacuum cast bronze impeller, (rather than plastic or stamped brass) for maximum efficiency and durability.
- Reduced spare parts - One seal and one motor design (GA) fits all pump models.
- Tapped suction and discharge gauge ports to verify pump performance as well as (3) casing drain port locations.
- Available in standard or build-to-order versions for optimum pump selection flexibility.
- Cast iron bronze fitted (standard), or optional all bronze/all iron constructions available.

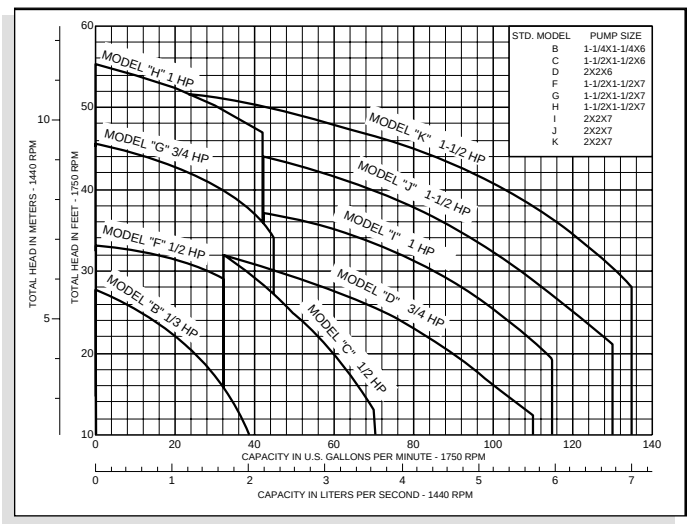
### MAINTENANCE FREE • LONG LASTING RELIABLE

*FEATURES THAT MAKE THE 326A PUMP SUPERIOR TO THE COMPETITION:*

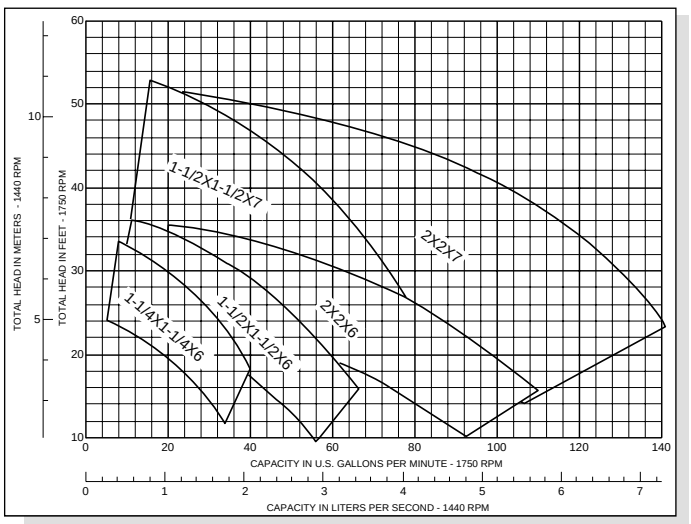
- Enlarged motor bearings with high temperature lubrication require no maintenance.
- Standard seal flush line assures proper mechanical seal lubrication and automatically vents air from the seal chamber for trouble-free operation.
- Stainless steel .75" (22mm) diameter oversized pump shaft for minimal shaft deflection, increasing mechanical seal life.
- Cast companion flange set packed with the pump (rather than stamped steel flanges.)
- Integral pump/motor shaft eliminates premature nuisance failures due to spring type couplings or shaft extensions.

### RANGE CHARTS 326A IN-LINE

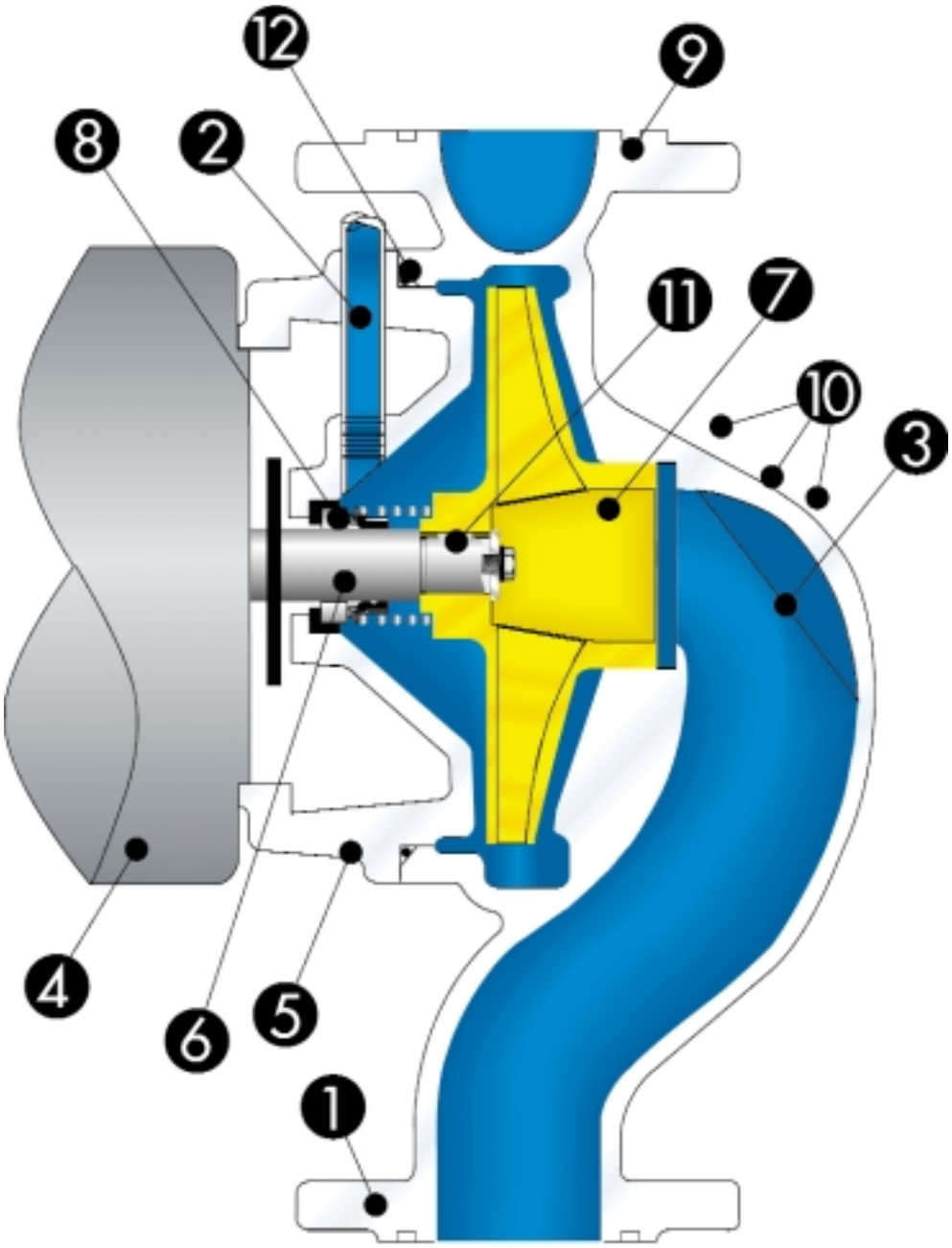
STANDARD MODELS — 1750 (60hz)/1440 (50hz) RPM




BUILD-TO-ORDER — 1750(60hz)/1440 (50hz) RPM



## Features

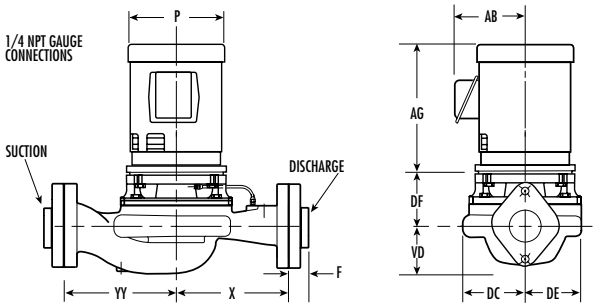



1 INDUSTRY STANDARD UNIVERSAL FLANGE-TO-FLANGE DIMENSIONS (direct replacement to competitor's models)
2 SEAL FLUSH LINE (automatic seal venting)
3 INLET STRAIGHTENING VANE (reduced noise)
4 STANDARD GA MOTOR, MAINTENANCE FREE (high temperature bearing lubrication)
5 BACK PULL-OUT DESIGN (quick disassembly)
6 STAINLESS STEEL SHAFT (large .75" diameter {22mm})
7 VACUUM CAST IMPELLER (higher pump efficiencies)
8 OVERSIZED .75" (22mm) HIGH TEMPERATURE MECHANICAL SEAL (reliable hot water service)
9 TAPPED SUCTION AND DISCHARGE GAUGE PORTS (pump performance test port)
10 THREE TAPPED CASING VENT PLUGS (easily accessible)
11 KEY DRIVEN IMPELLER (securely locked to shaft)
12 O-RING SEALED CASING (superior sealing)

# Engineering Specifications and Dimensions

## Material of Construction

| PUMP PART | BRONZE FITTED | ALL IRON | ALL BRONZE |
|---|---|---|---|
| Casing | Cast Iron ASTM A48 | Cast Iron ASTM A48 | Bronze ASTM B62 |
| Impeller | Bronze ASTM B584 | Cast Iron ASTM A48 | Bronze ASTM B584 |
| Motor Bracket | Cast Iron ASTM A48 | Cast Iron ASTM A48 | Bronze ASTM B62 |
| Shaft | Stainless Steel AISI 416 | Stainless Steel AISI 416 | Stainless Steel AISI 416 |
| Mechanical Seal | Ni-Resist w/"Buna-N" | Ni-Resist w/"Buna-N" | Ceramic w/Viton |




Notes:
1. Dimensions and weights are approximate.
2. All weights are in pounds or kilograms (kg)
3. All dimensions are in inches or metric (mm) and may vary ± .25" (.6mm).
4. Conduit box is shown in approximate position. Dimensions are not specified (as they vary with each motor manufacturer.)
5. Add pump and motor weight for unit weight.
6. Not for construction purposes unless certified.

* 1 phase (145tcz), 3 phase (56cz)
** 1 phase (182tcz), 3 phase (145tcz)

Maximum operating pressure 175psi.

Maximum operating temperature 225°F (107°C)

| MODEL | GA MOTOR HP | X | YY | VD | DF | DC | DE | F | PUMP WEIGHT | ODP MOTOR FRAME | ODP MOTOR WEIGHT | TEFC MOTOR WEIGHT | DIMENSIONS MAY VARY BY MANUFACTURE AG | P | AB |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1-1/4x1-1/4x6, MODEL "B" | 1/3 | 4-1/2 (115) | 6-1/2 (165) | 3-3/8 (86) | 2-7/8 (73) | 3-1/2 (89) | 3-1/2 (89) | 7/8 (22) | 17 (7.7) | 56cz | 25 (11.3) | Use 1/2 hp | 11 (280) | 6-5/8 (170) | 5 (130) |
| 1-1/4x1-1/4x6 | 1/2 | 4-1/2 (115) | 6-1/2 (165) | 3-3/8 (86) | 2-7/8 (73) | 3-1/2 (89) | 3-1/2 (89) | 7/8 (22) | 17 (7.7) | 56cz | 30 (13.6) | 40 (18.1) | 11 (280) | 6-5/8 (170) | 5 (130) |
| 1-1/2x1-1/2x6 | 1/3 | 4-1/2 (115) | 7 (165) | 3-3/4 (95) | 2-7/8 (73) | 3-1/2 (89) | 3-3/4 (95) | 7/8 (22) | 23 (10.4) | 56cz | 25 (11.3) | Use 1/2 hp | 11 (280) | 6-5/8 (170) | 5 (130) |
| 1-1/2x1-1/2x6, MODEL "C" | 1/2 | 4-1/2 (115) | 7 (178) | 3-3/4 (95) | 2-7/8 (73) | 3-1/2 (89) | 3-3/4 (95) | 7/8 (22) | 23 (10.4) | 56cz | 30 (13.6) | 40 (18.1) | 11 (280) | 6-5/8 (170) | 5 (130) |
| 1-1/2x1-1/2x6 | 3/4 | 4-1/2 (115) | 7 (178) | 3-3/4 (95) | 2-7/8 (73) | 3-1/2 (89) | 3-3/4 (95) | 7/8 (22) | 23 (10.4) | 56cz | 35 (15.9) | Use 1 hp | 11 (280) | 6-5/8 (170) | 5 (130) |
| 2x2x6 | 1/2 | 4-3/4 (120) | 6-3/4 (171) | 3-3/4 (95) | 2-7/8 (73) | 3-3/4 (95) | 4 (102) | 7/8 (22) | 23 (10.4) | 56cz | 30 (13.6) | 40 (18.1) | 11 (280) | 6-5/8 (170) | 5 (130) |
| 2x2x6, MODEL "D" | 3/4 | 4-3/4 (120) | 6-3/4 (171) | 3-3/4 (95) | 2-7/8 (73) | 3-3/4 (95) | 4 (102) | 7/8 (22) | 23 (10.4) | 56cz | 35 (15.9) | Use 1 hp | 11 (280) | 6-5/8 (170) | 5 (130) |
| 2x2x6 | 1 | 4-3/4 (120) | 6-3/4 (171) | 3-3/4 (95) | 2-7/8 (73) | 3-3/4 (95) | 4 (102) | 7/8 (22) | 23 (10.4) | 56cz | 40 (18.1) | 50 (22.7) | 11 (280) | 6-5/8 (170) | 5 (130) |
| 1-1/2x1-1/2x7, MODEL "F" | 1/2 | 5-1/2 (140) | 8 (203) | 4 (102) | 2-7/8 (73) | 4 (102) | 4-1/4 (108) | 7/8 (22) | 25 (11.3) | 56cz | 30 (13.6) | 40 (18.1) | 11 (280) | 6-5/8 (170) | 5 (130) |
| 1-1/2x1-1/2x7, MODEL "G" | 3/4 | 5-1/2 (140) | 8 (203) | 4 (102) | 2-7/8 (73) | 4 (102) | 4-1/4 (108) | 7/8 (22) | 25 (11.3) | 56cz | 35 (15.9) | Use 1 hp | 11 (280) | 6-5/8 (170) | 5 (130) |
| 1-1/2x1-1/2x7, MODEL "H" | 1 | 5-1/2 (140) | 8 (203) | 4 (102) | 2-7/8 (73) | 4 (102) | 4-1/4 (108) | 7/8 (22) | 25 (11.3) | 56cz | 40 (18.1) | 50 (22.7) | 11 (280) | 6-5/8 (170) | 5 (130) |
| 1-1/2x1-1/2x7 | 1 | 5-1/2 (140) | 8 (203) | 4 (102) | 2-7/8 (73) | 4 (102) | 4-1/4 (108) | 7/8 (22) | 25 (11.3) | 56cz | 40 (18.1) | 50 (22.7) | 11 (280) | 6-5/8 (170) | 5 (130) |
| 1-1/2x1-1/2x7 | 1-1/2 | 5-1/2 (140) | 8 (203) | 4 (102) | 2-7/8 (73) | 4 (102) | 4-1/4 (108) | 7/8 (22) | 25 (11.3) | 56cz | 40 (18.1) | 50 (22.7) | 11 (280) | 6-5/8 (170) | 5 (130) |
| 2x2x7,MODEL "I" | 3/4 | 6 (152) | 8 (203) | 4 (102) | 2-7/8 (73) | 4-1/4 (108) | 4-3/4 (121) | 13/16 (21) | 26 (11.8) | 56cz | 35 (15.9) | Use1hp | 11 (280) | 6-5/8 (170) | 5 (130) |
| 2x2x7 | 1 | 6 (152) | 8 (203) | 4 (102) | 2-7/8 (73) | 4-1/4 (108) | 4-3/4 (121) | 13/16 (21) | 26 (11.8) | 56cz | 40 (18.1) | 50 (22.7) | 11 (280) | 6-5/8 (170) | 5 (130) |
| 2x2x7,MODEL "J" & "K" | 1-1/2 | 6 (152) | 8 (203) | 4 (102) | 2-7/8 (73) | 4-1/4 (108) | 4-3/4 (121) | 13/16 (21) | 26 (11.8) | * | 55 (24.9) | 60 (27.2) | 11 (280) | 6-5/8 (170) | 5 (130) |
| 2x2x7 | 2 | 6 (152) | 8 (203) | 4 (102) | 2-7/8 (73) | 4-1/4 (108) | 4-3/4 (121) | 13/16 (21) | 26 (11.8) | ** | 55 (24.9) | 60 (27.2) | 11 (280) | 6-5/8 (170) | 5 (130) |

### HOW TO SPECIFY IN-LINE MOUNTED CENTRIFUGAL PUMP (326A)

The contractor shall furnish and install in location as shown on the plan an Aurora Pump Type 326A In-Line Centrifugal Pump, single stage design size……(bronze fitted) (all iron) (all bronze) construction. The pump shall have a capacity of ……G.P.M. at ……ft. total head and ……specific gravity. The pump mechanical seal is to be a "Buna-N" bellows, Ni-Resist seat, and hot water carbon washer. The pump shall be capable of mounting horizontally or vertically. The pump is to be close-coupled to a NEMA motor of ……H.P., ……phase, ……R.P.M.,(drip proof) (totally enclosed) enclosure, with stainless steel motor shaft. The motor shall be designed to Aurora Pump's specifications as to vibration limits.

**NOTE:** Aurora Pump reserves the right to make revisions to its products and their specifications, and to this bulletin and related information, without notice.

— Your Authorized Local Distributor —


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WORLDWIDE FAX: (630) 859-1226
**WEB:** www.aurorapump.com
**EMAIL:** aurora_info@pentairpump.com

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Refer to "Pumps" in yellow pages of your phone directory for your local Distributor.


AURORA®
Pentair Pump Group

AP-326A/Rev. A 2.99 (5M 1.00)

# Performance Curves for the 326 Series

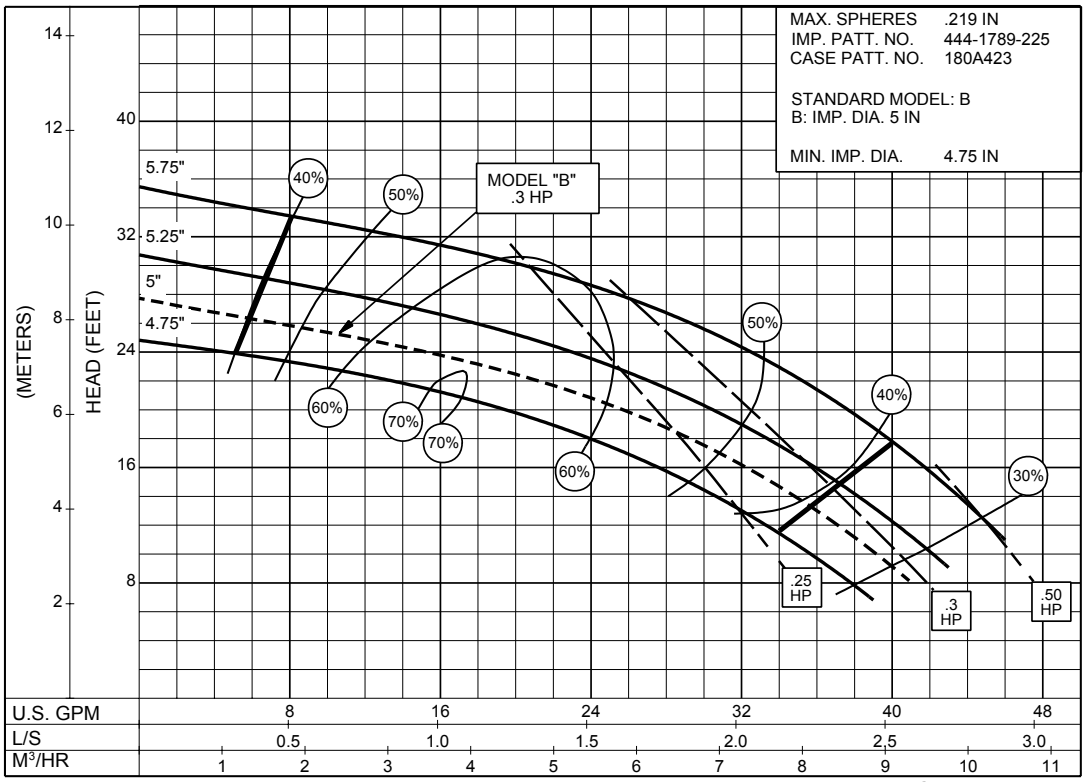
| MODEL/SIZE | R.P.M. | CATALOG PAGE | PDF PAGE |
|---|---|---|---|
| 1-1/4 x 1-1/4 x 6 | 1750 | 401 | 2 |
| 1-1/2 x 1-1/2 x 6 | 1750 | 402 | 3 |
| 2 x 2 x 6 | 1750 | 403 | 4 |
| 1-1/2 x 1-1/2 x 7 | 1750 | 404 | 5 |
| 2 x 2 x 7 | 1750 | 405 | 6 |

# 1-1/4 x 1-1/4 x 6 SERIES 326A

## ENCLOSED IMPELLER



**SIZE : 1-1/4x1-1/4x6** **TYPE : 326A** **IMPELLER : Enclosed** **R. P. M. : 1750**




**PC-163079**

**1750** R.P.M

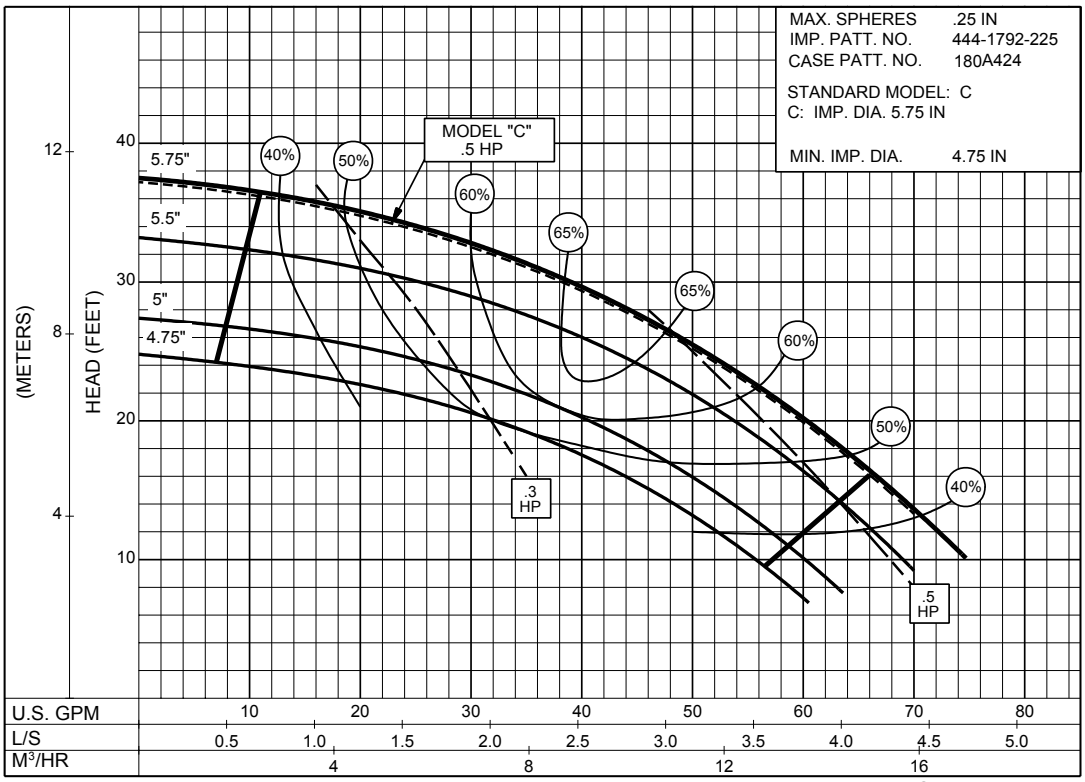
# 1-1/2 x 1-1/2 x 6 SERIES 326A

## ENCLOSED IMPELLER

Supersedes Section 326 Page 402
Dated October 1998

**1750**
R.P.M

**SIZE : 1-1/2x1-1/2x6** **TYPE : 326A** **IMPELLER : Enclosed** **R. P. M. : 1750**



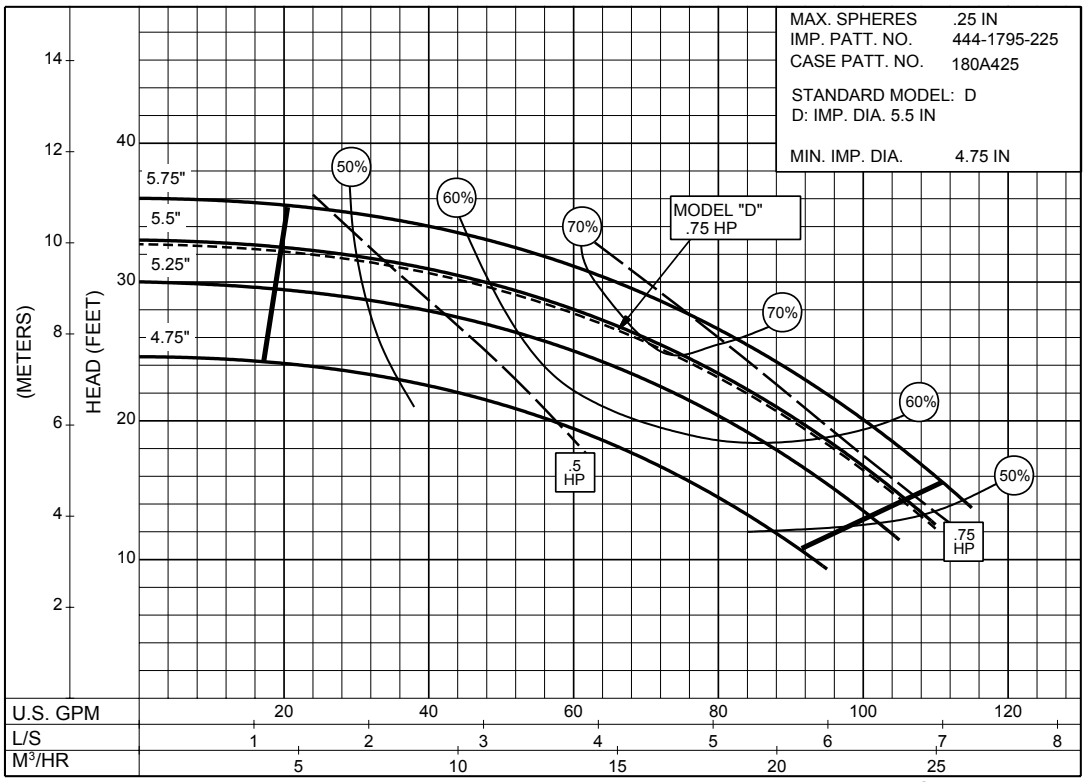

**PC-163080**

# 2 x 2 x 6 SERIES 326A

## ENCLOSED IMPELLER

Supersedes Section 326 Page 403
Dated October 1998

**SIZE : 2x2x6** **TYPE : 326A** **IMPELLER : Enclosed** **R. P. M. : 1750**




**PC-163081**

**1750**
R.P.M

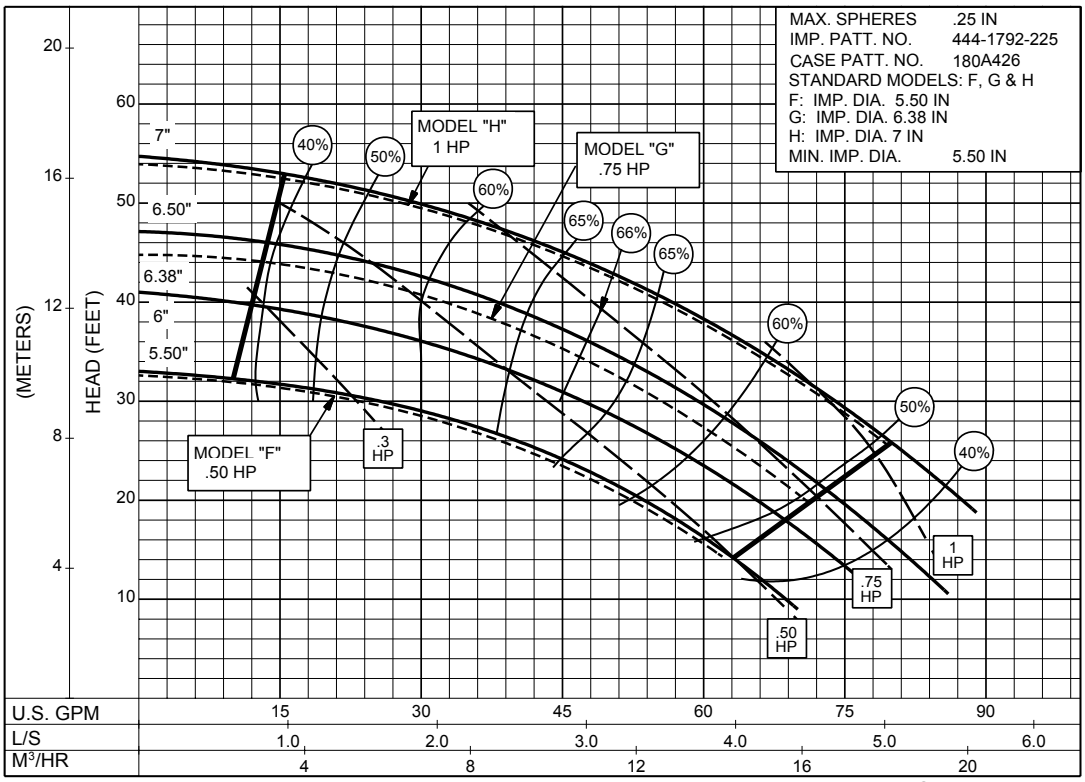
# 1-1/2 x 1-1/2 x 7 SERIES 326A

## ENCLOSED IMPELLER

Supersedes Section 326 Page 404
Dated October 1998

**1750**
R.P.M

**SIZE : 1-1/2X1-1/2X7** **TYPE : 326A** **IMPELLER : Enclosed** **R. P. M. : 1750**



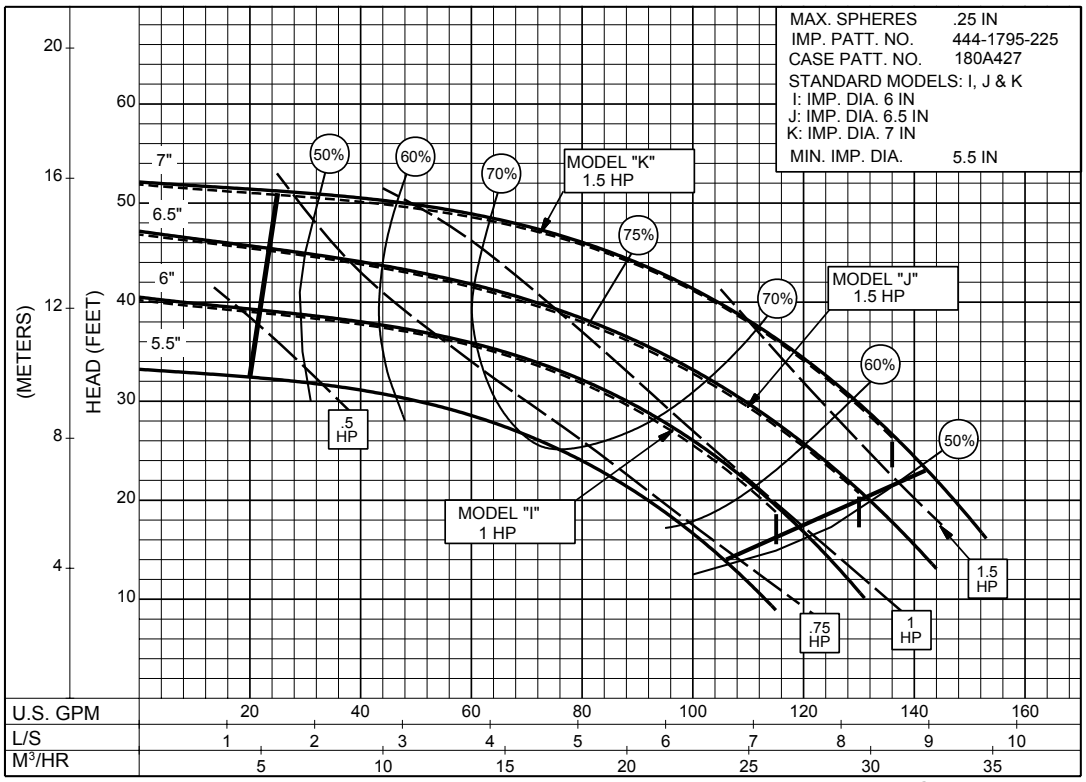

PC-163082A

# 2 x 2 x 7 SERIES 326A

## ENCLOSED IMPELLER

Supersedes Section 326 Page 405
Dated October 1998

**SIZE : 2X2X7** **TYPE : 326A** **IMPELLER : Enclosed** **R. P. M. : 1750**



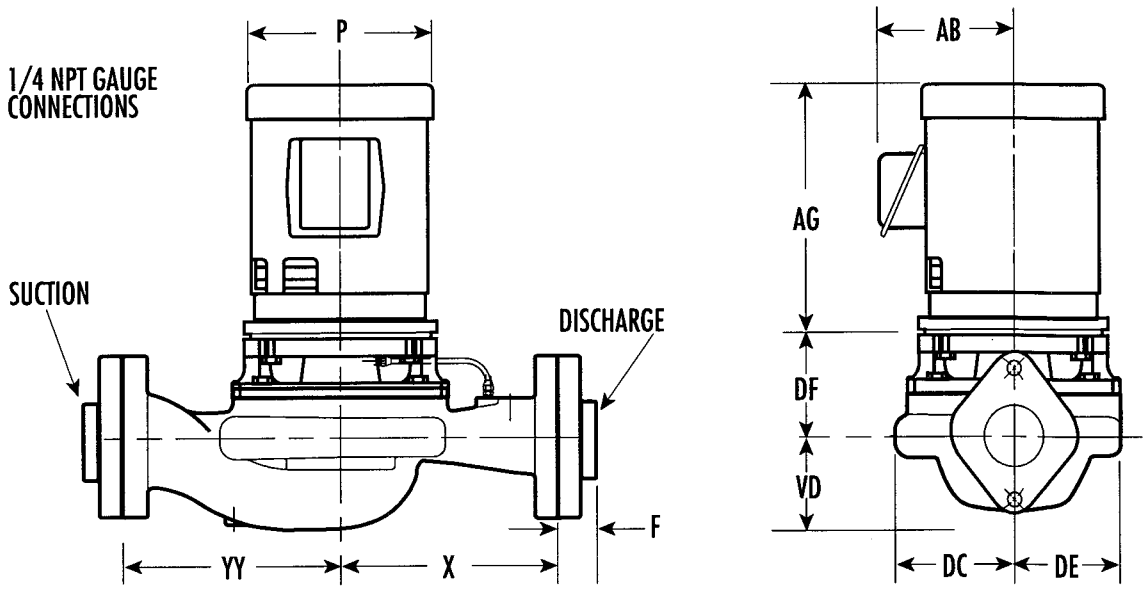

**PC-163083**

**1750** R.P.M

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# AURORA MODEL 326A PUMPS

## INLINE CENTRIFUGAL PUMP




NOTES:

1. Dimensions and weights are approximate.
2. All weights are in pounds or kilograms (kg).
3. All dimensions are in inches or metric (mm) and may vary ± .25" (6).
4. Conduit box is shown in approximate position. Dimensions are not specified (as they vary with each motor manufacturer).
5. Add pump and motor weight for unit weight.
6. Not for construction purposes unless certified.

* 1 phase (14TCZ), 3 phase (56CZ).

** 1 phase (18TCZ), 3 phase (145TCZ).

**Maximum Operating Pressure 175psi.** **1750 (60hz)/1440 (50hz) RPM** **Maximum Operating Temperature 225°F (107°C)**

| MODEL | GA MOTOR HP | X | YY | VD | DF | DC | DE | F | PUMP WEIGHT | ODP MOTOR FRAME | ODP MOTOR WEIGHT | TEFC MOTOR WEIGHT | DIMENSIONS MAY VARY BY MANUFACTURER AG | P | AB |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1-1/4 x 1-1/4 x 6, Model "B" | 1/3 | 4-1/2 (114) | 6-1/2 (165) | 3-3/8 (86) | 2-7/8 (73) | 3-1/2 (89) | 3-1/2 (89) | 7/8 (22) | 17 (7.7) | 56CZ | 25 (11.3) | Use 1/2 hp | 11 (279) | 6-5/8 (168) | 5 (127) |
| 1-1/4 x 1-1/4 x 6 | 1/2 | 4-1/2 (114) | 6-1/2 (165) | 3-3/8 (86) | 2-7/8 (73) | 3-1/2 (89) | 3-1/2 (89) | 7/8 (22) | 17 (7.7) | 56CZ | 30 (13.6) | 40 (18.1) | 11 (279) | 6-5/8 (168) | 5 (127) |
| 1-1/2 x 1-1/2 x 6 | 1/3 | 4-1/2 (114) | 7 (178) | 3-3/4 (95) | 2-7/8 (73) | 3-1/2 (89) | 3-3/4 (95) | 7/8 (22) | 23 (10.4) | 56CZ | 25 (11.3) | Use 1/2 hp | 11 (279) | 6-5/8 (168) | 5 (127) |
| 1-1/2 x 1-1/2 x 6, Model "C" | 1/2 | 4-1/2 (114) | 7 (178) | 3-3/4 (95) | 2-7/8 (73) | 3-1/2 (89) | 3-3/4 (95) | 7/8 (22) | 23 (10.4) | 56CZ | 30 (13.6) | 40 (18.1) | 11 (279) | 6-5/8 (168) | 5 (127) |
| 1-1/2 x 1-1/2 x 6 | 3/4 | 4-1/2 (114) | 7 (178) | 3-3/4 (95) | 2-7/8 (73) | 3-1/2 (89) | 3-3/4 (95) | 7/8 (22) | 23 (10.4) | 56CZ | 35 (15.9) | Use 1 hp | 11 (279) | 6-5/8 (168) | 5 (127) |
| 2 x 2 x 6 | 1/2 | 4-3/4 (121) | 6-3/4 (171) | 3-3/4 (95) | 2-7/8 (73) | 3-3/4 (95) | 4 (102) | 7/8 (22) | 23 (10.4) | 56CZ | 30 (13.6) | 40 (18.1) | 11 (279) | 6-5/8 (168) | 5 (127) |
| 2 x 2 x 6, Model "D" | 3/4 | 4-3/4 (121) | 6-3/4 (171) | 3-3/4 (95) | 2-7/8 (73) | 3-3/4 (95) | 4 (102) | 7/8 (22) | 23 (10.4) | 56CZ | 35 (15.9) | Use 1 hp | 11 (279) | 6-5/8 (168) | 5 (127) |
| 2 x 2 x 6 | 1 | 4-3/4 (121) | 6-3/4 (171) | 3-3/4 (95) | 2-7/8 (73) | 3-3/4 (95) | 4 (102) | 7/8 (22) | 23 (10.4) | 56CZ | 40 (18.1) | 50 (22.7) | 11 (279) | 6-5/8 (168) | 5 (127) |
| 1-1/2 x 1-1/2 x 7, Model "F" | 1/2 | 5-1/2 (140) | 8 (203) | 4 (102) | 2-7/8 (73) | 4 (102) | 4-1/4 (108) | 7/8 (22) | 25 (11.3) | 56CZ | 30 (13.6) | 40 (18.1) | 11 (279) | 6-5/8 (168) | 5 (127) |
| 1-1/2 x 1-1/2 x 7, Model "G" | 3/4 | 5-1/2 (140) | 8 (203) | 4 (102) | 2-7/8 (73) | 4 (102) | 4-1/4 (108) | 7/8 (22) | 25 (11.3) | 56CZ | 35 (15.9) | Use 1hp | 11 (279) | 6-5/8 (168) | 5 (127) |
| 1-1/2 x 1-1/2 x 7, Model "H" | 1 | 5-1/2 (140) | 8 (203) | 4 (102) | 2-7/8 (73) | 4 (102) | 4-1/4 (108) | 7/8 (22) | 25 (11.3) | 56CZ | 40 (18.1) | 50 (22.7) | 11 (279) | 6-5/8 (168) | 5 (127) |
| 1-1/2 x 1-1/2 x 7 | 1 | 5-1/2 (140) | 8 (203) | 4 (102) | 2-7/8 (73) | 4 (102) | 4-1/4 (108) | 7/8 (22) | 25 (11.3) | 56CZ | 40 (18.1) | 50 (22.7) | 11 (279) | 6-5/8 (168) | 5 (127) |
| 1-1/2 x 1-1/2 x 7 | 1-1/2 | 5-1/2 (140) | 8 (203) | 4 (102) | 2-7/8 (73) | 4 (102) | 4-1/4 (108) | 7/8 (22) | 25 (11.3) | 56CZ | 40 (18.1) | 50 (22.7) | 11 (279) | 6-5/8 (168) | 5 (127) |
| 2 x 2 x 7 | 3/4 | 6 (152) | 8 (203) | 4 (102) | 2-7/8 (73) | 4-1/4 (108) | 4-3/4 (121) | 13/16 (21) | 26 (11.8) | 56CZ | 35 (15.9) | Use1hp | 11 (279) | 6-5/8 (168) | 5 (127) |
| 2 x 2 x 7, Model "I" | 1 | 6 (152) | 8 (203) | 4 (102) | 2-7/8 (73) | 4-1/4 (108) | 4-3/4 (121) | 13/16 (21) | 26 (11.8) | 56CZ | 40 (18.1) | 50 (22.7) | 11 (279) | 6-5/8 (168) | 5 (127) |
| 2 x 2 x 7, Model "J" & "K" | 1-1/2 | 6 (152) | 8 (203) | 4 (102) | 2-7/8 (73) | 4-1/4 (108) | 4-3/4 (121) | 13/16 (21) | 26 (11.8) | * | 55 (24.9) | 60 (27.2) | 11 (279) | 6-5/8 (168) | 5 (127) |
| 2 x 2 x 7 | 2 | 6 (152) | 8 (203) | 4 (102) | 2-7/8 (73) | 4-1/4 (108) | 4-3/4 (121) | 13/16 (21) | 26 (11.8) | ** | 55 (24.9) | 60 (27.2) | 11 (279) | 6-5/8 (168) | 5 (127) |

AURORA PUMP
A member of
PENTAIR PUMP GROUP

# INSTRUCTION MANUAL
## INSTALLATION
## CIRCULATOR PUMP

2

GENERAL. The life of your Aurora pump can be extended considerably by carefully following the installation instructions contained herein. Each step of the pump installation instructions plays a vital part in assuring long life, efficient operation, and reduced maintenance, from the initial location of the pump through prestarting directions.

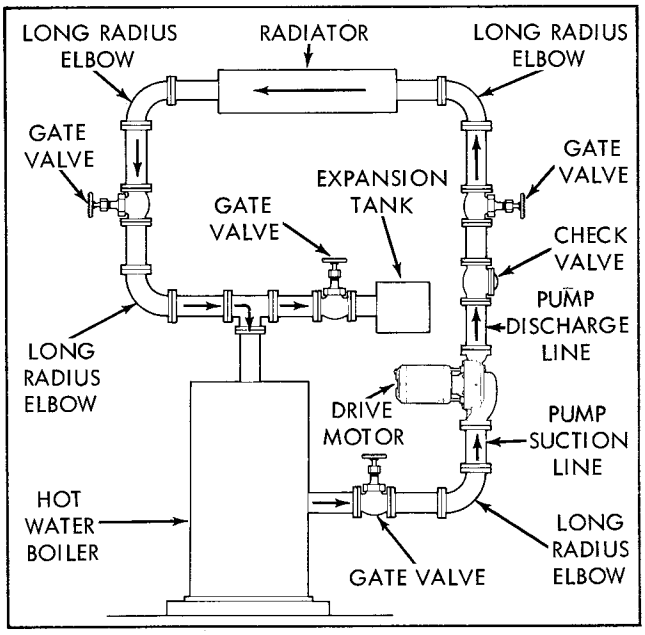



FIGURE 1. SIMPLIFIED HOT WATER CIRCULATING SYSTEM

UNPACKING YOUR PUMP. The crate containing your pump should be opened immediately upon receipt from the factory, and the pump generally inspected for damage and shortage of parts. Particular attention should be given to the discharge and suction nozzle threads or flanges. Any damage or shortage of parts should be reported to the carrier immediately.

CLEANING. If your pump is to be installed immediately, it will be necessary to remove the protective covers from all openings, and to clean the exposed metal parts thoroughly with white gasoline or other suitable solvent to remove the preservative coating.

STORAGE. If your pump is not to be put in service immediately it should be covered and stored in a clean dry area. The protective covers and preservative should be left intact until the pump is put into service. For extended storage, the pump should be dried internally with hot air or some other suitable means, and once free of moisture, filled with a protective fluid such as light oil or kerosene. Accordingly, at time of installation, the pump will have to be completely dismantled and thoroughly cleaned.

PLANNING THE PUMP LOCATION. You probably have spent considerable time planning where your pump will be located. However you may have overlooked some factor which may affect pump operation or efficiency.

Your circulator pump has been designed for simple installation. The pump can be mounted with the suction and discharge nozzles in any position, as long as the motor remains in a horizontal plane with the oil cups up.

Wherever possible the pump should be located in a clean, open area, where it is easily accessible for inspection, lubrication and repair. Pumps installed in dark, dirty areas or in cramped locations are often neglected which can result in premature failure of both the pump and the driver.

Protect your pump against the possibility of flooding. Although water will not seriously damage the pump, the drive motor can be damaged.

The pump should be located in an area where moisture either from leakage through the packing or from condensation can be adequately drained off. Moisture dripping onto exposed metal or wood can cause rapid deterioration of the area. Also, wet floors produce safety hazards.

Adequate provisions should be made for electrical wiring to the pump motor. A switch and overload protection should be installed near the pump unless it is impractical. The electrical conduit should be positioned in such a way as to preclude the possibility of moisture entering the conduit or the motor and causing short circuits.

LEVELING THE PUMP. Circulator pumps are normally installed in line, that is suspended between the suction and discharge piping. Therefore it is necessary to have the suction and discharge piping level when the pump is installed. To level the pump, simply assemble the pump to either the suction or the discharge piping, and with a spirit level on the suction or discharge flange, level the pump in the vertical plane. This will automatically level the pump in the horizontal plane since the suction and discharge flanges are machined at right angles to the motor horizontal center line.

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AURORA, ILLINOIS

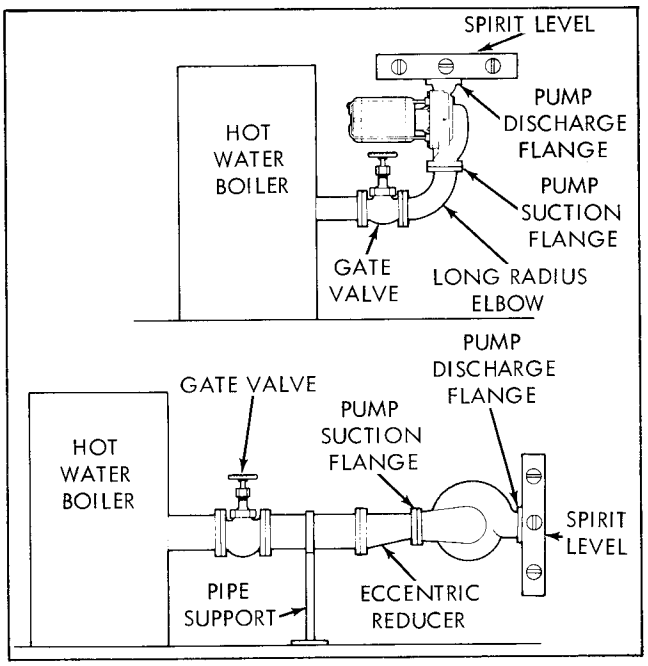



FIGURE 2. LEVELING THE PUMP

PIPING. Your pump unit is now ready to be piped. The piping practices you follow will directly affect the efficiency and power consumption of your pump. Pay particular attention to the seemingly insignificant details involved in piping your pump for they make the difference between a good and bad installation.

SUPPORTING THE PIPE. Both the suction and the discharge piping should be independently supported near the pump. Liberal use of pipe hangers and support blocks will prevent excessive strain on the pump casing and on the pipe joints.

SUCTION PIPING. The suction piping should be short, but no less than ten pipe diameters in length, and direct with as few elbows and fittings as possible to keep head loss, from friction, at a minimum.

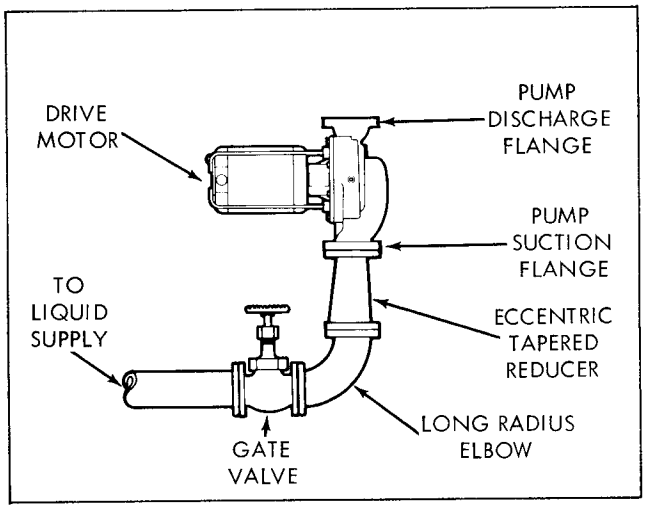



FIGURE 3. SUCTION PIPING FOR A CIRCULATOR PUMP

A horizontal suction line should have a gradual rise to the pump, and pass under any interfering piping.

PIPE. The suction pipe diameter should be at least the same diameter as the suction nozzle on the pump, and preferably larger. Use of a smaller diameter pipe will result in loss of head due to friction. All joints must be tight to maintain prime on the pump.

ELBOWS. Long radius elbows should be used in place of standard elbows wherever possible, because of their superior flow characteristics. For instance, head loss in a standard four inch elbow is equivalent to the head loss in a piece of pipe 11 feet long, while the head loss in a long radius elbow is approximately half as much. Elbows should not be used at the suction nozzle, but if it is unavoidable, they should be installed in a vertical position. Elbows installed in any position at the suction nozzle have a tendency to distribute the liquid unevenly in the impeller chamber, causing a reduction in capacity, and creating an undesirable thrust condition.

REDUCERS. Eccentric reducers should be installed directly at the suction nozzle, with the taper at the bottom to prevent air pockets from forming. Straight taper reducers should never be used in a horizontal suction line because of the air pocket that is formed at the leg of the reducer and the pipe.

DISCHARGE PIPE. Discharge piping should also be short and direct as possible, with few elbows and fittings, to reduce head loss from friction.

PIPE. The discharge pipe diameter should be the same as, or larger than, the discharge nozzle diameter. The size of discharge pipe to be used is dependent on its application.

The recommended pipe diameter can be obtained from your nearest Aurora Pump Sales Office.

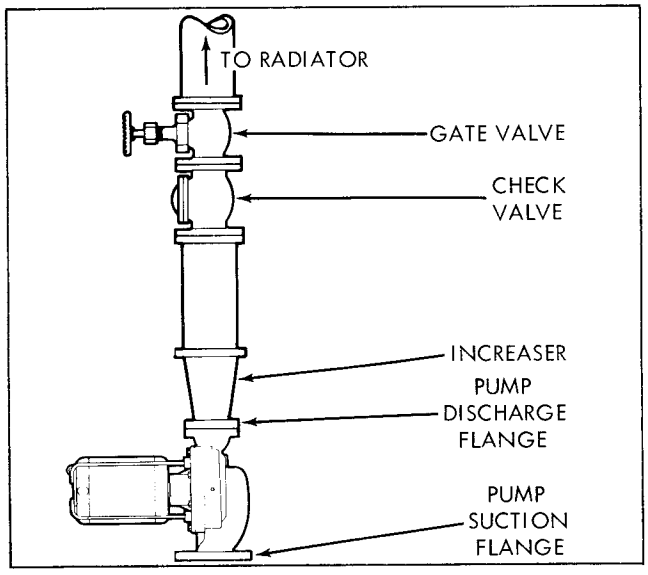



FIGURE 4. DISCHARGE PIPING FOR A CIRCULATOR PUMP

ELBOWS. Long radius elbows should be used in the discharge piping as well as in the suction piping to prevent excessive head loss due to friction.

Whenever possible, elbows should not be installed directly at the discharge nozzle as the turbulence created by the elbow will affect pressure gauge readings.

REDUCERS AND INCREASERS. An increaser should be installed at the discharge nozzle if larger diameter discharge piping is used. Straight taper increasers and/or reducers are satisfactory in discharge applications.

EXPANSION JOINTS. Expansion joints are used primarily to prevent the transmission of piping strain, caused by thermal expansion and contraction, piping misalignment, pressure changes, or other causes, to the pump casing. They also are used to suppress any noise that may be transmitted through the piping.

It is recommended that the flexible metal type of expansion joint be used because rubber expansion joints, while costing less, have a tendency to deteriorate, making frequent replacement necessary.

If an expansion joint must be used, an anchor or restraining device should be installed between the joint and the pump to prevent objectional forces from being transmitted to the pump. If an anchor is not installed at this point, a force equal to the area of the expansion joint times the pressure in the pipe is developed and transmitted to the pump. This force may exceed the allowable flange loading and could result in damage to the pump or piping.

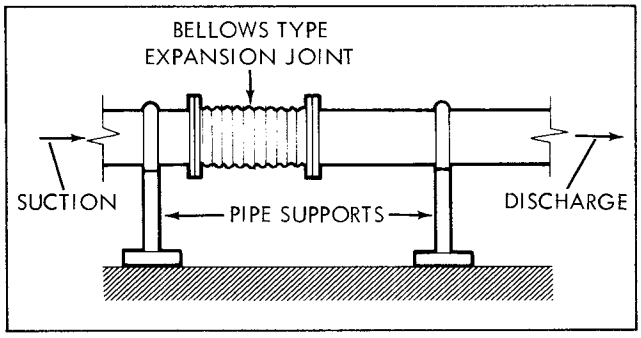



FIGURE 5. TYPICAL EXPANSION JOINT

PIPE ALIGNMENT. Proper piping alignment is essential before connection is made. Piping alignment should never be achieved by force, this could produce strain on the piping and the pump casing. Proper supports should be installed for the piping to keep its weight off the pump casing.

When flange bolts are used, line up the piping first, then loosely install flange bolts. Check the piping alignment, and tighten flange bolts until all bolts are tightened securely.

AIR IN PIPING. One of the most common conditions affecting pump efficiency is the formation of air pockets in the suction line. The air pockets are a

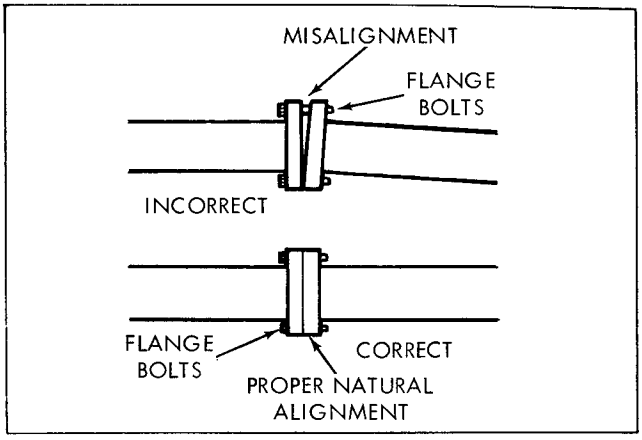



FIGURE 6. PIPE ALIGNMENT

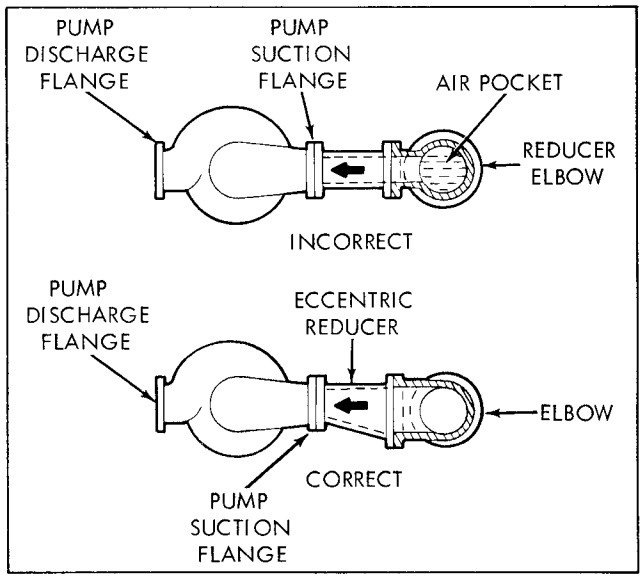



FIGURE 7. CORRECT AND INCORRECT INSTALLATION OF ELBOWS AND REDUCERS

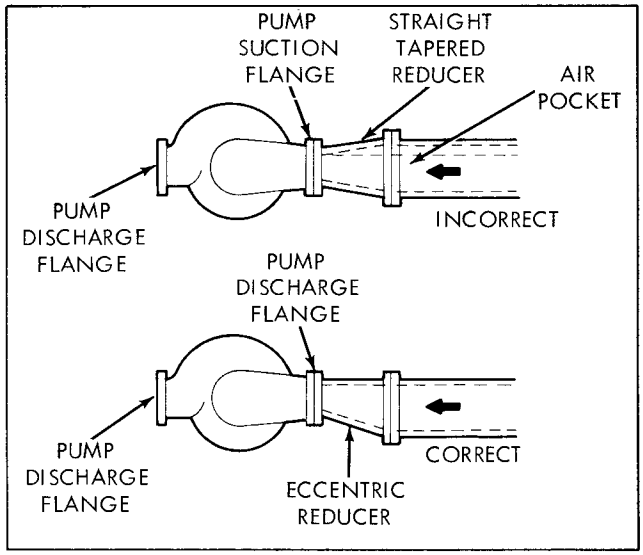



FIGURE 8. CORRECT AND INCORRECT TYPES OF REDUCERS

result of high points and improper installation of elbows, reducers, and valves in the suction piping.

For suction lift applications, lantern rings are required to prevent air from leaking into the pump, through the stuffing box, or at the joints.

The pump seals or packings depend on the liquid being pumped for lubrication. Excessive air can prevent proper lubrication with resultant damage to them.

VALVES. A circulator pump is normally installed as part of a closed system. As a result, once the pump has been primed a flooded suction condition exists.

SUCTION LIFT. A gate valve should be installed in the suction piping to enable shutting off the liquid to the pump for inspection and maintenance. The gate valve in the suction line should be installed with the stem in a horizontal or downward position to prevent formation of an air pocket at the top of the valve.

DISCHARGE VALVES. The discharge piping should include both a check valve and a gate valve. The check valve should be located between the gate valve and the pump. The check valve protects against a reverse flow of liquid if the driver fails. The gate valve is used as a throttling valve to control pump volume, and to shut down the pump for inspection and maintenance.

AIR VENT VALVE. Vent valves are installed at the high points in the pump casing to allow air or vapor to excape. These valves are used to release trapped air from the pump casing during priming and when pump becomes air bound.

FLOODED SUCTION PRIMING. This method of priming a pump is relatively simple. The liquid source is located above the pump, and all that is necessary to prime the pump is to open the air vent valve, or plug in the pump casing, and to crack the gate valve in the suction line. The suction line and pump should be filled slowly until a steady stream of liquid is observed flowing from the air vent. After your pump is operating, it is recommended that the air vent valve or plug be opened again to insure that all air has been expelled from the pump casing.

On suction lift applications, it is necessary to completely fill the suction piping and the pump casing with the liquid to be pumped. This can be accomplished by removing the air vent valve or plug in the pump casing, and inserting a pipe nipple in the orifice, with an appropriate increaser to accommodate a hose connection. A priming line can also be inserted in a discharge piping between the check valve and the pump or the priming can be done with a bucket and funnel. The important thing is to completely fill the suction pipe and pump casing with liquid.

When the pump is started, the vacuum created by pumping the priming liquid, combined with atmospheric pressure in the liquid well, forces liquid into the suction piping, thus maintaining a constant flow of liquid through the pump.

ELECTRICAL WIRING. Normally, your pump will be supplied with an attached drive motor. The motor should be wired in accordance with the wiring diagram found on the motor name plate. Be sure the voltage, frequency, and phase of your power supply corresponds with the name plate data. It is advisable to provide a separate switch and overload protection for your pump motor to protect against power failure in some other area. Conversely, if the pump motor develops electrical problems, it will be isolated from other equipment.

PRESTARTING INSTRUCTION. Before starting the pump, check the direction of rotation. Make sure that the rotation is the same as the arrow on the casing, or as otherwise indicated. This can be done by momentarily connecting the electrical leads to the pump motor and watching the motor shaft.

**CAUTION**

Do not operate the pump without liquid. Pump seals and packings depend on the liquid being pumped for lubrication.

Be sure the pump is primed and that no air exists in the suction pipe and pump casing.

Make sure the suction piping gate valve is open. The gate valve in the discharge piping should be closed, as a centrifugal pump operating against a closed valve consumes less power than it does when the valve is open. When the motor has reached operating speed, the discharge gate valve should be opened.

# INSTRUCTION MANUAL
## REPAIR
## MODEL 326A

6

APPLICATIONS:
The 326A Series is a superior commercial in-line pump based on the Aurora Pump 320 series which has been manufactured and field tested under the severest demands of high temperature condensate service and boiler feed applications for over 45 years. Pumping applications for the 326A Series include: hot or chilled water circulation, pressure booster systems, and cooling towers for office buildings, hotels, hospitals, universities and warehouses.

Operational Limits.
Maximum Operating Pressure: 175 psi
Maximum Operating Temperature: 225°F (107°C)

ATTENTION: SAFETY WARNINGS:
Read and understand all warnings before installation or servicing pump.

ELECTRICAL SAFETY:

**⚠ Warning:** Electrical Shock Hazard

All electrical connections are to be made by a qualified electrician in accordance with all codes and ordinances. Failure to follow these instructions could result in serious personal injury, death or property damage.

**⚠ Warning:** Electrical Overload Hazard

Insure all motors have properly sized overload protection. Failure to follow these instructions could result in serious personal injury, death or property damage.

**⚠ Warning:** Sudden Start-Up Hazard

Disconnect and lockout power source before servicing. Failure to follow these instructions could result in serious personal injury, death or property damage.

HIGH TEMPERATURE SAFETY:

**⚠ Warning:** Hot Surface Hazard

If pumping hot water insure guards or proper insulation is installed to protect against skin contact to hot piping or pump components. Failure to follow these instructions could result in serious personal injury, death or property damage.

**⚠ Warning:** Spraying Water Hazard

When servicing pump replace all gaskets and seals. Do not re-use old gaskets or seals. Failure to follow these instructions could result in serious personal injury, death or property damage.

HIGH PRESSURE SAFETY:

**⚠ Warning:** High Pressure Hazard

The pump is rated at a maximum of 175 psi(175psi at 150°F). Do not exceed this pressure. Install properly sized pressure relief valves in system. Failure to follow these instructions could result in serious personal injury, death or property damage.

**⚠ Warning:** Expansion Hazard

Water expands when heated. Install properly sized thermal expansion tanks and relief valves. Failure to follow these instructions could result in serious personal injury, death or property damage.



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## INSTALLATION:

The 326A pump can be installed either horizontally or vertically. Do not install with the motor below the pump. Install isolating valves on each side of pump so pump maintenance can be performed with out draining the system. Special mounting requirements may be required if the pump is to be mounted near a noise or vibration sensitive area.

A minimum length of straight pipe is required on the suction side of the pump. Five times the pipe diameter is sufficient to allow a smooth entry of water into the pump.

Suction and discharge piping must be in line. Do not use pump casing to force the alignment of the piping. Properly support the piping to provide a rigid support for the pump. Tighten pump flanges evenly to prevent flange cocking and liquid leakage. The flange cap screw torque specification is 60 foot-pounds. Do not reuse old gaskets.

## ELECTRICAL CONNECTIONS:

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Disconnect and lockout power source before servicing. Failure to follow these instructions could result in serious personal injury, death or property damage.

## START UP:

The pump must be filled with water before start up or the mechanical seal will not be lubricated and will fail. Loosen vent plug on pump casing to insure all air is vented from casing and the casing is filled with water.

**⚠ Warning:** Hot Surface Hazard

If pumping hot water, insure guards or proper insulation is installed to protect against skin contact to hot piping or pump components. Failure to follow these instructions could result in serious personal injury, death or property damage

**⚠ Warning:** Spraying Water Hazard

When servicing pump replace all gaskets and seals. Do not re-use old gaskets or seals. Failure to follow these instructions could result in serious personal injury, death or property damage.

## INSTALLATION:

**Read and understand all safety warnings at the beginning of the manual before beginning installation or any repair work.**

The Aurora Model 326A pump should be installed in an area where sufficient room is available for inspection and repair. We recommend that shut off valves be installed on both the suction and the discharge side of the pump to facilitate repair/replacement of the pump. The pump should not be located near any sound sensitive area and special precautions may be required to avoid sound and/or vibration transmission. Consult a vibration/sound specialist if applicable.

Insure that proper hydronic accessories such as pressure relief valves, thermal expansion tanks and flow/pressure control devices are installed in the system. Consult the responsible party for your system to insure these devises are installed and of the proper size.

The 326A pump can be installed in either vertical or horizontal mounting configurations. Under no circumstances should the pump be installed with the motor below the pump body. Insure that at least 5 diameters of straight pipe is present between the suction flange and the first pipe fitting. This allows a smooth and quite entrance of the pumped liquid into the pump.

Avoid all situations where pipe stain may be transferred to the pump casing. Expansion fittings and pipe hangers located close to the pump may be required. Do not force the piping to match the pump suction and discharge flanges. Re-cut the piping to avoid this situation. When tightening the suction and discharge flanges tighten each of the two mounting bolts equally to allow the flange faces to match squarely and the gaskets to seal correctly.

All electrical connections are to be completed by a qualified electrician. Insure properly sized overload protection is installed.

**OPERATING:**
Insure the system is filled with water and vented prior to pump start up. The pump rotation is clockwise when viewed from the back of the motor. Do not run the pump dry or the mechanical seal will be destroyed.

**MAINTENANCE AND SERVICE TO THE PUMP:**
The 326A pump requires no regular service. The ball bearings in the motor are permanently lubricated and require no re-greasing. A periodic inspection must be performed looking for seal leaks indicating the mechanical seal maybe worn out and any unusual noise or vibration that will indicate other pump components require service/repair.

**PUMP DISASSEMBLY:**
**READ AND UNDERSTAND ALL SAFETY WARNINGS AT THE BEGINNING OF THE MANUAL BEFORE BEGINNING INSTALLATION OR ANY REPAIR WORK.**

Refer to the exploded pump diagram for item numbers.

1. Insure the electrical power is locked out, the system pressure has been lowered to 0 psi and temperature of the unit is at a safe level.

**⚠ Warning:** Sudden Start-Up Hazard

Disconnect and lockout power source before servicing. Failure to follow these instructions could result in serious personal injury, death or property damage.

**⚠ Warning:** Hot Surface Hazard

If pumping hot water insure guards or proper insulation is installed to protect against skin contact to hot piping or pump components. Failure to follow these instructions could result in serious personal injury, death or property damage.

**⚠ Warning:** High Pressure Hazard

The pump is rated at a maximum of 175 psi(175psi at 150°F). Do not exceed this pressure. Install properly sized pressure relief valves in system. Failure to follow these instructions could result in serious personal injury, death or property damage.

**⚠ Warning:** Spraying Water Hazard

When servicing pump replace all gaskets and seals. Do not re-use old gaskets or seals. Failure to follow these instructions could result in serious personal injury, death or property damage.

2. Isolate the pump from the system by closing the valves that should be located on the suction and discharge side of the pump. Loosen one of the pipe plugs (#4) and drain the pump.

3. Remove the flange nuts and bolts ( #21 & #20) and place the pump on a suitable work surface for pump disassembly.

4. Loosen the tube connector (#25).

5. Remove the four (4) casing bolts (#3) and separate the casing (#5) from the bracket (#16).

6. Remove the impeller bolt (#6) and washer (#7). The impeller (#8) can then be pulled straight off the motor shaft.

7. Remove the four (4) bolts (#14) holding the bracket (#16) to the motor and pull the bracket (along with the mechanical seal (#10) off the motor shaft.

8. The stationary seat of the mechanical seal (#10) can then be removed from the bracket (#16).

9. Always replace all gaskets (#19 & #11) and the mechanical seal (#10) when pump disassembly is required.

**PUMP ASSEMBLY:**
1. The pump can be re-assembled in the reverse order of its disassembly.

2. The mechanical seal stationary seat should be mounted in the bracket (#16) before the bracket is mounted to the motor. The rotating components of the mechanical seal should be lubricated with clean soapy solution to ease sliding the seal onto the motor shaft.

3. Always check for pump and system leaks prior to pump start up.

**READ THE INSTALLATION AND OPERATING SECTION PRIOR TO PUMP START UP.**

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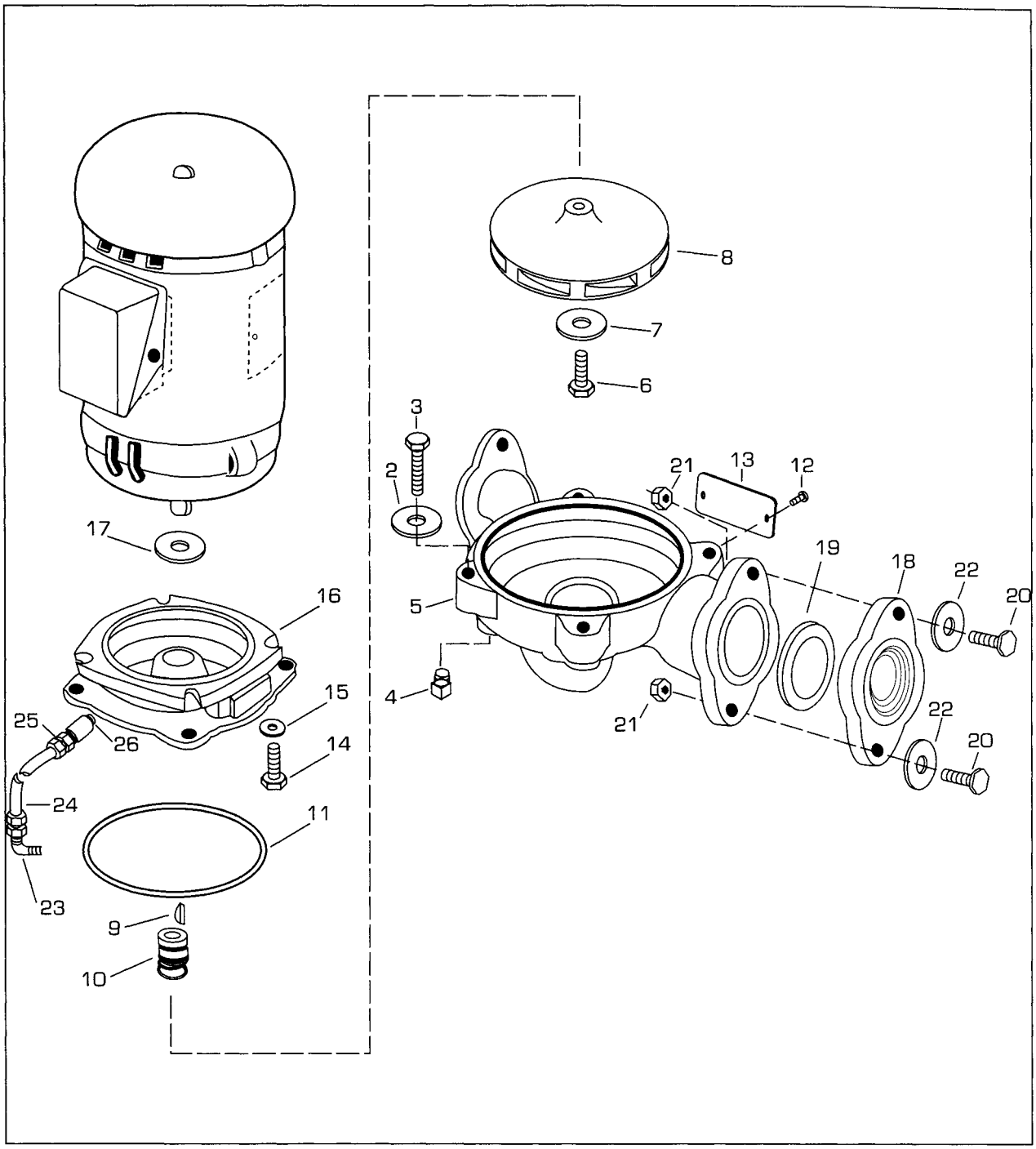



Figure 2. Model 326A Exploded View



**NOTE:**
Aurora Pump reserves the right to make revisions to its products and their specifications, and to this bulletin and related information without notice

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# INSTRUCTION MANUAL
## REPAIR
## MODEL 326A

6

APPLICATIONS:
The 326A Series is a superior commercial in-line pump based on the Aurora Pump 320 series which has been manufactured and field tested under the severest demands of high temperature condensate service and boiler feed applications for over 45 years. Pumping applications for the 326A Series include: hot or chilled water circulation, pressure booster systems, and cooling towers for office buildings, hotels, hospitals, universities and warehouses.

Operational Limits.
Maximum Operating Pressure: 175 psi
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ATTENTION: SAFETY WARNINGS:
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ELECTRICAL SAFETY:

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All electrical connections are to be made by a qualified electrician in accordance with all codes and ordinances. Failure to follow these instructions could result in serious personal injury, death or property damage.

**⚠ Warning:** Electrical Overload Hazard

Insure all motors have properly sized overload protection. Failure to follow these instructions could result in serious personal injury, death or property damage.

**⚠ Warning:** Sudden Start-Up Hazard

Disconnect and lockout power source before servicing. Failure to follow these instructions could result in serious personal injury, death or property damage.

HIGH TEMPERATURE SAFETY:

**⚠ Warning:** Hot Surface Hazard

If pumping hot water insure guards or proper insulation is installed to protect against skin contact to hot piping or pump components. Failure to follow these instructions could result in serious personal injury, death or property damage.

**⚠ Warning:** Spraying Water Hazard

When servicing pump replace all gaskets and seals. Do not re-use old gaskets or seals. Failure to follow these instructions could result in serious personal injury, death or property damage.

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## INSTALLATION:

The 326A pump can be installed either horizontally or vertically. Do not install with the motor below the pump. Install isolating valves on each side of pump so pump maintenance can be performed with out draining the system. Special mounting requirements may be required if the pump is to be mounted near a noise or vibration sensitive area.

A minimum length of straight pipe is required on the suction side of the pump. Five times the pipe diameter is sufficient to allow a smooth entry of water into the pump.

Suction and discharge piping must be in line. Do not use pump casing to force the alignment of the piping. Properly support the piping to provide a rigid support for the pump. Tighten pump flanges evenly to prevent flange cocking and liquid leakage. The flange cap screw torque specification is 60 foot-pounds. Do not reuse old gaskets.

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**MAINTENANCE AND SERVICE TO THE PUMP:**
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3. Remove the flange nuts and bolts ( #21 & #20) and place the pump on a suitable work surface for pump disassembly.

4. Loosen the tube connector (#25).

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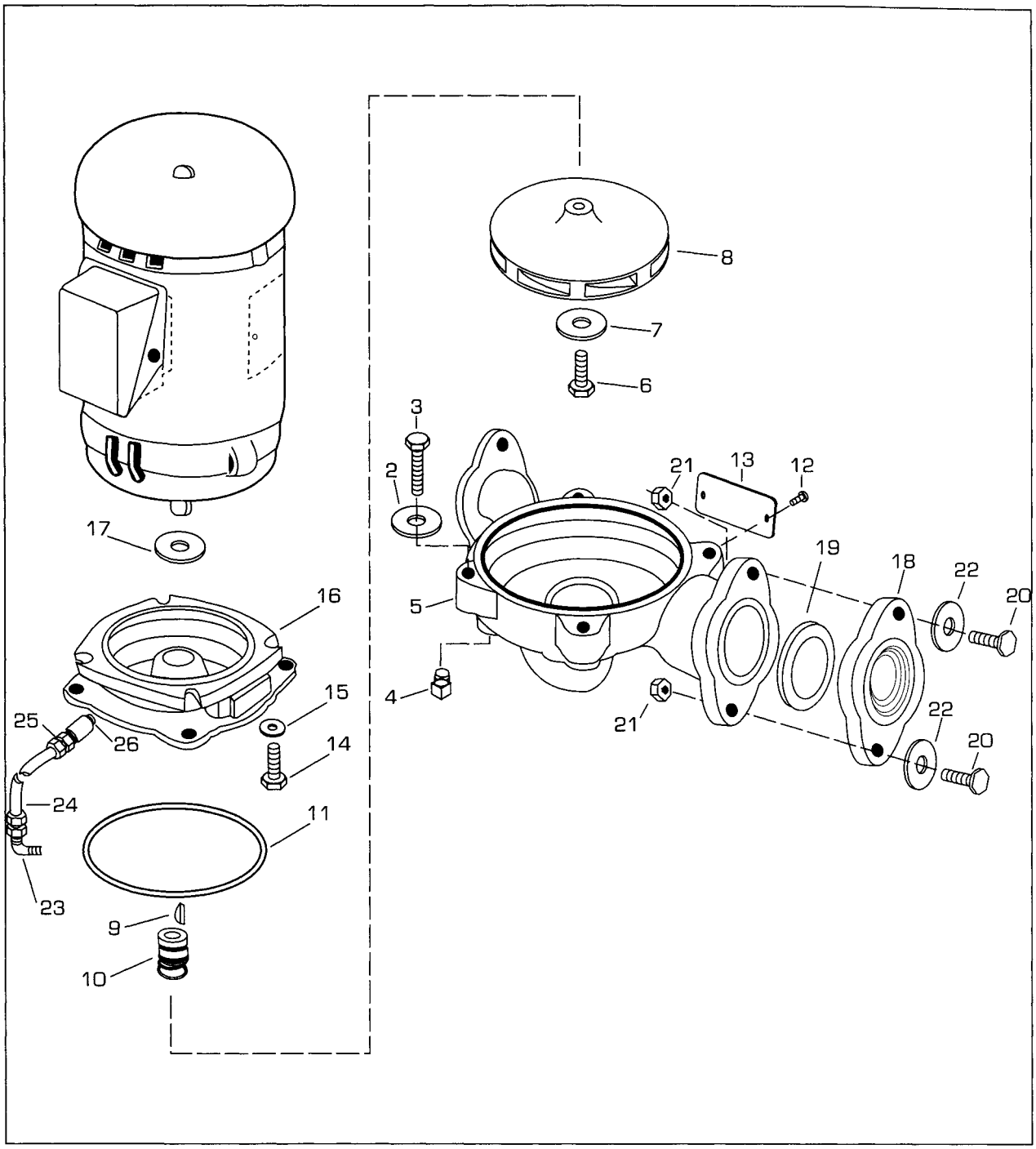



Figure 2. Model 326A Exploded View



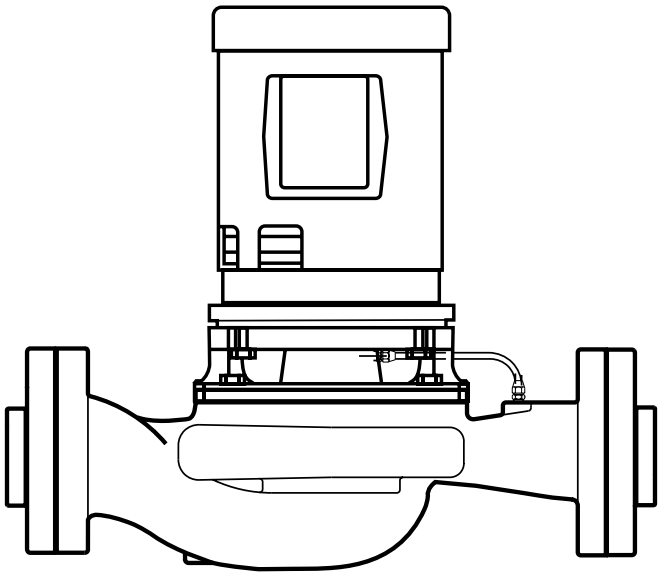
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Pentair Pump Group

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SUPERSEDES 326AP PAGE 1
DATED MARCH 1997

# 326A SERIES
# REPAIR PARTS INDEX

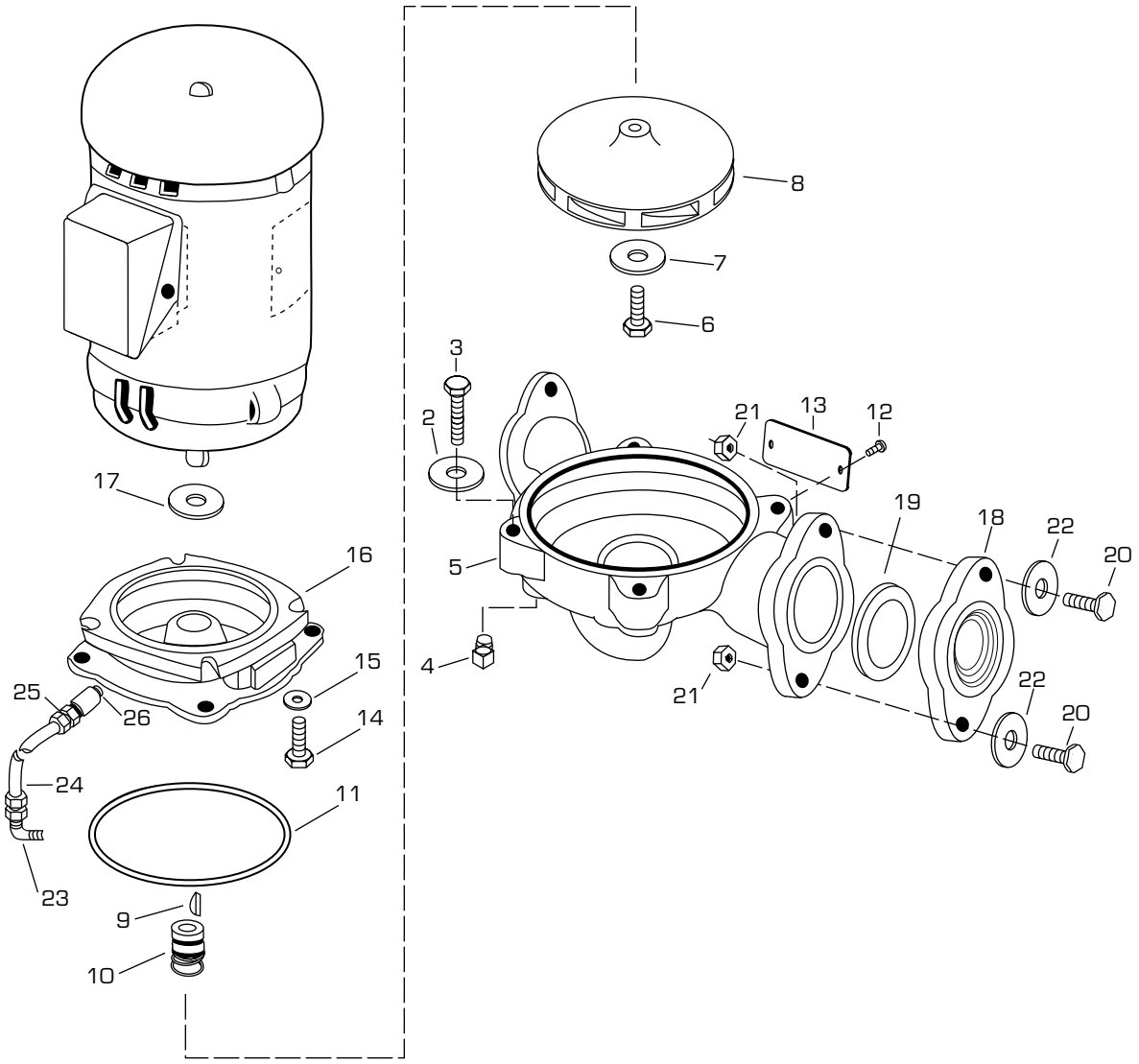


READ AND UNDERSTAND THE PUMP AND MOTOR INSTRUCTIONS BEFORE ATTEMPTING TO INSTALL, DISASSEMBLE OR REPAIR THE PUMP

AURORA®
Pentair Pump Group

# 326A SERIES

## MODEL 326A
## PIECE NUMBERS



# MODEL 326A
# PARTS LIST

| PC. NO. | DESCRIPTION | QTY | PART NO. | MATERIAL B.F. | MATERIAL A.B. | MATERIAL A.I. |
|---|---|---|---|---|---|---|
| 1 | INSTRUCTION MANUAL | 1 | 842-0586 | 999 | 999 | 999 |
| 2 | WASHER 6" PUMP | 4 | 908-0112 | 080 | 190 | 080 |
| | WASHER 7" PUMP | 4 | 908-0112 | 080 | 190 | 080 |
| 3 | CAPSCREW 6" PUMP | 4 | 168-0380 | 082 | 190 | 082 |
| | CAPSCREW 7" PUMP | 4 | 168-0488 | 082 | 190 | 082 |
| 4 | PLUG | 4 | 600-0002 | 087 | 190 | 087 |
| 5 | CASING | | | | | |
| | MODEL "B", 1-1/4x1-1/4x6 | 1 | 180-2568 | 010 | 208 | 010 |
| | MODEL "C", 1-1/2x1-1/2x6 | 1 | 180-2569 | 010 | 208 | 010 |
| | MODEL "D", 2x2x6 | 1 | 180-2570 | 010 | 208 | 010 |
| | MODEL "F,G,H", 1-1/2x1-1/2x7 | 1 | 180-2571 | 010 | 208 | 010 |
| | MODEL "I,J,K", 2x2x7 | 1 | 180-2572 | 010 | 208 | 010 |
| 6 | CAPSCREW | 1 | 168-0255 | 104 | 104 | 104 |
| 7 | WASHER | 1 | 908-0599 | 104 | 104 | 104 |
| 8 | IMPELLER, STANDARD TRIM | | | | | |
| | MODEL "B", 1-1/4x1-1/4x6 | 1 | 443-2966 | 225 | 225 | 010 |
| | MODEL "C", 1-1/2x1-1/2x6 | 1 | 443-2967 | 225 | 225 | 010 |
| | MODEL "D", 2x2x6 | 1 | 443-2968 | 225 | 225 | 010 |
| | MODEL "F", 1-1/2x1-1/2x7 | 1 | 443-2969 | 225 | 225 | 010 |
| | MODEL "G", 1-1/2x1-1/2x7 | 1 | 443-2970 | 225 | 225 | 010 |
| | MODEL "H", 1-1/2x1-1/2x7 | 1 | 443-2971 | 225 | 225 | 010 |
| | MODEL "I", 2x2x7 | 1 | 443-2972 | 225 | 225 | 010 |
| | MODEL "J", 2x2x7 | 1 | 443-2973 | 225 | 225 | 010 |
| | MODEL "K", 2x2x7 | 1 | 443-2974 | 225 | 225 | 010 |
| | IMPELLER, SPECIAL TRIM | | | | | |
| | 1-1/4x1-1/4x6 | 1 | 443-1789 | 225 | 225 | 010 |
| | 1-1/2x1-1/2x6 | 1 | 443-1792 | 225 | 225 | 010 |
| | 2x2x6 | 1 | 443-1795 | 225 | 225 | 010 |
| | 1-1/2x1-1/2x7 | 1 | 443-1792 | 225 | 225 | 010 |
| | 2x2x7 | 1 | 443-1795 | 225 | 225 | 010 |
| 9 | KEY | 1 | 472-0105 | 100 | 100 | 100 |
| 10 | SEAL | 1 | 712-1004 | 749 | 764 | 749 |
| 11 | GASKET - 6" PUMPS | 1 | 364-0446 | 457 | 457 | 457 |
| | GASKET - 7" PUMPS | 1 | 364-0452 | 457 | 457 | 457 |
| 12 | DRIVE SCREW | 2 | 708-0013 | 365 | 365 | 365 |
| 13 | NAMEPLATE | 1 | 532-0045 | 114 | 114 | 114 |
| 14 | CAPSCREW | 4 | 168-0380 | 082 | 190 | 082 |
| 15 | WASHER | 4 | 908-0112 | 080 | 190 | 080 |

| PC. NO. | DESCRIPTION | QTY | PART NO. | MATERIAL B.F. | MATERIAL A.B. | MATERIAL A.I. |
|---|---|---|---|---|---|---|
| 16 | BRACKET, 6" PUMP | 1 | 116-0511 | 010 | 208 | 010 |
| | BRACKET, 7" PUMP | 1 | 116-0512 | 010 | 208 | 010 |
| 17 | SLINGER | 1 | 764-1002 | 478 | 478 | 478 |
| 18 | FLANGE | | | | | |
| | 1-1/4" FLANGE, 1-1/4" NPT | 2 | 600-5305 | 010 | 208 | 010 |
| | 1-1/4" FLANGE, 1-1/2" NPT | 2 | 600-5306 | 010 | 208 | 010 |
| | 1-1/2" FLANGE, 1-1/2" NPT | 2 | 600-5307 | 010 | 208 | 010 |
| | 2" FLANGE, 2" NPT | 2 | 600-5308 | 010 | 208 | 010 |
| 19 | FLANGE SOCKET | | | | | |
| | 1-1/4" FLANGE | 2 | 364-0587 | 457 | 457 | 457 |
| | 1-1/2" FLANGE | 2 | 364-0588 | 457 | 457 | 457 |
| | 2" FLANGE | 2 | 364-0589 | 457 | 457 | 457 |
| 20 | FLANGE BOLTS | | | | | |
| | 1-1/4" & 1-1/2" FLANGES | 4 | 168-0454 | 082 | 190 | 080 |
| | 2" FLANGES | 8 | 168-0496 | 082 | 190 | 080 |
| 21 | FLANGE NUTS | | | | | |
| | 1-1/4" & 1-1/2" FLANGES | 4 | 544-0111 | 080 | 190 | 080 |
| | 2" FLANGES | 8 | 544-0113 | 080 | 190 | 080 |
| 22 | FLANGE WASHERS | | | | | |
| | 1-1/4" & 1-1/2" FLANGES | 4 | 908-0069 | 080 | 190 | 080 |
| | 2" FLANGES | 8 | 908-0114 | 080 | 190 | 080 |
| 23 | TUBE CONNECTOR | 1 | 868-3660 | 190 | 190 | 190 |
| 24 | TUBING | – | 872-0124 | 175 | 175 | 104 |
| 25 | TUBE CONNECTOR | 1 | 868-3581 | 190 | 190 | 190 |
| 26 | NIPPLE, 6" PUMP | | 600-1156 | 387 | 104 | 387 |
| | NIPPLE, 7" PUMP | | 600-1158 | 387 | 104 | 387 |
| 27 | FLANGE GASKET KIT CONTAINS SUFFICIENT ITEMS 18, 19, 20, 21, 22 FOR ONE PUMP | | | | | |
| | 1-1/4" FLANGE, 1-1/4" NPT | 1 | 476-0783 | 644 | 643 | 644 |
| | 1-1/4" FLANGE, 1-1/2" NPT | 1 | 476-0784 | 644 | 643 | 644 |
| | 1-1/2" FLANGE, 1-1/2" NPT | 1 | 476-0785 | 644 | 643 | 644 |
| | 2" FLANGE, 2" NPT | 1 | 476-0786 | 644 | 643 | 644 |

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