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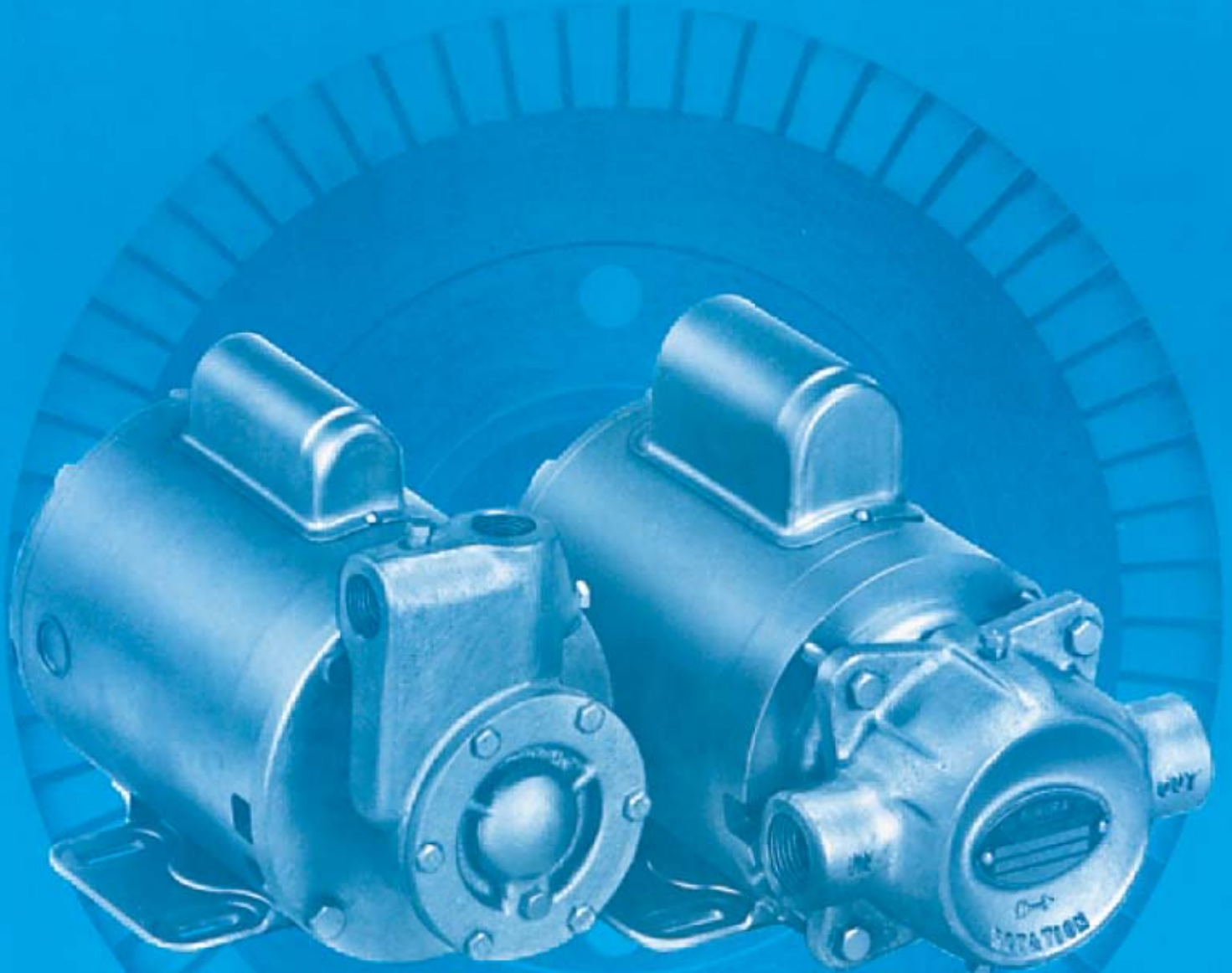
AURORA PUMP A member of PENTAIR PUMP GROUP

**AURORA PUMP**

BULLETIN 130/REV. H

**130 SERIES  
SINGLE STAGE  
TURBINE TYPE  
PUMPS**

CAPACITIES TO 50 G.P.M.  
HEADS TO 700 FEET  
TEMPERATURES TO 212°F



**MODEL 133**

**MODEL 134-135**

**motralec**

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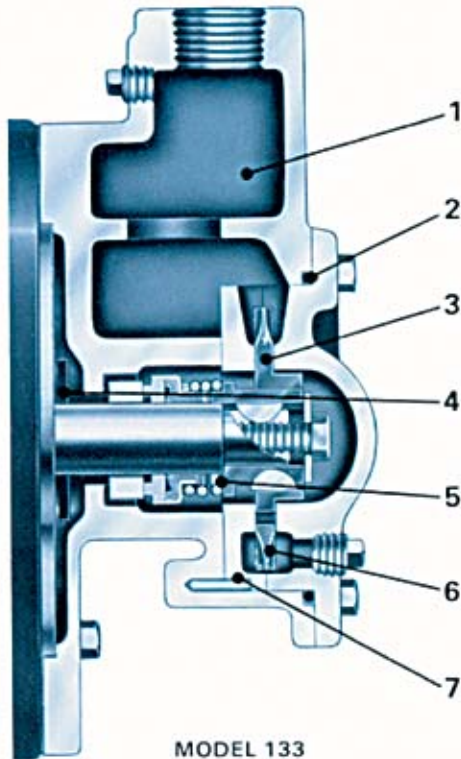
# INTRODUCTION AURORA TURBINE PUMPS

AURORA PUMP, a pioneer in turbine pump design, has long been the leader in the turbine pump industry. AURORA's leadership consistently offers the ultimate in turbine pump design. The regenerative turbine pump offers many advantages in the

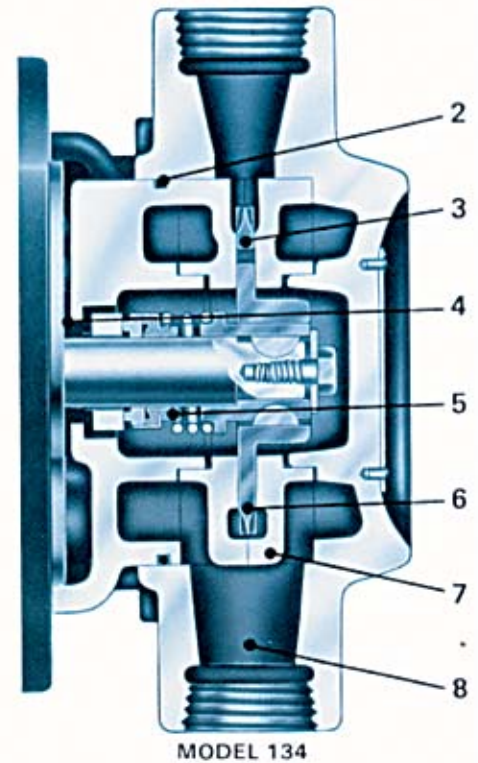
area of low flow and moderate to high pressure. A turbine pump is efficient under low flow—high pressure conditions and delivers a steady stream of liquid free from pressure pulsations. There is no metal to metal contact existing within the operating

parts of a turbine pump channel. Turbine pumps have solved many liquid handling problems. Because of this versatility, thousands of turbine pump units have been in use for over 50 years. Aurora offers an efficient, economical and proven pump.

## PUMP FEATURES



MODEL 133



MODEL 134

### THEY'RE ECONOMICAL

End-mounted, close-coupled design with single mechanical seal and choice of 3500 RPM or 1750 RPM operating speeds means you get greater capacity and pressure dollar for dollar. In fact, these close-coupled pumps are so economical, it's practical to have a spare unit ready for immediate replacement when maintenance is required.

### THEY CAN'T "VAPOR LOCK"

Turbine impeller handles gases and vapors (up to 20%) along with the liquid . . . eliminating any possibility of vapor lock within the pump.

### THEY'RE VERSATILE

Steep head curves with near-constant capacity over wide head variations means you can specify 130 Series Pumps for an extremely wide

range of operating conditions. And, if it's necessary, Model 134 and 135 pumps can be easily field converted to right- or left-hand operation by rotating the casing 180° after removing only 4 mounting bolts. Need a self-priming pump? Specify Model 133 with the self-priming feature. This feature has made Model 133 a popular pump selection. Aurora responds to user's needs.

## QUICK REFERENCE APCO-TURBINE FEATURE SELECTOR

### STANDARD

Bronze fitted construction  
Hydraulically balanced bronze impeller  
300# case working pressure  
416 stainless steel shaft  
Internal sealing water passages  
Removable channel rings  
VIP-TEST— Every pump is hydrostatically tested and given a running check consisting of head and capacity.

### OPTIONAL

All iron, bronze ring, all bronze construction  
Ductile iron or stain. stl. impeller  
316 stainless steel or monel shaft  
Vertical ASA Flanged suction casing (See Bulletin 680, Models 134 and 135 only)  
Bypass with manual shut-off valves  
Bypass with relief valve  
Certified performance test data consisting of head capacity and horsepower readings taken over the full operating range of the pump.



# PRINCIPLE OF OPERATION AND SELECTION CHART

Turbine pumps derive their name from the many buckets machined into the periphery of the rotating impeller. They have long since been recognized for their effectiveness in the areas of low flow, high head application. The turbine pump offers higher heads than centrifugal pumps. Because the head capacity curve is steep in a turbine pump, a greater degree of flexibility is available to the engineer. Turbine pumps having top center line discharge are self-venting and have the ability to handle vapors without vapor lock. This characteristic allows handling of boiling liquids and liquified gases at suction heads slightly over the vapor pressure. The turbine pump also has higher efficiencies at low flows than a centrifugal pump. Turbine pumps utilize close running clearances and are normally utilized on clean liquid applications. Viscous materials up to 500 S.S.U. can be pumped. Turbine pumps are unique in operation. The pumped liquid is directed by the liquid passage so that the liquid circulates in and out of the impeller buckets many times on its way from the pump inlet to the pump outlet. Both centrifugal and shearing action combine to impart additional energy to the liquid each time it passes through the buckets. Heads over 700 feet are successfully developed in a single stage pump. The impeller runs at very close axial clearances with the pump channel rings to minimize recirculation losses. The channel rings provide a circular channel around the blade area of the impeller, from the inlet to the outlet. Liquid entering the channel from the inlet is picked up immediately by the buckets on both sides of the impeller and pumped through the channel (Figure 1) by a shearing action. The flow of the liquid within the impeller buckets is illustrated in Figure 2. This process is repeated over and over, each cycle imparting more energy until the liquid is discharged. This flow is smooth and continuous. Turbine pumps are the most economical solution to general lift applications. Aurora Pump knows how to design and build an economical turbine pump without sacrificing quality or performance. For applications of regenerative turbine pumps manufactured by Aurora, refer to Bulletins 110/120, 150, 210, 280 and 680.

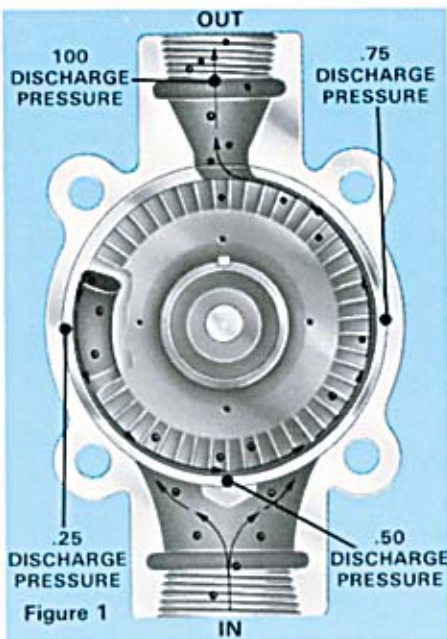


Figure 1

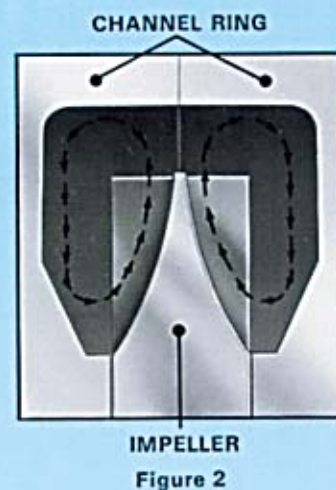


Figure 2

Determine the pump capacity and discharge head. Find the nearest charted head under the Total Dynamic Head listing, select the desired motor speed, and read down to the next larger capacity closest to the calculated requirement. The figures and numbers identify the size of

the pump and the motor horsepower.

Horsepowers shown may not be non-overloading. Check performance factor for actual B.H.P.

Selections are based on cold water with

specific gravity of 1.0... for final selection refer to performance curves.

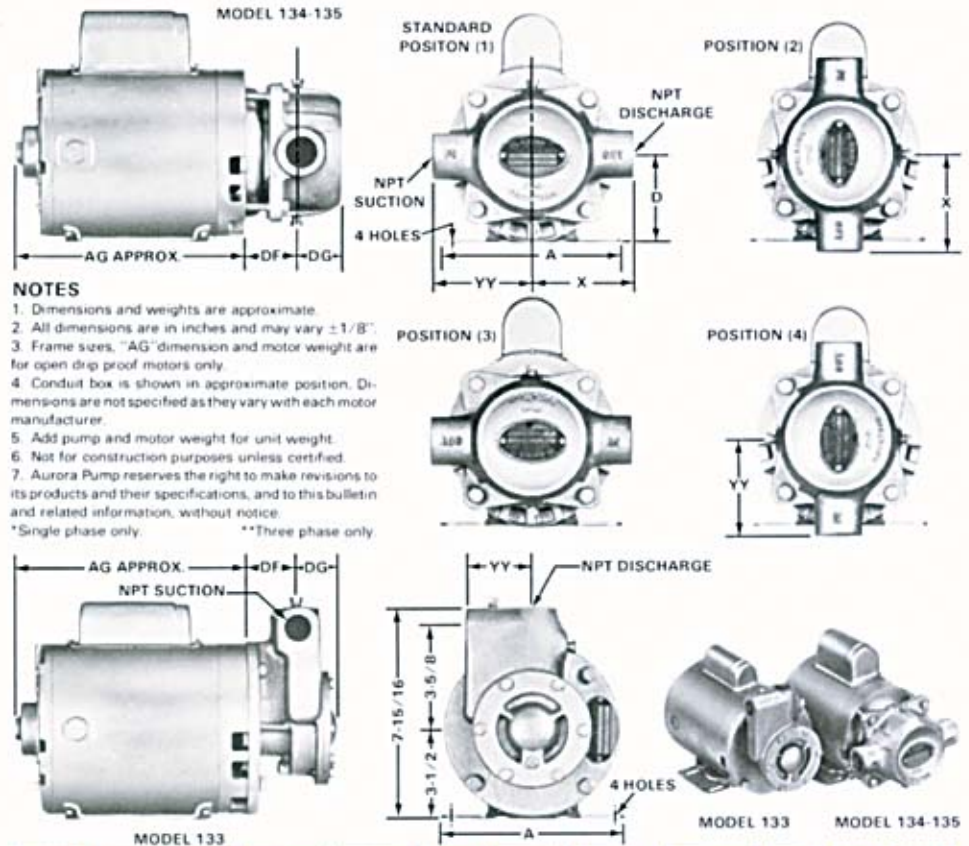
If fluctuation or increase in head is anticipated, the specific pump performance curve should be checked for final selection.

PUMP SIZE	R.P.M.	TOTAL DYNAMIC HEAD IN FEET																						
		10	20	30	40	50	60	70	80	90	100	150	200	250	300	350	400	450	500	550	600	650		
D03	3500	GPM	7.2	6.9	6.6	6.3	5.9	5.6	5.2	4.7	4.3	3.9	2.3	1.0										
		HP	1/3	1/3	1/3	1/3	1/3	1/3	1/3	1/3	1/3	1/3	1/3	1/3	1/3									
E03	3500	GPM	10.8	10.1	9.7	9.2	8.8	8.4	8.0	7.6	7.2	6.9	5.2	3.7	2.1									
		HP	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2									
F03	3500	GPM	12.0	11.5	11.0	10.4	9.9	9.5	9.1	8.6	8.3	7.9	6.1	4.4	2.7									
		HP	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2									
G03	3500	GPM	15.8	15.3	14.7	14.2	13.7	13.2	12.7	12.2	11.7	11.3	9.1	6.9	4.5	2.0								
		HP	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1	1	1/2	2								
B04	1750	GPM	3.8	3.5	3.2	2.8	2.5	2.2	1.8	1.5	1.1	0.7												
		HP	1/3	1/3	1/3	1/3	1/3	1/3	1/3	1/3	1/3	1/3												
3500	GPM	8.5	8.2	7.8	7.6	7.3	7.0	6.8	6.6	6.3	6.1	5.1	4.2	3.3	2.4	1.4								
	HP	1/3	1/3	1/3	1/3	1/3	1/3	1/3	1/3	1/3	1/3	1/2	1/2	1/2	1/2	1/2								
C04	1750	GPM	5.0	4.4	3.9	3.6	3.2	2.9	2.6	2.3	2.0	1.7												
		HP	1/3	1/3	1/3	1/3	1/3	1/3	1/3	1/3	1/3	1/3												
3500	GPM	10.6	10.2	9.9	9.6	9.4	9.1	8.8	8.5	8.3	8.1	6.9	5.8	4.8	3.8	2.8	1.9							
	HP	1/3	1/3	1/3	1/3	1/3	1/3	1/3	1/3	1/3	1/2	1/2	1/2	1/2	1	1	1/2	1/2						
D04	1750	GPM	6.6	6.2	5.7	5.2	4.7	4.2	3.6	3.0	2.4	1.8												
		HP	1/3	1/3	1/3	1/3	1/3	1/3	1/3	1/3	1/3	1/3												
3500	GPM	12.3	12.2	12.1	12.0	11.9	11.8	11.7	11.6	11.5	11.3	10.4	9.0	7.1	5.5	4.0	2.6							
	HP	3/4	3/4	3/4	3/4	3/4	3/4	3/4	3/4	3/4	3/4	1	1	1	1	1	1/2	1/2						
F05	1750	GPM	8.2	7.6	7.1	6.6	6.3	6.0	5.6	5.4	5.1	4.8	3.4	2.0										
		HP	1/3	1/3	1/3	1/3	1/3	1/3	1/3	1/3	1/3	1/2	1/2	1/2	1/2	1/2	1/2	1/2						
3500	GPM	16.5	16.3	16.0	15.7	15.5	15.3	15.0	14.7	14.4	14.2	13.0	11.9	10.8	9.8	9.0	8.0	7.1	6.3	5.5	4.6	3.8		
	HP	3/4	3/4	3/4	3/4	3/4	3/4	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
G05	1750	GPM	12.3	10.7	9.9	9.2	8.4	7.8	7.2	6.6	6.0	5.4	2.6											
		HP	1/3	1/3	1/3	1/3	1/3	1/3	1/3	1/3	1/3	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2
3500	GPM	24.9	24.6	24.1	23.8	23.6	23.0	22.7	22.3	22.0	21.5	20.0	18.2	16.6	15.0	13.5	12.0	10.5	9.0	7.7	6.4	5.1		
	HP	2	2	2	2	2	2	2	2	2	2	3	3	3	3	3	3	3	3	3	3	3	3	
H05	1750	GPM	14.0	13.1	12.4	11.8	11.2	10.7	10.2	9.7	9.2	8.8	6.7	4.7	3.0									
		HP	1/3	1/3	1/3	1/3	1/3	1/3	1/3	1/3	1/3	1/3	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2
3500	GPM	25.0	24.9	24.7	24.5	24.4	24.2	24.1	24.0	23.8	23.7	22.8	21.7	20.5	19.2	17.8	16.0	14.4	12.9	11.3	10.0	8.5		
	HP	1 1/2	1 1/2	1 1/2	1 1/2	1 1/2	1 1/2	1 1/2	1 1/2	1 1/2	1 1/2	2	2	2	2	2	2	2	2	2	2	2	2	
I05	1750	GPM	18.0	17.2	16.5	15.6	15.0	14.2	13.5	12.8	12.2	11.5	8.5	5.7	3.0									
		HP	1/3	1/3	1/3	1/3	1/3	1/3	1/3	1/3	1/3	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2
3500	GPM	31.3	31.2	31.1	31.1	31.0	30.9	30.8	30.7	30.6	30.5	29.8	28.5	26.8	25.0	23.2	21.5	19.8	18.1	16.5	14.9	13.2		
	HP	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	
J05	1750	GPM	24.4	23.7	22.6	21.5	20.3	19.2	18.1	17.0	15.6	14.5	8.4	2.2										
		HP	1 1/2	1 1/2	1 1/2	1 1/2	1 1/2	1 1/2	1 1/2	1 1/2	1 1/2	1 1/2	1	1 1/2	1 1/2	1 1/2	1 1/2	1 1/2	1 1/2	1 1/2	1 1/2	1 1/2	1 1/2	
3500	GPM	38.4	38.3	38.2	38.1	38.1	38.0	38.0	37.9	37.8	37.8	37.2	36.5	35.0	32.8	30.3	27.5	24.5	21.3	18.0	14.5	11.0		
	HP	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	
K05	1750	GPM	30.1	29.0	28.0	26.9	25.8	24.6	23.5	22.2	21.0	19.8	12.7	5.0										
		HP	1/3	1/3	1/3	1/3	1/3	1/3	1/3	1/3	1/3	1/3	1	1	1	1	1	1	1	1	1	1	1	1
3500	GPM	43.7	43.6	43.6	43.5	43.5	43.4	43.4	43.3	43.3	43.2	42.9	42.3	41.7	40.9	39.0	36.0	32.7	29.1	25.7	22.0	18.0		
	HP	7 1/2	7 1/2	7 1/2	7 1/2	7 1/2	7 1/2	7 1/2	7 1/2	7 1/2	7 1/2	7 1/2	7 1/2	7 1/2	7 1/2	7 1/2	7 1/2	7 1/2	7 1/2	7 1/2	7 1/2	7 1/2	7 1/2	



# ENGINEERING SPECIFICATIONS & DIMENSIONS

The contractor shall furnish (and install as shown on the plans) an Aurora regenerative turbine type pump model . . . . . size . . . . . (Bronze Fitted) (All Iron) (All Bronze). Each pump shall have a capacity of . . . . . G.P.M. when operating at a total head of . . . . . feet. Pumping temperature is . . . . . °F. Specific gravity is . . . . . The fluid to be pumped is (describe) . . . . . and NPSH of . . . . . Suction pressure will be . . . . . feet. The pump is to be furnished with mechanical seal, replaceable channel rings with in-line suction and discharge openings in casing. The casing shall be of 30,000 pound tensile strength cast iron. The impeller shall be hydraulically self-centering and no external adjustment shall be necessary. Each pump shall be tested prior to shipment. The pump shall be close coupled to a . . . . . HP . . . . . phase . . . . . Hertz . . . . . voltage . . . . . R.P.M., horizontal (drip proof) (totally enclosed) (explosion proof) motor. For (continuous)(intermittent) operation in a . . . . . °F maximum and . . . . . °F minimum atmosphere. The motor shall be sized to prevent overloading at the highest head condition listed in the specifications.



- NOTES**
1. Dimensions and weights are approximate.
  2. All dimensions are in inches and may vary  $\pm 1/8"$ .
  3. Frame sizes, "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 and motor weight for unit weight.
  6. Not for construction purposes unless certified.
  7. Aurora Pump reserves the right to make revisions to its products and their specifications, and to this bulletin and related information, without notice.
- \*Single phase only. \*\*Three phase only.

Frame	Horsepower		Motor Weight (Lbs.)	A	D	AG	Model
	3500 RPM	1750 RPM					
56	1/2	1/2	29	6 1/4	3 1/2	11	133 134 135
	3/4	3/4	46				
	1	1	56				
	1 1/2	1 1/2**	65				
	2	2	80				
145T	—	1 1/2*	42	7	3 1/2	11	134 135
	3**	2**	48	9	4 1/2	11	
182T	5**	3**	65				
184T	7 1/2**	3*	79	9	4 1/2	12	135
	—	5**	83	10 1/2	5 1/4	14	
213T	10	—	105				
215T	15	—	125				
254T	20	—	200	12 1/2	6 1/4	17	

Model	133	134	135
Suction	1/2	1	2
Disch.	1/2	1	1 1/2
DF	1 1/4	2	2 1/4
DG	1 1/2	1 3/4	2 1/4
X	NA	3 1/4	4 1/2
YY	2 1/2	3 1/4	4 1/2
Pump Wt. (Lbs.)	13	16	30

## MATERIALS OF CONSTRUCTION

PUMP PART	BRONZE FITTED	ALL IRON	ALL BRONZE
CASING	CAST IRON ASTM A48	CAST IRON ASTM A48	BRONZE ASTM B62
COVER (133)	CAST IRON ASTM A48	CAST IRON ASTM A48	BRONZE ASTM B62
IMPELLER	BRONZE ASTM B62	DUCTILE IRON ASTM A395	BRONZE ASTM B62
IMPELLER SLEEVE	BRONZE ASTM B62	STAIN. STEEL ASTM 316	BRONZE ASTM B62
INNER RING	CAST IRON ASTM A48	CAST IRON ASTM A48	BRONZE ASTM B62
OUTER RING (134-135)	CAST IRON ASTM A48	CAST IRON ASTM A48	BRONZE ASTM B62
MECHANICAL SEAL	316 stainless steel metal parts, "Buna N" elastomer parts, N: resin seal and carbon washer.		

## LIMITATIONS

Pump Model	Pump Size	Max. Suct. Pressure P.S.I.	Max. Dvl. Pressure P.S.I.	Max. Casing Pressure P.S.I.	Max. Temp. °F.	Min. Suct. Pressure Vac. in Hg	Motor Frame
133	G03 thru G03	100	150	175	225	26	145T 182T 184T
134	B04 C04 D04	100	225 190 180	300	225	26	
135	F05 G05 H05 I05 K05 K05	100	280 250 220 175 150 130	300	225	26	
135	F05 thru K05	100	300	300	225	26	213T 215T 254T

- NOTES**
- 1 Maximum differential pressure based on allowable shaft deflection for standard shafts.
  - 2 Maximum casing pressure based on laboratory tests at twice the pressure shown.
  - 3 All pressure limitations on this chart are based on standard pumps constructed of standard materials and handling water at normal temperatures.
  - 4 For temperatures below 32°F., consult factory.
  - 5 Maximum suction pressure based on limitations of mechanical seal furnished as standard.
  - 6 Pumps should not be used when any one of the above limitations is exceeded.

**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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