

## TECHNICAL SPECIFICATION



Flygt



ITT Industries

# PRODUCT DESCRIPTION

## Applications

5530 and 5540 are intended to be used for:

- pumping of water which may contain abrasive particles
- pumping of sludge
- pumping of ground water
- pumping of light slurries.

The pump is available in the following versions:

- HP** = for permanent installation in a sump. The pump slides down along the guide arrangement and connects automatically to a discharge connection.
- HS** = transportable version with stand and connection for hose or pipe.
- HT** = for a vertical dry stationary installation on a stand. Directly connected to the inlet and outlet lines.
- HZ** = for a horizontal dry stationary installation on a sled. Directly connected to the inlet and outlet lines.

**Liquid temperature:** max. 40°C (105°F).

The pump is also available in a version for liquid temperatures up to 70°C. These versions have certain operational limitations which are stated on a plate on the pump.

**Liquid density:** Depending on the duty point.

**The pH of the pumped liquid:** 6—14.

**Lowest liquid level:** above the pump.

**Depth of immersion:** max. 20 m (65 ft).

### WARNING!

**The pump may not be used in an explosive or flammable environment or for pumping flammable liquids.**

For other applications, than the above, contact your nearest Flygt representative for information.

## Weights

Weight without motor cable, in kg (lb).

Pump type	5530	5540
Pump unit	HC 203 (448)	HC 284 (626)
Pump unit with cooling jacket	—	HC 298 (657)
Stationary Discharge Connection	HC 85 (187)	HC 85 (187)
In-/outlet Elbow	HC 38 (84)	HC 38 (84)
HT/HS Stand	30 (66)	30 (66)
HZ Sled	125 (275)	125 (275)
Frame and Access Cover	29 (64)	29 (64)

HC = High Chrome Alloyed with Cast Iron.

## Materials

		DIN	BS	AISI/ ASTM
Major Castings, Outer Casing, Cooling Jacket, Hydraulic Casing	Cast Iron	1691 GG 25 G	1452: 1977 Grade 260	A 48 No 35 B
Screws, Studs and Nuts	Stainless Steel	X5CrNi 18 10	BS970 304S15	A320 Type 304
Impeller, Wear Parts	Alloyed White Cast Iron White L 102	1695 G-X260 Cr 27	4844 Grade 3E	532-80 Alloy 111 A
Strainer	Steel Painted	17100 RST 37-2	4360 Grade 40B	A248 Grade D A573 Grade 65
Lifting Handle	Steel Galvanized	17100 RST 37-2	4360 Grade 40B	A248 Grade D A573 Grade 65 A36-77A
Shaft (5530)	Stainless Steel	X20 Cr 13	420 S37	420
Shaft (5540)	Stainless Steel	17440 X22 CrNi 17	En 57	431
O-Ring (Std-version)				Nitrile Rubber 70°IRH
O-Ring (Warm-liquid version)				Fluorinated Rubber 75°IRH
Mechanical Face Seals:	Inner Stationary:			tungsten carbide, WCCR
	Inner Rotating:			tungsten carbide, WCCR
	Outer Stationary:			tungsten carbide, WCCR
	Outer Rotating:			tungsten carbide, WCCR

### Surface treatment

- Impeller: Sprayed with a primer.
- Outer Casing: After priming the outer casing is coated with black chlorinated rubber paint.

## Motor data

### 5530.181

**50 Hz, HP/HS 5.9 kW**  
**3 ~, 4-pole, 1450 r/min**

Voltage V	Rated current A	Starting current A
220	21	127
380	12	73
415	11	64
500	9.5	60
660	7.1	42

**60 Hz, HP/HS 10 hp (7.5 kW)**  
**3 ~, 4-pole, 1740 r/min**

Voltage V	Rated current A	Starting current A
230	25	156
460	13	82
575	10	62
600	9.7	55

### 5540.181

**50 Hz, HP/HS 13.5 kW**  
**HT/HZ 13.5 kW**  
**3 ~, 4-pole, 1450 r/min**

Voltage V	Rated current A	Starting current A
220	50	280
380	28	161
415	26	140
500	21	126
660	17	93

**60 Hz, HP/HS 20 hp (14.9 kW)**  
**HT/HZ 20 hp (14.9 kW)**  
**3 ~, 4-pole, 1750 r/min**

Voltage V	Rated current A	Starting current A
230	53	345
460	26	173
575	20	115
600	20	121

### Rated output

The pump is available with following motors:

#### 5530.181

**50 Hz**  
 5.9 kW, for HP/HS-version

**60 Hz**  
 10 hp (7.6 kW), for HP/HS-version

#### 5540.181

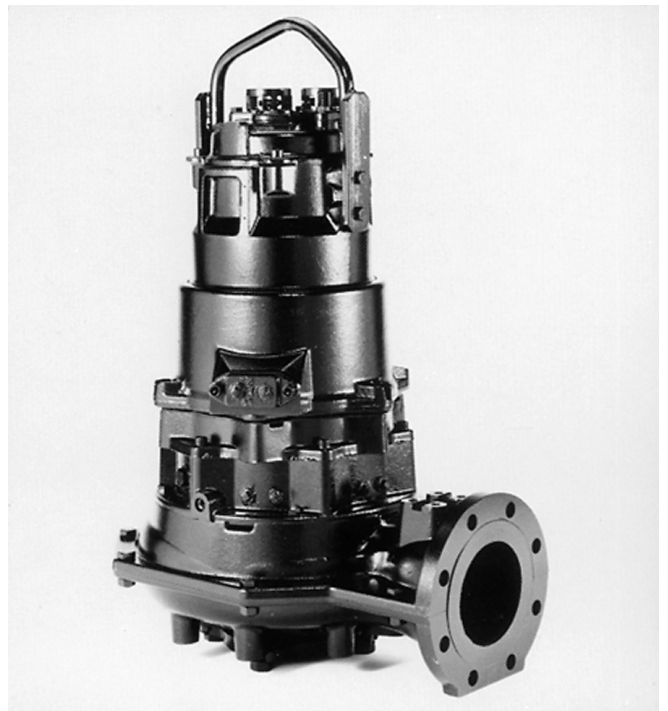
**50 Hz**  
 13.5 kW, for HP/HS-version  
 13.5 kW, for HT/HZ-version\*

**60 Hz**  
 20 hp (14.9 kW), for HP/HS-version  
 20 hp (14.9 kW), for HT/HZ-version\*

\* With external cooling.



**5530.181**



**5540.181**

5530 and 5540 are submersible, electric motor-driven pumps.

## 1. Motor

Squirrel-cage 3-phase induction motor for 50 Hz or 60 Hz.

The motor is started by means of direct on-line or star-delta start.

The motor can be run continuously or intermittently with a maximum of 15 evenly spaced starts per hour.

Flygt motors are tested in accordance with IEC 34-1.

The stator is insulated in accordance with class F (155°C, 310°F). The motor is designed to supply its rated output at  $\pm 5\%$  variation of the rated voltage. Without overheating the motor,  $\pm 10\%$  variation of the rated voltage can be accepted provided that the motor does not run continuously at full load. The motor is designed to operate with a voltage imbalance of up to 2% between the phases.

## 2. Flushing

External flushing of the outer seal can be connected to one of the holes. The other holes must then be plugged (1/2" thread must be cut). Flow 1—3 l/min and a pressure of 5 m + shut-off head.

For more information, contact your nearest Flygt representative.

## 3. Cooling

The motor is cooled by the surrounding liquid. The pump must work fully submerged under full load conditions otherwise external cooling must be used. Minimum flow of the external cooling water: 18 l/min. The 5530.181 is not available with external cooling.

## 4. Bearings

The pump bearings are designed for at least 50 000 hours of operation.

The support bearing of the rotor consists of a single ball bearing for 5530 and a roller bearing for 5540.

The main bearing of the rotor consists of a two row angular contact ball bearing.

## 5. Shaft seals

The pump has two mechanical seals with extremely wear-resistant seal surfaces.

Material: Inner seal: tungsten carbide—tungsten carbide.

Outer seal: tungsten carbide—tungsten carbide.

## 6. Oil casing

The oil lubricates and cools the seals and acts as a buffer between the pump casing and the electric motor.

Pressure build-up within the oil casing is reduced by means of a built-in air volume.

## 7. Shaft

The shaft is delivered with the rotor as an integral part.

Shaft material: stainless steel.

## 8. Impellers

The pump is available with a shrouded three-channel type of high chrome alloyed white cast iron (HC). Throughlet is 40 mm.

## 9. Monitoring equipment

Three thermistors, connected in series, are incorporated in the stator.

The resistance of the thermistor changes at 130°C (266°F) (reference temperature).

A platinum transducer (Pt 100) per phase, registers the winding temperature.

The stator incorporates three thermal switches connected in series.

The thermal protectors: open at 125°C (260°F).

The thermal switches of the warm liquid version shall not be connected when the liquid temperature is above 40°C (105°F).

The monitoring equipment shall be of a design that makes automatic restart impossible.

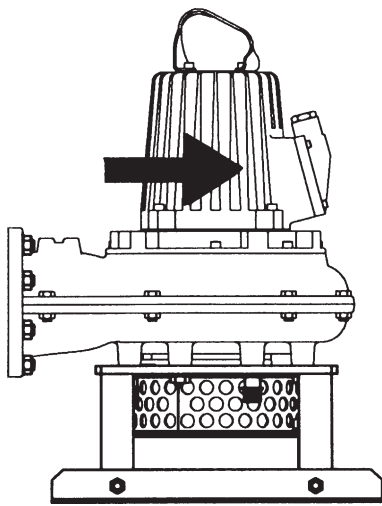
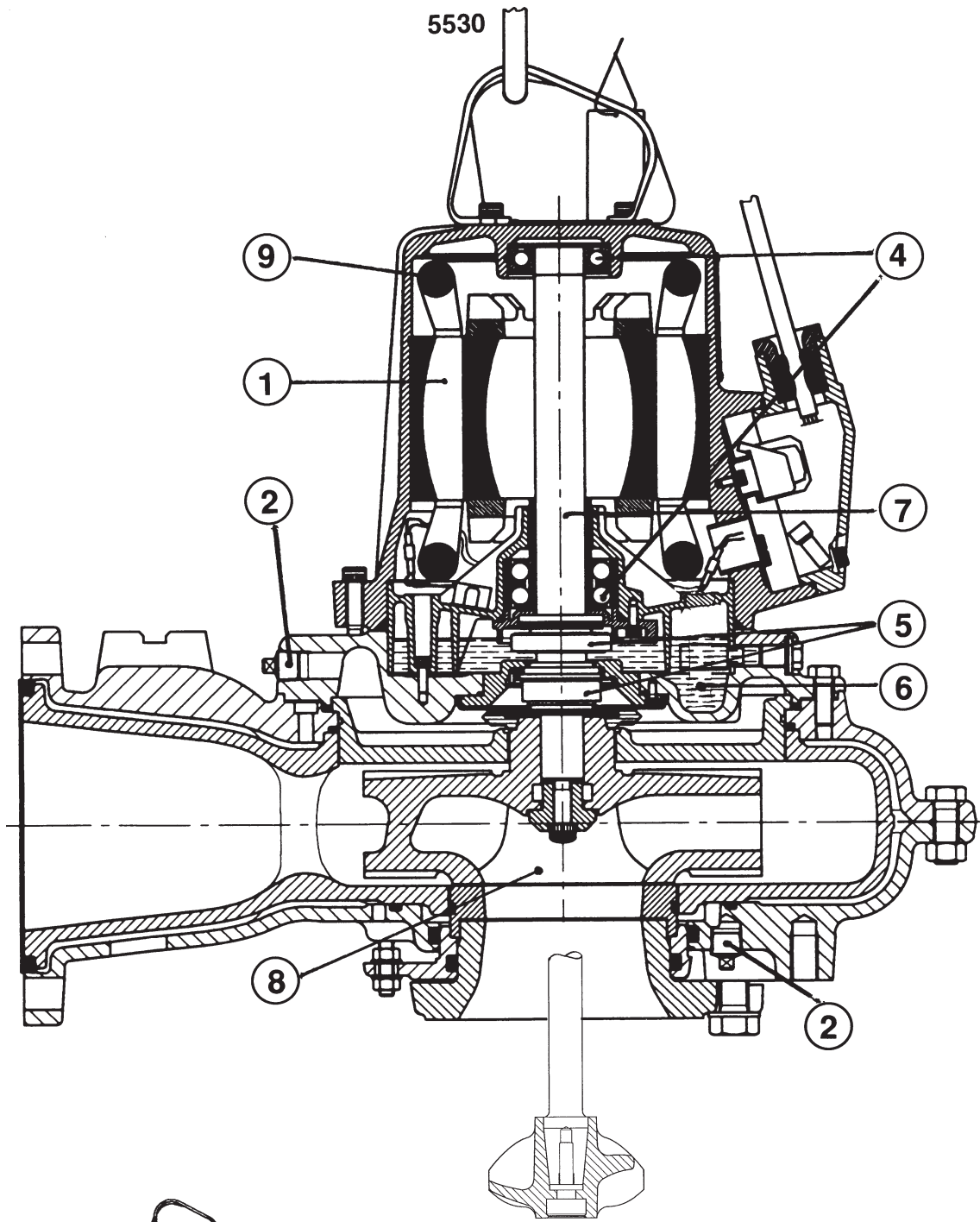
The pump is available with leakage sensors for sensing the presence of any water in the oil and/or stator housing.

See also "Electrical connections" and separate instructions for starter equipment/monitoring unit.

## 10. Wear parts

- Impeller
- Wear lining
- Wear ring
- Wear cover
- Suction cover
- Trimming flange
- Pumping housing

5530



# Performance curves

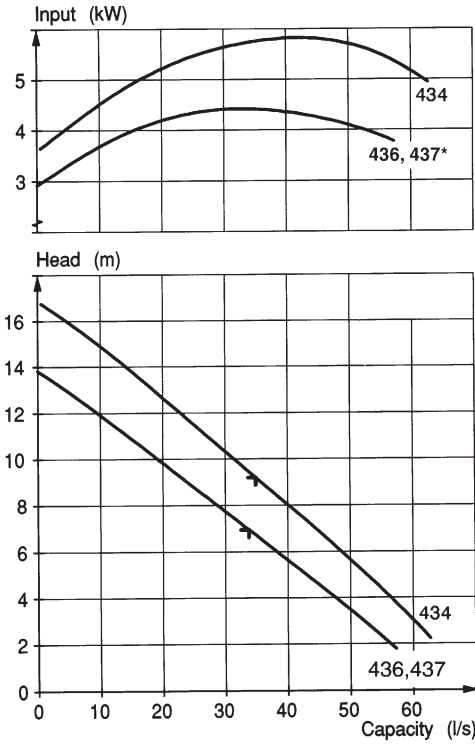
4XX = curve numbers

Each pump is tested in accordance with ISO 2548 class C standard.

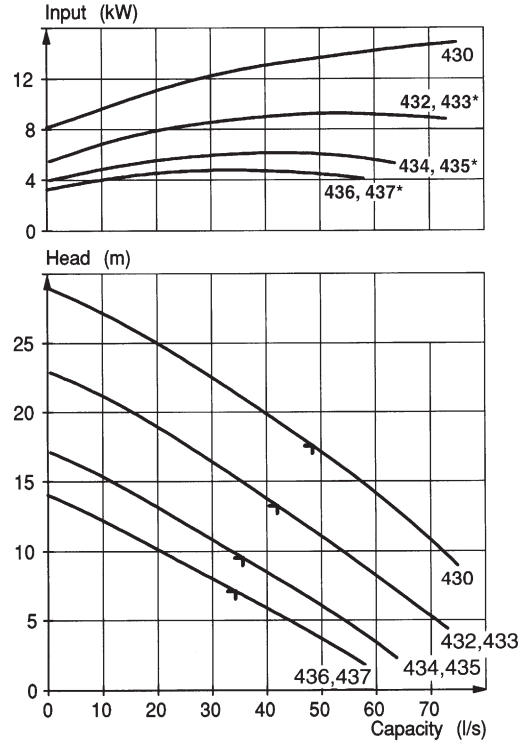
┌ = best operating point.

\* Extra power draw for the agitator  
 P = 0.7 kW (50 Hz), P = 1.2 kW (60 Hz)

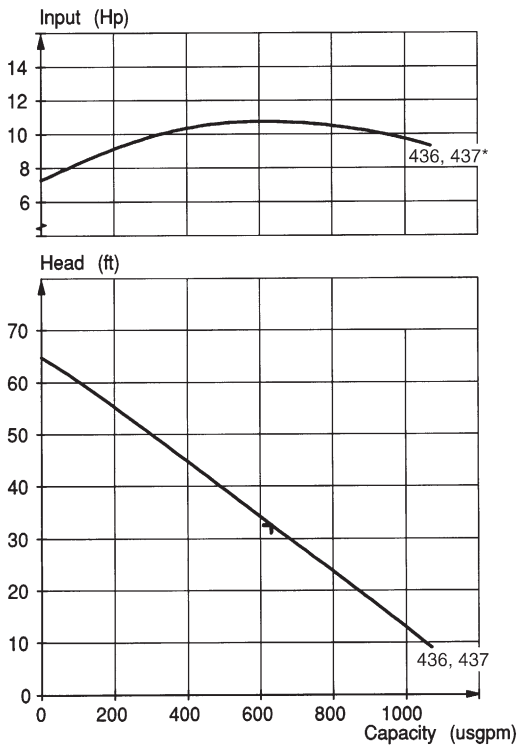
## 5530.181, 50 Hz



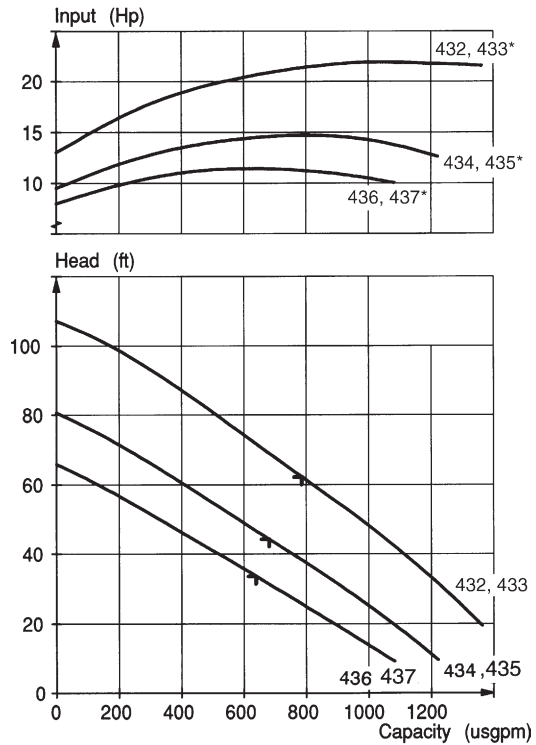
## 5540.181, 50 Hz



## 5530.181, 60 Hz

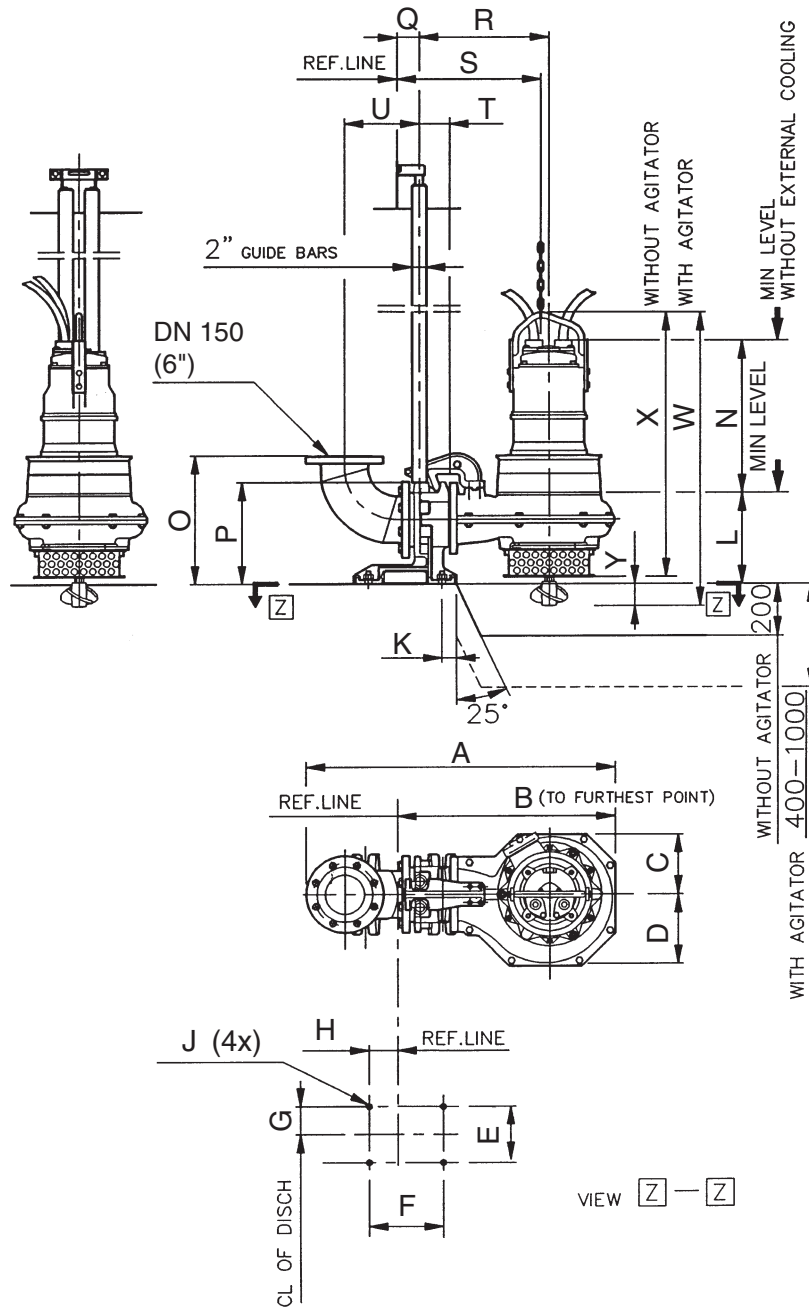


## 5540.181, 60 Hz



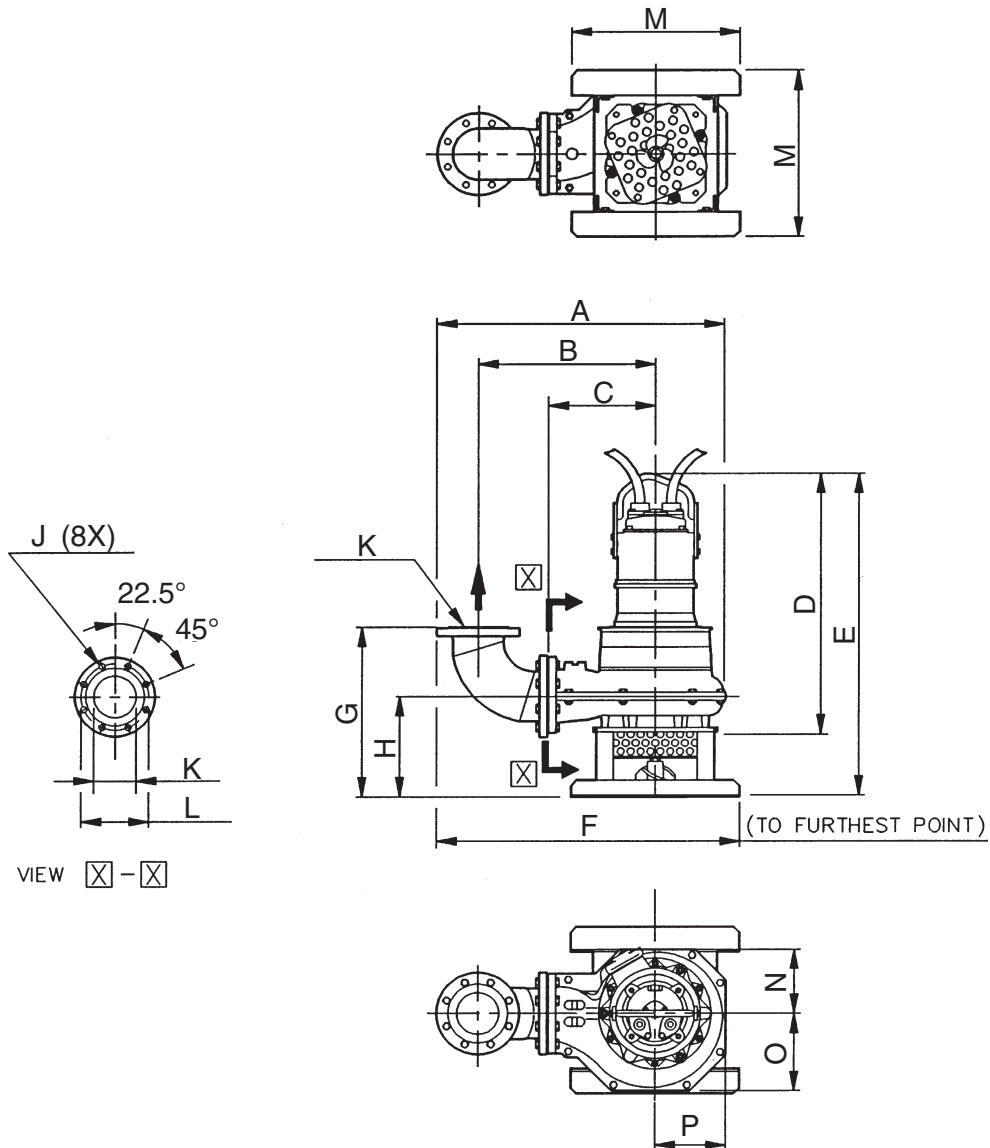


HP All dimensions are in mm (in).



	A	B	C	D	E	F	G
5530.181	1184 (46 <sup>5/8</sup> )	835 (33)	231 (9 <sup>1/2</sup> )	278 (11)	220 (8 <sup>5/8</sup> )	280 (11)	110 (4 <sup>5/16</sup> )
5540.181	1184 (46 <sup>5/8</sup> )	835 (33)	231 (9 <sup>1/2</sup> )	278 (11)	220 (8 <sup>5/8</sup> )	280 (11)	110 (4 <sup>5/16</sup> )
	H	J	K	L	N	O	P
5530.181	109 (4 <sup>5/16</sup> )	Ø20 (2 <sup>5/32</sup> )	55 (2 <sup>5/32</sup> )	340 (13 <sup>3/8</sup> )	360 (14 <sup>1/8</sup> )	500 (19 <sup>1/2</sup> )	395 (15 <sup>1/2</sup> )
5540.181	109 (4 <sup>5/16</sup> )	Ø20 (2 <sup>5/32</sup> )	55 (2 <sup>5/32</sup> )	340 (13 <sup>3/8</sup> )	595 (23 <sup>1/2</sup> )	500 (19 <sup>1/2</sup> )	395 (15 <sup>1/2</sup> )
	Q	R	S	T	U	W	X
5530.181	85 (3 <sup>3/8</sup> )	495 (19 <sup>1/2</sup> )	550 (21 <sup>1/2</sup> )	116 (4 <sup>9/16</sup> )	284 (11 <sup>1/8</sup> )	880 (34 <sup>5/8</sup> )	768 (30 <sup>1/4</sup> )
5540.181	85 (3 <sup>3/8</sup> )	495 (19 <sup>1/2</sup> )	550 (21 <sup>1/2</sup> )	116 (4 <sup>9/16</sup> )	284 (11 <sup>1/8</sup> )	1140 (44 <sup>7/8</sup> )	1028 (40 <sup>1/2</sup> )
	Y						
5530.181	85 (3 <sup>3/8</sup> )						
5540.181	85 (3 <sup>3/8</sup> )						

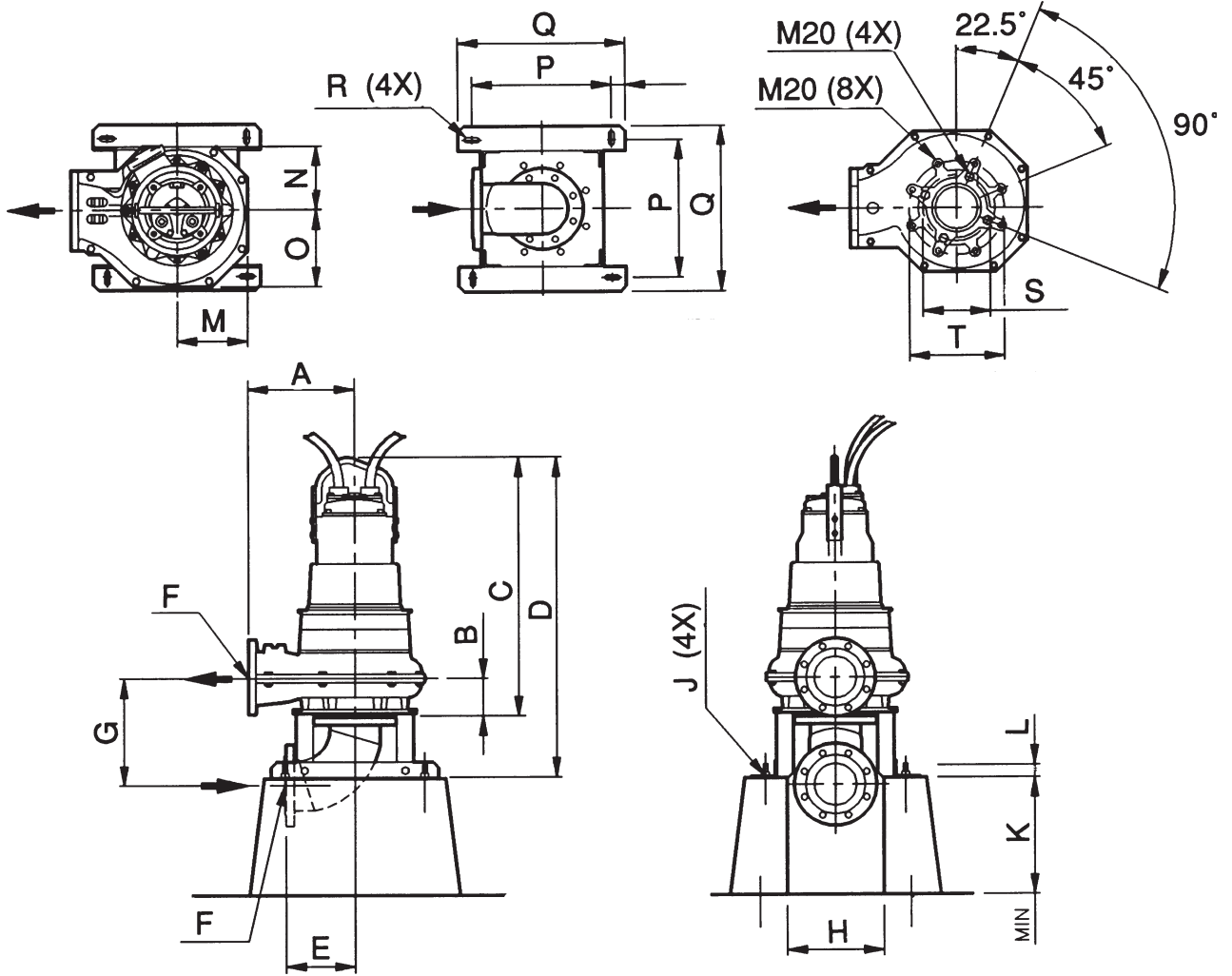
HS All dimensions are in mm (in).



	<b>A</b>	<b>B</b>	<b>C</b>	<b>D</b>	<b>E</b>	<b>F</b>	<b>G</b>
<b>5530.181</b>	1031 (41)	632 (25)	382 (15)	687 (27)	1000 (40)	1079 (42 1/2)	615 (24)
<b>5540.181</b>	1031 (41)	632 (25)	382 (15)	952 (37 1/2)	1175 (37 1/4)	1079 (42 1/2)	615 (24)
	<b>H</b>	<b>J</b>	<b>K</b>	<b>L</b>	<b>M</b>	<b>N</b>	<b>O</b>
<b>5530.181</b>	365 (14 1/2)	Ø23 (29/32)	Ø150 (6)	Ø240 (9 7/16)	600 (23 1/2)	231 (9 1/2)	278 (11)
<b>5540.181</b>	365 (14 1/2)	Ø23 (29/32)	Ø150 (6)	Ø240 (9 7/16)	600 (23 1/2)	231 (9 1/2)	278 (11)
	<b>P</b>						
<b>5530.181</b>	252 (10)						
<b>5540.181</b>	252 (10)						

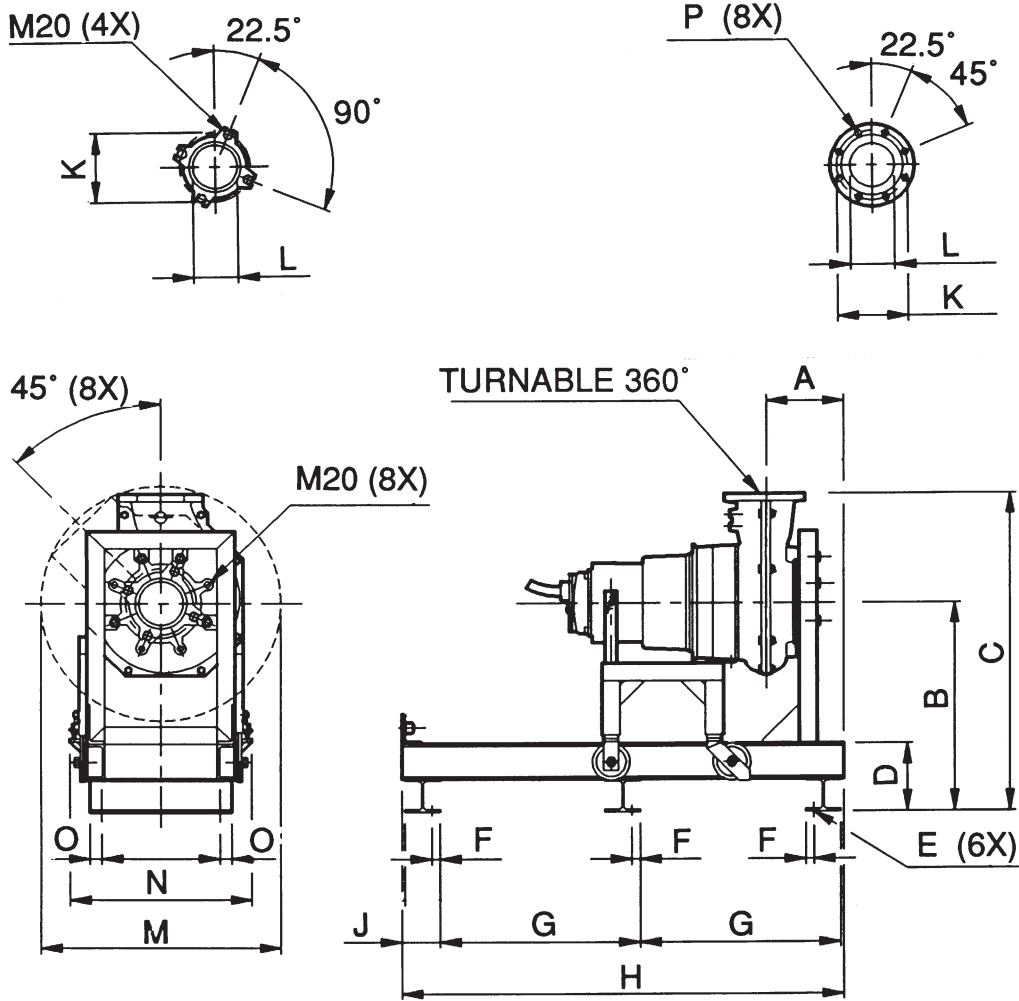


HT All dimensions are in mm (in).



	<b>A</b>	<b>B</b>	<b>C</b>	<b>D</b>	<b>E</b>	<b>F</b>	<b>G</b>
<b>5540.181</b>	382 (15)	142 (5 <sup>5</sup> / <sub>8</sub> )	952 (37 <sup>1</sup> / <sub>2</sub> )	1175 (46)	250 (9 <sup>7</sup> / <sub>8</sub> )	Ø150 (6)	392 (15 <sup>1</sup> / <sub>2</sub> )
	<b>H</b>	<b>J</b>	<b>K</b>	<b>L</b>	<b>M</b>	<b>N</b>	<b>O</b>
<b>5540.181</b>	345 (13 <sup>5</sup> / <sub>8</sub> )	Ø16 (5 <sup>5</sup> / <sub>8</sub> )	422 (16 <sup>5</sup> / <sub>8</sub> )	45 (1 <sup>3</sup> / <sub>4</sub> )	252 (10)	231 (9 <sup>1</sup> / <sub>2</sub> )	278 (11)
	<b>P</b>	<b>Q</b>	<b>R</b>	<b>S</b>	<b>T</b>		
<b>5540.181</b>	500 (20)	600 (23 <sup>1</sup> / <sub>2</sub> )	18 x 54 (1 <sup>1</sup> / <sub>16</sub> x 2 <sup>1</sup> / <sub>8</sub> )	Ø240 (9 <sup>7</sup> / <sub>16</sub> )	Ø340 (13 <sup>3</sup> / <sub>8</sub> )		

HS All dimensions are in mm (in).



	<b>A</b>	<b>B</b>	<b>C</b>	<b>D</b>	<b>E</b>	<b>F</b>	<b>G</b>
<b>5540.181</b>	265 (10 <sup>7</sup> / <sub>16</sub> )	720 28 <sup>1</sup> / <sub>2</sub> )	1100 (43 <sup>1</sup> / <sub>4</sub> )	235 (9 <sup>1</sup> / <sub>4</sub> )	Ø18 (45/ <sub>64</sub> )	28 (1 <sup>7</sup> / <sub>64</sub> )	680 (26 <sup>3</sup> / <sub>4</sub> )
	<b>H</b>	<b>J</b>	<b>K</b>	<b>L</b>	<b>M</b>	<b>N</b>	<b>O</b>
<b>5540.181</b>	1500 (59)	130 (5 <sup>1</sup> / <sub>8</sub> )	Ø240 (9 <sup>7</sup> / <sub>16</sub> )	Ø150 (6)	Ø815 (32)	615 (24)	35 (1 <sup>3</sup> / <sub>8</sub> )
	<b>P</b>						
<b>5540.181</b>	Ø23 (2 <sup>9</sup> / <sub>32</sub> )						



