

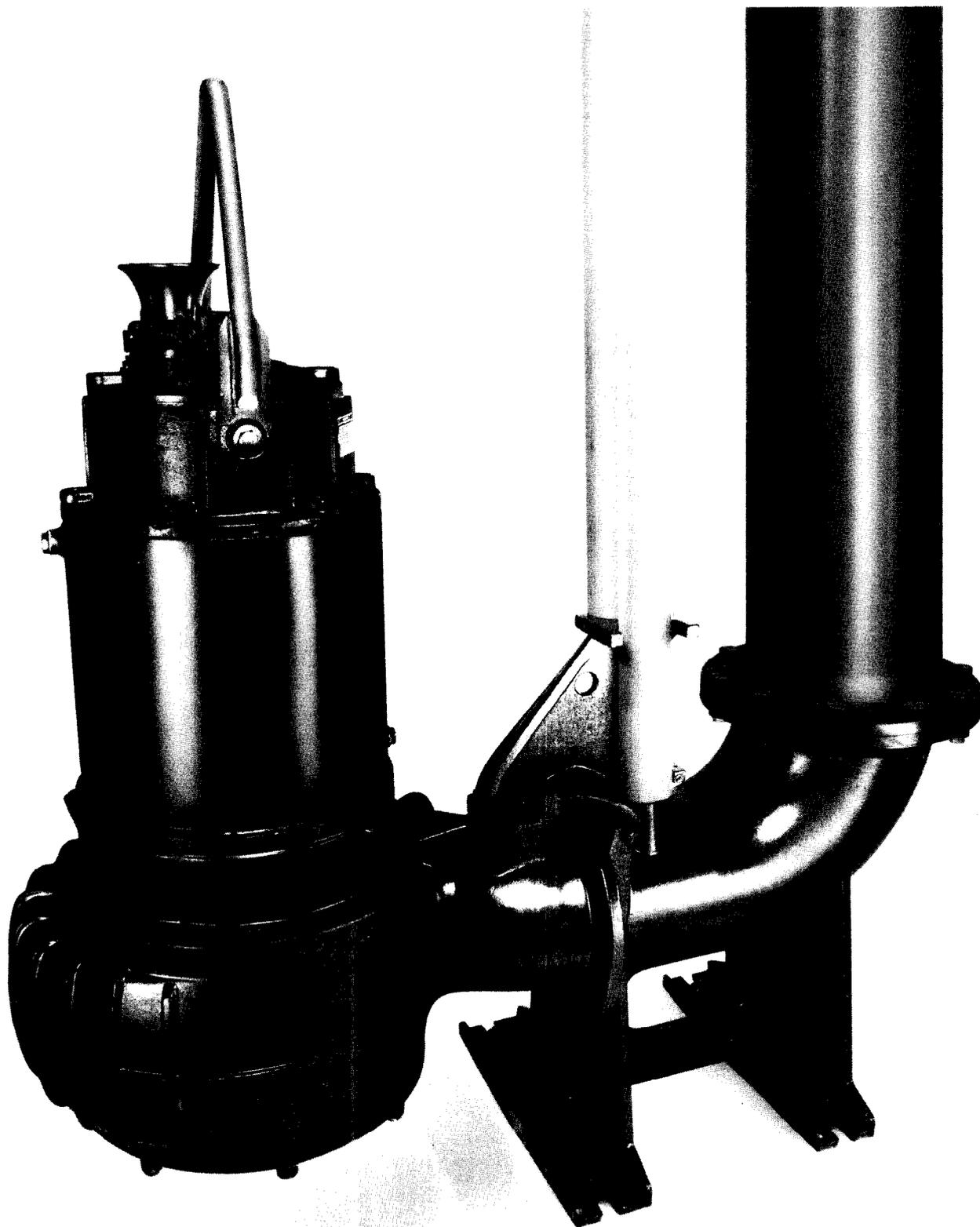
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3300



Technical Specification



3300 Technical Specifications

The Flygt 3300 submersible pump with a capacity of up to 400 l/s covers a number of applications.

The electric motor and the pump comprise a compact and robust unit which requires little space and is easy to handle.

The C version is designed to pump liquid containing solid particles, such as waste water. The pump housing and the one- and two-vane impellers can pass solids of diameters up to 190 mm in the standard version (CP, CT and CS).

For pumping salt water, the C version is available in some models in *bronze*.

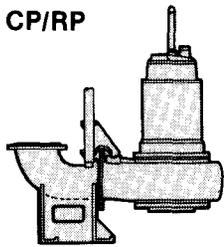
The R version with high efficiency is used for pumping clean or raw water. The R version (RP, RT) has a six-vane impeller and a throughlet of up to 37 mm.

The L version is used for land drainage, reclamation and damming projects. The pump section, which contains a two-vane impeller combined with a diffuser with three guide vanes, is connected (nominal diameter 600 mm) on the suction side. The diffuser slows up the rotation of the water and directs it outwards and upwards.

Installation alternatives

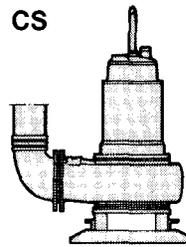
The pump is submersible, compact and it is simple to install. The different models are available in one or more versions, depending on the type of installation.

CP/RP



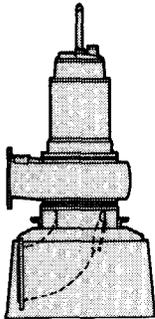
This system with guide bar and discharge connection permits automatic connection of the pump to the discharge line. The pump can be lifted up for inspection without anyone having to climb down into the sump. The pump works completely or partially submerged under water.

CS



A portable pump intended for operating completely or partially submerged in the pumped liquid. It is equipped with base stand and hose connection.

CT/RT



The pump is installed dry on a concrete base and is connected directly to the inlet and outlet lines. The submersible design of the pump prevents damage in the event of flooding.

LL



The pump is installed in a station which consists of two sections, a lower inlet section and an upper outlet section, divided by an intermediate deck. The pump is placed in a hole in the intermediate deck, whereby the diffuser rests on a plate against which it is sealed by a rubber ring. The pump is lowered and hoisted by means of a simple lifting arrangement. The pump operates completely under water.

Bronze version

The C version, installation types CP and CS, of the pump is made of material which is particularly resistant to corrosion in salt water.

- The MT (medium head) version is the same design as the C version with closed two-vane impellers. Curves 641, 642, 644, 646 and 648, all with 100 mm, square throughlets can be obtained.
- The HT (high head) version is equipped with closed two-vane impellers with square throughlets of 76 x 76 mm. The curves 460, 461, 462, 463, 464, 465, 466, 467 and 468 illustrate the performance of these impellers.

Just as in the C version, a motor with a rated output of 44 kW is used for the MT and 54 kW for the HT version.

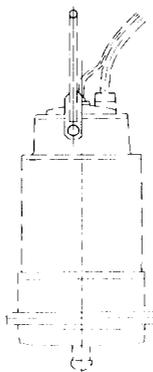
The dimensions coincide with those of the MT and HT pumps in the CP and CS installation versions, respectively, on the dimension drawings (page 7).

The bronze pumps generally weigh around 100 kg (220 lb) more than the standard pumps. The discharge connections weigh 250 kg (550 lb) for the MT and 80 kg (176 lb) for the HT version.

Different versions of the hydraulic section

Depending on desired performance, the pump is available for clean water, waste water and sludge in low-, medium- and high-head versions, as well as a special high-head R version for clean and raw water.

The L version, also intended for raw water, is available in a low-head version.



C version

		Impeller		
		Curve No.	Number of vanes	Throughlet mm
LT low-head version for CP, CT and CS installations		612	2	Elliptical 146 x 180
		614	2	132 x 170
		616	2	125 x 160
		812	2	146 x 180
		814	2	132 x 170
MT medium-head version for CP, CT and CS installations		632	1	Circular 190
		636	1	Elliptical 176 x 180
		638	1	150 x 180
		640	1	134 x 180
		641*	2	Square 100
		642*	2	100
		644*	2	100
		646*	2	100
648*	2	100		
HT high-head version for CP, CT and CS installations		452	1	Rectangular 90 x 96
		454	1	76 x 90
		460	2	Square 76 x 76
		461	2	76 x 76
		462	2	76 x 76
		463	2	76 x 76
		464	2	76 x 76
		465	2	76 x 76
		466	2	76 x 76
		467	2	76 x 76
468	2	76 x 76		

* Impeller available in stainless steel.

R version

		Impeller		
		Curve No.	Number of vanes	Throughlet mm
HT high-head version for RP and RT installations		480	6	Square 37
		484	6	32

L version

		Impeller		
		Curve No.	Number of vanes	Throughlet mm
LT low-head version with guide vanes for LL installations		612	2	Elliptical 146 x 180
		614	2	132 x 170
		616	2	125 x 160
		812	2	146 x 180
		814	2	132 x 170

Technical data

Pump type	Motor: Squirrel-cage, 3-phase AC motor Insulation class F 50 Hz							Power cable*					
	Rated power		Rated current					Direct on-line start			Star-delta start		
	kW	rev/min	220 V	380 V	415 V	500 V	660 V	220 V	380— 500 V	660 V	220 V	380— 500 V	660 V
C version CP, CT, CS-3300 L version LL-3300 LT (curve 812—814)	20	730	78 A	44 A	40 A	33 A	25 A	4 × 25 mm ²	4 × 10 mm ²				
C version CP, CT, CS-3300 L version LL-3300 LT (curve 812—814)	44	970	144 A	83 A	76 A	63 A	48 A	4 × 35 mm ²	4 × 25 mm ²	4 × 10 mm ²	4 × 25 mm ²	4 × 25 mm ²	4 × 10 mm ²
	34	970	116 A	67 A	62 A	51 A	39 A	4 × 35 mm ²	4 × 16 mm ²	4 × 10 mm ²	4 × 16 mm ²	4 × 16 mm ²	4 × 10 mm ²
C version CP, CT, CS-3300 MT													
C version CP, CT, CS-3300 R version RP, RT-3300 HT	54	1470	180 A	105 A	96 A	80 A	60 A	4 × 35 mm ²	4 × 35 mm ²	4 × 16 mm ²	4 × 25 mm ²	4 × 25 mm ²	4 × 10 mm ²

* For details of local cable requirements contact your local Flygt agent.

Weights in kg

Pump type	Pump unit	Discharge connection
C version CP 3300 LT CP 3300 MT CP 3300 HT	995 1080 870	210 205 66
CS 3300 LT CS 3300 MT CS 3300 HT	1050 } 1135 } 935 }	incl. base stand incl. hose conn. and base stand
R version RP 3300	930	Discharge connection 66

Access frame with cover: 138 kg (304 lb).

Pump type	Pump unit	
C version CT 3300 LT CT 3300 MT curve 632—640 CT 3300 MT curve 641—642 CT 3300 HT	1225 1310 1235 880	incl. inlet bend and base stand
R version RT 3300	1065	
L version LL 3300	755	

Practical limitations

- The 3300 in its standard version can pump liquids at temperatures of up to 40°C.*
- The pump can be submerged down to 20 m below the surface of the liquid.
- The pump section, including seals, is designed for working pressures of up to 0.8 MPa.
- The motors are designed to supply their rated outputs at deviations of up to ±5% of the rated frequency and voltage. Voltage variations of up to ±10% are possible without overheating.
- The 3300 can be started up to 15 times per hour.
- Starting methods: Direct on-line start or star-delta start.

* For details of local cable requirements contact your local Flygt agent.

Materials

Cast parts in all versions	Cast iron	BS 1452	DIN 1691 GG 20
Shaft	Carbon steel	970 En 5 c	17200 C 35
Studs, nuts, screws and washers	Stainless steel	304 S 15	17440 X5 CrNi 18/9
Lifting handle and casing	Galvanized steel	970 En 3	17100 St 37
O-rings	Nitrile rubber (70° IRH)		
Stationary wear ring	Brass or nitrile-rubber-clad steel	1400 LG 2	1705 Rg 5
Rotating wear ring	Stainless steel	304 S 15	17440 X5 CrNi 18/9
Mechanical shaft seals			
— upper	Graphite/carbide		
— lower	Carbide/carbide		

Surface treatment

Impeller, special for raw and clean water	Primed
Impeller, two-vane for high-head version	Primed
Impeller, other versions	Coated with amide plastic, RILSAN
Outer casing	The outer casing is primed with PVC Epoxy and then painted with black chloric rubber paint.

Materials, Bronze version

Cast parts, incl. impeller	Aluminium bronze	BS 1400 AB 2-C	DIN 1714 CuAl 10 Ni
Shaft, studs, screws, nuts, lifting handle	Stainless steel	—	17440 X8 CrNiMo 27 5
Cable entry	Stainless steel	EN 58 J	17440 X5 CrNiMo 18 12
O-rings	Nitrile rubber (70° IRH)		
Wear parts	Nitrile-rubber-clad steel (40° IRH)		
Mechanical shaft seals			
— upper	Carbide/graphite		
— lower	Corundum/corundum		

Impeller of stainless steel

The C version's closed two-vane impellers, curves 641—648, are also available in stainless steel, grade DIN 17440 X8 CrNiMo 27 5 or DIN 17440 X5 CrNiMo 18 12 (BS En 58 J).

Design of the pump

1. **The junction box** is completely sealed off from the outside and from the motor.

2. **Built-in cooling system**

The cooling system enables the 3300 to operate continuously at its rated output, regardless of whether the electric motor is above or below the surface of the liquid. Some of the pumped liquid is circulated through the cooling jacket which surrounds the motor and dissipates the heat generated by the motor.

Where external cooling is required, the cooling jacket can be sealed off from the pump housing and instead be connected to an external cooling medium system.

3. **Class F motor insulation**

Class F means that the maximum operating temperature is 155°C and that a temperature rise of 100°C is permitted. The temperature rise in Flygt motors does not exceed 80°C. This temperature reduction increases the service life of the motor by a factor of nearly 4. The stator is impregnated three times.

4. **Bearings**

Upper bearing: Roller bearing
Lower bearing: Two-row angular contact ball bearing

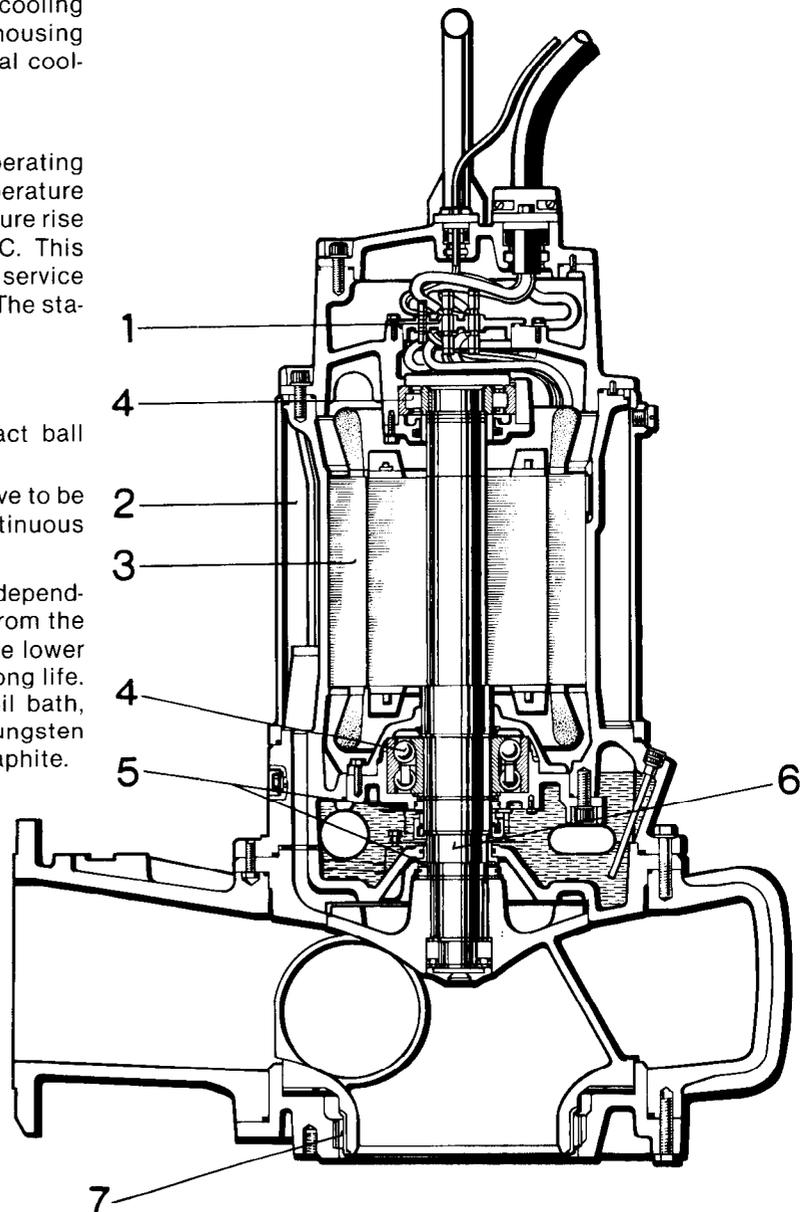
The bearings are greased and do not have to be regreased until after three years of continuous operation.

5. **Two mechanical face seals** operating independently of each other seal off the motor from the pump housing. The two seal rings in the lower seal are made of tungsten carbide for long life. The upper seal, which rotates in an oil bath, has a stationary seal ring made of tungsten carbide and a rotating ring made of graphite.

6. **The common pump/motor shaft** does not come into contact with the pumped liquid.

7. **Replaceable wear rings**

The pump housing bottom and the impeller are equipped with easily replaceable wear rings.

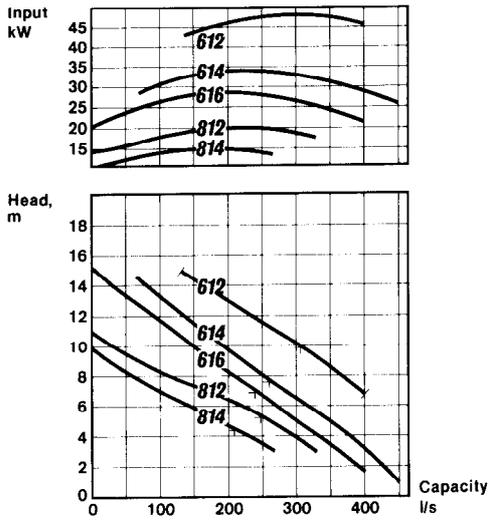


C version

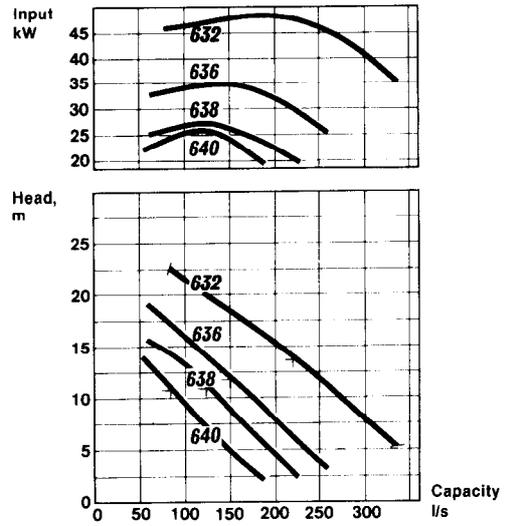
Each pump is tested in accordance with ISO 2548 Class C.

┘ = Optimum operating point

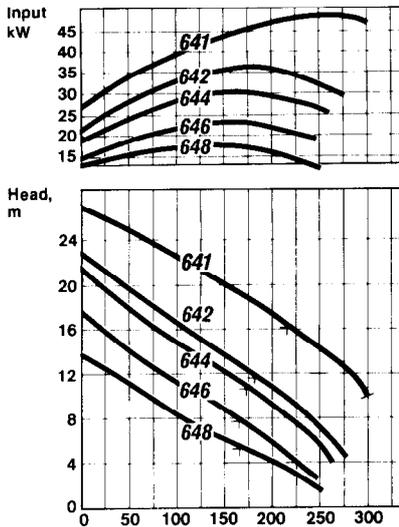
LT Curve No. 612—616, 812, 814



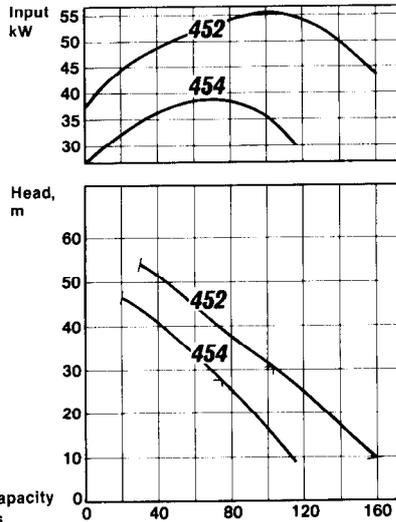
MT Curve No. 632—640



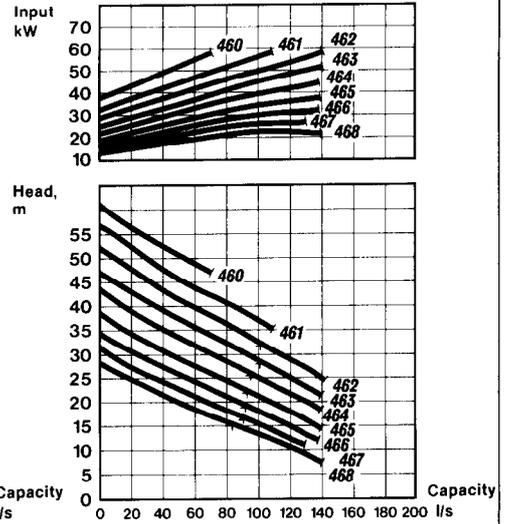
MT Curve No. 641—648*



HT Curve No. 452, 454

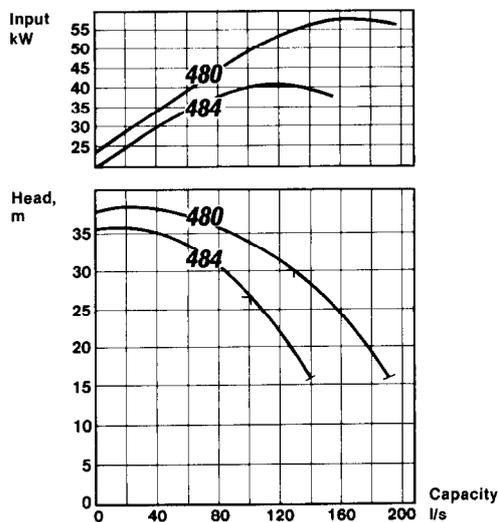


HT Curve No. 460—468

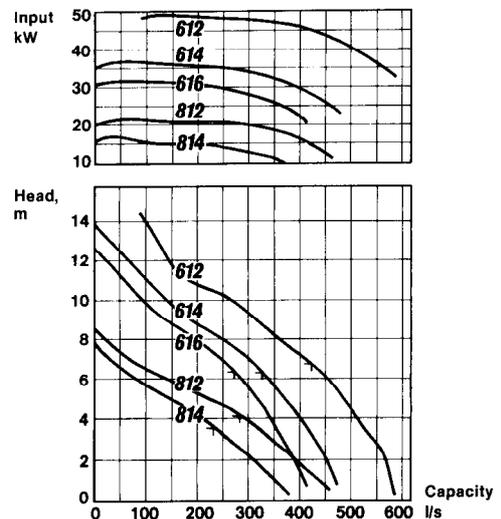


* Impellers shown on curves 641—648 are also available in stainless steel.

R version

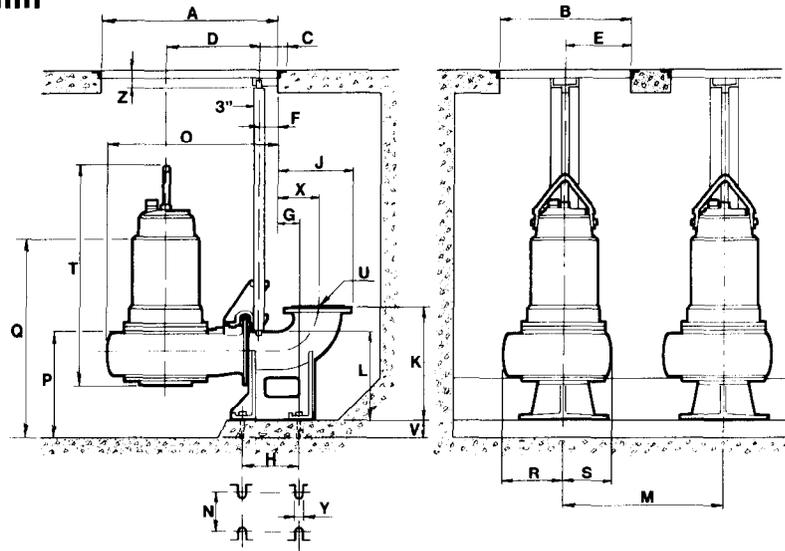


L version



Dimensions in mm

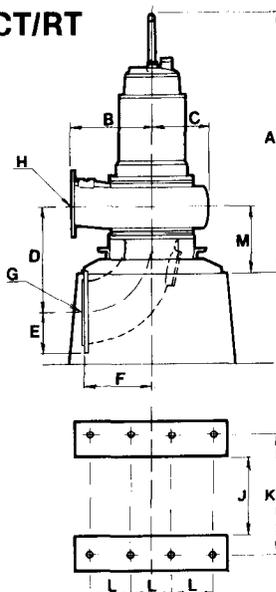
CP/RP



CP/RP version	A	B	C	D	E	F	G	H	J	K	L	Min. dim. M
CP LT	1455	1150	50	681	523	135	194	500	591	850	685	2000
MT	1455	1150	50	681	523	135	194	500	540	800	660	2000
HT	1455	1150	50	581	523	135	89	280	344	450	346	2000
RP	1455	1150	50	581	523	135	89	280	344	450	346	2000

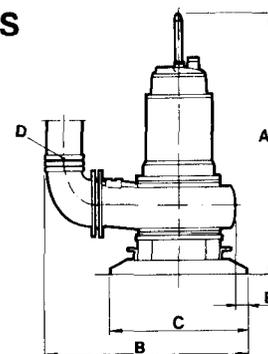
CP/RP version	N	O	P	Q	R	S	T	U	Min. dim. V	X	Y	Z
CP LT	530	1233	835	1400	450	311	1694	dia. 350*	150	324	23	130
MT	530	1292	810	1380	501	378	1694	dia. 300*	150	299	23	130
HT	245	1070	560	1170	341	305	1605	dia. 200*	200	174	23	130
RP	245	1056	576	1180	320	305	1614	dia. 200*	230	174	23	130

CT/RT



CT/RT version	A	B	C	D	E	F	G	H	J	K	L	M
CT LT	1964	600	382	788	298	500	dia. 400*	dia. 300*	680	900	300	508
MT												
curve 632—640	1964	600	441	810	298	500	dia. 400*	dia. 250*	680	900	300	530
curve 641—648	1964	600	441	552	241	400	dia. 300*	dia. 250*	680	900	300	507
HT	1875	500	319	484	175	450	dia. 200*	dia. 150**	680	900	300	454
RT	1838	500	305	675	200	350	dia. 250*	dia. 150**	680	900	300	439

CS



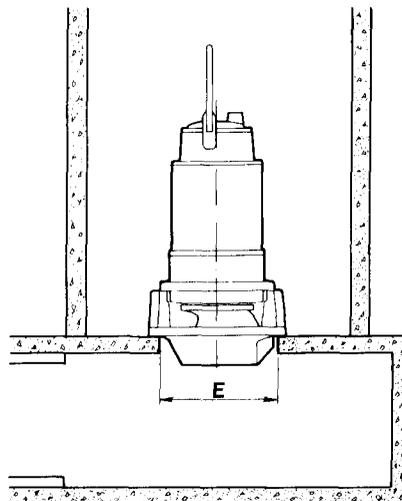
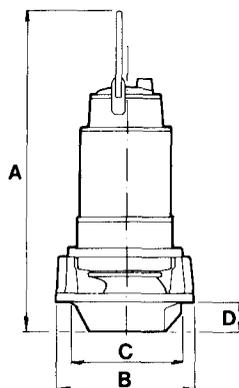
CS version	A	B	C	D	E
LT (flange conn.)	1964	—	1000	dia. 300*	118
MT (flange conn.)	1964	—	1000	dia. 250*	59
HT (hose conn.)	1875	1280	1000	dia. 200	188

* Flange connection drilled to SMS 342, DIN 2532 or BS 4622:1970 table 11.

** Flange connection drilled to SMS 342, DIN 2533 or BS 4622:1970 table 11.

Dimensions in mm

LL



LL version

- A 1650
- B dia. 720
- C dia. 590
- D 150
- E dia. 600



The manufacturers reserve the right to alter performance, specifications or design without notice.