

## 7. TP Series 300 pumps



Fig. 12 TP Series 300

### Technical data

	PN 16 version	PN 25 version
Flow rate [m <sup>3</sup> /h]	Up to 2000	Up to 4500
Head [m]	Up to 93	Up to 140
Liquid temperature [°C]	-25 to +140	-40 to +150*
Maximum operating pressure [bar]	16	25
Direction of rotation	Clockwise	

\* At 120 to 150 °C, the maximum operating pressure is less than 23 bar.

### Construction

Grundfos TP, TPD Series 300 pumps are single-stage, close-coupled pumps with in-line inlet and outlet ports of identical diameter.

The pumps are fitted with a fan-cooled asynchronous motor. Motor and pump shafts are connected via a rigid sleeve coupling.

Most TP Series 300 pumps are available as single-head, TP, and twin-head, TPD pumps.

TP Series 300 pumps have PN 16 flanges or PN 25 flanges.

The largest pumps have DN 500, PN 40 inlet flanges and DN 400, PN 40 outlet flanges and a maximum operating pressure of 25 bar.

The pumps are fitted with an unbalanced or a balanced mechanical shaft seal.

The pumps are of the top-pull-out design, that is you can remove the power head (motor, pump head and/or motor stool and impeller) for maintenance or service while the pump housing remains in the pipes.

The pump housing is provided with a replaceable wear ring to ensure high pump efficiency for life.

The twin-head pumps are designed with two parallel power heads. A non-return flap valve in the common outlet port is opened by the flow of the pumped liquid and prevents backflow of liquid into the idle pump head.

As radial and axial forces are absorbed by the fixed bearing in the motor drive-end, the pump requires no bearing.

The impeller is hydraulically balanced to minimise axial forces.

TP, TPD Series 300 pumps are fitted with high-efficiency motors.

TP Series 300 pumps with bronze impeller are suitable for pumping brine.

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## 1. Pump data

### Introduction

TP pumps are designed for applications such as:

- district heating systems
- heating systems
- air-conditioning systems
- district cooling systems
- water supply
- industrial processes
- industrial cooling.

The pumps are available with either mains-operated motors (TP and TPD) or electronically speed-controlled motors (TPE, TPED, TPE2, TPE2 D, TPE3, TPE3 D).

The pumps are all single-stage, in-line centrifugal pumps with mechanical shaft seal. The pumps are of the close-coupled type, that is the pump and the motor are separate units.

### TP, mains-operated pumps

The TP range is divided into three groups based on their construction: TP Series 100, 200 and 300.

#### TP Series 100 with union or flange connection

Rp 1 (DN 25) to Rp 1 1/4 (DN 32) and motor sizes from 0.12 to 0.25 kW.

For further information, see page 27.

#### TP Series 200 with flange connection

DN 32 to DN 100 and motor sizes from 0.12 to 2.2 kW.

For further information, see page 27.

#### TP Series 300 with flange connection

We offer two versions:

- 16-bar version with DN 32 to DN 350 flanges and motor sizes from 0.25 to 315 kW
- 25-bar version with DN 100 to DN 400 flanges and motor sizes from 5 to 630 kW.

For further information, see page 29.

### TPE, TPE2 and TPE3 speed-controlled pumps

We offer the following speed-controlled pumps which are based on the construction and choice of material of the TP pumps:

- TPE Series 1000 pumps without factory-fitted differential-pressure sensor.
- TPE Series 2000 pumps with factory-fitted differential-pressure sensor.
- TPE2 pumps without built-in differential-pressure sensor and temperature sensor.
- TPE3 pumps with built-in differential-pressure sensor and temperature sensor.

All pumps with 2-pole motors up to 11 kW and 4-pole motors up to 7.5 kW are fitted with Grundfos permanent-magnet MGE motors with motor efficiency class IE5 according to IEC 60034-30-2.

#### TPE Series 1000 pumps

The motors have a built-in frequency converter.

Via an external signal from a sensor or a controller, the pumps allow for any configuration and control method required, that is constant pressure, temperature or flow.

For further information, see page 32.

#### TPE Series 2000 pumps

The pumps have a factory-fitted differential-pressure sensor.

The pumps are factory-set to proportional-pressure control.

The motors have a built-in frequency converter for continuous adjustment of the pressure to the flow rate.

The range is recognised as a preset solution for quick and safe installation. Pumps fitted with 2-pole motors below 15 kW and 4-pole motors below 11 kW have a colour display for easy and intuitive pump setup and with full access to all functions.



Fig. 1 Example of main display on a TPE Series 2000 with advanced control panel

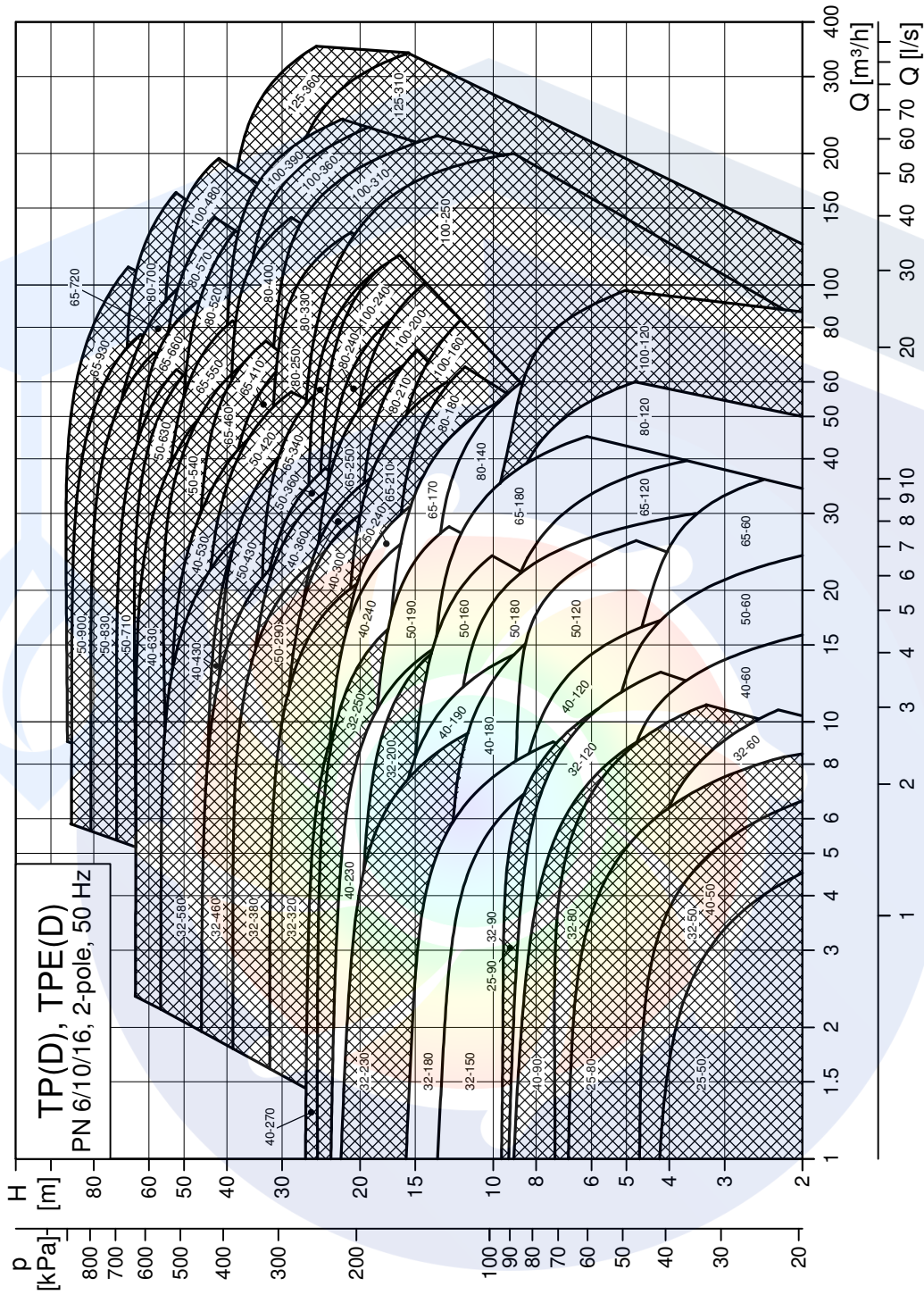
For further information, see page 35.

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### Performance range, 2-pole, PN 6, 10, 16

See page 174 for performance curves.

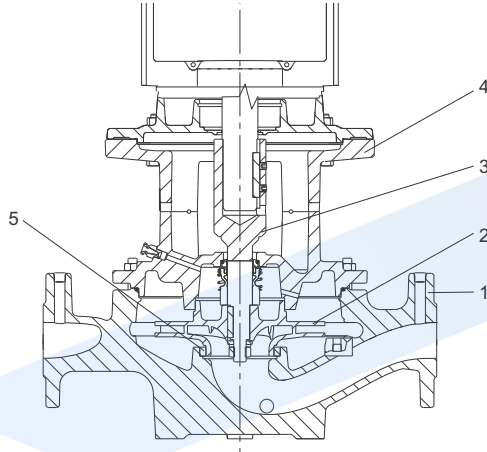


**Note:** All QH curves apply to single-head pumps. For further information about curve conditions, see page 160. The hatched area shows the performance range of TPE pumps.



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## Materials



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Fig. 13 Sectional drawing of TP Series 300

### Material specification

#### TP Series 300, PN 16

Pos.	Component	Material	EN/DIN
1	Pump housing	Cast iron EN-GJL-250	EN-JL 1040
2	Impeller	Cast iron EN-GJL-200, bronze CuSn10	EN-JL 1030 2.1093
3	Stub shaft	Stainless steel	1.4301
	Two-part stub shaft	Stainless steel/steel	1.4301/1.0301
4	Pump head/motor stool	Cast iron EN-GJL-250	EN-JL 1040
	Secondary seals	EPDM	
	Rotating seal face	Metal-impregnated carbon Silicon carbide	
	Stationary seat	Silicon carbide	
5	Wear ring	Bronze CuSn10/brass CuZn34Mn3Al2Fe1-C	2.1093

#### TP Series 300, PN 25

Pos.	Component	Material	EN/DIN
1	Pump housing	Ductile cast iron EN-GJS-400-18-LT	EN-JS 1025
2	Impeller	Cast iron EN-GJL-200, bronze CuSn10	EN-JL 1030 2.1093
3	Stub shaft	Stainless steel	1.4301
	Two-part stub shaft	Stainless steel/steel	1.4301/1.0301
4	Motor stool	Cast iron EN-GJL-250	EN-JL 1040
	Secondary seals	EPDM FXM	
	Rotating seal face	Metal-impregnated carbon Silicon carbide	
	Stationary seat	Silicon carbide	
5	Wear ring	Bronze CuSn10/brass CuZn34Mn3Al2Fe1-C	2.1093

### TP Series 300, DN 400, PN 25

Pos.	Component	Material	EN/DIN
1	Pump housing	Ductile cast iron EN-GJS-400-18 (A-LT)	EN-JS1020
2	Impeller	Ductile cast iron EN-GJS-400 Bronze CuSn10	EN-JS1030 2.1093
3	Pump shaft	Stainless steel	1.4436
4	Coupling	Cast iron EN-GJL-250	EN-JL 1040
5	Motor stool	Cast iron EN-GJL-250	EN-JL 1040
	Secondary seals	EPDM rubber	
	Rotating seal face	Resin-impregnated carbon	
	Stationary seat	Tungsten carbide	

### Mechanical shaft seal

For 16-bar versions, the following types of unbalanced mechanical shaft seals are available as standard:

- **BAQE**  
The BAQE shaft seal is a rubber bellows seal with carbon/silicon carbide seal faces and secondary seals of EPDM.
- **BQQE**  
The BQQE shaft seal is a rubber bellows seal with silicon carbide/silicon carbide seal faces and secondary seals of EPDM.

For 25-bar versions, the following types of balanced mechanical shaft seals are available as standard:

- **DAQF**  
The DAQF shaft seal is a balanced O-ring seal with carbon/silicon carbide seal faces and secondary seals of FXM.
- **DQQE**  
The DQQE shaft seal is a balanced O-ring seal with silicon carbide/silicon carbide seal faces and secondary seals of EPDM.
- **DBUE**  
The DBUE shaft seal is a balanced O-ring seal with carbon/tungsten carbide seal faces and secondary seals of EPDM.

For further information about common pumped liquids with recommended shaft seals, see page 24.

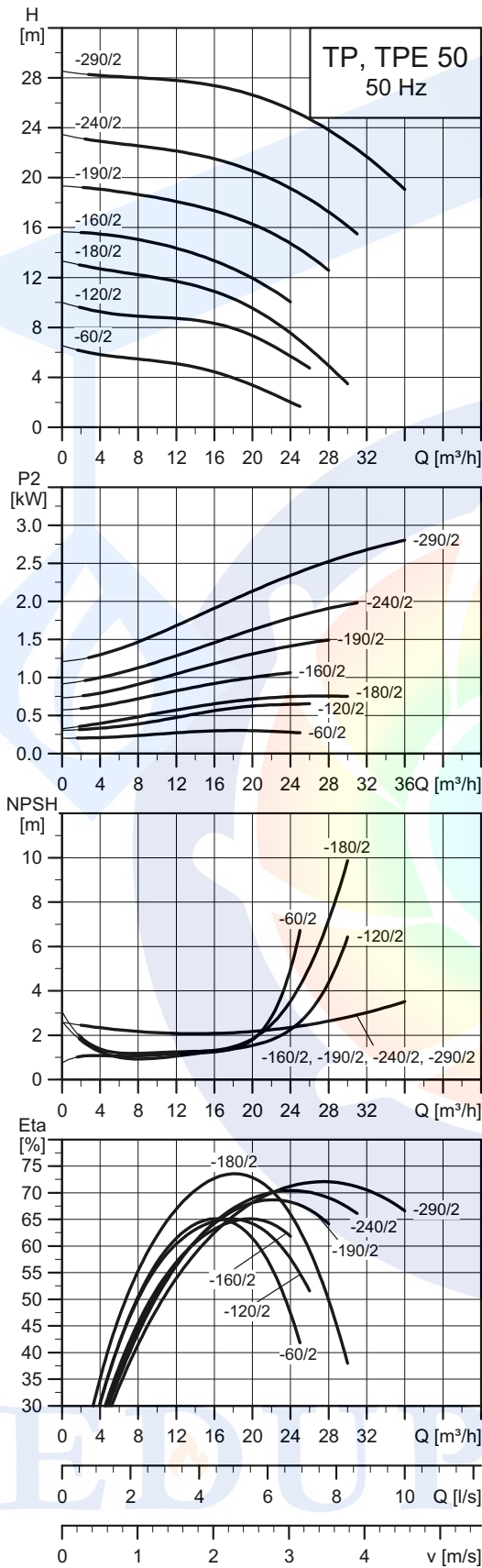
Special shaft seals are available for partly conditioned water or other liquids containing abrasive or crystallising particles. See page 24.

### Connections

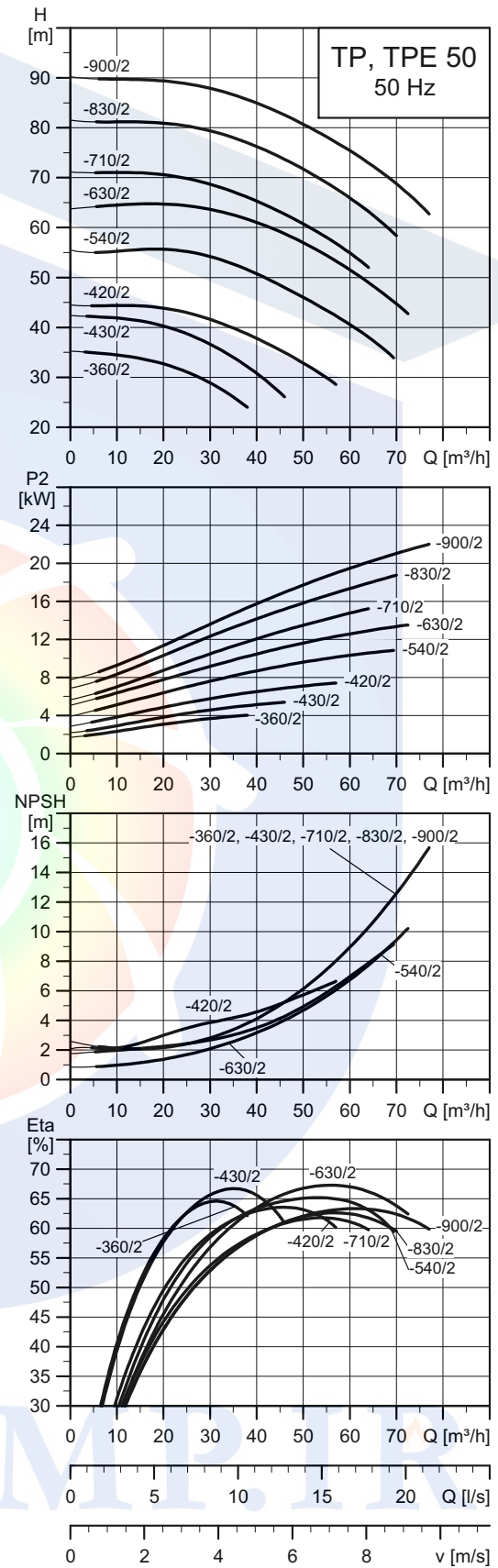
TP Series 300 pumps have PN 16 or PN 25 flanges. All dimensions are according to ISO 7005-2 or EN 1092-2.

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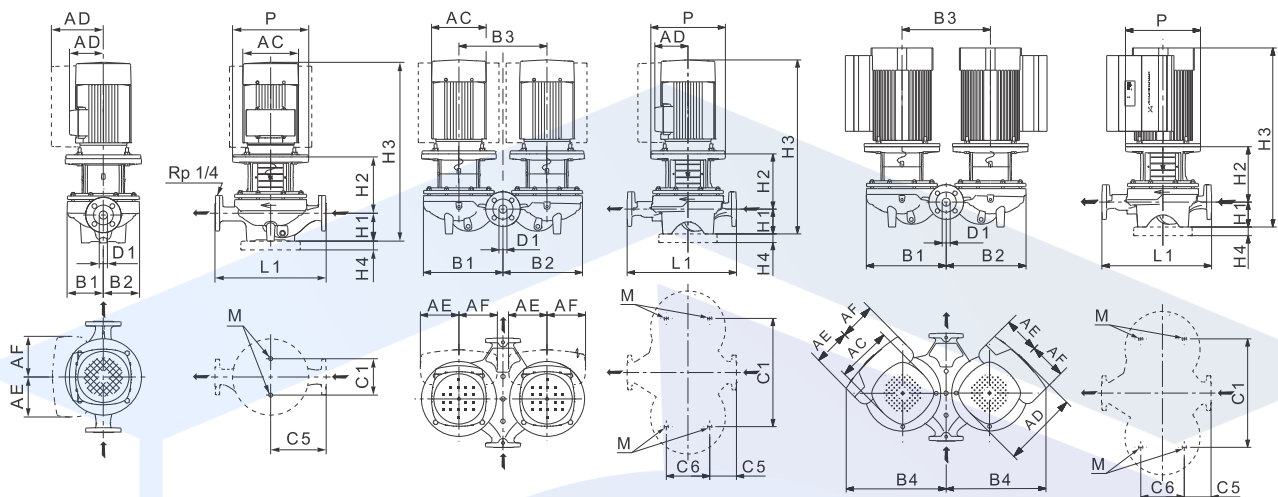
TP 50-XX/2



TP 50-XX/2



Note: All curves apply to single-head pumps. For further information, see page 160. Note: All curves apply to single-head pumps. For further information, see page 160.



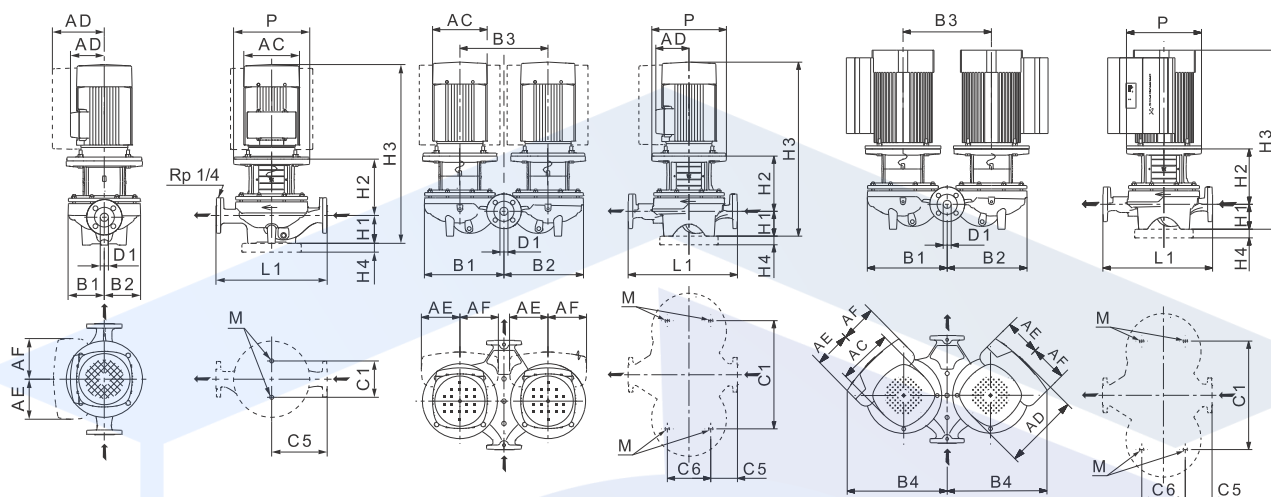
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### Technical data

TP 50	-60/2	-120/2	-180/2	-160/2	-190/2	-240/2	-290/2
TPD	•	•	•	•	•	•	•
TPE	-	-	-	-	-	-	•
TPED	-	-	-	-	-	-	•
Series	200	200	200	300	300	300	300
IEC size	1~ TP	71	80	80	-	-	-
	3~ TP	71	80	80	80	90	100
	1~ TPE	-	-	-	-	-	-
	3~ TPE	-	-	-	-	-	100
P2	1~3~ TP ★ [kW]	0.37/0.37	0.75/0.75	0.75/0.75	-1.1	-1.5	-2.2
	1~3~ TPE [kW]	-	-	-	-	-	-3
PN	PN 6/10	PN 6/10	PN 6/10	PN 16	PN 16	PN 16	PN 16
T <sub>min</sub> , T <sub>max</sub>	[°C]	[-25;140]	[-25;140]	[-25;140]	[-25;120]	[-25;120]	[-25;120]
D1	[mm]	50	50	50	50	50	50
AC	1~3~ TP [mm]	141/141	141/141	141/141	-141	-178	-198
	1~3~ TPE [mm]	-	-	-	-	-	-191
AD	1~3~ TP [mm]	133/133	133/133	133/109	-109	-110	-120
	1~3~ TPE [mm]	-	-	-	-	-	-201
AE	1~3~ TPE [mm]	-	-	-	-	-	-146
AF	1~3~ TPE [mm]	-	-	-	-	-	-146
P	[mm]	105	120	-	200	200	250
B1 ★★	[mm]	90/177	100/221	100/225	117/252	117/252	117/252
B2 ★★	[mm]	75/188	100/221	100/225	117/252	117/252	117/252
B3	[mm]	200	240	240	270	270	270
B4 ★★	[mm]	-	-	-	-	-	-381
C1 ★★	[mm]	120/200	120/240	120/240	144/350	144/350	144/350
C5 ★★	[mm]	140/60	140/60	140/60	170/60	170/60	170/60
C6	[mm]	125	126	126	175	175	175
L1	[mm]	280	280	280	340	340	340
H1	[mm]	75	75/61	75	115	115	115
H2	[mm]	137	135/141	135	152	152	180
H3	1~3~ TP [mm]	403/403	441/441	441/441	-518	-548	-588
	1~3~ TPE [mm]	-	-	-	-	-	-629
H4	[mm]	-	-	-	-	-	-
M		M12	M12	M12	M16	M16	M16

★ TP, TPD pumps are primarily fitted with IE3 motors. See *Motor data* on page 125.

★★ The dimension before the slash applies to the single-head pump, and the dimension after the slash applies to the twin-head pump.



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**Technical data**

TP 50	-360/2	-430/2	-420/2	-540/2	-630/2	-710/2	-830/2	-900/2
TPD	•	•	•	•	•	•	•	•
TPE	•	•	•	•	•	•	•	•
TPED	•	•	•	•	•	•	•	•
Series	300	300	300	300	300	300	300	300
IEC size	1~ TP	-	-	-	-	-	-	-
	3~ TP	112	132	132	160	161	160	180
	1~ TPE	-	-	-	-	-	-	-
	3~ TPE	112	132	132	160	161	160	180
P2	1~/3~ TP ★ [kW]	-/4	-/5.5	-/7.5	-/11	-/15	-/15	-/18.5
	1~/3~ TPE [kW]	-/4	-/5.5	-/7.5	-/11	-/15	-/15	-/18.5
PN	PN 16	PN 16	PN 16	PN 16	PN 16	PN 16	PN 16	PN 16
T <sub>min</sub> , T <sub>max</sub>	[°C]	[-25;120]	[-25;120]	[-25;120]	[-25;120]	[-25;120]	[-25;120]	[-25;120]
D1	[mm]	50	50	50	50	50	50	50
AC	1~/3~ TP [mm]	-/220	-/220	-/260	-/314	-/314	-/314	-/314
	1~/3~ TPE [mm]	-/191	-/191	-/255	-/255	-/314	-/314	-/314
AD	1~/3~ TP [mm]	-/134	-/134	-/159	-/204	-/204	-/204	-/204
	1~/3~ TPE [mm]	-/201	-/201	-/237	-/237	-/308	-/308	-/308
AE	1~/3~ TPE [mm]	-/146	-/146	-/173	-/173	-/210	-/210	-/210
AF	1~/3~ TPE [mm]	-/146	-/146	-/173	-/173	-/210	-/210	-/210
P	[mm]	250	300	300	350	350	350	350
B1 ★★	[mm]	133/290	133/290	162/373	162/373	162/373	180/386	180/386
B2 ★★	[mm]	119/284	119/284	162/373	162/373	162/373	164/379	164/379
B3	[mm]	320	320	420	420	420	420	420
B4 ★★	[mm]	-/406	-/406	-/383	-/501	-/385	-/555	-/555
C1 ★★	[mm]	144/400	144/400	144/500	144/500	144/500	144/500	144/500
C5 ★★	[mm]	170/52	170/52	220/123	220/123	220/123	220/123	220/123
C6	[mm]	175	175	175	175	175	175	175
L1	[mm]	340	340	440	440	440	440	440
H1	[mm]	115	115	115	115	115	115	115
H2	[mm]	189	228	227	257	257	264	264
H3	1~/3~ TP [mm]	-/676	-/734	-/721	-/843	-/843	-/850	-/894
	1~/3~ TPE [mm]	-/638	-/708	-/738	-/785	-/843	-/850	-/894
H4	[mm]	-	-	-	35	35	35	35
M		M16	M16	M16	M16	M16	M16	M16

★ TP, TPD pumps are primarily fitted with IE3 motors. See *Motor data* on page 125.

★★ The dimension before the slash applies to the single-head pump, and the dimension after the slash applies to the twin-head pump.



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