

Immersion Pumps PRT and PRA sealless

1-6001-US

***Centrifugal pumps
of plastic for a wide variety
of industrial fluids***

Technical data

- Delivery rate
 $Q_{\max} = 120 \text{ l/min}$
- Delivery head
 $H_{\max} = 32 \text{ m}$
- Temperature range
 $-30 \text{ }^{\circ}\text{C}$ to $+60 \text{ }^{\circ}\text{C}$

Product features

- Centrifugal pump,
1- to 5-stage models
- Open impellers
- Port dimensions
to DIN EN 12157
- Immersion depths
of up to 350 mm
- Operation on 50 Hz and 60 Hz
without impeller change
- Three-phase or single-phase motor



Main applications

- Air conditioning
- Beverage cooling installations
- Cleaning/degreasing facilities
- Filtering installations
- Grinding operations
- Humidifiers
- Lapping machines
- Machine tools
- Medical equipment
- Optical industry
- etc.

Fluids delivered

- Aqueous emulsions (with synthetic/mineral oil), also with chemical additives
- Oils
- Drinking water
- Salt water
- Distilled water
- Deionized water
- Bases and acids
- Photo developer fluids
- etc.

Please consult our endurance table for the large number of other fluids the pumps can deliver.

Temperature range: -30 °C to +60 °C.

Models

Model PRT:
Standard coolant pump for machine tools and systems.

Model PRA:
Special model for aggravated conditions in the machinery and systems sector for a large number of industrial fluids (see also "Mechanical Design").

The delivery rates of models **PRT** and **PRA** are the same.

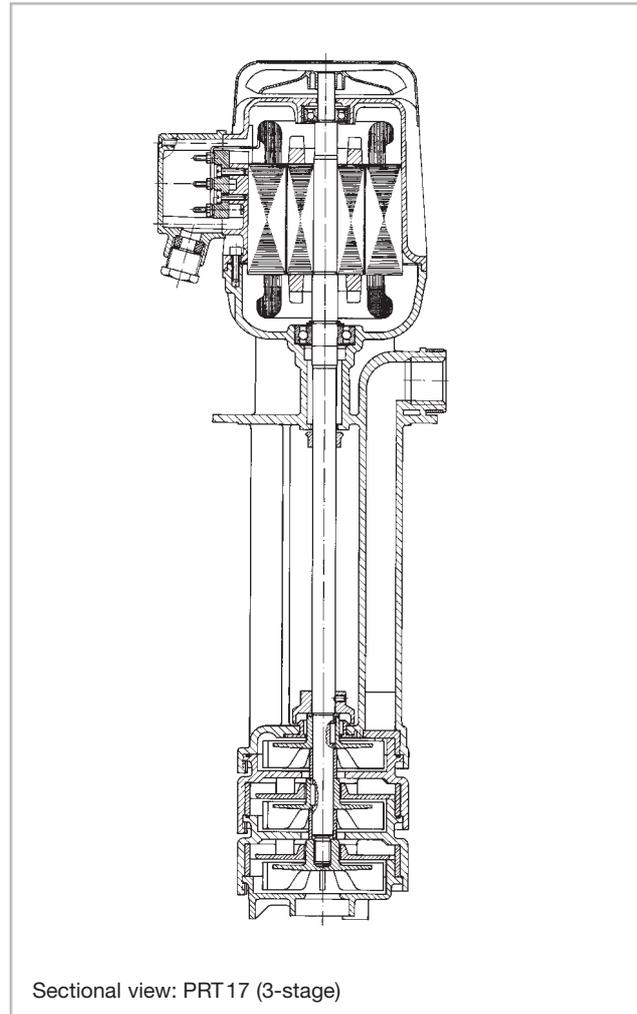
Both models can be supplied in two variants:

- a) for 50 **or** 60 Hz operation: PRT..**H** and PRA..**H**;
- b) for 50 **and** 60 Hz operation: PRT..**K** and PRA..**K** (without impeller change).

PRT..**H**, PRA..**H**, PRT..**K** and PRA..**K** = three-phase operation;
PRTE..**H**, PRAE..**H**, PRTE..**K** and PRAE..**K** = single-phase operation.

Design features

- sealless
- free-floating pump shaft, supported only by motor bearings
- open impellers
- 1- to 5-stage models
- installation and connecting dimensions to DIN EN 12157
- immersion depths of up to 350 mm



Sectional view: PRT 17 (3-stage)

Mechanical design

Component	Model PRT	Model PRA
Motor housing	aluminum	aluminum
Pump support	PPU	PPU
Pump bottom	PPU (PRT 22, 27: LCP)	PPU (PRA 22, 27: LCP)
Intermediate chamber	PPU (PRT 22, 27: LCP)	PPU (PRA 22, 27: LCP)
Impeller	PPU	PPU
Shaft	ETG	Stainless steel 1.4122 (others on request)
Antifriction bearings	Radial deep-groove ball bearings with two side plates (2Z), with permanent lubrication	Radial deep-groove ball bearings with two seals (2 RS), with permanent lubrication
Shaft packing (underneath lower ball bearing)	-	FPM
Spritzring (unter dem Flansch)	NBR	FPM
Dachspritzring (above pump chamber)	FPM	FPM
V-Ring (between fan and motor housing)	-	NBR; except for PRA 5, unventilated.

Electrical design

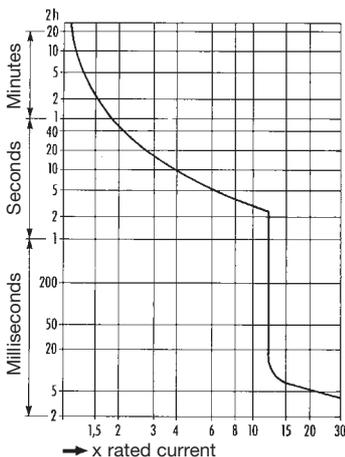
The drive motors have a sophisticated fail-safe winding that is baked instead of impregnated. They meet VDE regulations as well as European motor standards (DIN EN 60034-1/11.95) and the requirements underlying the CE mark.

Designs in conformity with non-European regulations, e.g. Canadian Standards Association (CSA), Underwriters Laboratories INC. (UL) or special requirements, e.g. the USA or Japan, are possible. Moreover, we also produce models for special operating conditions (e.g. exposure to humidity or dust).

The regular models have motor windings designed for continuous operation and connection to a mains voltage of 230/400 V ±10%, 50 Hz in accordance with IEC 38/5.87. On request the motors can be customized to all common mains values.

	Standard	Options
Degree of protection (DIN EN 60034-5/4.88)	IP 54	IP 55
Insulation class	F.B	
Ambient temperature (DIN EN 60034-1/11.95)	max. 40 °C	50 °C and higher
Relative humidity (DIN 50015)	max. 92 %	95 % and higher
Site altitude (DIN EN 60034-1/11.95)	< 1000 m above sea level	on request
Electrical parameters	230/400 V, 50 Hz 255/440 V, 60 Hz	on request
Mains operation	three-phase	single-phase AC
Number of poles	2 poles	4 poles; multiple-speed
Terminal box		
- layout (DIN EN 12157)	layout 1	layout 2, 3 or 4
- material	high-impact plastic	light metal
- cable entry (DIN 40430/2.71)	M16x1.5	M25x1.5
Protective surface coating	synthetic resin lacquer color: RAL 9005 (deep-black, dull)	Special finish on request.
Special protection		Motor protection (thermistors in the winding/PTC); fan cowl with canopy
Used with converter		on request

Tested Safety (GS) regulations specify a motor circuit breaker conforming to the following tripping characteristic.



Installation and operation

The unit is installed in a vertical position. The maximum permissible level of fluid is 20 mm beneath the mounting flange (cf. following drawings).

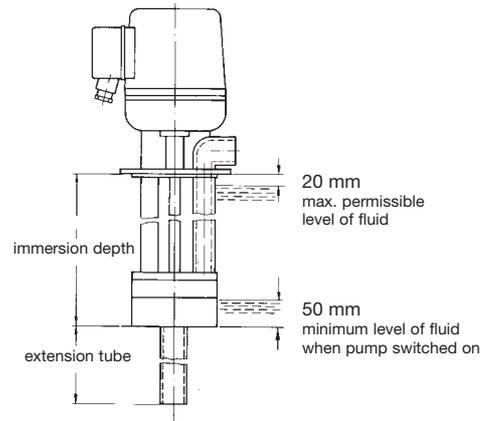
Dry running is not permitted.

The pump may, however, run dry (no fluid) for a brief period of time to check the direction of rotation prior to startup.

Operation against closed valve is possible.

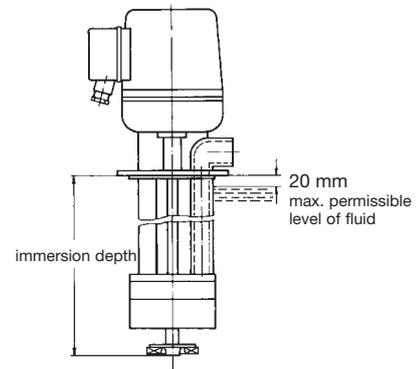
Direction of rotation: to the left (counterclockwise) as viewed from above looking down on the ventilation side of the motor.

Options



Model with extension tube

if immersion depth deviates from standard.



Model with agitator blades

for fluids with fast sedimentation characteristics.

(Please note: higher power required)

Order Example

Model _____

Size _____

H = 50 Hz _____

60 Hz (with impeller change) _____

K = 50/60 Hz _____

(without impeller change) _____

Immersion depth t _____

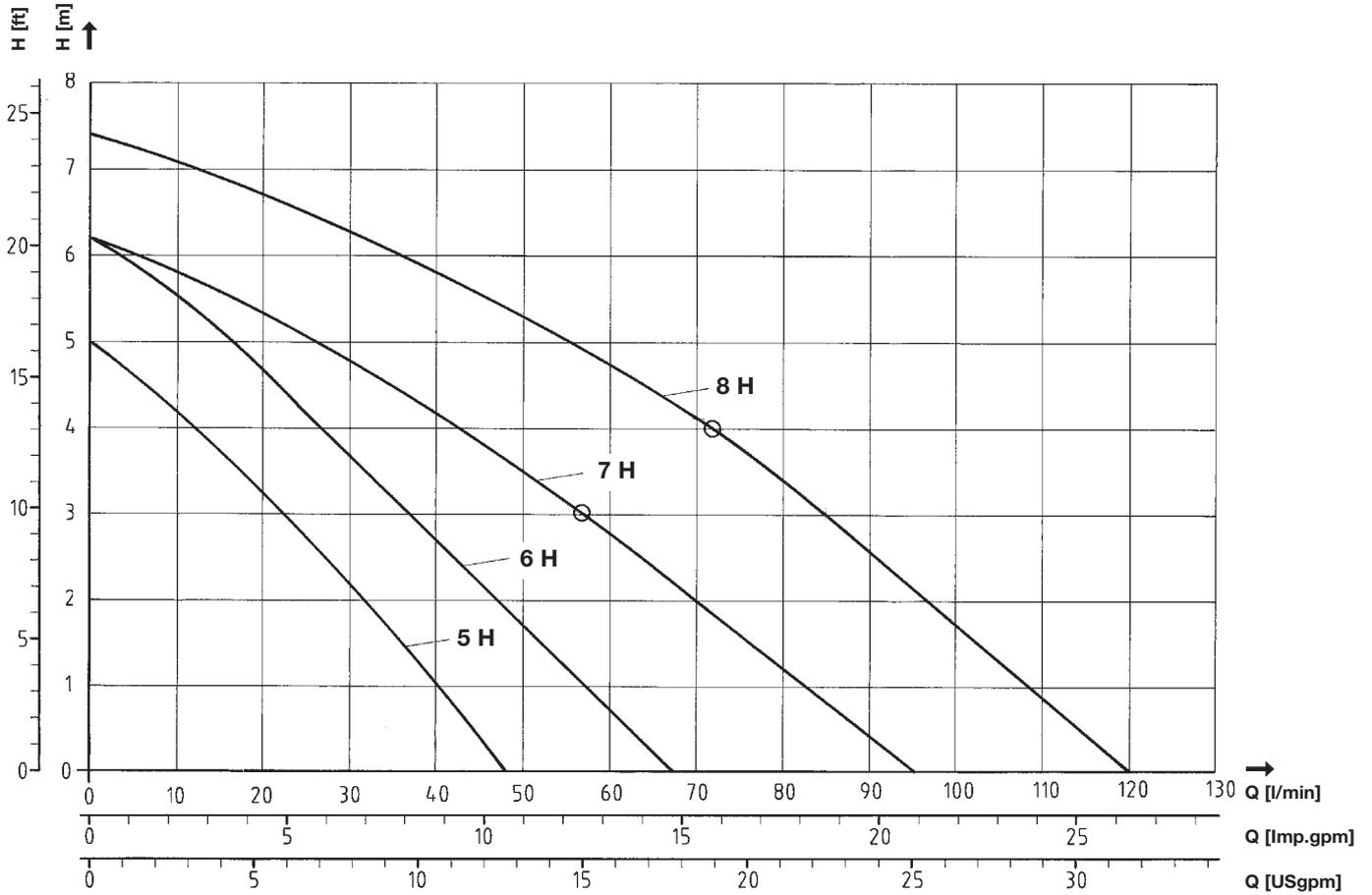
PRT 7 H-220
PRA 7 K-220

Please indicate electrical parameters, e.g. 230/400 V, 50 Hz.

When ordering spare parts, always indicate the 10-place serial number (see motor rating plate).

Models PRT..H/PRA..H, 1-stage, for 50 or 60 Hz (with impeller change)

Characteristics



The data apply to fluids with a viscosity of 1 mm²/s at a density of 1 kg/dm³.
 ○ Q_{max} in single-phase operation (operation above Q_{max} leads to overload of drive motor)

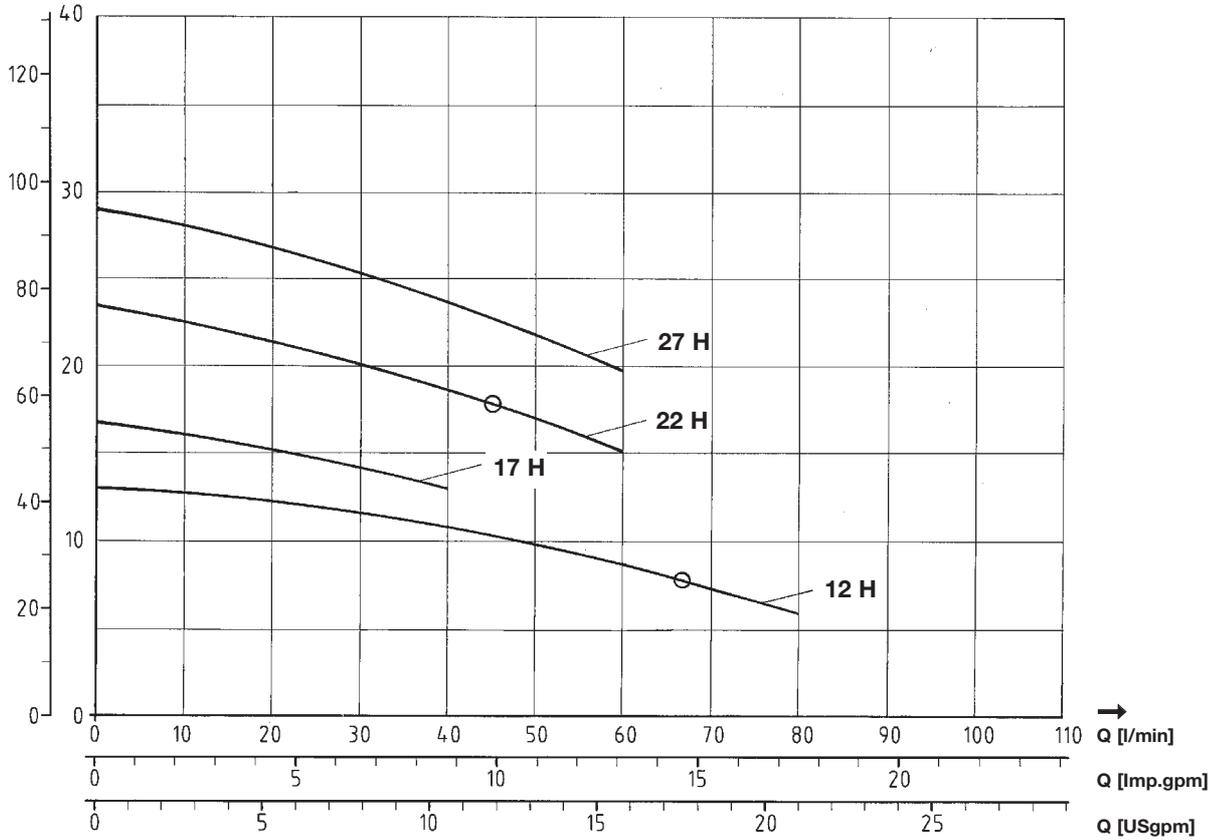
Three-phase operation							Single-phase operation						
Model	Rated power [kW]	Rated voltage Δ/Y [V]	Rated frequency [Hz]	Rated current Δ/Y [A]	Rated speed [rpm]	Noise level *) [dB (A)]	Model	Rated power [kW]	Rated voltage ⊥ [V]	Rated frequency [Hz]	Rated current ⊥ [A]	Rated speed [rpm]	BC [μF]
PRT 5H 1-stage	0.12	230/400	50	0.71 / 0.41	2886	42	-	-	-	-	-	-	-
		255/440	60	0.65 / 0.38	3494								
PRT PRA 6H 1-stage	0.18	230/400	50	0.86 / 0.5	2812	44	PRTE PRAE 6H 1-stage	0.18	230	50	1.36	2840	6
		255/440	60	0.78 / 0.45	3437				250	60	1.1	3486	
PRT PRA 7H 1-stage	0.18 0.25	230/400	50	0.86 / 0.5	2812	44	PRTE PRAE 7H 1-stage	0.18	230	50	1.36	2840	6
		255/440	60	0.99 / 0.57	3350				250	60	1.1	3486	
PRT PRA 8H 1-stage	0.25	230/400	50	1.11 / 0.64	2701	45	PRTE PRAE 8H 1-stage	0.18	230	50	1.36	2840	6
		255/440	60	0.99 / 0.57	3350				250	60	1.1	3486	

*) to DIN EN 60034-9/5.96

Models PRT..H/PRA..H, 2 to 5-stage, for 50 or 60 Hz (with impeller change)

Characteristics

$\frac{H}{H} \frac{E}{E} \uparrow$



The data apply to fluids with a viscosity of 1 mm²/s at a density of 1 kg/dm³.

○ Q_{max} in single-phase operation (operation above Q_{max} leads to overload of drive motor)

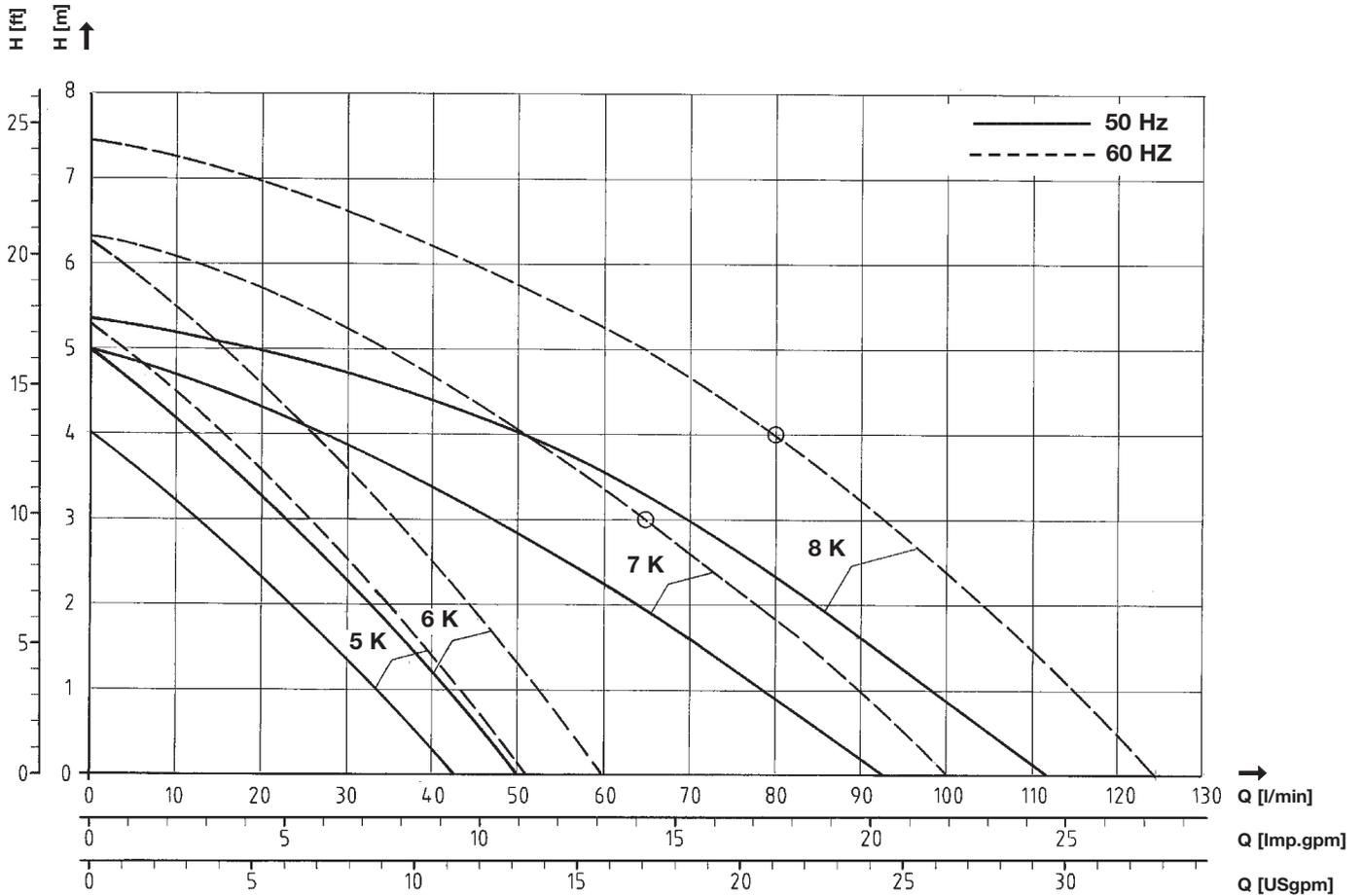
Three-phase operation							Electrical data								Single-phase operation				
Model	Rated power [kW]	Rated voltage Δ/Y [V]	Rated frequency [Hz]	Rated current Δ/Y [A]	Rated speed [rpm]	Noise level *) [dB (A)]	Model	Rated power [kW]	Rated voltage ⊥ [V]	Rated frequency [Hz]	Rated current ⊥ [A]	Rated speed [rpm]	BC [μF]						
PRT 12H PRA 12H 2-stage	0.37	230/400	50	1.73 / 1	2667	48	PRTE 12H PRAE 12H 2-stage	0.35	230	50	1.8	2700	8						
		255/440	60	1.49 / 0.86	3329				250	60	2	3220	6						
PRT 17H PRA 17H 3-stage	0.37	230/400	50	1.73 / 1	2667	48	PRTE 17H PRAE 17H 3-stage	1)	1)	1)	1)	1)	1)						
		255/440	60	1.49 / 0.86	3329				1)	1)	1)	1)	1)						
PRT 22H PRA 22H 4-stage	0.75	230/400	50	2.72 / 1.57	2753	54	PRTE 22H PRAE 22H 4-stage	0.55	230	50	3.45	2855	12						
		255/440	60	2.37 / 1.37	3370			0.75	250	60	3.97	3380							
PRT 27H PRA 27H 5-stage	0.75	230/400	50	3.46 / 2	2846	54	PRTE 27H PRAE 27H 5-stage	1)	1)	1)	1)	1)	1)						
		255/440	60	3.46 / 2	3403				1)	1)	1)	1)	1)						

1) on request

*) to DIN EN 60034-9/5.96

Models PRT..K/PRA..K, 1-stage, for 50 and 60 Hz (without impeller change)

Characteristics



The data apply to fluids with a viscosity of 1 mm²/s at a density of 1 kg/dm³.

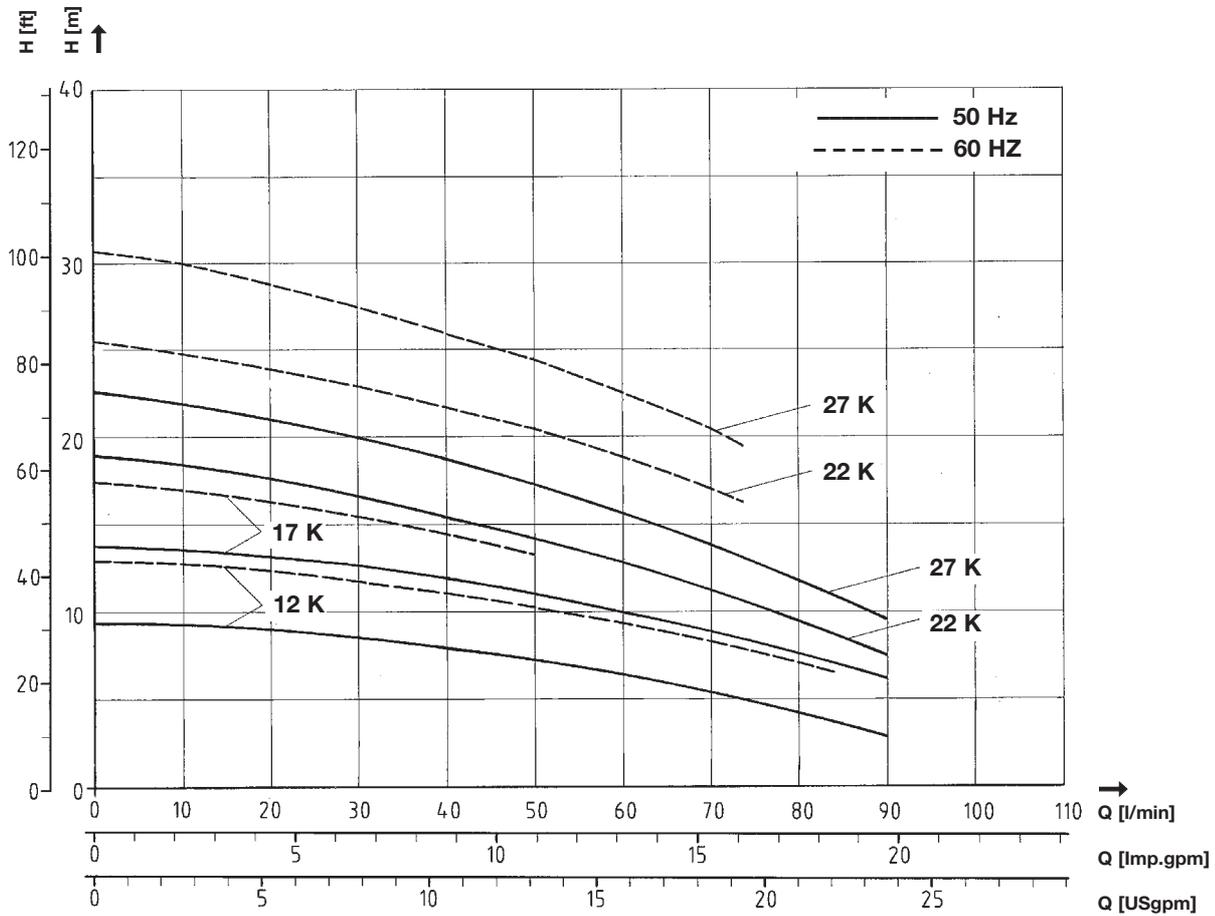
○ Q_{max} in single-phase operation (operation above Q_{max} leads to overload of drive motor)

		Electrical data											
		Three-phase operation					Single-phase operation						
Model	Rated power [kW]	Rated voltage Δ/Y [V]	Rated frequency [Hz]	Rated current Δ/Y [A]	Rated speed [rpm]	Noise level *) [dB (A)]	Model	Rated power [kW]	Rated voltage ⊥ [V]	Rated frequency [Hz]	Rated current ⊥ [A]	Rated speed [rpm]	BC [μF]
PRT 5K 1-stage	0.12	230/400	50	0.71 / 0.41	2886	42	-	-	-	-	-	-	-
		255/440	60	0.65 / 0.38	3494								
PRT PRA 6K 1-stage	0.12	230/400	50	0.71 / 0.41	2886	44	PRTE PRAE 6K 1-stage	0.12	230	50	1.12	2897	6
	0.18	255/440	60	0.78 / 0.45	3437			0.18	250	60	1.1	3486	
PRT PRA 7K 1-stage	0.18	230/400	50	0.86 / 0.5	2812	44	PRTE PRAE 7K 1-stage	0.18	230	50	1.36	2840	6
	0.25	255/440	60	0.99 / 0.57	3350			0.18	250	60	1.1	3486	
PRT PRA 8K 1-stage	0.18	230/400	50	0.86 / 0.5	2812	45	PRTE PRAE 8K 1-stage	0.18	230	50	1.36	2840	6
	0.25	255/440	60	0.99 / 0.57	3350			0.18	250	60	1.1	3486	

*) to DIN EN 60034-9/5.96

Models PRT..K/PRA..K, 2- to 5-stage, for 50 and 60 Hz (without impeller change)

Characteristics

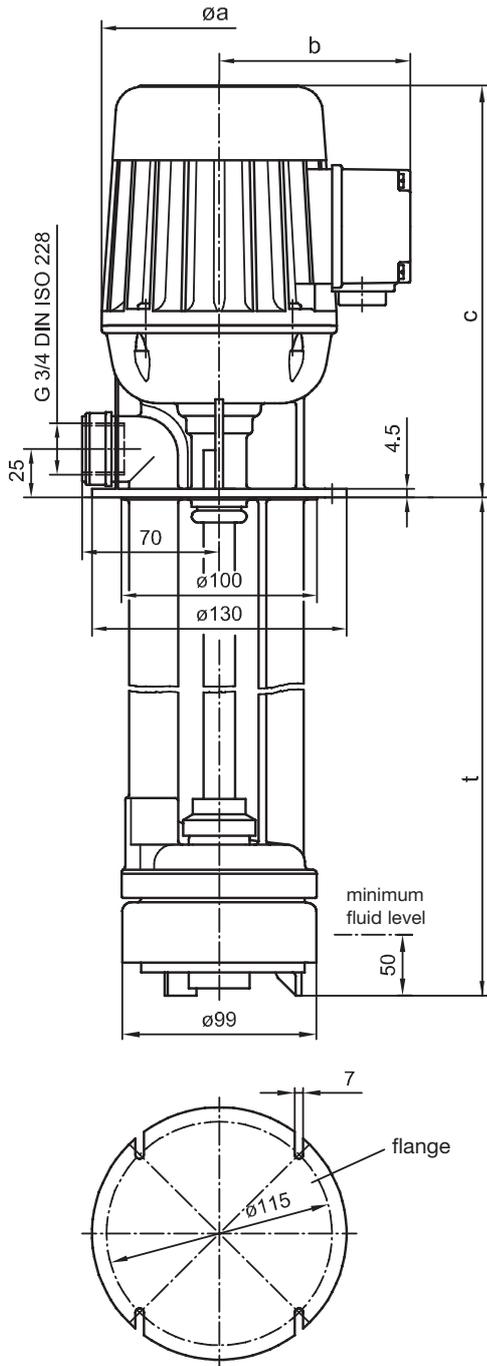


The data apply to fluids with a viscosity of 1 mm²/s at a density of 1 kg/dm³.

Three-phase operation							Electrical data								Single-phase operation				
Model	Rated power [kW]	Rated voltage Δ/Y [V]	Rated frequency [Hz]	Rated current Δ/Y [A]	Rated speed [rpm]	Noise level *) [dB (A)]	Model	Rated power [kW]	Rated voltage ⊥ [V]	Rated frequency [Hz]	Rated current ⊥ [A]	Rated speed [rpm]	BC [μF]						
PRT PRA 12K 2-stage	0.37	230/400	50	1.73 / 1	2667	48	PRTE PRAE 12K 2-stage	0.35	230	50	1.8	2700	8						
		255/440	60	1.49 / 0.86	3329				250	60	2	3220	6						
PRT PRA 17K 3-stage	0.37	230/400	50	1.73 / 1	2667	48	PRTE PRAE 17K 3-stage	1)	230	50	1)	1)	1)						
		255/440	60	1.49 / 0.86	3329				250	60	1)	1)	1)	1)					
PRT PRA 22K 4-stage	0.75	230/400	50	2.72 / 1.57	2753	54	PRTE PRAE 22K 4-stage	0.55	230	50	3.45	2855	12						
		255/440	60	2.37 / 1.37	3370				250	60	3.97	3380							
PRT PRA 27K 5-stage	0.75	230/400	50	3.46 / 2	2846	54	PRTE PRAE 27K 5-stage	1)	230	50	1)	1)	1)						
		255/440	60	3.46 / 2	3403				250	60	1)	1)	1)						

1) on request

*) to DIN EN 60034-9/5.96



Dimensions and Weights of models H and K						
Model	t [mm]	weight [kg]	ø a	b *)	c	ventilated motor
PRT 5 1-stage	90	3	120	98	190	-
	120					
	140					
	170	4				
	220					
	270					
PRT (E) PRA (E) 6; 7; 8 1-stage	90	3.6	120	98	216	X
	120					
	140					
	170	4.2				
	220					
	270					
PRT (E) 12 PRA (E) 12 2-stage	130	4.5	120	98	216	X
	160					
	180					
	210	5				
	260					
	310					
PRT (E) 17 PRA (E) 17 3-stage	170	4.7	120	98	216	X
	200					
	220					
	250	5.2				
	300					
	350					
PRT (E) 22 PRA (E) 22 4-stage	200	6	140	104	295	X
	230					
	250	8				
	280					
	330					
PRT (E) 27 PRA (E) 27 5-stage	240	6.8	140	104	295	X
	270					
	290	8.5				
	290					
	320					

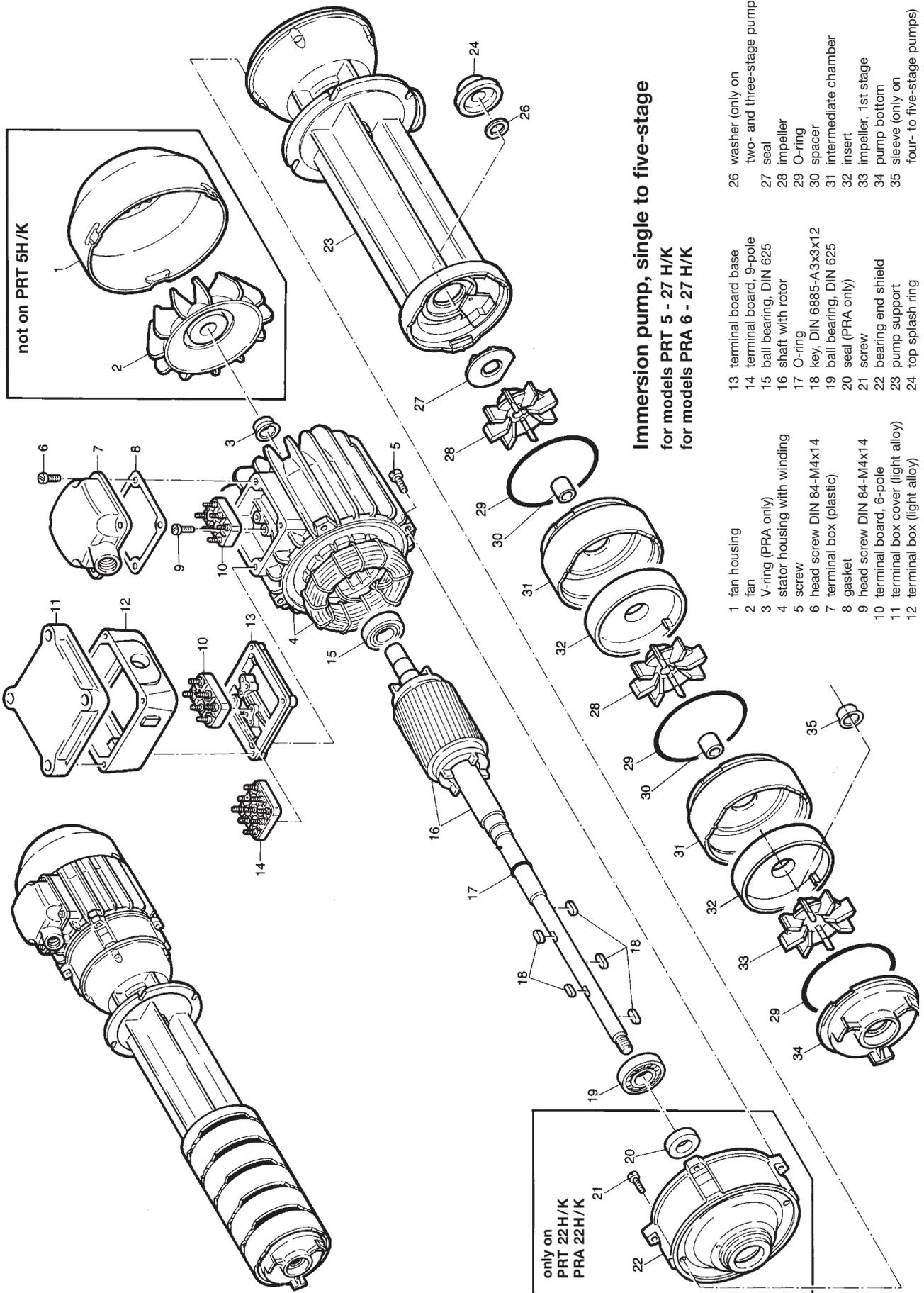
*) Dimension "b" is increased by +20 mm in the case of CSA and USA designs or if thermistor-type motor protection is provided.

Standard ventilated motors come without a canopy. If necessary – observe the respective safety regulations and laws applying to machinery guards –, the motors can be supplied with a protection cap at extra charge. Dimension "c" is then increased by about 25 mm.

Please note:

All equipment may only be installed and/or assembled by qualified personnel. Observe existing safety regulations.

To avoid errors please consult our operating instructions.



Immersion pump, single to five-stage
for models PRT 5 - 27 H/K
for models PRA 6 - 27 H/K

- | | | |
|-------------------------------------|---------------------------|--|
| 1 fan housing | 13 terminal board base | 26 washer (only on two- and three-stage pumps) |
| 2 fan | 14 terminal board, 9-pole | 27 seal |
| 3 V-ring (PRA only) | 15 ball bearing, DIN 625 | 28 impeller |
| 4 stator housing with winding | 16 shaft with rotor | 29 O-ring |
| 5 screw | 17 O-ring | 30 spacer |
| 6 head screw DIN 84-M4x14 | 18 key, DIN 6885-A-3x3x12 | 31 intermediate chamber |
| 7 terminal box (plastic) | 19 ball bearing, DIN 625 | 32 insert |
| 8 gasket | 20 seal (PRA only) | 33 impeller, 1st stage |
| 9 head screw DIN 84-M4x14 | 21 screw | 34 pump bottom |
| 10 terminal board, 6-pole | 22 bearing end shield | 35 sleeve (only on four- to five-stage pumps) |
| 11 terminal box cover (light alloy) | 23 pump support | |
| 12 terminal box (light alloy) | 24 top splash ring | |