

# HB-Therm<sup>®</sup> THERMO-5

## Temperature Control Units

Product Catalogue 2023-11



## Temperature Control Units Thermo-5

Regulated mould temperatures are essential for plastics injection moulding.

Temperature control units regulate mould temperatures through a liquid heat carrier by controlled inducing or dissipating of heat.

Thermo-5 units provide efficient and reliable operation and are used to control temperatures in injection moulding or similar processes.

### ...precise, powerful and efficient

Highly accurate temperature control


- $\pm 0,1$  Kelvin with self-optimizing regulation
- Calibration of temperature, pressure and flow rate measurement
- Quality inspection certificate

Short heating and cooling times

- The tankless system tempers only as much heat carrier as necessary

Uses lower heating and cooling energy

- Minimal circulation volume requires less power
- Clever cooling concept reduces losses

Energy efficient pump – Eco-pump  \*

- Energy savings by variable speed pump

### ...easy, intelligent and convenient

Simple operation

- Well-arranged menus in 21 languages
- Intuitive navigation
- On-the-spot instructions at the push of a button

Bright display

- Easily legible with high contrast
- Free choice of display windows and values

Convenient functions

- Fully automated mould cooling and evacuation \*
- Recording of data via USB and analysis in Excel
- Store function for mould specific parameters
- Control also via the machine



### ...safe, reliable and low on maintenance

Fully automated process monitoring

- Continuous monitoring of temperature, flow and pressure
- Highly accurate ultrasonic flow rate measurement
- Detection of hose ruptures and leaks
- Pump status is monitored \*

Durable construction

- Solely non-corroding materials in the hydraulic circuit
- Heating elements without direct contact to the heat transfer medium
  - ▶ Lifetime warranty on the heater
- Bypass and proportional valve result in vaporisation-free cooling and low-scaling \*
- Sealless pump in stainless steel

Improved protection for the mould

- Closed system without oxygen contact
- Completely automatic purging of air
- Active regulation of pressure – only as much as necessary \*

### ...small, clean and quiet

Squeezes into almost everywhere

- Made possible by ingenious hydraulic modules and a tankless system

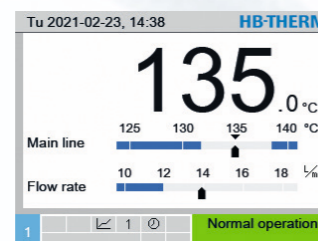
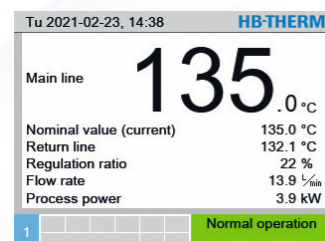
Can also be used in a clean room \*

- Fibre-free insulation, abrasion resistant castors and high-gloss finish

Draws attention only when necessary

- Intelligent monitoring of all processes

\* Some features may not apply, depending on the model



Some models of Thermo-5 temperature control units have already been replaced by the latest Thermo-6 generation.



**Standard Equipment**

<b>Hydraulics</b>	Closed system without oxygen contact, with efficient automatic deaeration, automatic filling Temperature measurement in main line and return line with sensor Pt 1000 Continuous maintenance-free ultrasonic flow meter Low-scaling and pressure shock-free cooling with cooling water filter and proportional valve Proportionally controlled cooler bypass (on units over 100 °C) Sealless pump in stainless steel Hydraulic circuit made of non-corroding materials Heating elements without direct contact to the heat transfer medium Easy to modify for separate supply of system water (on water units) Booster pump for system filling (on water units over 100 °C) Controlled superimposed system pressure (on water units) Bypass and return line filter Heat transfer circuit with superimposed cold oil (on oil units) Tank with level measuring for expansion and mould evacuation (on oil units)
<b>Functions</b>	Mould emptying by pump reversal (not possible with: <b>8R</b> ) Even load distribution at all heating stages with solid-state relays Auto-tuning cascade control Control on either main line or return line (or external sensor <b>ZE</b> ) Cooling with automatic switch-off programme Changeover to 2nd nominal value Nominal value ramp and ramp programme Cyclical system water exchange (selectable)
<b>Monitoring / Safety</b>	Automatic limit value setting Monitoring of various process parameters Hose rupture and leakage monitor Sensor failure monitor Pump and heater current monitor Dry-running protection Triple safety cut-out for heating Pressure enabling with device OFF (not possible with: <b>8R</b> ) Safety relief valve and pressure gauge on rear of unit Automatic phase direction adaptation and phase monitor Lockable and abrasion resistant castors (PUR)
<b>Command / Display</b>	TFT-Colour display 3,5" with interactive user guidance in 21 languages Help button with context sensitive information Display of flow rate, pump pressure, process power and energie savings Large choice of display windows and values Temperature display in 0,1 °C Units of measurement for temperature, flow rate and pressure can be set Visual and acoustic alarms; volume adjustable Store function for mould specific parameters Display of date and time Timer Operating hours counter and service interval display Logbook for alarms Data input password protected
<b>Interfaces</b>	USB Connection (Host/Device) for software updates, parameter transfer and data recording HB HB-Therm data interface CAN to connect modular units, flow meters Flow-5 and switching units Vario-5 (1 socket Sub-D 15 pin, female)

Note: Modular units do not have a proper command

**Additional Equipment**

<b>ZL Leak stopper</b>	With automatic vacuum optimisation (up to 70 °C; not possible with: <b>B2</b> )
<b>ZB Connection for alarm and external control</b>	Alarm using potential-free contact (rating max. 250 VAC, 4 A) Unit ON/OFF, ramp programme ON/OFF and switching nominal value 1 or 2 using potential-free contact 1 socket Harting Han 7D (male), connecting cable 6 m with plug included
<b>ZE Connection for external sensor</b>	Thermocouple type J, K, T or Pt 100 in 3-wire system, with selectable production detector 1 socket Audio 5 pin (female), connector 90° (male) included
<b>ZD Interface DIGITAL</b>	Serial data interface 20 mA, RS-232 or RS-422/485 Various protocols selectable: Arburg, Billion, Bühler, Dr. Boy, Engel, Ferromatik Milacron, Haitian, KraussMaffei, MODBUS (RTU-Mode), Negri Bossi, SPI (Fanuc, etc.), Stork, Sumitomo Demag, Wittmann Battenfeld, Zhafir 2 sockets Sub-D 25 pin (female)
<b>ZC Interface CAN</b>	Serial data interface CAN-bus (Sumitomo Demag) and CANopen (EUROMAP 66; Netstal, etc.) To remotely control singular units 2 sockets Sub-D 9 pin (1 male and 1 female)
<b>ZO Interface OPC UA</b>	Ethernet interface (EUROMAP 82.1) 1 socket RJ-45 (female)
<b>ZP Interface PROFIBUS-DP</b>	Serial data interface PROFIBUS-DP 1 Sub-D 9-pin socket (not possible with: <b>ZC</b> )
<b>ZU Pump status monitor</b>	Additional pressure sensor in main line
<b>ZK Keyboard-protection</b>	Transparent flap over display and controls
<b>ZR Clean room package</b>	Clean room capable version: 'At Rest' < ISO class 6 (class 1 000) 'In Operation' ISO class 7 (class 10 000) Fibre-free insulation
<b>ZG Mould evacuation with compressed air</b>	Replaces mould evacuation by pump reversal Connection, compressed air (P. 16, Fig. 5) Pressure: 2–8 bar; Thread: G¼; Resistance: 10 bar, 100 °C

**Singular unit**



**Modular unit**



Temperature control units Thermo-5 are available as singular or modular units. Contrary to singular units, modular units do not have a proper command and display. They can only be controlled via a singular unit or a control module Panel-5 but thus enable a common changing of parameters as well as a remote control. The units are linked to the master and among each other always via the interface HB. Further, modular units have a cost advantage over the singular units and are distinguished from the latter by adding the letter M to the unit designation (e. g. HB-140ZM2).

Communication (P. 13, Fig. 1)

100 °C

Single units  
Water, direct cooling

Temperature control unit		Heat transfer medium		Water			
		Cooling		Direct			
Type	with maximum main line temperature in °C	Housing size (P. 16, Fig. 5)					
		1	1L	2	2L	3	4
<b>Heating</b> (P. 14, Fig. 2)	kW	8	●	●			
		16			●	●	●
		32					○
							○
<b>Pump</b> (P. 14, Fig. 3)	sealless, stainless; 0,5 kW; 30 L/min, 52 m	2M	●		●		
	sealless, stainless; 1,0 kW; 50 L/min, 70 m	4M	○		○ <sup>1)</sup>		○
	Eco-pump  , sealless, stainless; 1,1 kW; 60 L/min, 70 m	4S		●		●	
	stainless; 2,8 kW; 110 L/min, 70 m	6G					●
	sealless, stainless; 2,8 kW; 110 L/min, 70 m	6M					○
	stainless; 3,5 kW; 160 L/min, 70 m	8G					○
	sealless, stainless; 3,5 kW; 160 L/min, 70 m	8M					○
	Eco-pump  , sealless, stainless; 2,2 kW; 220 L/min, 65 m	8R					●
<b>Cooling</b> (P. 15, Fig. 4)	38 kW @ 60 K	B1	●	●	●	●	
	110 kW @ 60 K	E1					●
<b>Additional Equipment</b>		ZB	○	○	○	○	○
Connection for alarm and external control		ZE	○	○	○	○	○
Connection for external sensor		ZD	○	○	○	○	○
Interface DIGITAL		ZC	○	○	○	○	○
Interface CAN		ZO	○	○	○	○	○
Interface OPC UA		ZP	○	○	○	○	○
Interface PROFIBUS-DP		ZU	○	●	○	●	●
Pump status monitor		ZK	○	○	○	○	○
Keyboard-protection		ZR	○	○	○	○	○
Clean room package		ZG	○ <sup>2)</sup>	○ <sup>2)</sup>	○ <sup>2)</sup>	○ <sup>2)</sup>	○ <sup>2)</sup>
Mould evacuation with compressed air		405	●	●	●	●	●
<b>Mains voltage</b>	400 V (380–415 V), 50 Hz; 3LPE	406	○	○	○	○	○
	400 V (380–415 V), 60 Hz (50/60 Hz); 3LPE	215	○	○	○	○	○
	210 V (200–220 V), 50 Hz; 3LPE	216	○	○	○	○	○
	210 V (200–220 V), 60 Hz (50/60 Hz); 3LPE	466	○	○	○	○	○
	460 V (440–480 V), 60 Hz; 3LPE						

Ordering example: HB-100X2L-16-4S-B1-ZD, 405, English

● Standard specification ○ Optional <sup>1)</sup> Typical specification  
<sup>2)</sup> Only possible through the cooling water outlet  
 □ replaced by Thermo-6

Maximum main line temperature	°C	100	100	100	100	100	100
Flow rate measurement	Measuring range	L/min	0,4–40	0,4–40	0,4–40	0,4–40	2–160
Circulating volume in unit	approx.	L	1,0	1,0	1,6	1,6	6,5
Dimensions (P. 16, Fig. 5)	Height	mm	510	510	700	700	850
	Width	mm	180	180	240	240	300
	Depth	mm	661	731	661	731	982
Weight max.	kg	50	55	62	68	136	140
Connection, main line and return line	Thread		G¾	G¾	G¾	G¾	G1 ¼
	Resistance	bar, °C	20, 120	20, 120	20, 120	20, 120	20, 120
Connection, cooling water	Pressure	bar	2–5	2–5	2–5	2–5	2–5
	Thread		G¾	G¾	G¾	G¾	G¾
	Resistance	bar, °C	10, 100	10, 100	10, 100	10, 100	10, 100
Connection, drain	Thread		G¾	G¾	G¾	G¾	G½

100 °C

Single units  
Water, indirect cooling

Temperature control unit		Heat transfer medium		Water			
		Cooling		Indirect			
Type	with maximum main line temperature in °C	Housing size (P. 16, Fig. 5)					
		1	1L	2	2L	3	4
<b>Heating</b> (P. 14, Fig. 2)	kW	8	●	●			
		16			●	●	●
		32					○
							○
<b>Pump</b> (P. 14, Fig. 3)	sealless, stainless; 0,5 kW; 30 L/min, 52 m	2M	●		●		
	sealless, stainless; 1,0 kW; 50 L/min, 70 m	4M	○		○ <sup>1)</sup>		○
	Eco-pump  , sealless, stainless; 1,1 kW; 60 L/min, 70 m	4S		●		●	
	stainless; 2,8 kW; 110 L/min, 70 m	6G					●
	sealless, stainless; 2,8 kW; 110 L/min, 70 m	6M					○
	stainless; 3,5 kW; 160 L/min, 70 m	8G					○
	sealless, stainless; 3,5 kW; 160 L/min, 70 m	8M					○
	Eco-pump  , sealless, stainless; 2,2 kW; 220 L/min, 65 m	8R					●
<b>Cooling</b> (P. 15, Fig. 4)	30 kW @ 60 K	A2	●	●	●	●	
	50 kW @ 60 K	B2	○	○	○	○	
	90 kW @ 60 K	C2					●
<b>Additional Equipment</b>		ZL	○ <sup>3)</sup>	○ <sup>3)</sup>	○ <sup>3)</sup>	○ <sup>3)</sup>	
Leak stopper		ZB	○	○	○	○	○
Connection for alarm and external control		ZE	○	○	○	○	○
Connection for external sensor		ZD	○	○	○	○	○
Interface DIGITAL		ZC	○	○	○	○	○
Interface CAN		ZO	○	○	○	○	○
Interface OPC UA		ZP	○	○	○	○	○
Interface PROFIBUS-DP		ZU	○	●	○	●	●
Pump status monitor		ZK	○	○	○	○	○
Keyboard-protection		ZR	○	○	○	○	○
Clean room package		ZG	○	○	○	○	○
Mould evacuation with compressed air		405	●	●	●	●	●
<b>Mains voltage</b>	400 V (380–415 V), 50 Hz; 3LPE	406	○	○	○	○	○
	400 V (380–415 V), 60 Hz (50/60 Hz); 3LPE	215	○	○	○	○	○
	210 V (200–220 V), 50 Hz; 3LPE	216	○	○	○	○	○
	210 V (200–220 V), 60 Hz (50/60 Hz); 3LPE	466	○	○	○	○	○
	460 V (440–480 V), 60 Hz; 3LPE						

Ordering example: HB-100Z2L-16-4S-B2-ZE, 405, English

● Standard specification ○ Optional <sup>1)</sup> Typical specification  
<sup>3)</sup> Not possible with: B2 □ replaced by Thermo-6

Maximum main line temperature	°C	100	100	100	100	100	100
Flow rate measurement	Measuring range	L/min	0,4–40	0,4–40	0,4–40	0,4–40	2–160
Circulating volume in unit	approx.	L	1,2	1,2	1,8	1,8	6,5
Dimensions (P. 16, Fig. 5)	Height	mm	510	510	700	700	850
	Width	mm	180	180	240	240	300
	Depth	mm	661	731	661	731	982
Weight max.	kg	52	57	64	70	147	150
Connection, main line and return line	Thread		G¾	G¾	G¾	G¾	G1 ¼
	Resistance	bar, °C	20, 120	20, 120	20, 120	20, 120	20, 120
Connection, cooling water	Pressure	bar	2–5	2–5	2–5	2–5	2–5
	Thread		G¾	G¾	G¾	G¾	G¾
	Resistance	bar, °C	10, 100	10, 100	10, 100	10, 100	10, 100
Connection, separate system water	Pressure	bar	2–5	2–5	2–5	2–5	2–5
	Thread		G¾	G¾	G¾	G¾	G½
	Resistance	bar, °C	10, 100	10, 100	10, 100	10, 100	10, 100
Connection, drain	Thread		G¾	G¾	G¾	G¾	G½

140 °C

Single units  
Water, indirect cooling

Temperature control unit	Heat transfer medium	Water					
		Indirect					
Type	with maximum main line temperature in °C	HB-140Z					
	Housing size (P. 16, Fig. 5)	1	1L	2	2L	3	4
Heating (P. 14, Fig. 2)	8 kW	●	●				
	16 kW			●	●	●	●
	32 kW					○	○
Pump (P. 14, Fig. 3)	sealless, stainless; 0,5 kW; 30 L/min, 52 m	2M	●	●			
	sealless, stainless; 1,0 kW; 50 L/min, 70 m	4M	○		○ <sup>1)</sup>	○	
	Eco-pump  , sealless, stainless; 1,1 kW; 60 L/min, 70 m	4S		●		●	
	stainless; 2,8 kW; 110 L/min, 70 m	6G				●	
	sealless, stainless; 2,8 kW; 110 L/min, 70 m	6M				○	
	stainless; 3,5 kW; 160 L/min, 70 m	8G				○	
	sealless, stainless; 3,5 kW; 160 L/min, 70 m	8M				○	
	Eco-pump  , sealless, stainless; 2,2 kW; 220 L/min, 65 m	8R					●
Cooling (P. 15, Fig. 4)	30 kW @ 60 K	A2	●	●	●	●	●
	50 kW @ 60 K	B2			○	○	○
	90 kW @ 60 K	C2					○
Additional Equipment	Leak stopper	ZL	○	○	○ <sup>3)</sup>	○ <sup>3)</sup>	
	Connection for alarm and external control	ZB	○	○	○	○	○
	Connection for external sensor	ZE	○	○	○	○	○
	Interface DIGITAL	ZD	○	○	○	○	○
	Interface CAN	ZC	○	○	○	○	○
	Interface OPC UA	ZO	○	○	○	○	○
	Interface PROFIBUS-DP	ZP	○	○	○	○	○
	Pump status monitor	ZU	○	●	○	●	○
	Keyboard-protection	ZK	○	○	○	○	○
	Clean room package	ZR	○	○	○	○	○
	Mould evacuation with compressed air	ZG	○	○	○	○	○
Mains voltage	400 V (380–415 V), 50 Hz; 3LPE	405	●	●	●	●	●
	400 V (380–415 V), 60 Hz (50/60 Hz); 3LPE	406	○	○	○	○	○
	210 V (200–220 V), 50 Hz; 3LPE	215	○	○	○	○	○
	210 V (200–220 V), 60 Hz (50/60 Hz); 3LPE	216	○	○	○	○	○
	460 V (440–480 V), 60 Hz; 3LPE	466	○	○	○	○	○

Ordering example: HB-140Z2L-16-4S-A2-ZE-ZD, 405, English

● Standard specification ○ Optional <sup>1)</sup> Typical specification  
<sup>3)</sup> Not possible with: B2 □ replaced by Thermo-6

Maximum main line temperature	°C	140	140	140	140	140	140	
Flow rate measurement	Measuring range	L/min	0,4–40	0,4–40	0,4–40	0,4–40	2–160	2–200
Circulating volume in unit	approx.	L	1,5	1,5	2,1	2,1	6,5	6,5
Dimensions (P. 16, Fig. 5)	Height	mm	510	510	700	700	850	650
	Width	mm	180	180	240	240	300	400
	Depth	mm	661	731	661	731	982	1065
Weight max.	kg	55	60	67	73	155	160	
Connection, main line and return line	Thread		G¾	G¾	G¾	G¾	G1 ¼	G1 ¼
	Resistance	bar, °C	20, 160	20, 160	20, 160	20, 160	20, 160	20, 160
Connection, cooling water	Pressure	bar	2–5	2–5	2–5	2–5	2–5	2–5
	Thread		G¾	G¾	G¾	G¾	G¾	G¾
Connection, separate system water	Resistance	bar, °C	10, 100	10, 100	10, 100	10, 100	10, 100	10, 100
	Pressure	bar	2–5	2–5	2–5	2–5	2–5	2–5
Connection, drain	Thread		G¾	G¾	G¾	G¾	G½	G½
	Resistance	bar, °C	10, 100	10, 100	10, 100	10, 100	10, 100	10, 100

160 °C

Single units  
Water, indirect cooling

Temperature control unit	Heat transfer medium	Water					
		Indirect					
Type	with maximum main line temperature in °C	HB-160Z					
	Housing size (P. 16, Fig. 5)	1	1L	2	2L	3	4
Heating (P. 14, Fig. 2)	8 kW	●	●				
	16 kW			●	●	●	●
	32 kW					○	○
Pump (P. 14, Fig. 3)	sealless, stainless; 0,5 kW; 30 L/min, 52 m	2M	●	●			
	sealless, stainless; 1,0 kW; 50 L/min, 70 m	4M	○		○ <sup>1)</sup>	○	
	Eco-pump  , sealless, stainless; 1,1 kW; 60 L/min, 70 m	4S		●		●	
	sealless, stainless; 2,8 kW; 110 L/min, 70 m	6M				○ <sup>1)</sup>	
	sealless, stainless; 3,5 kW; 160 L/min, 70 m	8M				○	
	Eco-pump  , sealless, stainless; 2,2 kW; 220 L/min, 65 m	8R					●
	30 kW @ 60 K	A2	●	●	●	●	●
	50 kW @ 60 K	B2			○	○	○
Additional Equipment	Leak stopper	ZL	○	○	○ <sup>3)</sup>	○ <sup>3)</sup>	
	Connection for alarm and external control	ZB	○	○	○	○	○
	Connection for external sensor	ZE	○	○	○	○	○
	Interface DIGITAL	ZD	○	○	○	○	○
	Interface CAN	ZC	○	○	○	○	○
	Interface OPC UA	ZO	○	○	○	○	○
	Interface PROFIBUS-DP	ZP	○	○	○	○	○
	Pump status monitor	ZU	○	●	○	●	○
	Keyboard-protection	ZK	○	○	○	○	○
	Clean room package	ZR	○	○	○	○	○
	Mould evacuation with compressed air	ZG	○	○	○	○	○
Mains voltage	400 V (380–415 V), 50 Hz; 3LPE	405	●	●	●	●	●
	400 V (380–415 V), 60 Hz (50/60 Hz); 3LPE	406	○	○	○	○	○
	210 V (200–220 V), 50 Hz; 3LPE	215	○	○	○	○	○
	210 V (200–220 V), 60 Hz (50/60 Hz); 3LPE	216	○	○	○	○	○
	460 V (440–480 V), 60 Hz; 3LPE	466	○	○	○	○	○

Ordering example: HB-160Z4-16-8R-B2-ZE-ZD, 405, English

● Standard specification ○ Optional <sup>1)</sup> Typical specification  
<sup>3)</sup> Not possible with: B2 □ replaced by Thermo-6

Maximum main line temperature	°C	160	160	160	160	160	160	
Flow rate measurement	Measuring range	L/min	0,4–40	0,4–40	0,4–40	0,4–40	2–160	2–200
Circulating volume in unit	approx.	L	1,5	1,5	2,1	2,1	6,5	6,5
Dimensions (P. 16, Fig. 5)	Height	mm	510	510	700	700	850	650
	Width	mm	180	180	240	240	300	400
	Depth	mm	661	731	661	731	982	1065
Weight max.	kg	57	62	69	75	155	160	
Connection, main line and return line	Thread		G¾	G¾	G¾	G¾	G1 ¼	G1 ¼
	Resistance	bar, °C	20, 180	20, 180	20, 180	20, 180	20, 180	20, 180
Connection, cooling water	Pressure	bar	2–5	2–5	2–5	2–5	2–5	2–5
	Thread		G¾	G¾	G¾	G¾	G¾	G¾
Connection, separate system water	Resistance	bar, °C	10, 100	10, 100	10, 100	10, 100	10, 100	10, 100
	Pressure	bar	2–5	2–5	2–5	2–5	2–5	2–5
Connection, drain	Thread		G¾	G¾	G¾	G¾	G½	G½
	Resistance	bar, °C	10, 100	10, 100	10, 100	10, 100	10, 100	10, 100

# 180 °C

Single units  
Water, indirect cooling

Temperature control unit	Heat transfer medium	Water		
	Cooling	Indirect		
Type	with maximum main line temperature in °C	HB-180Z		
	Housing size (P. 16, Fig. 5)	2	2L	3
<b>Heating</b> (P. 14, Fig. 2)	kW	<b>8</b>	●	●
		<b>16</b>	○ <sup>1)</sup>	○ <sup>1)</sup>
		<b>32</b>		○
<b>Pump</b>	sealless, stainless; 0,5 kW; 30 L/min, 52 m	<b>2M</b>	●	
(P. 14, Fig. 3)	sealless, stainless; 1,0 kW; 50 L/min, 70 m	<b>4M</b>	○ <sup>1)</sup>	●
	Eco-pump , sealless, stainless; 1,1 kW; 60 L/min, 70 m	<b>4S</b>		●
	sealless, stainless; 2,8 kW; 110 L/min, 70 m	<b>6M</b>		○ <sup>1)</sup>
	sealless, stainless; 3,5 kW; 160 L/min, 70 m	<b>8M</b>		○
<b>Cooling</b> (P. 15, Fig. 4)	30 kW @ 60 K	<b>A2</b>	●	●
	50 kW @ 60 K	<b>B2</b>	○	○
	90 kW @ 60 K	<b>C2</b>		○
<b>Additional Equipment</b>				
	Connection for alarm and external control	<b>ZB</b>	○	○
	Connection for external sensor	<b>ZE</b>	○	○
	Interface DIGITAL	<b>ZD</b>	○	○
	Interface CAN	<b>ZC</b>	○	○
	Interface OPC UA	<b>ZO</b>	○	○
	Interface PROFIBUS-DP	<b>ZP</b>	○	○
	Pump status monitor	<b>ZU</b>	○	○
	Keyboard-protection	<b>ZK</b>	○	○
	Clean room package	<b>ZR</b>	○	○
	Mould evacuation with compressed air	<b>ZG</b>	○	○
<b>Mains voltage</b>	400 V (380–415 V), 50 Hz; 3LPE	<b>405</b>	●	●
	400 V (380–415 V), 60 Hz (50/60 Hz); 3LPE	<b>406</b>	○	○
	210 V (200–220 V), 50 Hz; 3LPE	<b>215</b>	○	○
	210 V (200–220 V), 60 Hz (50/60 Hz); 3LPE	<b>216</b>	○	○
	460 V (440–480 V), 60 Hz; 3LPE	<b>466</b>	○	○

Ordering example: HB-180Z2-8-4M-A2-ZD-ZU, 405, English

● Standard specification ○ Optional  
<sup>1)</sup> Typical specification

Maximum main line temperature	°C	180	180	180
Flow rate measurement	Measuring range	L/min	0,4–40	0,4–40
Circulating volume in unit	approx.	L	2,1	2,1
Dimensions (P. 16, Fig. 5)	Height	mm	700	700
	Width	mm	240	240
	Depth	mm	661	731
Weight max.	kg	69	75	154
Connection, main line and return line	Thread		G¾	G¾
	Resistance	bar, °C	25, 200	25, 200
Connection, cooling water	Pressure	bar	2–5	2–5
	Thread		G¾	G¾
	Resistance	bar, °C	10, 100	10, 100
Connection, separate system water	Pressure	bar	2–5	2–5
	Thread		G¾	G¾
	Resistance	bar, °C	10, 100	10, 100
Connection, drain	Thread		G¾	G¾

# 200/230 °C

Single units  
Water, indirect cooling

Temperature control unit	Heat transfer medium	Water	
	Cooling	Indirect	
Type	with maximum main line temperature in °C	HB-200Z	HB-230Z
	Housing size (P. 16, Fig. 5)	2B	2B
<b>Heating</b> (P. 14, Fig. 2)	kW	<b>16</b>	●
<b>Pump</b>	sealless, stainless; 0,5 kW; 30 L/min, 52 m	<b>2M</b>	●
(P. 14, Fig. 3)	sealless, stainless; 1,0 kW; 50 L/min, 70 m	<b>4M</b>	○ <sup>1)</sup>
	Eco-pump , sealless, stainless; 1,1 kW; 60 L/min, 70 m	<b>4S</b>	○
<b>Cooling</b> (P. 15, Fig. 4)	30 kW @ 60 K	<b>A2</b>	●
	50 kW @ 60 K	<b>B2</b>	○
<b>Additional Equipment</b>			
	Connection for alarm and external control	<b>ZB</b>	○
	Connection for external sensor	<b>ZE</b>	○
	Interface DIGITAL	<b>ZD</b>	○
	Interface CAN	<b>ZC</b>	○
	Interface OPC UA	<b>ZO</b>	○
	Interface PROFIBUS-DP	<b>ZP</b>	○
	Pump status monitor	<b>ZU</b>	○ <sup>4)</sup>
	Keyboard-protection	<b>ZK</b>	○
	Clean room package	<b>ZR</b>	○
	Mould evacuation with compressed air	<b>ZG</b>	○
<b>Mains voltage</b>	400 V (380–415 V), 50 Hz; 3LPE	<b>405</b>	●
	400 V (380–415 V), 60 Hz (50/60 Hz); 3LPE	<b>406</b>	○
	210 V (200–220 V), 50 Hz; 3LPE	<b>215</b>	○
	210 V (200–220 V), 60 Hz (50/60 Hz); 3LPE	<b>216</b>	○
	460 V (440–480 V), 60 Hz; 3LPE	<b>466</b>	○

Ordering example: HB-230Z2B-16-4M-A2-ZE-ZD, 405, English

● Standard specification ○ Optional  
<sup>1)</sup> Typical specification  
<sup>4)</sup> Included with: 4S

Maximum main line temperature	°C	200	230
Flow rate measurement	Measuring range	L/min	0,4–40
Circulating volume in unit	approx.	L	1,6
Dimensions (P. 16, Fig. 5)	Height	mm	700
	Width	mm	300
	Depth	mm	962
Weight max.	kg	115	115
Connection, main line and return line	Thread		G¾
	Resistance	bar, °C	31, 220
Connection, cooling water	Pressure	bar	2–5
	Thread		G¾
	Resistance	bar, °C	10, 100
Connection, separate system water	Pressure	bar	2–5
	Thread		G¾
	Resistance	bar, °C	10, 100
Connection, drain	Thread		G¾

<b>Temperature control unit</b>	Heat transfer medium		Oil
	Cooling		Indirect
<b>Type</b>	with maximum main line temperature in °C		<b>HB-200T</b>
	Housing size (P. 16, Fig. 5)		<b>2</b>
			<b>3</b>
<b>Heating</b> (P. 14, Fig. 2)	kW		
			<b>8</b>
			<b>16</b>
<b>Pump</b>	sealless, stainless; 0,5 kW; 30 L/min, 52 m	<b>2M</b>	●
(P. 14, Fig. 3)	sealless, stainless; 1,0 kW; 50 L/min, 70 m	<b>4M</b>	○
<b>Cooling</b> (P. 15, Fig. 4)	34 kW @ 120 K	<b>A3</b>	●
	60 kW @ 120 K	<b>B3</b>	○
<b>Additional Equipment</b>			
	Connection for alarm and external control	<b>ZB</b>	○
	Connection for external sensor	<b>ZE</b>	○
	Interface DIGITAL	<b>ZD</b>	○
	Interface CAN	<b>ZC</b>	○
	Interface OPC UA	<b>ZO</b>	○
	Interface PROFIBUS-DP	<b>ZP</b>	○
	Pump status monitor	<b>ZU</b>	○
	Keyboard-protection	<b>ZK</b>	○
<b>Mains voltage</b>	400 V (380–415 V), 50 Hz; 3LPE	<b>405</b>	●
	400 V (380–415 V), 60 Hz (50/60 Hz); 3LPE	<b>406</b>	○
	210 V (200–220 V), 50 Hz; 3LPE	<b>215</b>	○
	210 V (200–220 V), 60 Hz (50/60 Hz); 3LPE	<b>216</b>	○
	460 V (440–480 V), 60 Hz; 3LPE	<b>466</b>	○

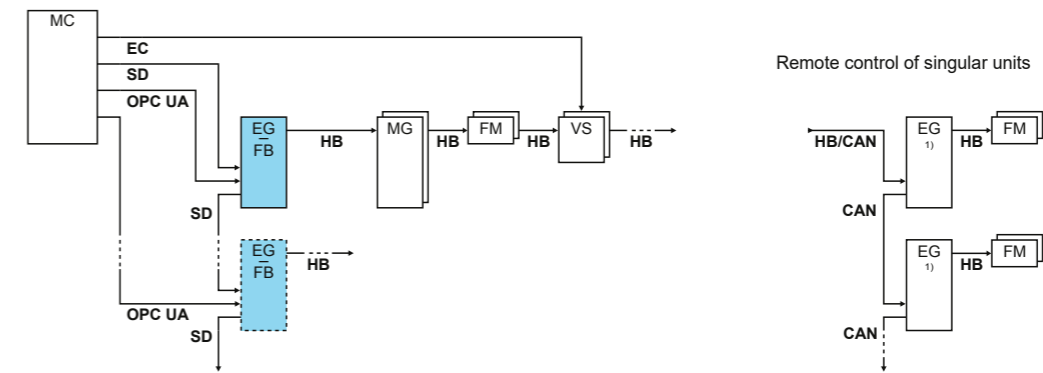
Ordering example: HB-250T3-8-2M-A3-ZE-ZD-ZU, 405, English

● Standard specification ○ Optional

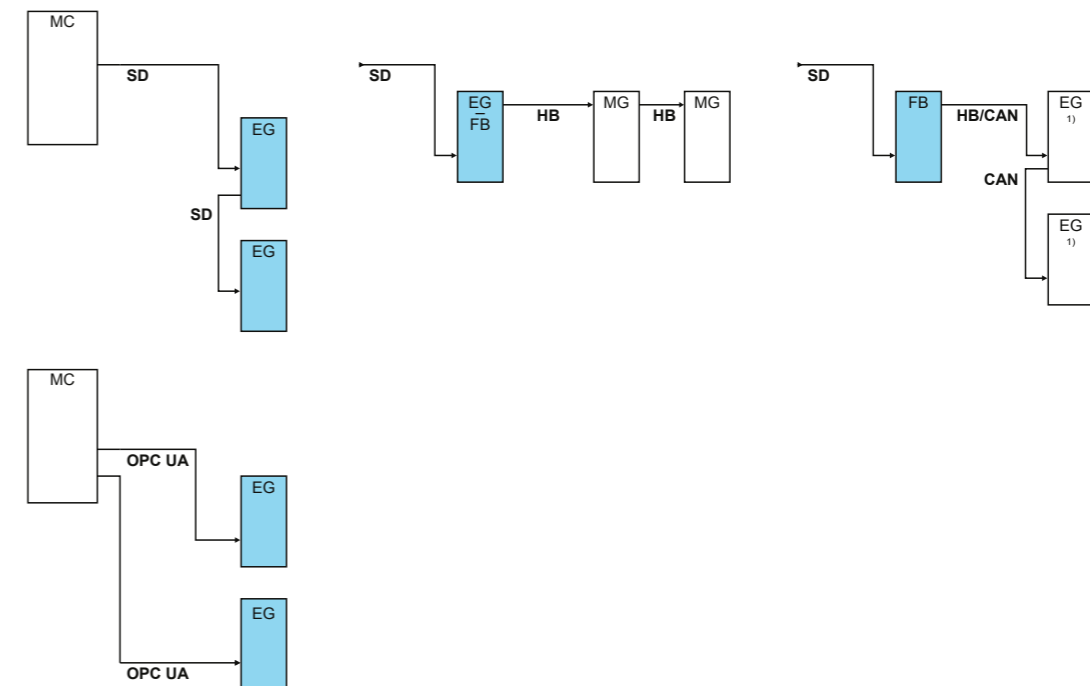
Maximum main line temperature	°C	200	250
Flow rate measurement	Measuring range	L/min	0,4–40
Circulating volume in unit	approx.	L	1,6
Volume of internal expansion tank	approx.	L	5,5
Dimensions (P. 16, Fig. 5)	Height	mm	700
	Width	mm	240
	Depth	mm	684
Weight max.	kg	59	101
Connection, main line and return line	Thread		G $\frac{3}{4}$
	Resistance	bar, °C	10, 220
Connection, cooling water	Pressure	bar	2–5
	Thread		G $\frac{3}{8}$
	Resistance	bar, °C	10, 100
Connection, drain	Thread		G $\frac{3}{8}$

### Communication (Fig. 1)

Basic circuit diagram



### Examples



Legend	Description	Note
MC	Machine control	max. 1
FB	Control modul Panel-5	max. 1
EG	Temperature control unit Thermo-5, singular unit	max. 16 (per command)
MG	Temperature control unit Thermo-5, modular unit	
FM	Flow meter Flow-5	max. 32 (at 4 circuits each)
VS	Switching unit Vario-5	max. 8
<b>SD</b>	Communication via serial data interface DIGITAL ( <b>ZD</b> ), CAN ( <b>ZC</b> ), PROFIBUS-DP ( <b>ZP</b> )	Maximum number of units, operating range and transfer of flow rate values depend on machine control and protocol
<b>OPC UA</b>	Communication OPC UA via Ethernet ( <b>ZO</b> )	
<b>HB</b> <sup>2)</sup>	Communication interface HB	Order of connection is not relevant
<b>HB/CAN</b> <sup>2)</sup>	Communication interface HB/CAN	To remotely control singular units
<b>CAN</b>	Communication interface CAN ( <b>ZC</b> )	
<b>EC</b>	External control	Assignment dependent on machine control unit

■ Command <sup>1)</sup> Command deactivated <sup>2)</sup> max. length cable HB: Total 50 m

**Heating Capacity, Electricity Supply (Fig. 2)**

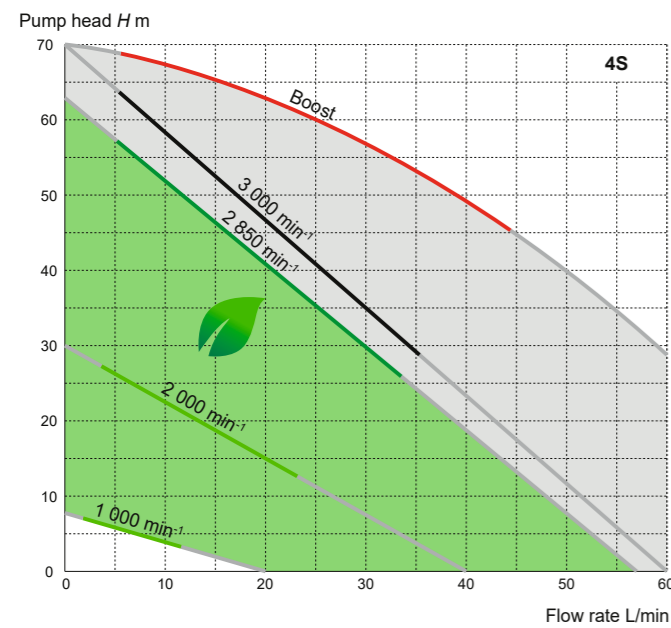
The heating capacity applies at rated voltage (400 V, 460 V or 210 V) and varies max. ±10 % within the range indicated.

Maximum fusing; Cross-section through unit mains cable (with mains voltage)

Heating	400 V or 460 V	210 V
8 kW	3x20 A; 2,5 mm <sup>2</sup>	3x32 A; 6 mm <sup>2</sup>
16 kW	3x32 A; 6 mm <sup>2</sup>	3x63 A; 16 mm <sup>2</sup>
32 kW	3x63 A; 16 mm <sup>2</sup>	3x125 A; 50 mm <sup>2</sup>

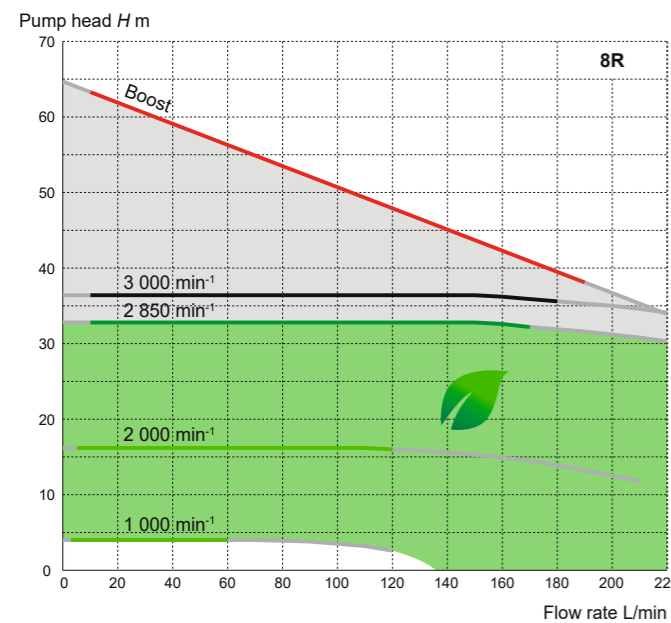
**Pump Capacity Curve (Fig. 3)**

Eco-pump Variable speed Eco-pump (Energy efficiency class IE4)



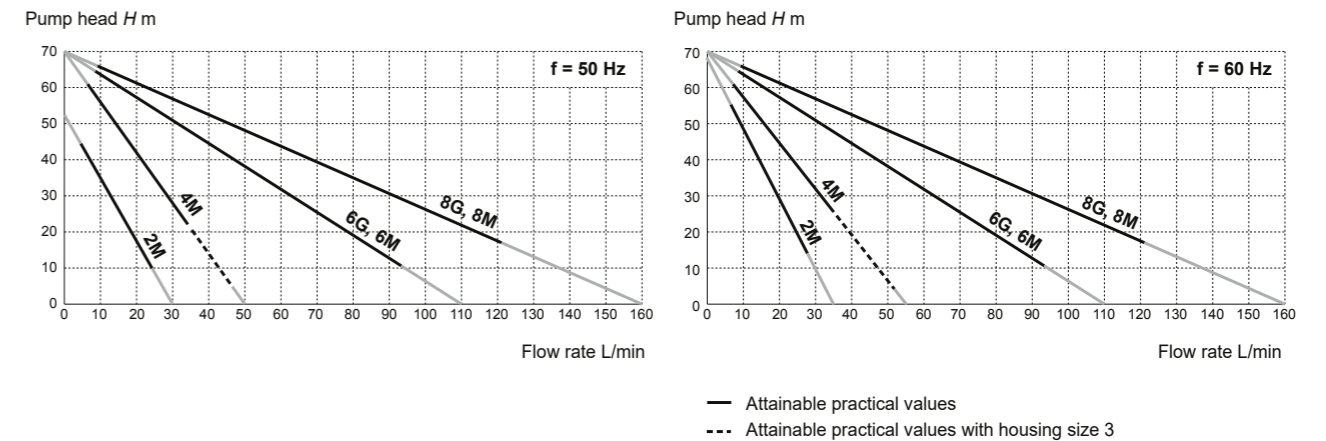
In Eco-mode the unit will control the speed depending on either actual speed or flow rate or pump pressure or temperature difference between main- and return line. Energy savings are announced and registered.

- Energy savings range
- High power range
- Boost-mode (max. speed)
- Normal operation 2 850 min<sup>-1</sup>



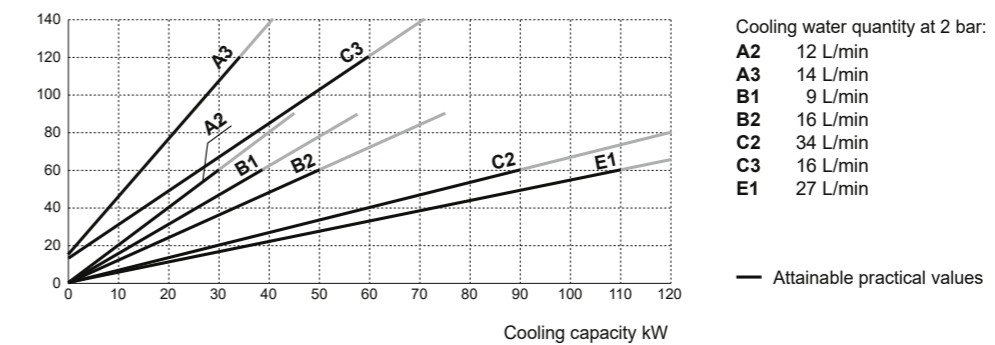
Note: Pressure p in bar = 0,1 · Pump head H in m · density ρ in kg/dm<sup>3</sup>

**Fixed speed pumps**



**Cooling Capacity (Fig. 4)**

Temperature difference between heat transfer medium and cooling water K (Kelvin)



- Cooling water quantity at 2 bar:
- A2 12 L/min
  - A3 14 L/min
  - B1 9 L/min
  - B2 16 L/min
  - C2 34 L/min
  - C3 16 L/min
  - E1 27 L/min

**General Technical Data**

Mains cable to unit	3LPE, 4 m (plug on request)
Environment	Temperature range Relative humidity
	5–40 °C 35–85 % RH (non-condensing)
Colour	Cover
	RAL 7035 (glossy light grey), RAL 5012 (glossy light blue)
	Control panel
	Access cover
	RAL 7012 (basalt grey) RAL 7021 (glossy black grey)
Continuous sound pressure level	<67 dB(A)
Protection class	IP 44
Standards (depending on unit type)	EN 12828, EN 12953-6, EN 60204-1, EN 60730-2-9, EN IEC 61000-6-2, EN IEC 61000-6-4, EN ISO 12100, EN IEC 63000, EN ISO 13732-1, DIN 4754
Certification/Approval	CE (compliance with relevant CE directives)
Temperature measurement	Resolution Control accuracy Tolerance
	0,1 °C ±0,1 K ±0,8 K
Flow rate measurement	Resolution Tolerance: Housing size 1, 1L, 2, 2L, 2B Tolerance: Housing size 3, 4
	0,1 L/min ±(5 % of measured value + 0,1 L/min) ±(5 % of measured value + 0,5 L/min)
Pump pressure indicator	Tolerance
	±10 % of rated value

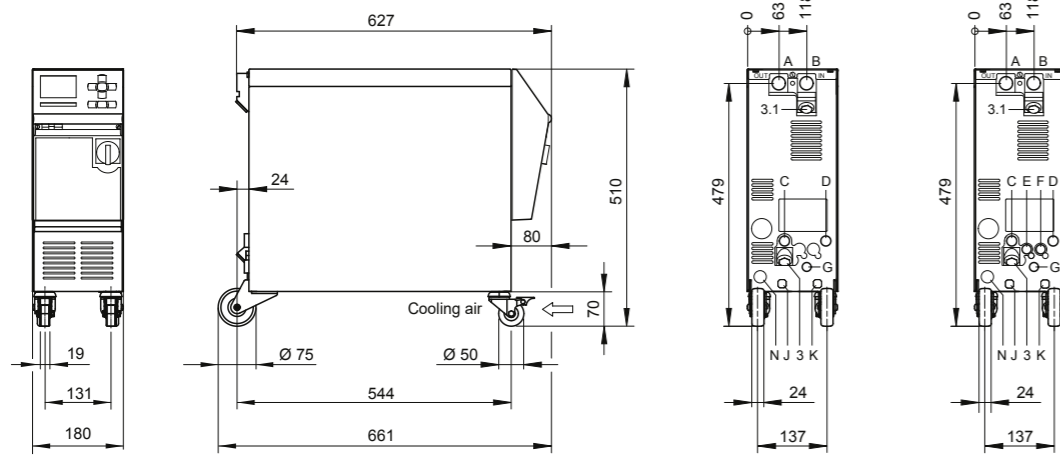


**Dimensions (Fig. 5)**

Housing size 1, scale 1:15

HB-100X1

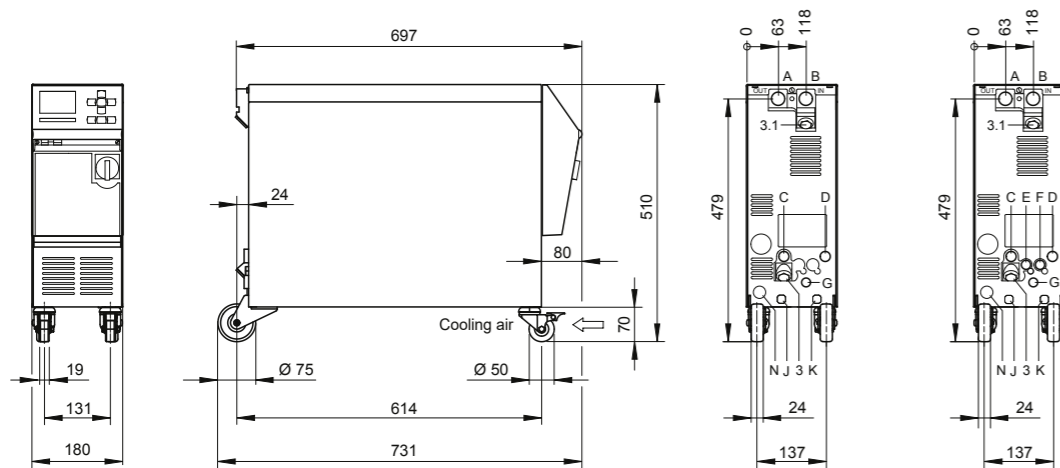
HB-\_\_Z1



Housing size 1L, scale 1:15

HB-100X1L

HB-\_\_Z1L



- A Main line
- B Return line
- C Cooling water inlet
- D Cooling water outlet
- E System water inlet
- F System water outlet
- G Drain
- H Filling (on oil units)
- J Compressed air inlet (ZG)
- K Compressed air outlet (ZG)
- N Mains connection cable

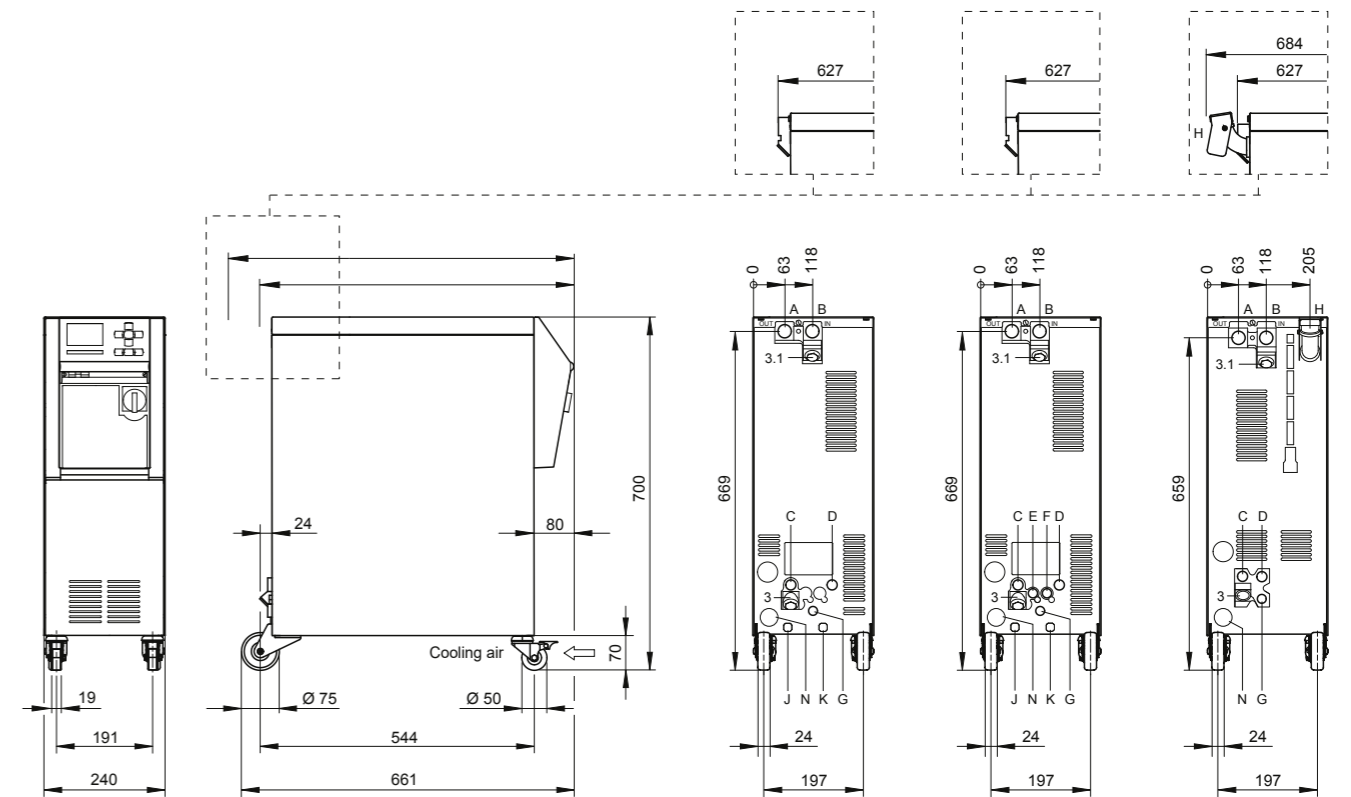
Note: 3D data available

Housing size 2, scale 1:15

HB-100X2

HB-\_\_Z2

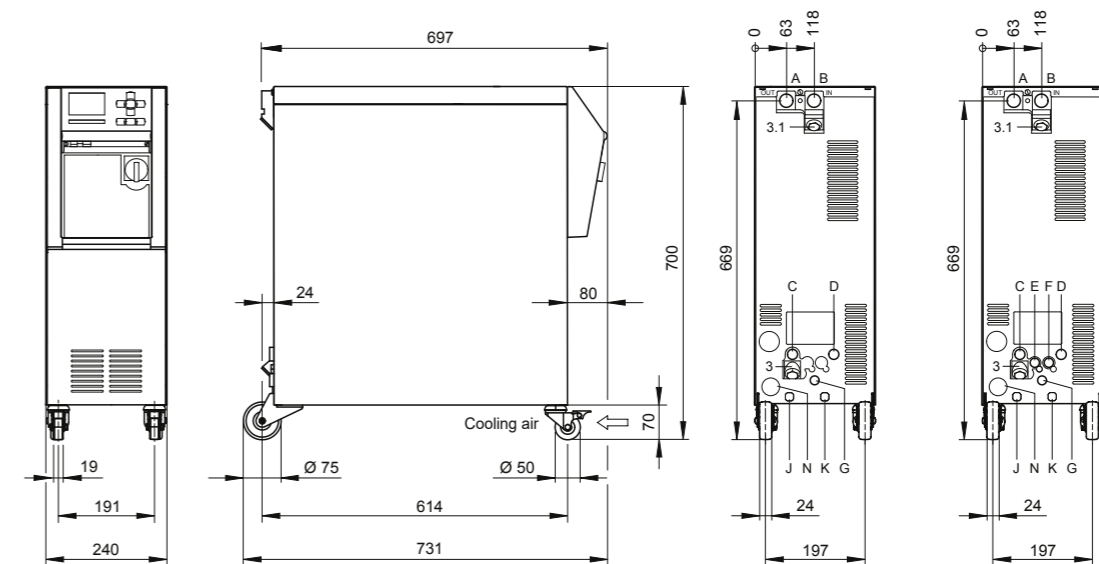
HB-200T2



Housing size 2L, scale 1:15

HB-100X2L

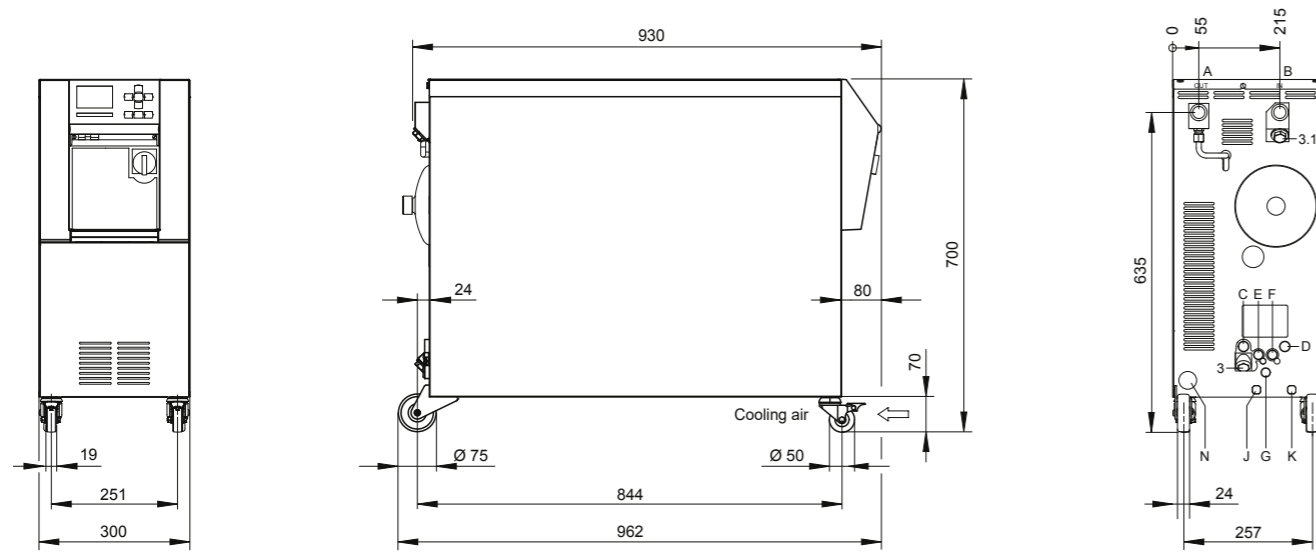
HB-\_\_Z2L



- 3 Filter cooling water inlet
- 3.1 Filter return line

Housing size 2B, scale 1:15

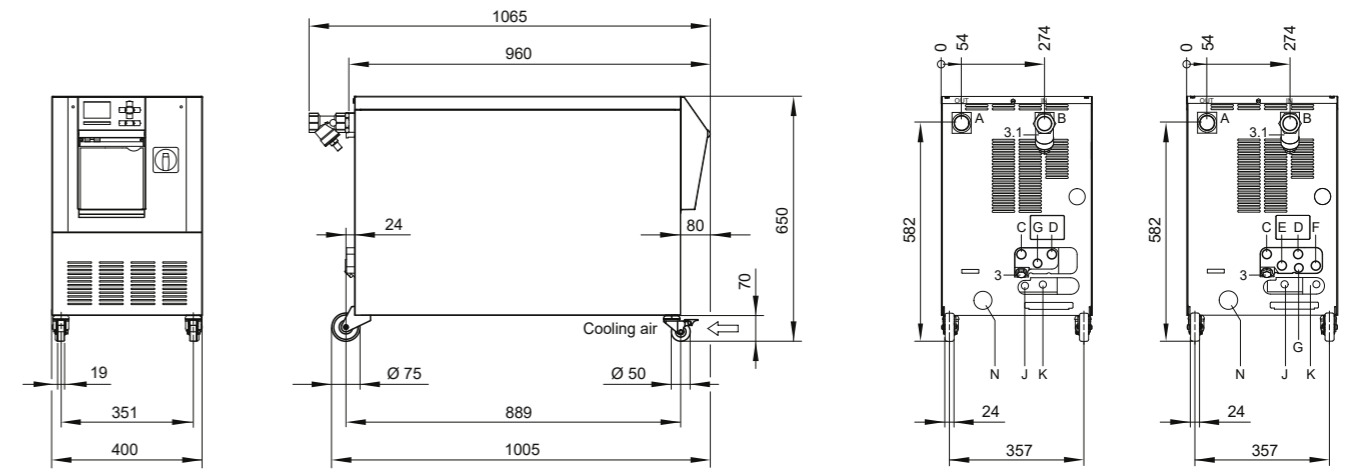
HB-\_\_Z2B



Housing size 4, scale 1:20

HB-100X4

HB-\_\_Z4

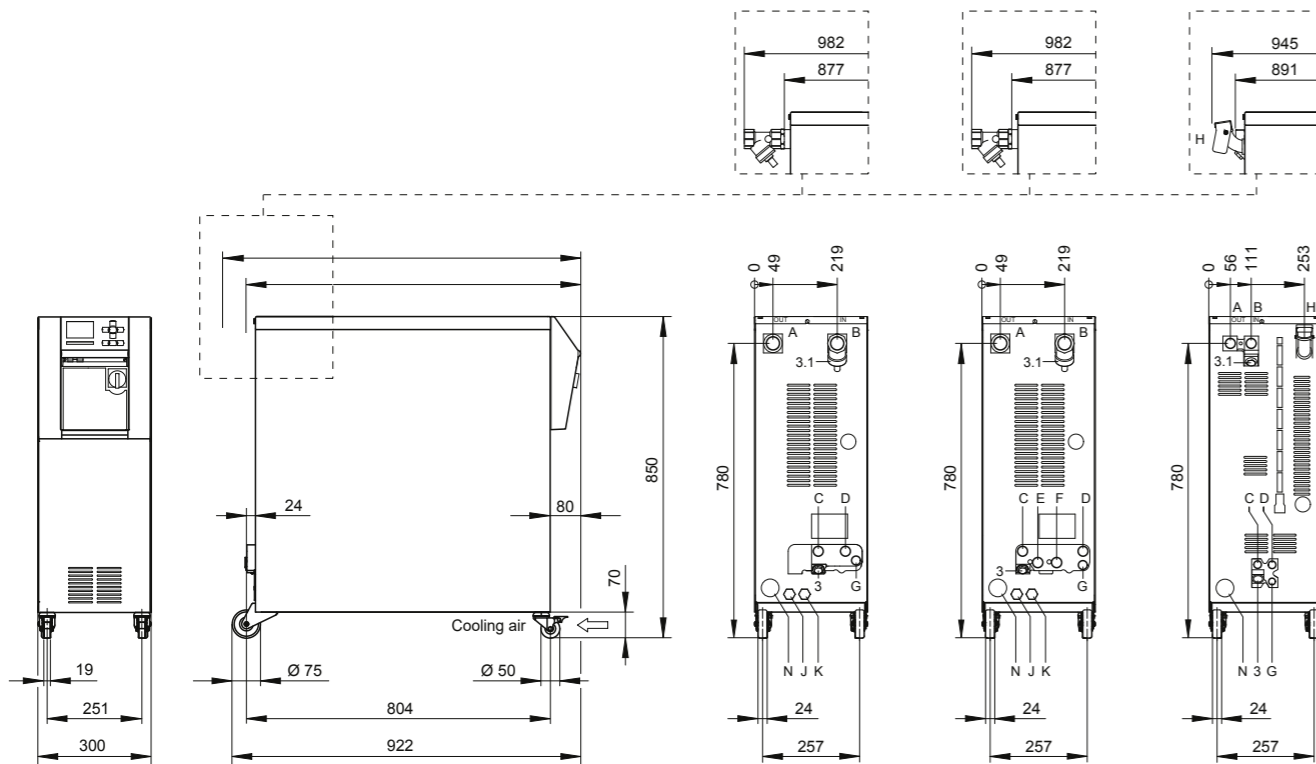


Housing size 3, scale 1:20

HB-100X3

HB-\_\_Z3

HB-250T3



- A Main line
- B Return line
- C Cooling water inlet
- D Cooling water outlet
- E System water inlet
- F System water outlet
- G Drain
- H Filling (on oil units)
- J Compressed air inlet (ZG)
- K Compressed air outlet (ZG)
- N Mains connection cable

- 3 Filter cooling water inlet
- 3.1 Filter return line

Note: 3D data available



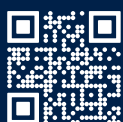
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