

HB-THERM[®]

THERMO-5

Temperature Control Units

Product Catalogue 2019-10



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

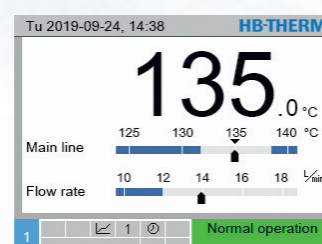
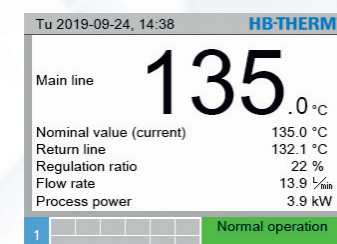
- Well-arranged menus in 21 languages
- Intuitive navigation
- On-the-spot instructions at the push of a button

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 vapourisation-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



Standard Equipment

Hydraulics	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)
Functions	Mould evacuation by pump reversal (not possible with pump 8R)
	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 ZE)
	Continuous cooling and automatic switch-off programme
	Change-over to second nominal value
	Nominal value ramp and ramp programme
	Cyclical system water exchange (selectable)
Monitoring / Safety	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
	Depressurised at unit OFF (not possible with pump 8R)
	Safety relief valve and pressure gauge on rear of unit
	Automatic phase direction adaptation and phase monitor
Lockable and abrasion resistant castors (PUR)	
Command / Display	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
	Hours run counter and service interval display
	Logbook for alarms
Data input password protected	
Interface	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

ZL	Leak stopper	With automatic depression optimisation (up to 70 °C, not possible with cooler B2)
ZB	Connection for alarm and external control	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
ZE	Connection for external sensor	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
ZD	Interface DIGITAL	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)
ZC	Interface CAN	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)
ZO	Interface OPC UA	Ethernet interface (EUROMAP 82.1) 1 socket RJ-45 (female)
ZP	Interface PROFIBUS-DP	Serial data interface PROFIBUS-DP 1 socket Sub-D 9 pin (female; not possible with ZC)
ZU	Pump status monitor	Additional pressure sensor in main line
ZK	Keyboard-protection	Transparent flap over display and controls
ZR	Clean room package	Clean room capable version: 'At Rest' < ISO class 6 (class 1000) 'In Operation' ISO class 7 (class 10 000) Fibre-free insulation
ZG	Mould evacuation with compressed air	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-140ZM1).

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)	HB-100X					
			1	1L	2	2L	3	4
Heating (→P. 14, Fig. 2)	kW		●	●				
					●	●	●	●
							○	○
Pump	sealless, stainless; 0,5 kW; 30 L/min, 52 m	2M	●		●			
(→P. 14, Fig. 3)	sealless, stainless; 1,0 kW; 50 L/min, 70 m	4M	○		○ ¹⁾		○	
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)	38 kW @ 60 K	B1	●	●	●	●		
	110 kW @ 60 K	E1					●	●
Additional equipment								
	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	○ ²⁾	○ ²⁾	○ ²⁾	○ ²⁾	○ ²⁾	○ ²⁾
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-100X1-8-2M-B1-ZE-ZD, 405, English



● Standard specification ○ Optional ¹⁾ Typical specification

²⁾ only possible through the cooling water outlet

Maximum main line temperature	°C	100	100	100	100	100	100
Flow rate measurement	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		G ³ / ₄	G ³ / ₄	G ³ / ₄	G ³ / ₄	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		G ³ / ₈	G ³ / ₈	G ³ / ₈	G ³ / ₈	G ³ / ₄
	Resistance	bar, °C	10, 100	10, 100	10, 100	10, 100	10, 100
Drain	Thread		G ³ / ₈	G ³ / ₈	G ³ / ₈	G ³ / ₈	G ¹ / ₂

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)	HB-100Z					
			1	1L	2	2L	3	4
Heating (→P. 14, Fig. 2)	kW		●	●				
					●	●	●	●
							○	○
Pump	sealless, stainless; 0,5 kW; 30 L/min, 52 m	2M	●		●			
(→P. 14, Fig. 3)	sealless, stainless; 1,0 kW; 50 L/min, 70 m	4M	○		○ ¹⁾		○	
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	○ ³⁾	○ ³⁾	○ ³⁾	○ ³⁾		
	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-100Z1L-8-4S-A2-ZO, 405, English

● Standard specification ○ Optional ¹⁾ Typical specification
³⁾ not possible with cooler **B2**

Maximum main line temperature	°C	100	100	100	100	100	100
Flow rate measurement	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		G ³ / ₄	G ³ / ₄	G ³ / ₄	G ³ / ₄	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		G ³ / ₈	G ³ / ₈	G ³ / ₈	G ³ / ₈	G ³ / ₄
	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		G ¹ / ₄	G ¹ / ₄	G ¹ / ₄	G ¹ / ₄	G ¹ / ₂
	Resistance	bar, °C	10, 100	10, 100	10, 100	10, 100	10, 100
Drain	Thread		G ³ / ₈	G ³ / ₈	G ³ / ₈	G ³ / ₈	G ¹ / ₂

140 °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)	HB-140Z						
			1	1L	2	2L	3	4	
Heating (→P. 14, Fig. 2)	kW		8	●	●				
			16			●	●	●	●
			32					○	○
Pump	sealless, stainless; 0,5 kW; 30 L/min, 52 m		2M	●		●			
(→P. 14, Fig. 3)	sealless, stainless; 1,0 kW; 50 L/min, 70 m		4M	○		○ ¹⁾		○	
	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	○	○	○ ³⁾	○ ³⁾		
	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-140Z2-16-4M-A2-ZB, 405, English

● Standard specification ○ Optional ¹⁾ Typical specification
³⁾ not possible with cooler **B2**

Maximum main line temperature		°C	140	140	140	140	140	140
Flow rate measurement	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
	Resistance	bar, °C	10, 100	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	2–5
	Thread		G¾	G¾	G¾	G¾	G½	G½
	Resistance	bar, °C	10, 100	10, 100	10, 100	10, 100	10, 100	10, 100
Drain	Thread		G¾	G¾	G¾	G¾	G½	G½

160 °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)	HB-160Z					
			1	1L	2	2L	3	4
Heating (→P. 14, Fig. 2)	kW	8	●	●				
		16			●	●	●	●
		32					○	○
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	○		○ ¹⁾		●	
	Eco-pump  , sealless, stainless; 1,1 kW; 60 L/min, 70 m	4S		●		●		
	sealless, stainless; 2,8 kW; 110 L/min, 70 m	6M					○ ¹⁾	
	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	○	○	○ ³⁾	○ ³⁾		
	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-160Z4-32-8R-B2-ZE-ZO, 405, English

● Standard specification ○ Optional ¹⁾ Typical specification
³⁾ not possible with cooler **B2**

Maximum main line temperature		°C	160	160	160	160	160	160
Flow rate measurement	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		G ³ / ₄	G ³ / ₄	G ³ / ₄	G ³ / ₄	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		G ³ / ₈	G ³ / ₈	G ³ / ₈	G ³ / ₈	G ³ / ₄	G ³ / ₄
	Resistance	bar, °C	10, 100	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	2–5
	Thread		G ¹ / ₄	G ¹ / ₄	G ¹ / ₄	G ¹ / ₄	G ¹ / ₂	G ¹ / ₂
	Resistance	bar, °C	10, 100	10, 100	10, 100	10, 100	10, 100	10, 100
Drain	Thread		G ³ / ₈	G ³ / ₈	G ³ / ₈	G ³ / ₈	G ¹ / ₂	G ¹ / ₂

180 °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)	HB-180Z		
Heating (→P. 14, Fig. 2)	kW		2	2L	3
Pump (→P. 14, Fig. 3)	sealless, stainless; 0,5 kW; 30 L/min, 52 m	8	●	●	
	sealless, stainless; 1,0 kW; 50 L/min, 70 m	16	○ ¹⁾	○ ¹⁾	●
	Eco-pump  , sealless, stainless; 1,1 kW; 60 L/min, 70 m	32			○
Pump	sealless, stainless; 2,8 kW; 110 L/min, 70 m	2M	●		
	sealless, stainless; 3,5 kW; 160 L/min, 70 m	4M	○ ¹⁾		●
		4S		●	
		6M			○ ¹⁾
Cooling (→P. 15, Fig. 4)	30 kW @ 60 K	8M			○
	50 kW @ 60 K	A2	●	●	●
	90 kW @ 60 K	B2	○	○	○
Additional equipment		C2			○
	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-180Z2-8-4M-A2-ZD-ZU, 405, English

 ● Standard specification ○ Optional ¹⁾ Typical specification

Maximum main line temperature	°C	180	180	180	
Flow rate measurement	Range	L/min	0,4–40	0,4–40	2–160
Circulating volume in unit	approx.	L	2,1	2,1	6,5
Dimensions (→P. 16, Fig. 5)	Height	mm	700	700	850
	Width	mm	240	240	300
	Depth	mm	661	731	982
Weight max.		kg	69	75	154
Connection, main line and return line	Thread		G ³ / ₄	G ³ / ₄	G1 ¹ / ₄
	Resistance	bar, °C	25, 200	25, 200	25, 200
Connection, cooling water	Pressure	bar	2–5	2–5	2–5
	Thread		G ³ / ₈	G ³ / ₈	G ³ / ₄
	Resistance	bar, °C	10, 100	10, 100	10, 100
Connection, separate system water	Pressure	bar	2–5	2–5	2–5
	Thread		G ¹ / ₄	G ¹ / ₄	G ¹ / ₂
	Resistance	bar, °C	10, 100	10, 100	10, 100
Drain	Thread		G ³ / ₈	G ³ / ₈	G ¹ / ₂

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 Housing size (→P. 16, Fig. 5)		HB-200Z HB-230Z
			2B 2B
Heating (→P. 14, Fig. 2)	kW	16	●
Pump	sealless, stainless; 0,5 kW; 30 L/min, 52 m	2M	●
(→P. 14, Fig. 3)	sealless, stainless; 1,0 kW; 50 L/min, 70 m	4M	○ ¹⁾
	Eco-pump  , sealless, stainless; 1,1 kW; 60 L/min, 70 m	4S	○
Cooling (→P. 15, Fig. 4)	30 kW @ 60 K	A2	●
	50 kW @ 60 K	B2	○
Additional equipment			
	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	○ ⁴⁾
	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-230Z2B-16-4M-A2-ZE-ZD, 405, English

● Standard specification ○ Optional

¹⁾ Typical specification ⁴⁾ included with pump 4S

Maximum main line temperature	°C	200	230
Flow rate measurement	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
Connection, main line and return line	Thread		G ³ / ₄
	Resistance	bar, °C	31, 220
Connection, cooling water	Pressure	bar	2–5
	Thread		G ³ / ₈
	Resistance	bar, °C	10, 100
Connection, separate system water	Pressure	bar	2–5
	Thread		G ¹ / ₄
	Resistance	bar, °C	10, 100
Drain	Thread		G ³ / ₈

200/250 °C

Single units
 Oil, indirect cooling

Temperature control unit	Heat transfer medium		Oil
	Cooling		Indirect
Type	with maximum main line temperature in °C		HB-200T
	Housing size (→P. 16, Fig. 5)		HB-250T
Heating (→P. 14, Fig. 2)	kW	8	●
		16	○
Pump	sealless, stainless; 0,5 kW; 30 L/min, 52 m	2M	●
(→P. 14, Fig. 3)	sealless, stainless; 1,0 kW; 50 L/min, 70 m	4M	○
Cooling (→P. 15, Fig. 4)	34 kW @ 120 K	A3	●
	60 kW @ 120 K	C3	○
Additional equipment			
	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	○
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	○

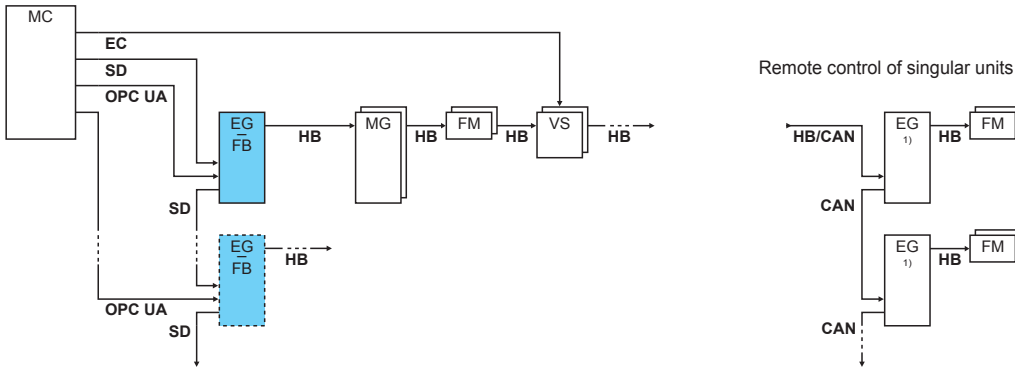
Ordering example: HB-250T3-8-2M-A3-ZE-ZD-ZU, 405, English

● Standard specification ○ Optional

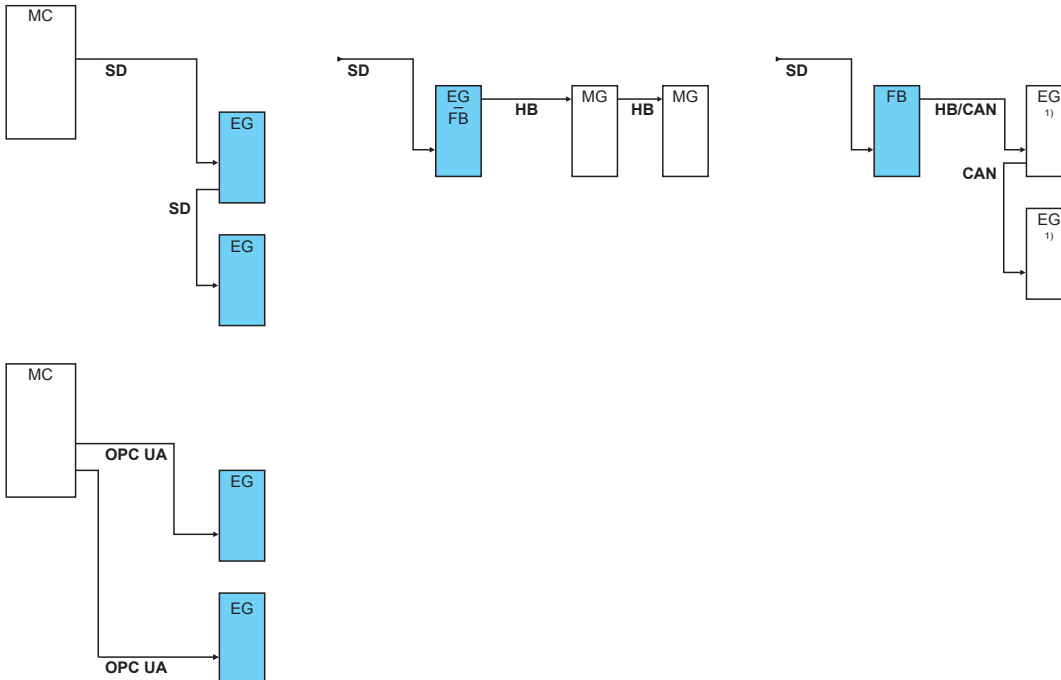
Maximum main line temperature	°C	200	250
Flow rate measurement	Range	L/min	0,4–40
Volume of internal expansion tank	approx.	L	1,6
Circulating volume in unit	approx.	L	5,5
Dimensions (→P. 16, Fig. 5)	Height	mm	700
	Width	mm	240
	Depth	mm	684
Weight max.		kg	59
Connection, main line and return line	Thread		G¾
	Resistance	bar, °C	10, 220
Connection, cooling water	Pressure	bar	2–5
	Thread		G¾
	Resistance	bar, °C	10, 100
Drain	Thread		G¾

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
SD	Communication via serial data interface DIGITAL (ZD), CAN (ZC) or PROFIBUS-DP (ZP)	Maximum number of units, operating range and transfer of flow rate values depend on machine control and protocol
OPC UA	Communication OPC UA via Ethernet (ZO)	
HB	Communication interface HB	Order of connection is not relevant
HB/CAN	Communication interface HB/CAN	To remotely control singular units
CAN	Communication interface CAN (ZC)	
EC	External control	Assignment dependent on machine control unit

■ Command ¹⁾ Command deactivated

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.

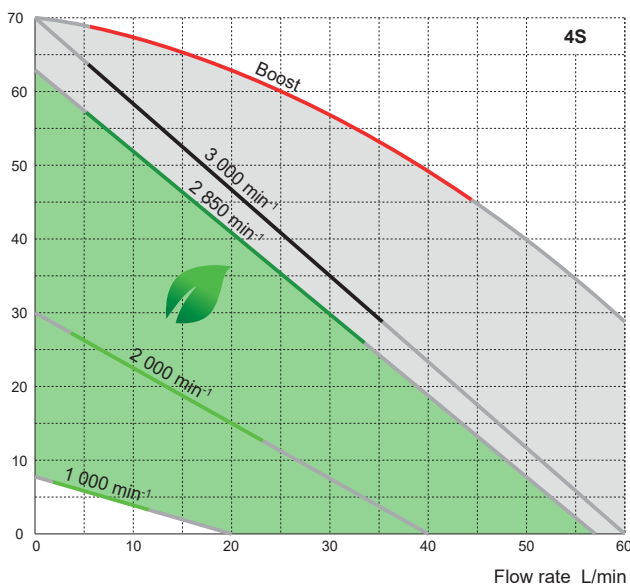
Maximum fusing; Cross-section through unit mains cable (with mains voltage)

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





Pump Capacity Curve (Fig. 3)

Variable speed Eco-pump  (Energy efficiency class IE4)

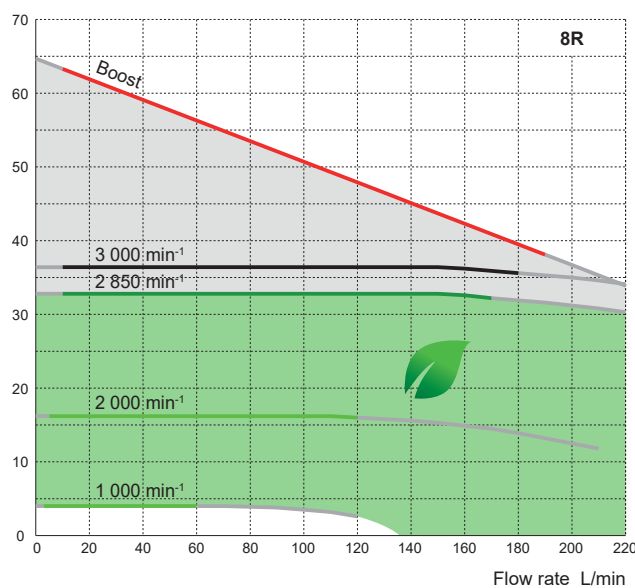
Pump head *H* m



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⁻¹)

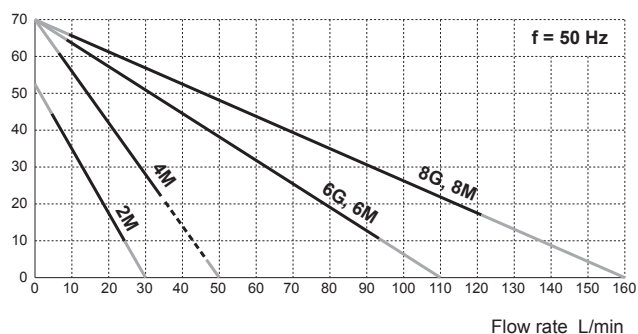
Pump head *H* m



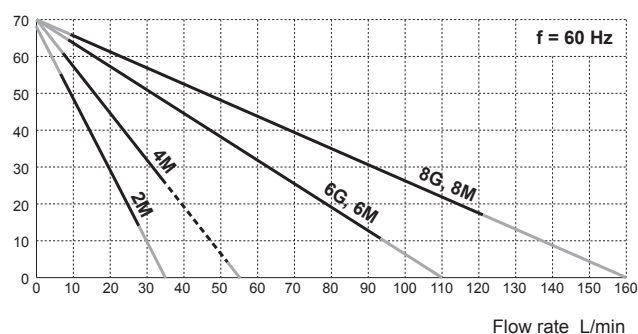
Note: Pressure *p* in bar = 0,1 · Pump head *H* in m · density *ρ* in kg/dm³

Fixed speed pumps

Pump head H m



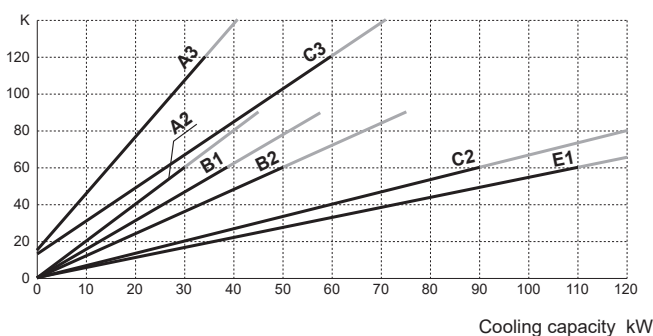
Pump head H m



— Attainable practical values
--- Attainable practical values with housing size 3

Cooling Capacity (Fig. 4)

Temperature difference between heat transfer medium and cooling water



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

— Attainable praxis values

General Technical Data

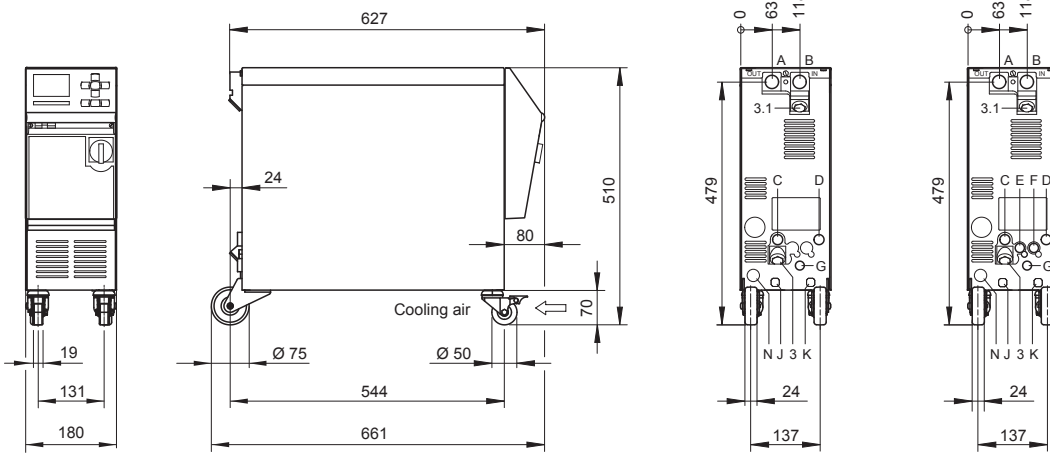
Mains cable to unit		3LPE, 4 m (plug on request)
Environment	Temperature	5–40 °C
	Humidity	35–85 % RH (non-condensing)
Colour	Cover	RAL 7035 (glossy light grey), RAL 5012 (glossy light blue)
	Control panel	RAL 7012 (basalt grey)
	Access cover	RAL 7021 (glossy black grey)
Continuous sound pressure level		<67 dB(A)
Protection class		IP 44
Standards (depending on unit type)		EN 12828, EN 12953-6, EN 50581, EN 60204-1, EN 60335-1, EN 60730-2-9, EN 61000-6-4, EN 61000-6-2, EN ISO 12100, EN ISO 13732-1, EN, DIN 4754
Certification/Approval		CE (compliance with relevant CE directives)
Temperature measurement	Resolution	0,1 °C
	Control accuracy	±0,1 K
	Tolerance	±0,8 K
Flow rate measurement	Resolution	0,1 L/min
	Tolerance	±(5 % of measured value + 0,1 L/min)
Pump pressure indicator	Tolerance	±10 % of rated value

Dimensions (Fig. 5)

Housing size 1, scale 1:15

HB-100X1

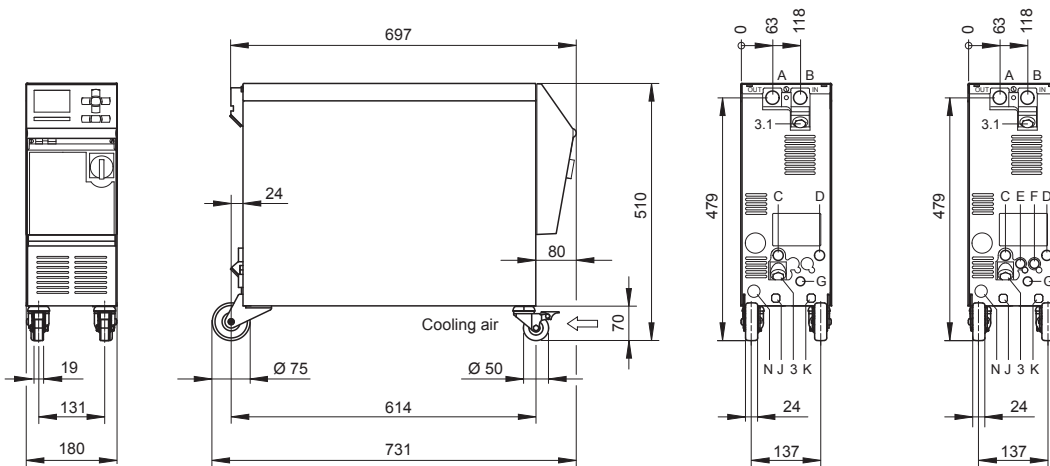
HB-__Z1



Housing size 1L, scale 1:15

HB-100X1L

HB-__Z1L



- | | | | |
|------------------------|-----------------------|------------------------------|------------------------------|
| A Main line | E System water inlet | J Compressed air inlet (ZG) | 3 Filter cooling water inlet |
| B Return line | F System water outlet | K Compressed air outlet (ZG) | 3.1 Filter return line |
| C Cooling water inlet | G Drain | N Mains connection cable | |
| D Cooling water outlet | | | |

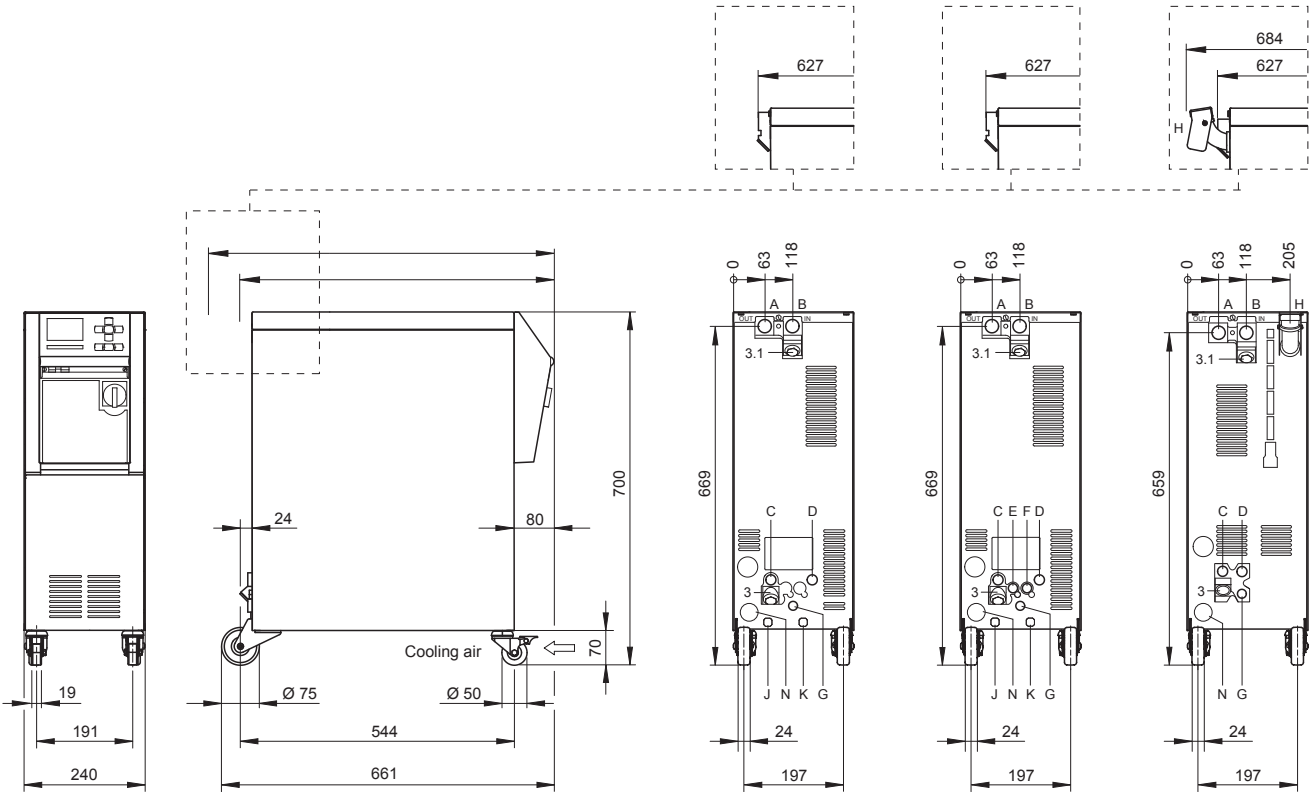
Note: 3D data available

Housing size 2, scale 1:15

HB-100X2

HB-__Z2

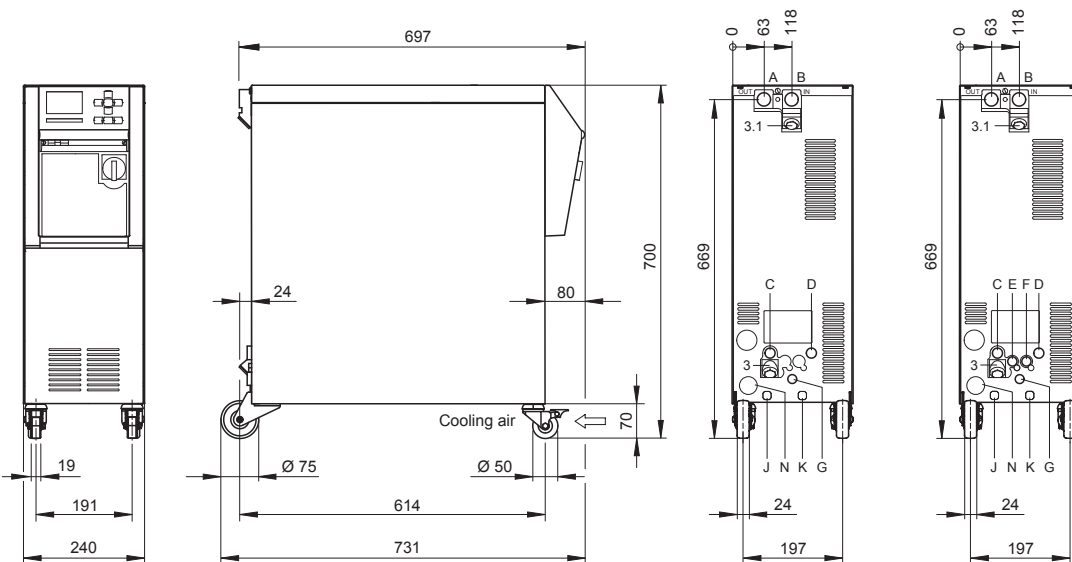
HB-200T2



Housing size 2L, scale 1:15

HB-100X2L

HB-__Z2L

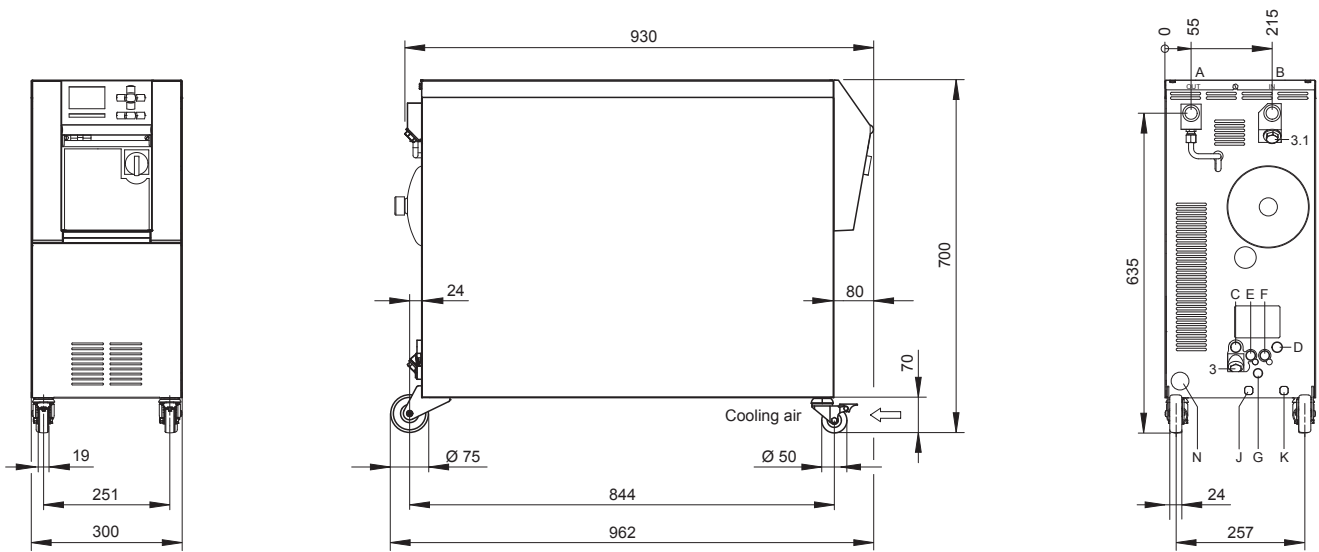


- | | | | |
|------------------------|--------------------------|------------------------------|------------------------------|
| A Main line | E System water inlet | J Compressed air inlet (ZG) | 3 Filter cooling water inlet |
| B Return line | F System water outlet | K Compressed air outlet (ZG) | 3.1 Filter return line |
| C Cooling water inlet | G Drain | N Mains connection cable | |
| D Cooling water outlet | H Filling (on oil units) | | |

Note: 3D data available

Housing size 2B, scale 1:15

HB-__Z2B

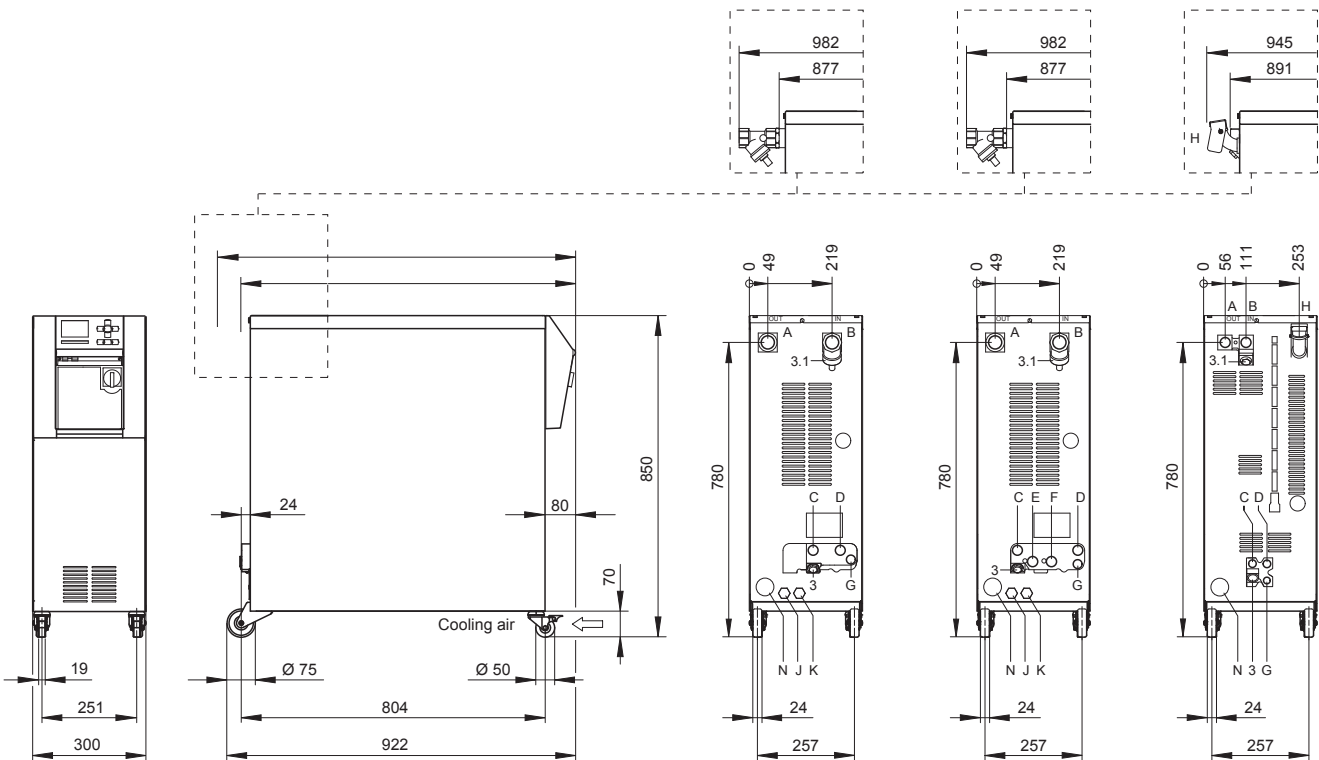


Housing size 3, scale 1:20

HB-100X3

HB-__Z3

HB-250T3



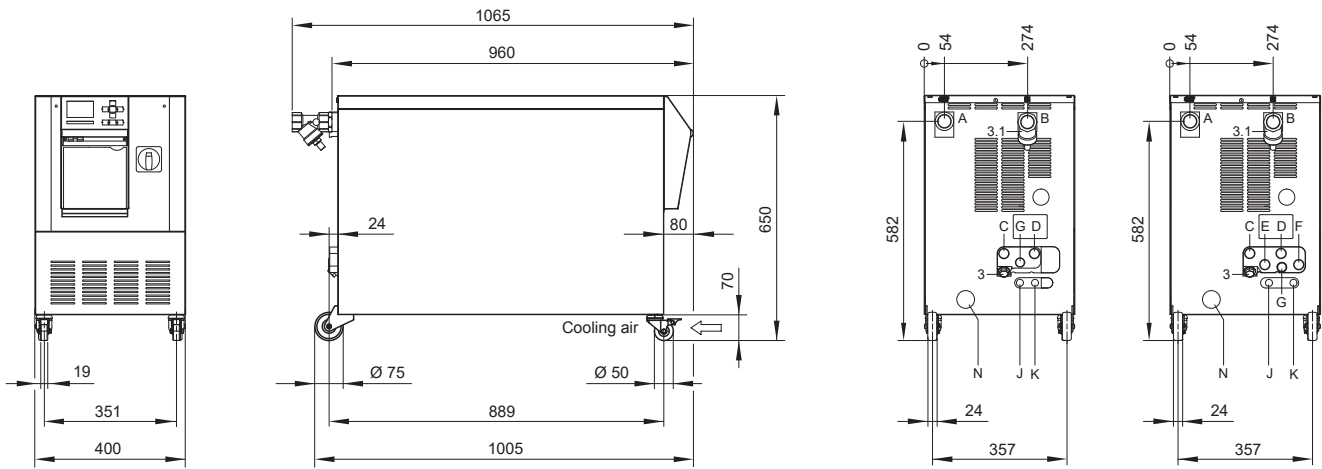
- | | | | |
|------------------------|--------------------------|------------------------------|------------------------------|
| A Main line | E System water inlet | J Compressed air inlet (ZG) | 3 Filter cooling water inlet |
| B Return line | F System water outlet | K Compressed air outlet (ZG) | 3.1 Filter return line |
| C Cooling water inlet | G Drain | N Mains connection cable | |
| D Cooling water outlet | H Filling (on oil units) | | |

Note: 3D data available

Housing size 4, scale 1:20

HB-100X4

HB-__Z4



- | | | | |
|------------------------|-----------------------|------------------------------|------------------------------|
| A Main line | E System water inlet | J Compressed air inlet (ZG) | 3 Filter cooling water inlet |
| B Return line | F System water outlet | K Compressed air outlet (ZG) | 3.1 Filter return line |
| C Cooling water inlet | G Drain | N Mains connection cable | |
| D Cooling water outlet | | | |

Note: 3D data available

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