

HB-Therm[®]

THERMO-5

Temperature Control Units

Product Catalogue 2023-10



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 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

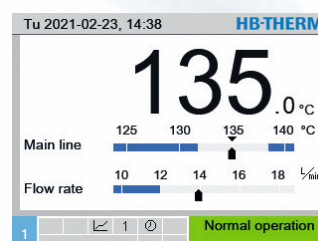
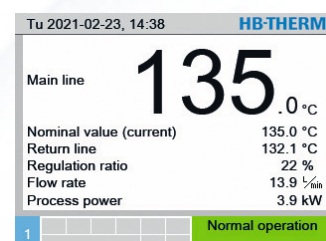
Can also be used in a clean room *

- 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

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 emptying by pump reversal (not possible with: 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)
	Cooling with automatic switch-off programme
	Changeover to 2nd nominal value
	Nominal value ramp and ramp programme
Monitoring / Safety	Cyclical system water exchange (selectable)
	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: 8R)
	Safety relief valve and pressure gauge on rear of unit
Command / Display	Automatic phase direction adaptation and phase monitor
	Lockable and abrasion resistant castors (PUR)
	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
Interfaces	Operating hours counter and service interval display
	Logbook for alarms
	Data input password protected
	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

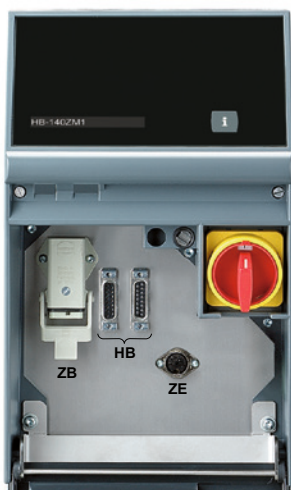
Additional Equipment

ZL	Leak stopper	With automatic vacuum optimisation (up to 70 °C; not possible with: 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
ZC	Interface CAN	2 sockets Sub-D 25 pin (female) Serial data interface CAN-bus (Sumitomo Demag) and CANopen (EUROMAP 66; Netstal, etc.) To remotely control singular units
ZO	Interface OPC UA	2 sockets Sub-D 9 pin (1 male and 1 female) Ethernet interface (EUROMAP 82.1) 1 socket RJ-45 (female)
ZP	Interface PROFIBUS-DP	Serial data interface PROFIBUS-DP 1 Sub-D 9-pin socket (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 1 000) '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-140ZM2).

Communication (P. 13, Fig. 1)

100 °C

Single units
Water, direct cooling**HB-Therm**
THERMO-5

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	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		●		●		
	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-100X2L-16-4S-B1-ZD, 405, English● Standard specification ○ Optional ¹⁾ Typical specification²⁾ 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	2–200
Circulating volume in unit	approx.	L	1,0	1,0	1,6	1,6	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	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	G1 ¼
	Resistance	bar, °C	20, 120	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	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, drain	Thread		G ³ / ₈	G ³ / ₈	G ³ / ₈	G ³ / ₈	G½	G½

100 °C

Single units
Water, indirect cooling**HB-Therm®**
THERMO-5

Temperature control unit		Heat transfer medium							
		Cooling	Water						
			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	8	●	●				
			16			●	●	●	●
			32					○	○
			2M	●		●			
Pump (P. 14, Fig. 3)	sealless, stainless; 0,5 kW; 30 L/min, 52 m		4M	○		○ ¹⁾		○	
	sealless, stainless; 1,0 kW; 50 L/min, 70 m		4S		●		●		
	Eco-pump  , sealless, stainless; 1,1 kW; 60 L/min, 70 m		6G					●	
	stainless; 2,8 kW; 110 L/min, 70 m		6M					○	
	sealless, stainless; 2,8 kW; 110 L/min, 70 m		8G					○	
	stainless; 3,5 kW; 160 L/min, 70 m		8M					○	
	sealless, stainless; 3,5 kW; 160 L/min, 70 m		8R						●
	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	○	○	○	○	○	○
			405	●	●	●	●	●	●
Mains voltage	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 ¹⁾ Typical specification³⁾ 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	2–200
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	650
	Width	mm	180	180	240	240	300	400
	Depth	mm	661	731	661	731	982	1065
Weight max.		kg	52	57	64	70	147	150
Connection, main line and return line	Thread		G¾	G¾	G¾	G¾	G1 ¼	G1 ¼
	Resistance	bar, °C	20, 120	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		G⅜	G⅜	G⅜	G⅜	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		G¼	G¼	G¼	G¼	G½	G½
	Resistance	bar, °C	10, 100	10, 100	10, 100	10, 100	10, 100	10, 100
Connection, drain	Thread		G⅜	G⅜	G⅜	G⅜	G½	G½

140 °C

Single units
Water, indirect cooling

Temperature control unit		Heat transfer medium		Water				
		Cooling		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)	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		●		●		
	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-140Z2L-16-4S-A2-ZE-ZD, 405, English

● Standard specification ○ Optional ¹⁾ Typical specification

³⁾ 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		G ³ / ₄	G ³ / ₄	G ³ / ₄	G ³ / ₄	G1 1/4	G1 1/4
	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		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
Connection, drain	Thread		G ³ / ₈	G ³ / ₈	G ³ / ₈	G ³ / ₈	G ¹ / ₂	G ¹ / ₂

160 °C

Single units
Water, indirect cooling**HB-Therm®**
THERMO-5

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

Ordering example: HB-160Z4-16-8R-B2-ZE-ZD, 405, English● Standard specification ○ Optional ¹⁾ Typical specification³⁾ 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
Circulating volume in unit		approx.	L	1,5	1,5	2,1	2,1	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	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
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	G¾
		Resistance	bar, °C	10, 100	10, 100	10, 100	10, 100	10, 100
Connection, drain		Thread		G¾	G¾	G¾	G¾	G¾

180 °C

Single units
Water, indirect cooling**HB-Therm®**
THERMO-5

Temperature control unit		Heat transfer medium	
		Cooling	
Type		with maximum main line temperature in °C	
		Housing size (P. 16, Fig. 5)	
Heating (P. 14, Fig. 2)		kW	
		8	●
		16	○ ¹⁾
		32	
Pump		2M	●
(P. 14, Fig. 3)		4M	○ ¹⁾
Eco-pump 		4S	●
sealless, stainless; 0,5 kW; 30 L/min, 52 m		6M	
sealless, stainless; 1,0 kW; 50 L/min, 70 m		8M	
Eco-pump 			○ ¹⁾
sealless, stainless; 2,8 kW; 110 L/min, 70 m			○
sealless, stainless; 3,5 kW; 160 L/min, 70 m			
Cooling (P. 15, Fig. 4)		A2	●
30 kW @ 60 K		B2	○
50 kW @ 60 K		C2	
90 kW @ 60 K			
Additional Equipment		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	●
Mains voltage		406	○
400 V (380–415 V), 50 Hz; 3LPE		215	○
400 V (380–415 V), 60 Hz (50/60 Hz); 3LPE		216	○
210 V (200–220 V), 50 Hz; 3LPE		466	○
210 V (200–220 V), 60 Hz (50/60 Hz); 3LPE			
460 V (440–480 V), 60 Hz; 3LPE			

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		L/min	0,4–40	0,4–40	2–160
Circulating volume in unit		approx.	2,1	2,1	6,5
Dimensions (P. 16, Fig. 5)		Height	700	700	850
		Width	240	240	300
		Depth	661	731	982
Weight max.		kg	69	75	154
Connection, main line and return line		Thread	G¾	G¾	G1 ¼
		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	G½
		Resistance	bar, °C	10, 100	10, 100
Connection, drain		Thread		G¾	G½

200/230 °C

 Single units
 Water, indirect cooling

Temperature control unit		Heat transfer medium	
		Cooling	
Type	with maximum main line temperature in °C	Indirect	
	Housing size (P. 16, Fig. 5)	HB-200Z	HB-230Z
		2B	2B
Heating (P. 14, Fig. 2)	kW	●	●
Pump	sealless, stainless; 0,5 kW; 30 L/min, 52 m	●	●
(P. 14, Fig. 3)	sealless, stainless; 1,0 kW; 50 L/min, 70 m	○ ¹⁾	○ ¹⁾
	Eco-pump  , sealless, stainless; 1,1 kW; 60 L/min, 70 m	○	●
Cooling (P. 15, Fig. 4)	30 kW @ 60 K	●	●
	50 kW @ 60 K	○	○
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: **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
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

200/250 °C

 Single units
 Oil, indirect cooling

Temperature control unit		Heat transfer medium	
		Cooling	
Type	with maximum main line temperature in °C	Indirect	
	Housing size (P. 16, Fig. 5)	HB-200T	HB-250T
Heating (P. 14, Fig. 2)		2	3
	kW	●	●
			○
Pump		2M	3
	sealless, stainless; 0,5 kW; 30 L/min, 52 m	●	●
	(P. 14, Fig. 3) sealless, stainless; 1,0 kW; 50 L/min, 70 m	○	○
Cooling (P. 15, Fig. 4)		A3	3
	34 kW @ 120 K	●	●
	60 kW @ 120 K	B3	○
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		405	●
	400 V (380–415 V), 50 Hz; 3LPE		
	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	○

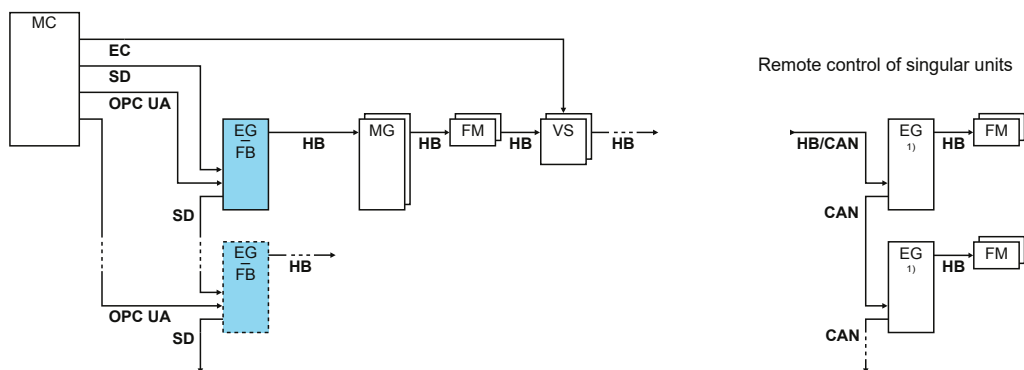
Ordering example: HB-250T3-8-2M-A3-ZE-ZD-ZU, 405, English

● Standard specification ○ Optional

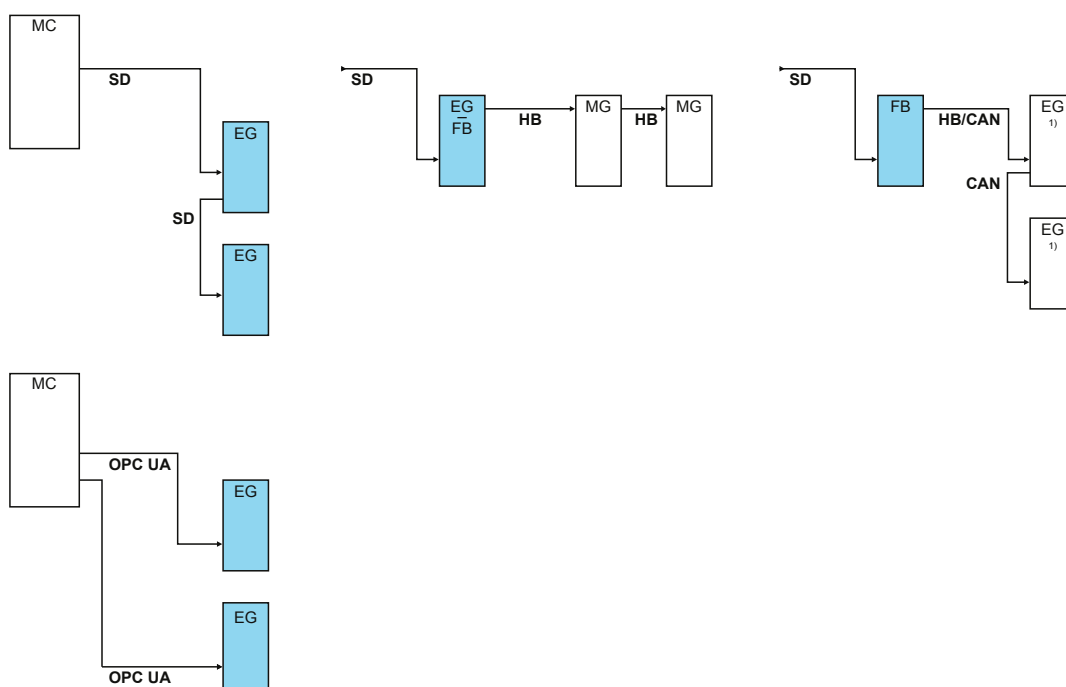
Maximum main line temperature	°C	200	250
Flow rate measurement	Measuring range	L/min	0,4–40
Circulating volume in unit	approx.	L	1,6
Volume of internal expansion tank	approx.	L	5,5
Dimensions (P. 16, Fig. 5)	Height	mm	700
	Width	mm	240
	Depth	mm	684
Weight max.		kg	59
Connection, main line and return line	Thread		G¾
	Resistance	bar, °C	10, 220
Connection, cooling water	Pressure	bar	2–5
	Thread		G¾
	Resistance	bar, °C	10, 100
Connection, 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), 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 ²⁾	Communication interface HB	Order of connection is not relevant
HB/CAN ²⁾	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

²⁾ 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. $\pm 10\%$ within the range indicated.

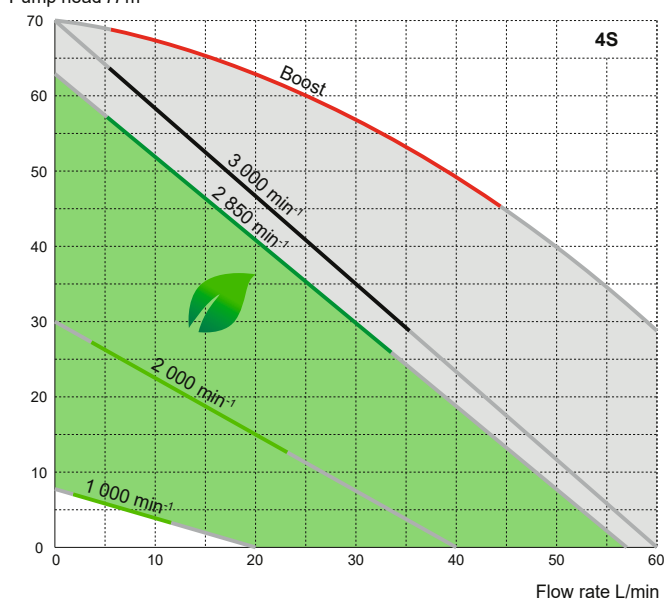
Maximum fusing; Cross-section through unit mains cable (with mains voltage)

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)

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

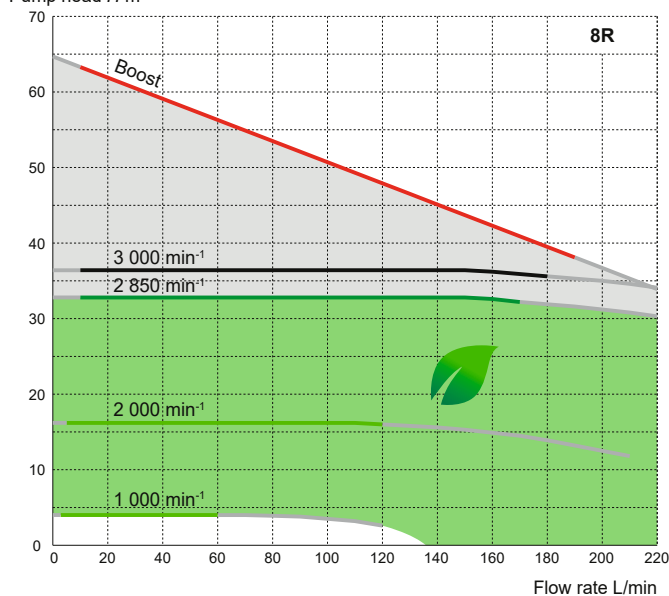
Pump head H m



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

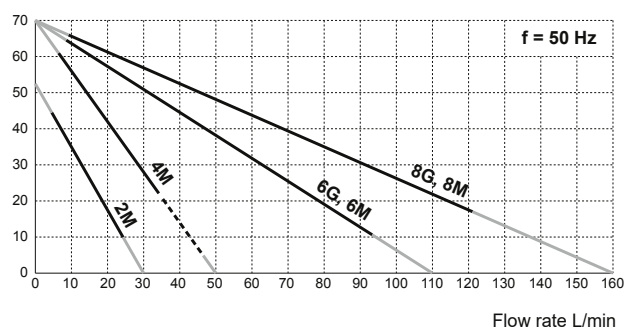
Pump head H m



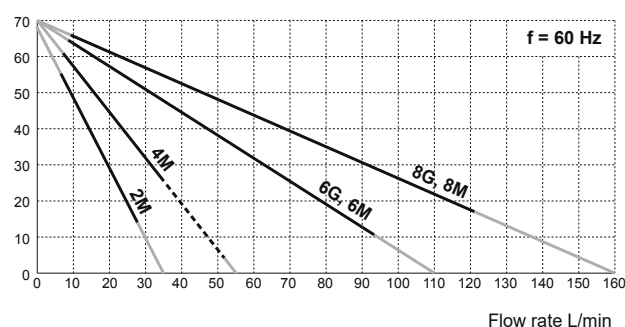
Note: Pressure p in bar = $0,1 \cdot$ Pump head H in m $\cdot$ density ρ in kg/dm³

Fixed speed pumps

Pump head H m



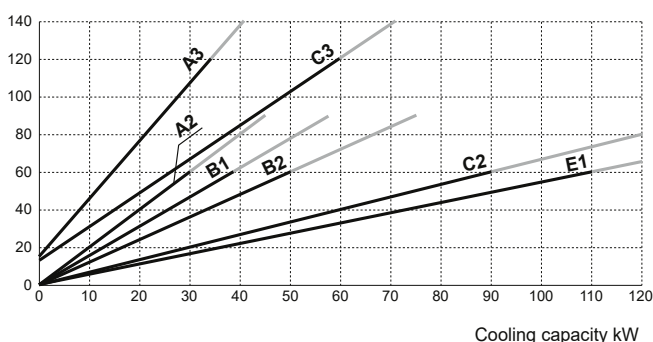
Pump head H m



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

Cooling Capacity (Fig. 4)

Temperature difference between heat transfer medium and cooling water 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

— Attainable practical values

General Technical Data

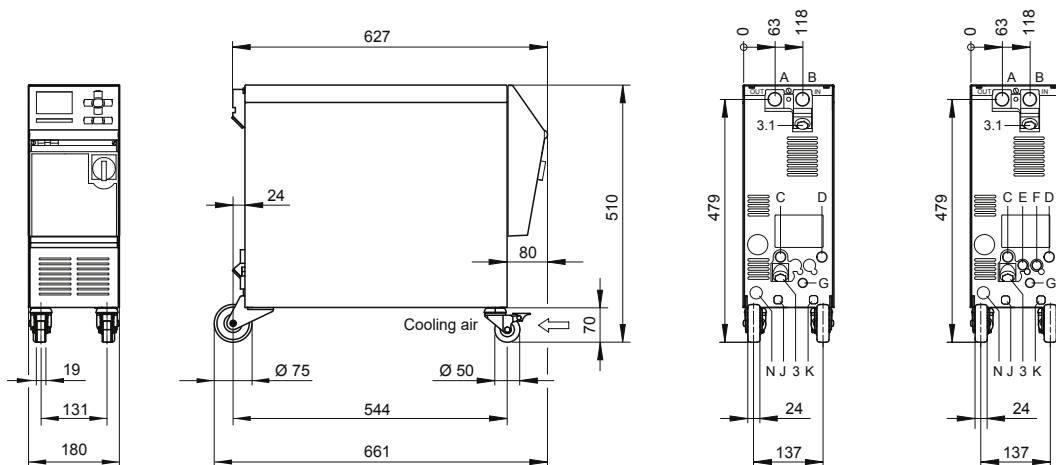
Mains cable to unit	3LPE, 4 m (plug on request)
Environment	Temperature range 5–40 °C
	Relative humidity 35–85 % RH (non-condensing)
Colour	Cover RAL 7035 (glossy light grey), RAL 5012 (glossy light blue)
	Control panel RAL 7012 (basalt grey)
	Access cover RAL 7021 (glossy black grey)
Continuous sound pressure level	<67 dB(A)
Protection class	IP 44
Standards (depending on unit type)	EN 12828, EN 12953-6, EN 60204-1, EN 60335-1, EN 60730-2-9, EN IEC 61000-6-2, EN IEC 61000-6-4, EN ISO 12100, EN IEC 63000, EN ISO 13732-1, 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: Housing size 1, 1L, 2, 2L, 2B ±(5 % of measured value + 0,1 L/min)
	Tolerance: Housing size 3, 4 ±(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

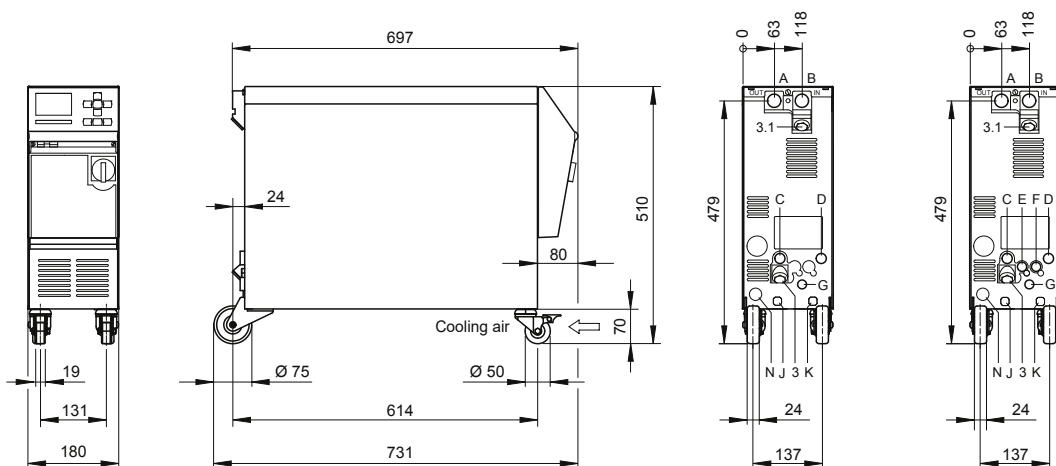
HB-__Z1



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

- 3 Filter cooling water inlet
- 3.1 Filter return line

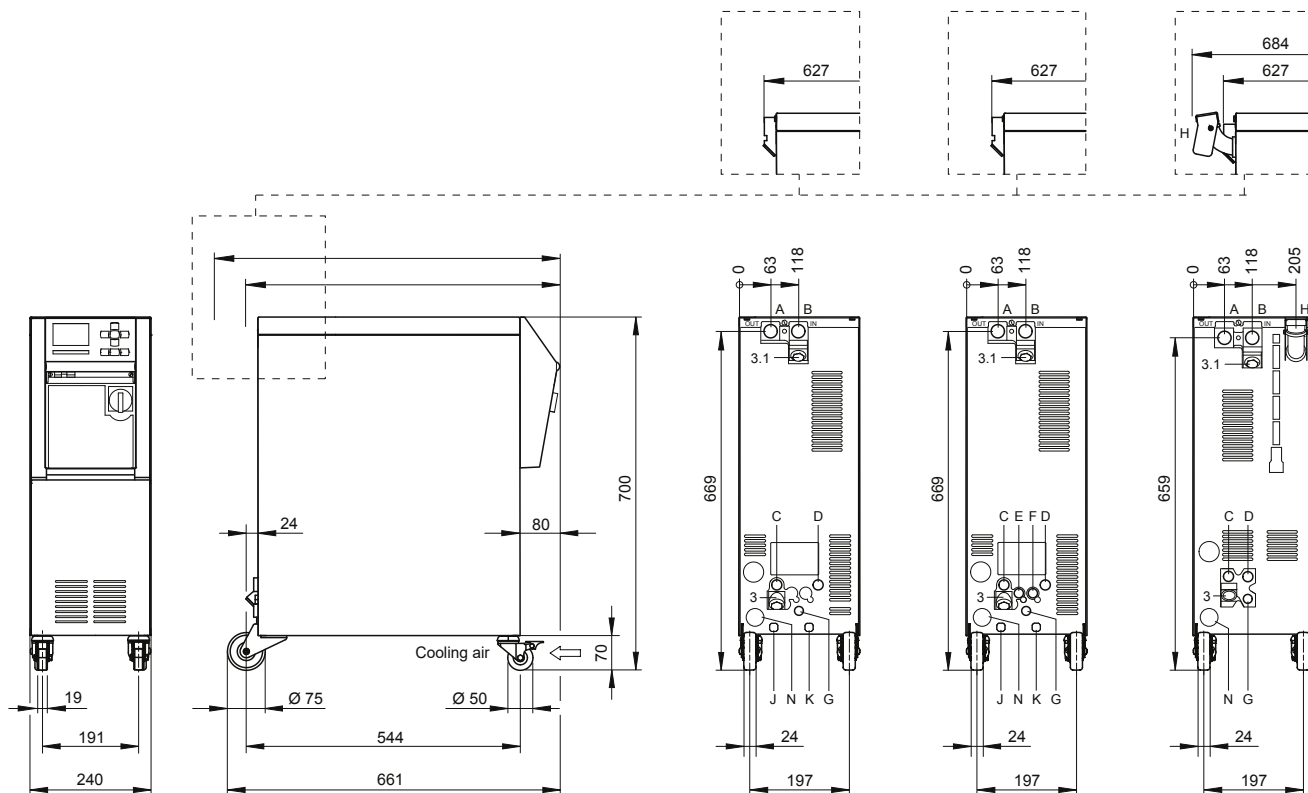
Note: 3D data available

Housing size 2, scale 1:15

HB-100X2

HB-__Z2

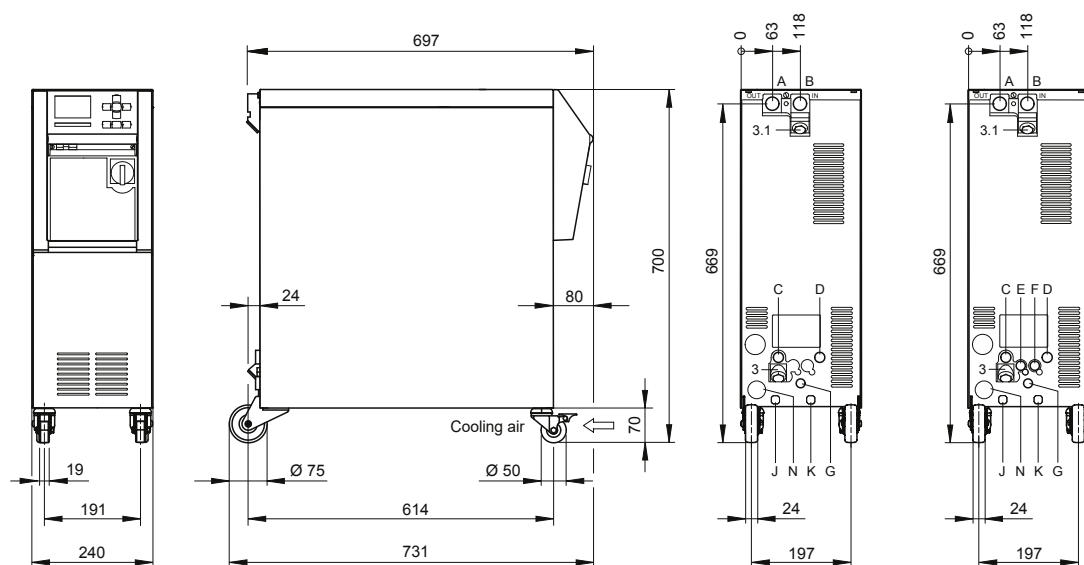
HB-200T2



Housing size 2L, scale 1:15

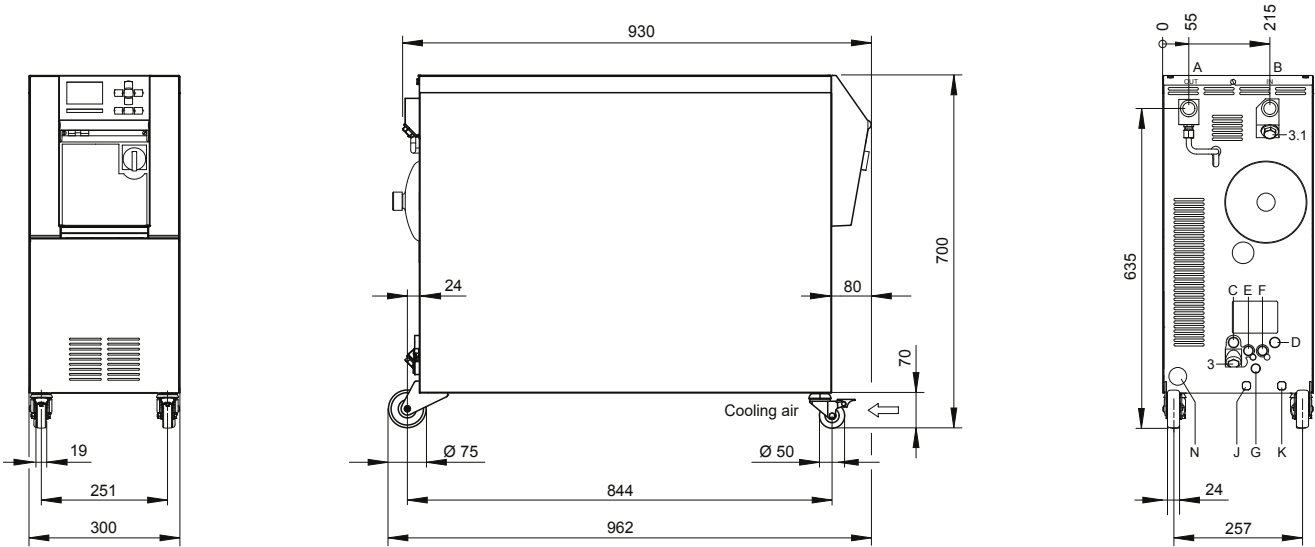
HB-100X2L

HB-__Z2L



Housing size 2B, scale 1:15

HB-__Z2B

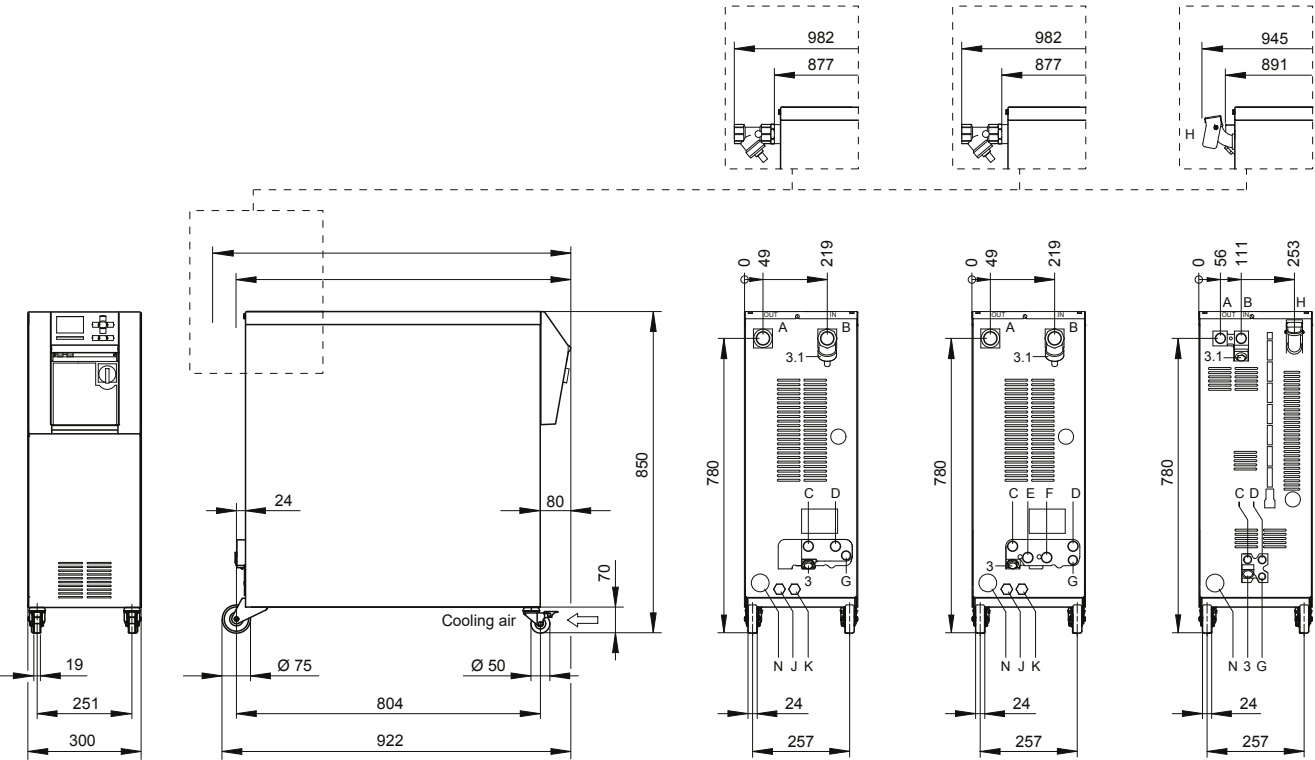


Housing size 3, scale 1:20

HB-100X3

HB-__Z3

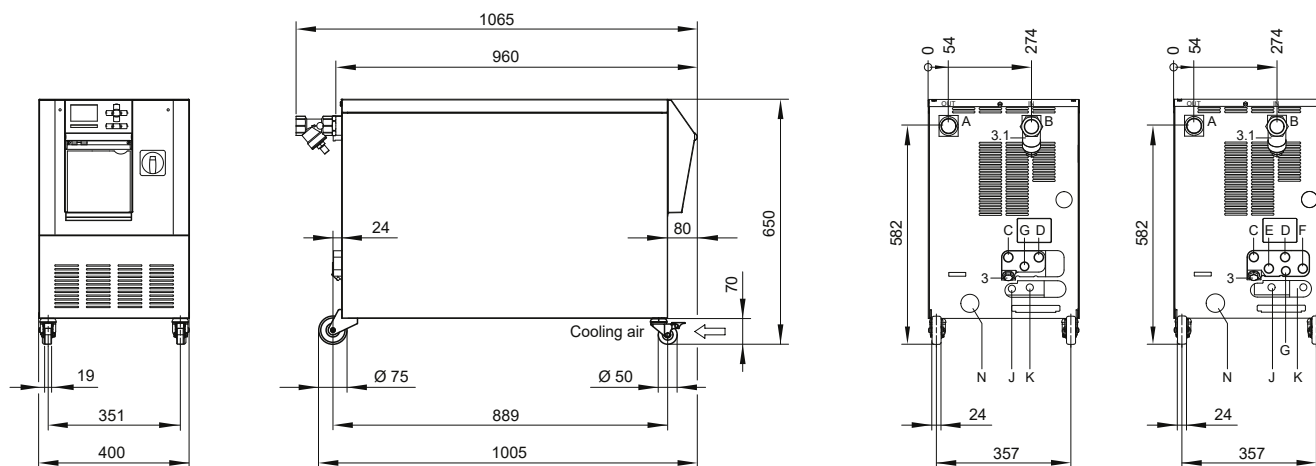
HB-250T3



Housing size 4, scale 1:20

HB-100X4

HB-__Z4



- 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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St. Gallen, Switzerland

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New Zealand
North Macedonia
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