

REGLOPLAS⁺

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P100smart/P140smart

Operating Instructions



Documentation Temperature Control Unit P100smart/P140smart

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General Safety Information

Safety Symbols

 DANGER	
	Denotes imminent danger. Failure to heed the information can result in death or grave personal injury (disability)!

 WARNING	
	Denotes a dangerous situation. Failure to heed the information can result in death or grave personal injury (disability)!

 CAUTION	
	Denotes a potentially dangerous situation. Failure to heed the information can result in property damage as well as minor or moderate personal injury!

NOTE	
	Denotes general information, useful advice to users and work recommendations, which, however, do not have any influence on the safety and health of personnel.

Range of Application

This general safety information is generally valid for all temperature controllers and control systems from Regloplas.

Intended Use

The Regloplas temperature control unit is built according to the current state of the art and the generally accepted principles of safety engineering. The temperature control unit is intended solely for the normal use for heating and/or cooling of injection moulds and die casting dies, extruders, calenders, mixers and other consumers in areas where there is no risk of explosion.

Any use beyond this shall be deemed to constitute improper use. The manufacturer is not responsible for damage resulting from improper use; the user is solely responsible for such risks. The temperature control unit may not be used under other operating conditions and/or with other media, in deviation from our specifications, without the prior consent of Regloplas AG.

The intended use also entails compliance with the operating, servicing and maintenance conditions stipulated by the manufacturer. The temperature control unit may only be operated, serviced and maintained by personnel who are familiar with these tasks and have been instructed as to the risks.

Safety Information

General Information

The Regloplas temperature control unit is safe to operate but can cause danger if it is used incorrectly or for a purpose other than its intended use. It should be noted that any such incorrect use or non-compliance with the intended use can cause risks to the life and limb of the user or third parties, adverse effects on the equipment and other material assets belonging to the user, and risks to the efficient operation of the equipment.

Start-up (i.e., commencement of intended use) is prohibited until it has been determined that the temperature control unit has been set up and wired in accordance with the Machinery Directive (2006/42/EC). EN 60204-1 (Safety of Machinery) must also be observed.

These operating instructions must be read carefully before switching on and operating the temperature control unit. The information regarding the intended use and foreseeable misuse must be observed. Local safety regulations must also be obeyed.

If the temperature control unit is used in combination with products made by other manufacturers, the notices and safety regulations of these manufacturers must also be obeyed.

Process Monitoring

In plants in which a temperature control system malfunction leads to endangerment of the operating personnel or destruction of the plant, an in-

dependent process monitor that shuts down the plant reliably must be used.

Information for Operators and Personnel

The operator and all persons who are tasked with working on the temperature control unit must obey the fundamental regulations regarding work safety and accident prevention. The operator must ensure that only persons who have read and understood these operating instructions, in particular the chapter on safety, may work on the temperature control unit.

Any working methods that have a negative effect on the technical safety of the temperature control unit must not be used. The operator must ensure that the temperature control unit is operated only in flawless condition. If necessary, the company using the equipment must obligate the operating personnel to wear protective clothing.

For all tasks relating to set-up, start-up, operating, modification of operating conditions and operational methods, maintenance, inspection and repair, any shut-down procedures stated to be necessary in the operating instructions must be followed.

Changing the Parameter Settings



The parameterisation of the control system may only be carried out by personnel trained by Regloplas. In particular, no parameters in the device configuration may be changed without consulting Regloplas.

The relevant accident prevention regulations and the generally accepted principles of safety engineering, occupational medicine and structural engineering must be observed. The national safety regulations must also be obeyed.

Residual Risks

Any unauthorised modifications and changes to the temperature control unit as well as unauthorised changes to the parameterisation of the control system are prohibited for reasons of safety.

If the temperature control unit is damaged, it must not remain in use; the defective part must be replaced or repaired immediately. Only original Regloplas replacement parts may be used. Damage due to use of third-party parts voids any and all warranty claims.

 DANGER	
	The temperature control unit must be rendered currentless before it is opened (unplug mains plug and, if present, press the main switch on the temperature control unit). Danger due to electrical shock!

Repair leaks in the temperature control circuit (device, connecting lines, consumers, etc.) immediately.



In temperature control units that use oil as a heat transfer medium, it should be noted that oil is flammable under certain conditions. For this reason, the temperature control unit must not be located in the vicinity of heat sources. The thermal insulation in the device must always be kept clean. Insulation that is soaked with thermal oil poses an increased risk of fire.

Burning thermal oil can be extinguished using a spray foam fire extinguisher, a powder fire extinguisher (avoid with dust-sensitive plants, control systems, EDP, etc.) or a CO₂ fire extinguisher. The appropriate fire extinguisher must be provided by the operator, taking into account the equipment located in the room and the mandatory safety regulations.

The temperature control unit may only be operated when all safety systems are completely installed and intact.

The temperature control unit must be protected against sprays and cleaning agents.


Before detaching connecting lines in the temperature control circuit and depending on the outlet temperature, allow the temperature control unit to cool down first and then turn it off. Check that the pump is no longer running.

 WARNING	
	Important - danger of injury in the event of escaping water or oil!

Using This Documentation

This documentation contains important information for safe, economical operation and for proper maintenance of the device.

Compliance with this documentation helps to avoid danger, minimise repair costs and downtime, and increase the dependability and service life of the device/system.

NOTE	
	The operating instructions should be kept near the corresponding device/system and always be accessible to operating and maintenance personnel.

Additional Documentation

The included documentation is completely correct for the basic versions of devices. Components that do not belong to the basic hardware are noted as extra equipment. The corresponding additional documents are included with special versions of devices. Any additional documents supplement and/or replace the descriptions contained in this documentation, which are then either invalid or only conditionally valid.

Operating Instructions

General

Introduction

These operating instructions contain a detailed description of the Temperature Control Unit P100smart/P140smart as well as important information for safe operation and optimal maintenance.

The operating instructions must be kept near the temperature control unit and always be accessible to operating and maintenance personnel.

Operating Range

The operating range and medium of the Temperature Control Unit P100smart/P140smart are shown in the following table (in this regard, see also the chapter "Technical Data" in the service section).

Temperature Control Unit Type	P100smart	P140smart
Temperature range	up to 100 °C	up to 140 °C
Heat transfer medium	Water	Water

NOTE





The technical data and information for installation, start-up and maintenance of the temperature control unit can be found in the maintenance section of these operating instructions. The operating instructions should be kept near the device/system and always be accessible to operating and maintenance personnel!



Start-up

Setting up the Temperature Control Unit

The temperature control unit is designed for an ambient temperature of 10-40 °C. Sufficient ventilation must be ensured during set-up. The distance between the devices and/or between the temperature control unit and a wall must be at least 10 cm. The ventilation slits must not be covered.

- Check the temperature control unit to ensure that it is undamaged and complete
- Do not tip the temperature control unit! Heat transfer medium remaining in the unit from the test run could spill, and there is a risk that the thermal insulation could become soaked with it
- Position the temperature control unit on a horizontal surface and engage the wheel brake

 WARNING	
	<p>The temperature control unit may be pressurised - danger of injury in the event of escaping hot water or steam!</p> <p>Never start up the temperature control unit without the side panels and housing!</p> <p>Never use the temperature control unit in potentially explosive environments and protect it against sprays and cleaning agents that contain solvents!</p> <p>Repair leaks in the temperature control circuit (temperature control unit, connecting lines, consumers, etc.) immediately!</p> <p>Observe local laws during set-up!</p>

 CAUTION	
	<p>Before detaching connecting lines in the temperature control circuit and depending on the outlet temperature, the temperature control unit must be allowed to cool down first! The deactivation procedure is initiated by pressing the ON/OFF button. The pump continues to run. The temperature control unit cools down until the temperature of the heat transfer medium has reached the programmed run-on temperature (factory default 60 °C). Then the pump and the control system are turned off!</p> <p>Verify that the pump is no longer running and the system pressure gauge reads 0 bar (display reads OFF)!</p> <p>The corresponding chapters of the operating instructions must be read before starting up the temperature control unit!</p>

Operating Instructions

The operating instructions for the temperature control unit belong in the hands of the personnel who carry out start-up and operation. Please ensure that the operating instructions are read. By doing so, you will avoid unnecessary expense and problems during start-up as well as production downtime.

Inspection of Consumers

Before installing the connecting lines between consumer and temperature control unit, the consumer must be subjected to the following inspections:

- Verify that channels are unobstructed
- Remove residual fluid and fouling with compressed air (foreign objects such as shavings, etc., can damage the pump)
- Rust and lime deposits must be removed because they greatly interfere with the heat exchange between consumer and heat transfer medium and increase the pressure drop in the consumer. Descaling can be carried out using the Regloplas REG descaling unit (see the "Regloplas Temperature Control Technology" brochure, REG data sheet)

Water Quality

The water used must meet the following requirements to avoid damage to the cooler of the temperature control unit:


Criterion	Requirement
Appearance	clear/without sediment
Cloud	< 0.5 NTU (very light cloud)
Total hardness	< 10 °dH
pH-value	6.5-8.5
Conductivity	max. 500 µS/cm
Carbonate hardness	< 5 °dH

Addition of RK93 corrosion inhibitor is urgently recommended (see the "Regloplas Temperature Control Technology" brochure, RK93 data sheet).

Connecting Lines

The connecting lines must consist only of pressure- and temperature-resistant hoses and screw fittings. The section of the connecting lines may not be reduced (see maintenance section).

- Outlet and inlet - dimensioning for 140 °C (16 bar). The connecting lines must be routed so that they are protected against unintentional contact. Thermal expansion must be taken into account in pipe joints
- Cooling water inlet - dimensioning for 100 °C (10 bar). When connecting to public water mains, the applicable laws and safety regulations must be observed (e.g., connection of the unit via water circuit separator). The water mains pressure must be at least 4 bar. The minimum cooling water flow rate must be 10 l/min
- Cooling water outlet - dimensioning for 160 °C (10 bar), must be hammer-free and always open. The hose must be fastened so that any escaping steam at the start of the cooling procedure does not pose a hazard
- For reasons of safety, the cooling must always be connected!

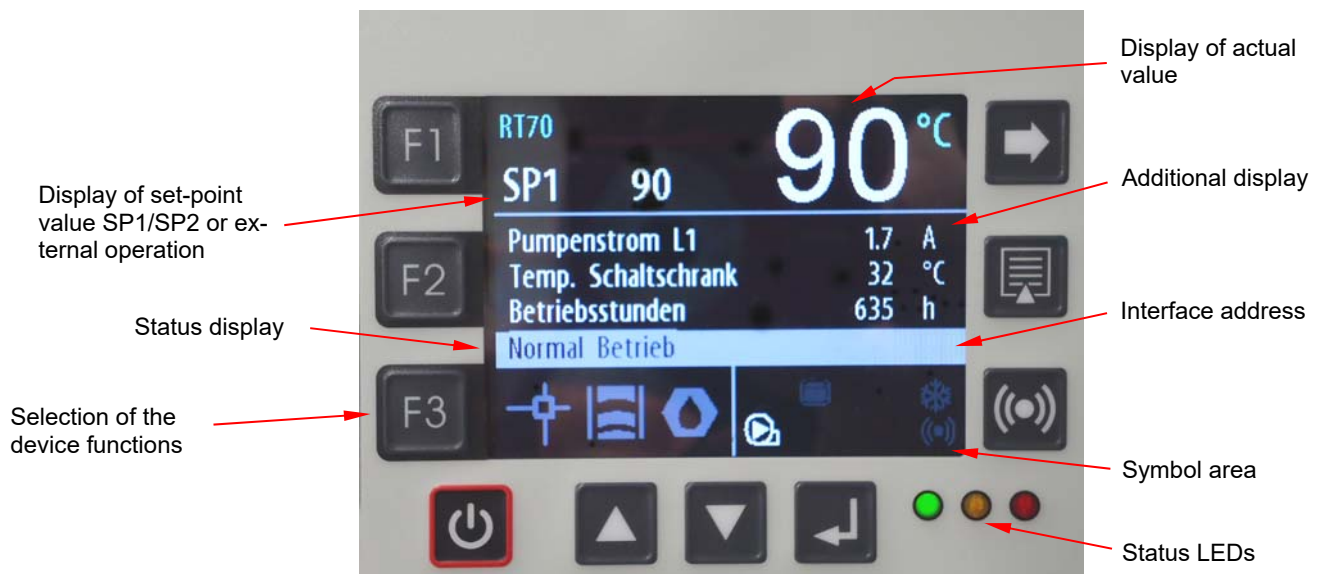
⚠ CAUTION	
	The temperature of the emerging cooling water can increase up to the temperature of the heat transfer medium!

Electrical Connections

The temperature control unit may only be connected by a qualified electrician.









- Compare supply voltage and frequency with the information on the rating plate of the temperature control unit
- Verify the rating of the preliminary fuse according to the information in the electrical diagram and power consumption in accordance with the rating plate of the temperature control unit
- Observe the applicable local laws and safety regulations when connecting to the mains

RT70 Control System






RT70 Control System - front panel

Buttons




	Setting the set-point value		Scrolling through pages
	Setting the additional display		Setting the parameters
	Selection of the device functions (toggling SP1/SP2, drainage by suction, leak-stop)		Alarm reset and alarm history
	Button ON/OFF		Enter key

	Navigation upward		Navigation downward
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Status LEDs

	Normal mode		Warning		Alarm
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Device Functions

	Set-point value toggling SP1/SP2		Draining (suction or blowing out)
	Leak-stop mode		

Symbols

	Interface operation		Level of the heat transfer medium (filled quantity) LOW
	Level of the heat transfer medium (filled quantity) OK		Heating
	Ramp program activated		Timer activated
	Cooling		Feed pump, counterclockwise rotation
	Feed pump, clockwise rotation		Alarm
	Maintenance due (flashes if maintenance is due)		

RT70 Operation and Status Displays



In the off state of the RT70 control system, the message **OFF** appears in the display area. Upon switching on with the **ON/OFF** button, the additional display is shown. The top left part of the display shows the set-point temperature **SP1** or **SP2** (SP = Set point). The top right part of the display shows the current outlet temperature (actual value of temperature sensor **Sn1**, **Sn2** or **Sn3**).

Sn1 = Outlet temperature



Three other selectable values are shown in the middle part of the display. The additional display can be set by using the **F2** key and by turning/pressing the RCD control knob (turning selects a value, pressing confirms it).

The symbols for set-point value display, suction operation (draining) and leak-stop operation are shown in the lower left part of the display. The various operational and status displays of the temperature control unit are shown in the lower right part of the display.

Setting the Set-point values



The set-point values **SP1** and **SP2** are set by pressing the key **F1**. The set-point value is then coloured light blue and can be set with the RCD control knob. This setting is also possible in the parameter positions. The set-point values can be selected via an external digital signal.



To toggle between set-point values **SP1** and **SP2**, press the **F3** button and select the set-point toggling function. Set-point toggling is only possible if there is no alarm pending.

Parameter Menu



The parameter menu is activated by pressing the Parameter button. In this menu, all the parameters can be configured by turning/pressing the RCD control knob.

RT70 Control System - Functions

Powering Up



Upon switching on the main switch, the message **OFF** appears in the display. The RT70 control system is now ready for operation and is switched on by pressing the **ON/OFF** button, or by the timer, through a digital input or an interface.

The display, depending on the programming, shows the set-point and actual values, as well as information on the operational state of the control system or the temperature control unit.

Rotational field detection / Direction reversal

The rotary field detection of the RT70 control system detects a wrong phase sequence and reports this in the display or corrects the direction of rotation automatically.

Shutdown



The RT70 control system is switched off by pressing the **ON/OFF** button, by the timer, via a digital input or an interface.

Depending on the temperature of the heat transfer medium, the shutdown program runs as follows:

- The pump and the control system are switched off. The RT70 control system will then be in standby mode and the message **OFF** appears on the display
- The pump continues to run. The unit cools down until the temperature of the heat transfer medium has reached the programmed coastdown temperature. On reaching this temperature, the pump and the control system are automatically switched off. In the case of pressurised water units, the pump then continues running for a further few seconds in the opposite direction (pressure release). The RT70 control system will then be in standby mode and the message **OFF** appears on the display

Leak-stop operation



The leak-stop operation is activated by pressing the **F3** key and selecting the leak-stop symbol and is only possible if it is supported by the device type.

The leak stop operation is only possible if water is used as the heat transfer medium and the set-point value is in the vicinity of the value run-on temperature (0-80 °C). Pressurised water units do not have any leak-stop operation.

When oil is used as a heat transfer medium, the set-point value must be within the range 0-250 °C. The heating capacity is then max. 60 %, since the thermal load of the oil must be kept low owing to the reduced pump capacity.

The leak-stop operation can be cancelled by pressing the **ON/OFF** button. When the **ON/OFF** button is pressed again (wait until the display reads **OFF**), the unit switches back to normal operation.

Clearance for the Leak-Stop Function

The leak-stop function is not permitted with every device (e.g. if a change in the direction of rotation of the delivery pump is not possible). The clearance of the leak-stop function is set in the parameter menu.



DANGER



The leak-stop operation is an emergency operation and may only be switched on or cleared for devices intended for the purpose. A leak-stop operation in the case of devices not intended for the purpose can cause a fire.

Emptying (option)

The consumer device can be drained using the delivery pump (suction) or by means of compressed air (blowing out); (setting in the parameter menu).

Drainage by Suction with Pump



The suction program allows the draining of the consumer connected at the temperature control unit and is activated by pressing the **F3** button and selecting the suction symbol. The pump is switched off, and after the pump coastdown time has elapsed the pump is switched on again in the opposite direction. The consumer is drained by suction during the defined period (draining time).

Draining is only possible if the temperature of the heat transfer medium is below the programmed coastdown temperature value. If that is not the case, the heat transfer medium is first cooled to this value.

Blowing out with Compressed Air

The blowing out program enables the user to drain the consumer connected to the temperature control unit by means of compressed air. Blowing out is activated after the pump coastdown time has elapsed and directs compressed air through the consumer. The temperature control unit switches off automatically after the set period (draining time) has elapsed.



The suction or blowing out program can be aborted by pressing the **ON/OFF** button. When the **ON/OFF** button is pressed again (wait until the display reads **OFF**), the unit switches back to normal operation.

NOTE



In the case of pressurised water units, the pressure release valve (Y8) closes at 5 °C above the coastdown temperature (max. 85 °C) and opens at the programmed coastdown temperature during the cooling process (only devices with 1K/2K).

Operation with Code/Password

In order to prevent the values that have already been set or programmed from being unintentionally reset/adjusted, the use of a code/password is urgently recommended. The code is defined in the parameter **Code**.

The RT70 control system has three password levels that are organised hierarchically:

- User password - Default **0000** (switched off)
- Technician password - Default **0070**
- Service password - only for personnel trained by Regloplas

NOTE



It is strongly recommended that an operator password should be set up when commissioning the temperature control unit.

Alarm Reset and Alarm History

Alarm Reset



If an alarm has been triggered, the signal horn can be switched off by pressing the **Alarm Reset** button. After the malfunction has been remedied, the alarm can be reset by again pressing the **Alarm Reset** button.

Alarm History



If there is no alarm pending, the **Alarm Reset** button can be used to view the alarm history.

Save/Reset of the Setting Values

The RT70 control system provides the facility to reload the factory settings or user settings at any time by a simple procedure. Two different new customer-specific settings can be loaded (user setting 1 and 2).

Changing Consumer/Decommissioning

Before detaching the connecting lines, it is necessary to verify that the temperature control unit is turned off and that all circuits are depressurised (see the chapter "Switching off the Temperature Control Unit"). The temperature control unit must be drained completely and stored in a dry

place at 10-40 °C when not in use. To restart the unit, proceed as instructed in the "Start-up" chapter.

Alarm Messages

The RT70 control system can display various error messages (warnings and alarms). Attention must be paid to these error messages without fail. Otherwise, malfunctions of / damage to the temperature control unit and production downtimes may result.



Pressing the **Alarm Reset** button allows you to acknowledge/reset an alarm (e.g. switching off the horn). Only after the malfunction has been rectified can the alarm display be cleared by once again pressing the **Alarm Reset** button.

The **Alarm Reset** button also allows manual acknowledgement of the automatic switchover (toggling) from consumer temperature control (or cascade control) **Sn2** to outlet temperature control **Sn1** in the event that sensor **Sn2** is defective or removed from the consumer.

Alarm list



Pressing the **Alarm Reset** button opens the alarm list, as long as there is no active alarm. The last ten alarm messages are displayed in this list, complete with date and time.

Warnings

Error message	Rectification
Service is due	Carry out maintenance procedure according to the operating manual. Increment the parameter Next Maintenance by 1000 hours
Deviation set-point value/outlet underrun	Adjust the outlet temperature and acknowledge the fault
Deviation set-point value/outlet exceeded	Adjust the outlet temperature and acknowledge the fault
Leak stop not possible	Reduce the temperature
Leak stop not allowed	Unit is not allowed for leak stop
Suction not possible	Switch the unit to normal operation mode

Alarms



Error message	Rectification
Level 1 underrun	Refill heat transfer medium
Toggling of heat transfer medium - unit must be re-started	Switch the main switch off and on again
External set-point value signal interrupted or not present	External set-point value signal must be present (if required, check external control system)
Analog option missing or defective	Connect analog option or switch off in the parameter Hardware Options
Digital option missing or defective	Connect digital option or switch off in the parameter Hardware Options
AD converter failure	Replace base module
Attention - temperature control cabinet too high	Place the temperature control unit in a place with low ambient temperature

Error message	Rectification
Flow switch act	Check the outlet pressure (min. 0.7 bar must be present)
Max. temperature exceeded	Max. temperature of the heat transfer medium may not exceed the maximum device temperature (if required, check the tool temperature)
Motor current underrun	Check the pump/pump motor (with Ohmmeter) and if required, replace them
Phase sequence failure	Correct the phase sequence (interchange 2 phases)
Phase sequence unidentified	Switch off phase sequence monitoring
Phase missing	Check the mains, input conductor and pump motor
Motor contactor malfunction	Check motor contactor and if required, replace it
Temperature sensor Sn1 failure	Replace temperature sensor Sn1
Motor current exceeded	Check the pump/pump motor (with Ohmmeter) and if required, replace them
Power failure	Failure of the power supply or temperature control unit not switched off properly
Safety thermostat triggered	Temperature control unit has become too hot - determine the cause and reset the thermostat
Turn on time refill exceeded	Check the cooling water circuit and the cooling circuit for leaks

System Errors/System Notes

Error message	Rectification
Parameter data corrupt	Replace the control unit
Save/Load not possible during device is on	Switch the temperature control unit to OFF
Error, password not reset	Enter the reset code correctly
Password reset	Password has been reset

Maintenance

 WARNING	
	<p>Before all maintenance procedures, turn off the temperature control unit, press the main switch and unplug the mains plug!</p> <p>The temperature control unit may be pressurised - danger of injury in the event of escaping hot water or steam!</p> <p>Check that the system pressure gauge is displaying the value 0 bar.</p> <p>Before disconnecting the feed lines to the temperature control unit/consumer, first allow the temperature control unit to cool down.</p>

Periodic Inspections and Maintenance Procedures

The RT70 control system has a service interval display to simplify maintenance work on the temperature control unit. We recommend entering the corresponding maintenance interval (e.g., 2000 hours, see the RT70 control system programming instructions).

Please note that the instructions below are based on a daily operating time of 8 hours. In multi-shift operation, the inspections and maintenance procedures must be carried out at correspondingly shorter intervals. Defective parts must be repaired or replaced immediately.

- Temperature control unit inspections and maintenance procedures must be carried out by an expert
- Maintenance procedures involving electrical equipment may only be carried out by qualified electricians
- The RT70 control system unit may only be replaced when the mains plug is unplugged
- The safety valve should be vented from time to time by brief activation (blow off)



WARNING



Danger of magnetic fields in the case of feed pumps with magnetic drive.

Persons with pacemakers and surgically implanted metal parts must remain at a safe distance or should not be required to perform maintenance and repairs on these pumps.

When assembling the magnetic drive, the motor must be securely retained to prevent any possibility of fingers being crushed between components due to the magnetic forces.

All computers, data media, credit cards, electronic watches etc. must be kept at a safe distance.

Daily Inspections/Maintenance Procedures

- Check the entire temperature control circuit (temperature control unit, connecting lines, consumers, etc.) for leakage and repair any leaks immediately
- Check filters and clean if necessary

Monthly Inspections/Maintenance Procedures

- Inspect the cooling air inlet port of the pump motor to ensure that it is free of obstructions. Clean the port by blowing compressed air from inside to outside
- Check filters and clean if necessary



Semi-annual Inspections/Maintenance Procedures

- Inspect the electrical equipment such as grounding wires, secure connection of power supply cord and connecting lines, etc.
- Dismantle solenoid valves (see maintenance section), inspect membranes for lime deposits and damage. Check the core and spring bolt for free movement. Clean or replace parts if necessary
- Descale cooler - exercise caution when tightening the screwed connections on the heat exchanger (max. 170 Nm).
- Check pump capacity (the flow rate and final pressure must comply with the pump characteristic)

Annual Inspections/Maintenance Procedures

- Replace the heat transfer medium (water and corrosion inhibitor) after approx. 2000 working hours (equivalent to approx. one year in single-shift operation). In the event of poor water quality or multi-shift operation (contamination, etc.), the medium must be replaced correspondingly earlier



Cleaning

 CAUTION	
	<p>Always allow the temperature control unit to cool down!</p> <p>Switch off the temperature control unit: press the main switch and unplug from the mains!</p> <p>When using a solvent for cleaning - do not blow out the tank and the cooler, but flush them instead (explosion hazard)!</p> <p>When using a solvent, the manufacturer's instructions for use must be observed. Solvents are flammable under certain conditions. For this reason, cleaning must never take place near heat sources!</p>

In the event of unfavourable operating conditions, the procedures listed below must be carried out correspondingly earlier.

- 1) Drain the temperature control unit by suction or blowing out
- 2) Clean the filters in the circuit
- 3) Inspect the cooler for scale deposits and clean using the REG Descaling Unit if necessary
- 4) Dismantle solenoid valves (see Maintenance section), inspect diaphragms for scale deposits and damage. Check the core and spring bolt for free movement. Clean or replace parts if necessary
- 5) Inspect pump for corrosion and replace if necessary
- 6) It is also advisable to inspect the consumers for contamination. Impurities lead to a sharp reduction in heat exchange between consumer and heat transfer medium. Deposits increase the pressure drop in the consumer, so that, over time, the pump capacity of the temperature control unit is no longer sufficient to handle the necessary heating or cooling load

Repairs

 CAUTION	
	<p>Allow the temperature control unit to cool down and, if necessary, drain it before any repair!</p> <p>Switch off the temperature control unit: press the main switch and unplug from the mains!</p> <p>Disconnect all hose couplings from the temperature control unit!</p>



For fast, error-free supply of spares, we need the following data without fail:

- Device type
- Device number



- Voltage and frequency

This information is given on the rating plate on the temperature control unit.

The item numbers of the components can be found in the corresponding drawings in these operating instructions and the electrical circuit diagrams of the temperature control unit.

 CAUTION	
	<p>Only authentic (OEM) Regloplas spare parts may be used! In case of damage from the use of non-OEM parts, the warranty will be rendered null and void!</p>

Transport

 CAUTION	
	<p>Allow the temperature control unit to cool down, turn it off, press the main switch and unplug the mains plug! Disconnect all hose couplings from the temperature control unit!</p>

Before shipping, the temperature control unit must be drained through the discharge port on the delivery pump (see maintenance section). Because of the danger of freezing (bursting of the cooling pipes) at low temperatures, the cooler must be blown out as follows:



- 1) Switch on the temperature control unit - press the main switch and press the **ON/OFF** button

- 2) Set the set-point value on the controller to 0 °C

- 3) Check that the cooler solenoid valve (**Y6**) is open

- 4) Blow out the cooler with compressed air (max. 6 bar)



- 5) Switch off the temperature control unit with the **ON/OFF** button, and then press the main switch and unplug the mains plug

- 6) Do not tip the temperature control unit - heat transfer medium remaining in the unit could spill out

- 7) Use the original packaging and mark the top side clearly

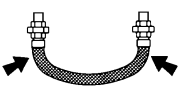
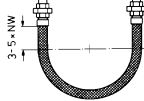
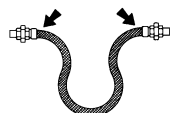
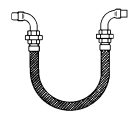
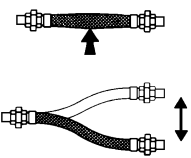
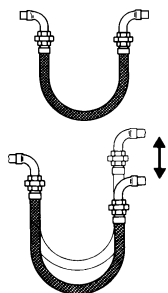
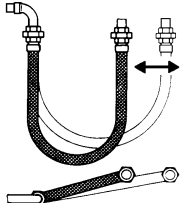
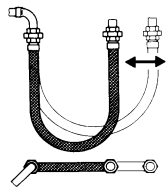
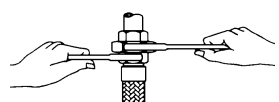
Disposal

The temperature control unit must be drained completely and disposed of in accordance with local regulations.

The temperature control unit can also be returned to Regloplas AG, Switzerland, for disposal.

Maintenance

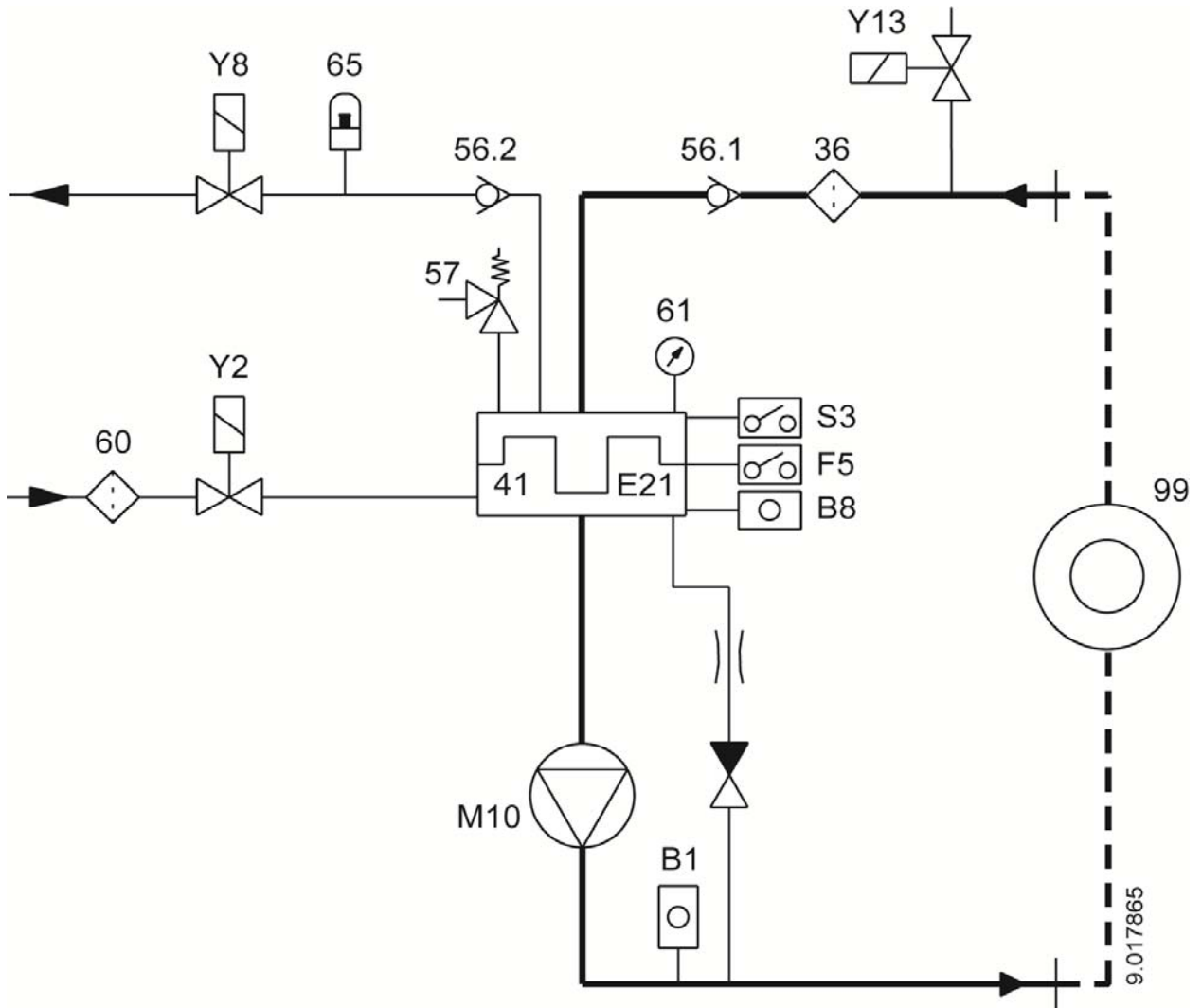
Guidelines for Connecting Hoses

Wrong		Right	
	Hose too short - hose is bent at the connections		Provide sufficiently long neutral hose ends (3-5 x DN)
	Excessive bending load at the connections		Pipe elbows fitted
	Incorrect installation - compression along the longitudinal axis		Pipe elbows fitted
	Torsion - hose axis and direction of movement not in the same plane		The pipe axes must be parallel and in the same plane as the direction of movement
	Important - twisting of the hoses can also be caused during installation		When attaching/ detaching a hose, always hold it in place with a second wrench

Technical Data P100smart/P140smart

Temperature Control Unit Type	P100smart	P140smart
Max. outlet temperature	100 °C	140 °C
Heat transfer medium	Water	
Filling capacity	1.0 l	
Max. expansion volume	----	
Heating capacity	8 kW	
Heating switch	SSR relay	
Cooling capacity	145 kW	85 kW
at outlet temperature	90 °C	130 °C
at cooling water temperature	20 °C	20 °C
Water system pressure	min. 4 bar	
Pump type	SM22	
Motor power (pump)	0.5 kW	
Max. delivery rate	40 l/min	
Max. delivery pressure	5 bar	
System pressure	10 bar	
Outlet pressure	max. 16 bar	
Control System	RT70 Control System	
Measurement type (standard)	Pt100	
Control voltage	115/230 V, 50/60 Hz	
Input supply voltages	400/480 V, 50/60 Hz	
Total power	(see specification plate)	
Outlet/inlet connections (standard)	G 1/2"	
Cooling water supply connections (standard)	G 1/2"	
Degree of protection	IP40	
Dimensions W/H/D	233/595/746 mm	
Weight	approx. 50 kg	
Colour	RAL 9006/7016	
Ambient temperature	max. 40°C	
Continuous sound pressure level	< 70 dB(A)	

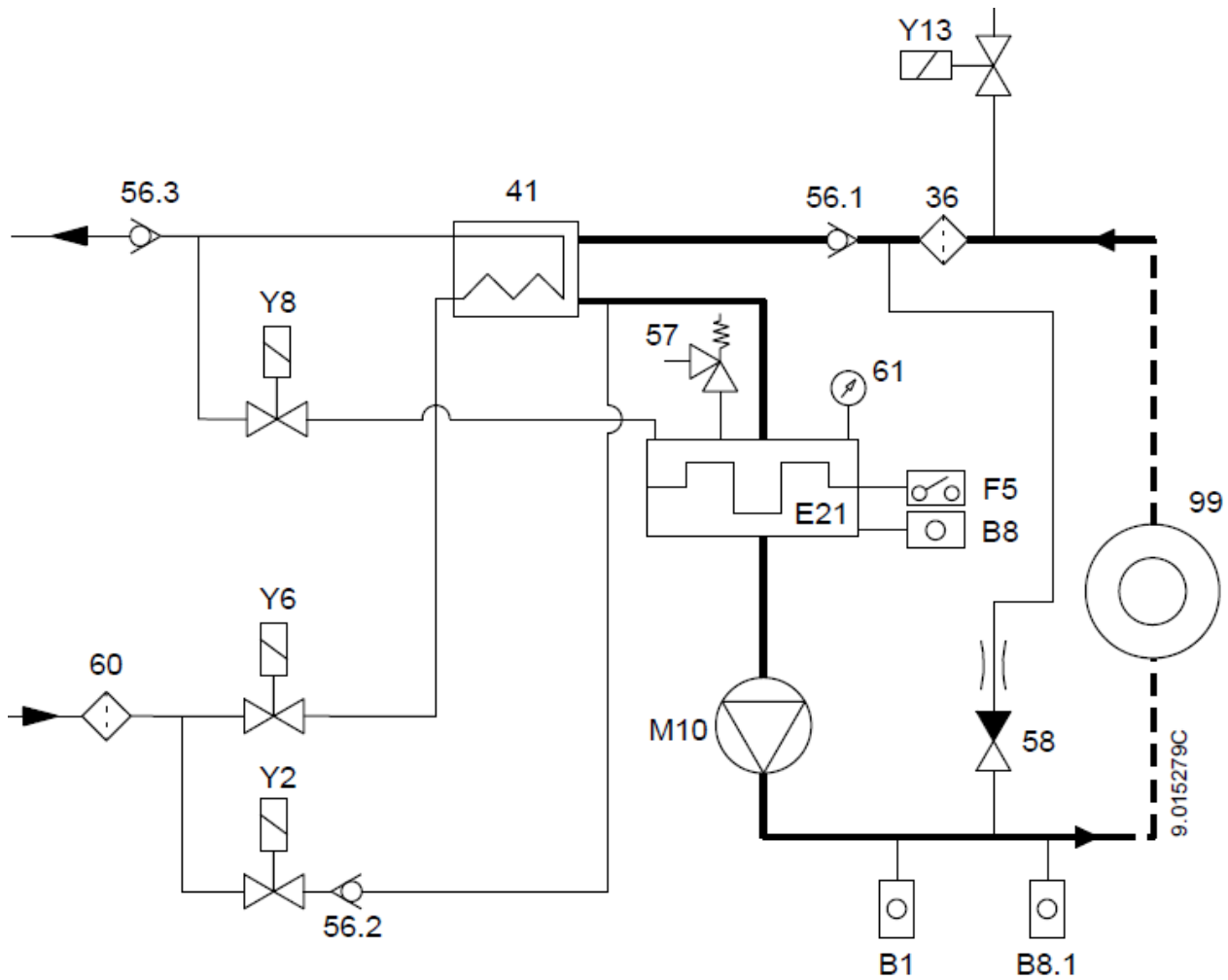
Block diagram P100smart



Block diagram P100smart

Item	Designation	Item	Designation
36	Filter (main circuit)	B1	Temperature probe - internal
41	Cooler	B8	Pressure sensor (system pressure)
56.1	One way check-valve (inlet)	E21	Heating
56.2	One way check-valve (cooling water OUT)	F5	Safety thermostat
57	Safety Valve	M10	Pump
58	Bypass	S3	Float switch
60	Filter (cooling circuit)	Y2	Solenoid valve (auto. water refill)
61	System pressure gauge	Y8	Solenoid valve (pressure release)
99	Consumer	Y13	Solenoid valve (suction, air entry)

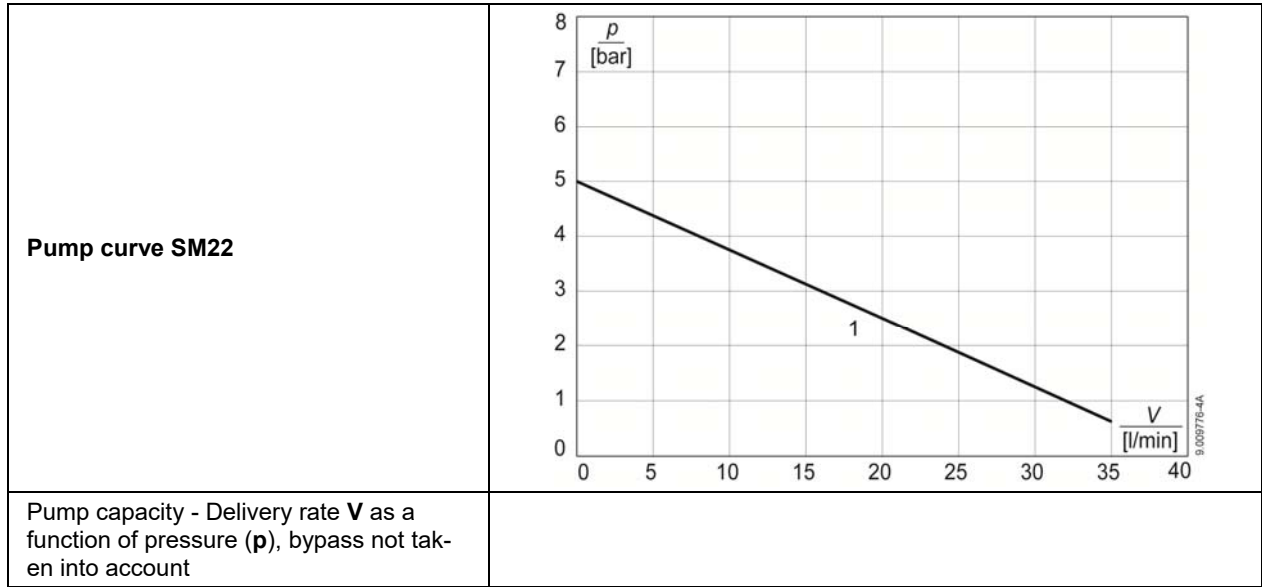
Block diagram P140smart



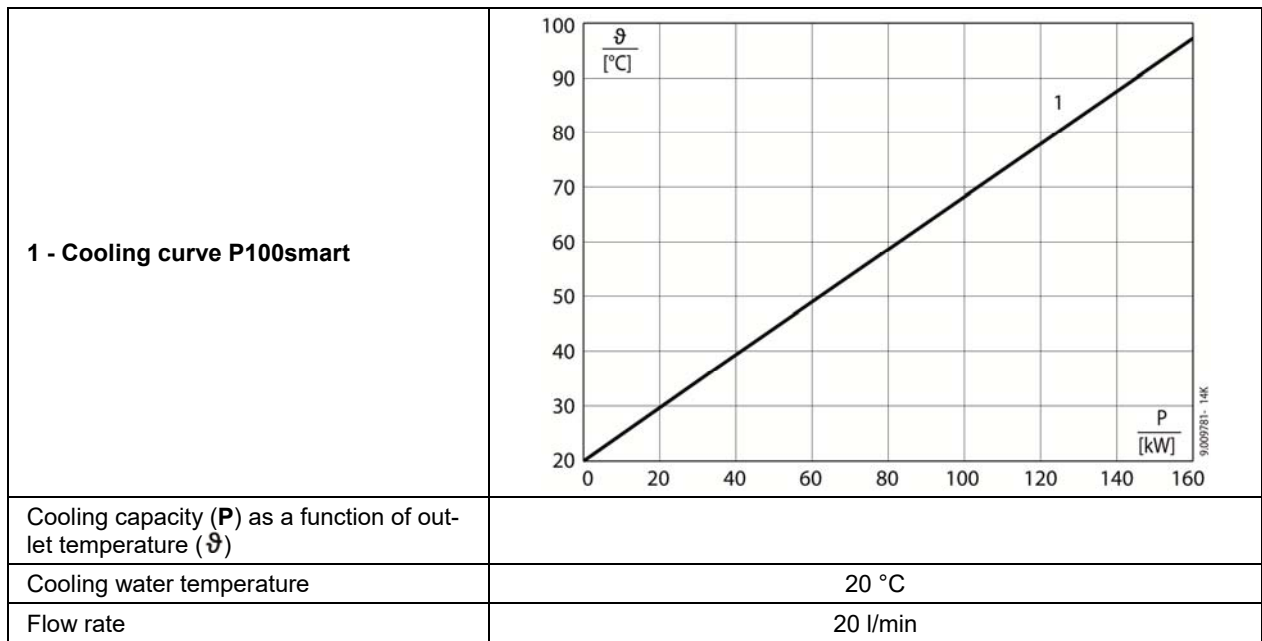
Block diagram P140smart

Item	Designation	Item	Designation
36	Filter (main circuit)	B1	Temperature probe - internal
41	Cooler	B8	Pressure sensor (system pressure)
56.1	One way check-valve (suction)	B8.1	Pressure sensor (outlet pressure)
56.2	One way check-valve (refill)	E21	Heating
56.3	One way check-valve (cooling water OUT)	F5	Safety thermostat
57	Safety Valve	M10	Pump
58	Bypass	Y2	Solenoid valve (auto. water refill)
60	Filter (cooling circuit)	Y6	Solenoid valve (cooling)
61	System pressure gauge	Y8	Solenoid valve (pressure release)
99	Consumer	Y13	Solenoid valve (suction, air entry)

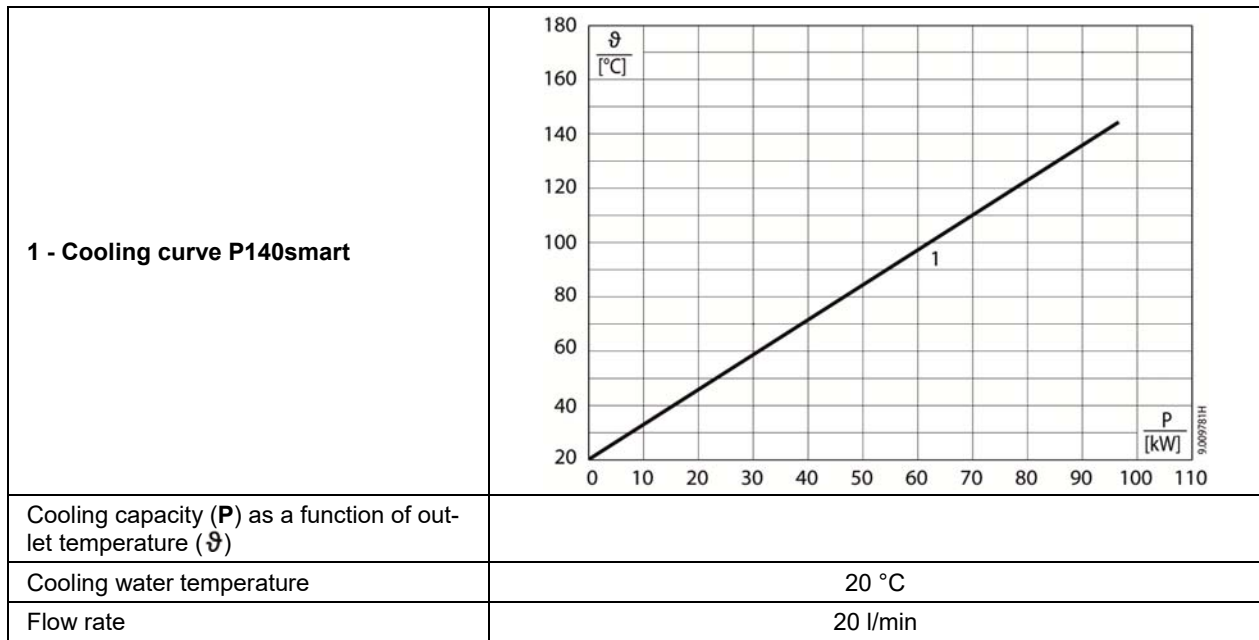
Graph (pump capacity)



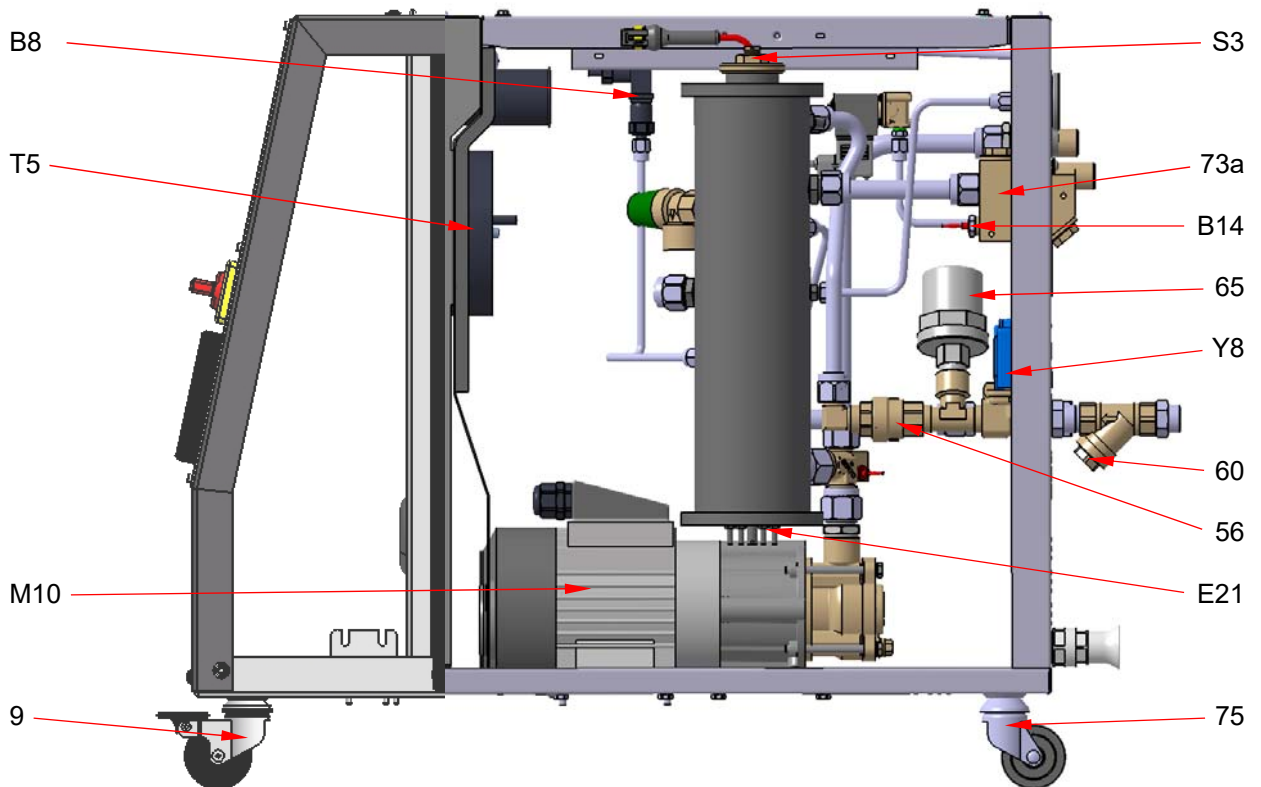
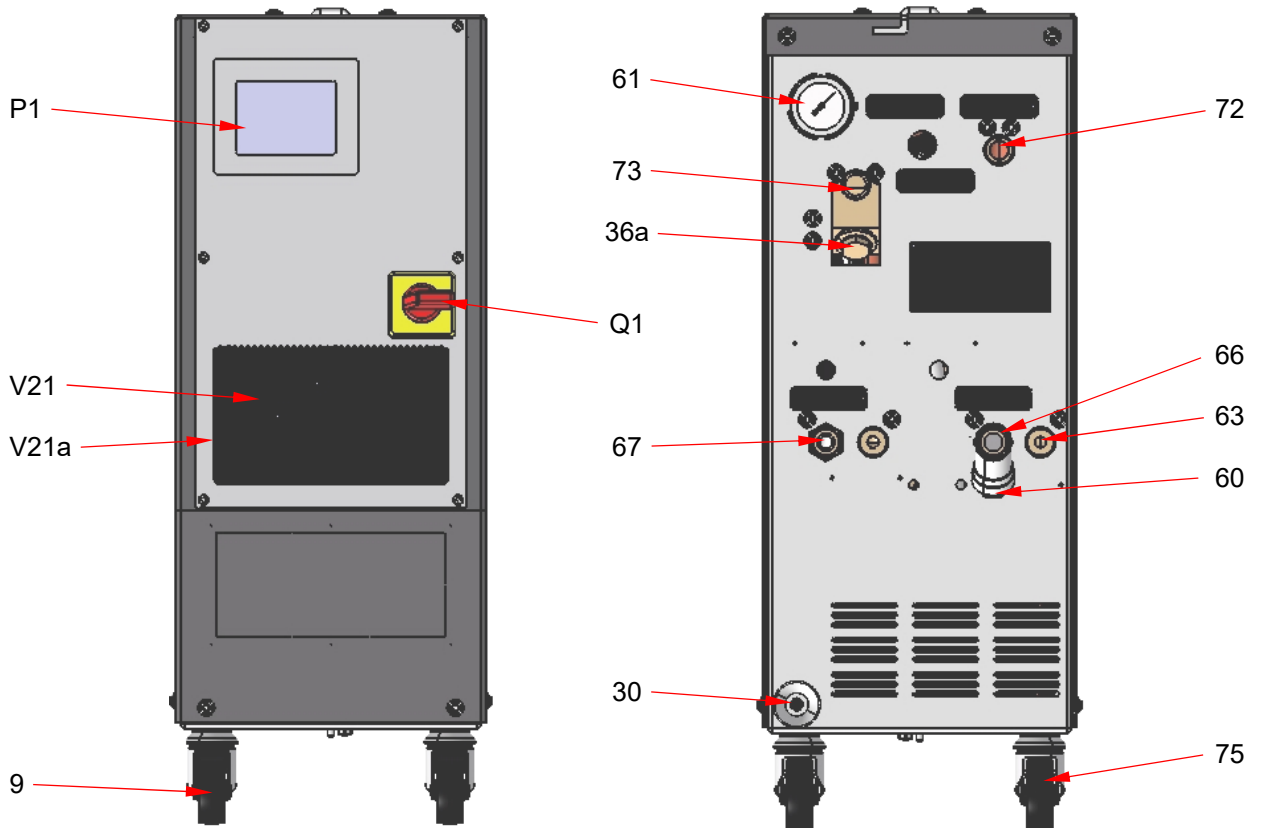
Graph (Cooling capacity)

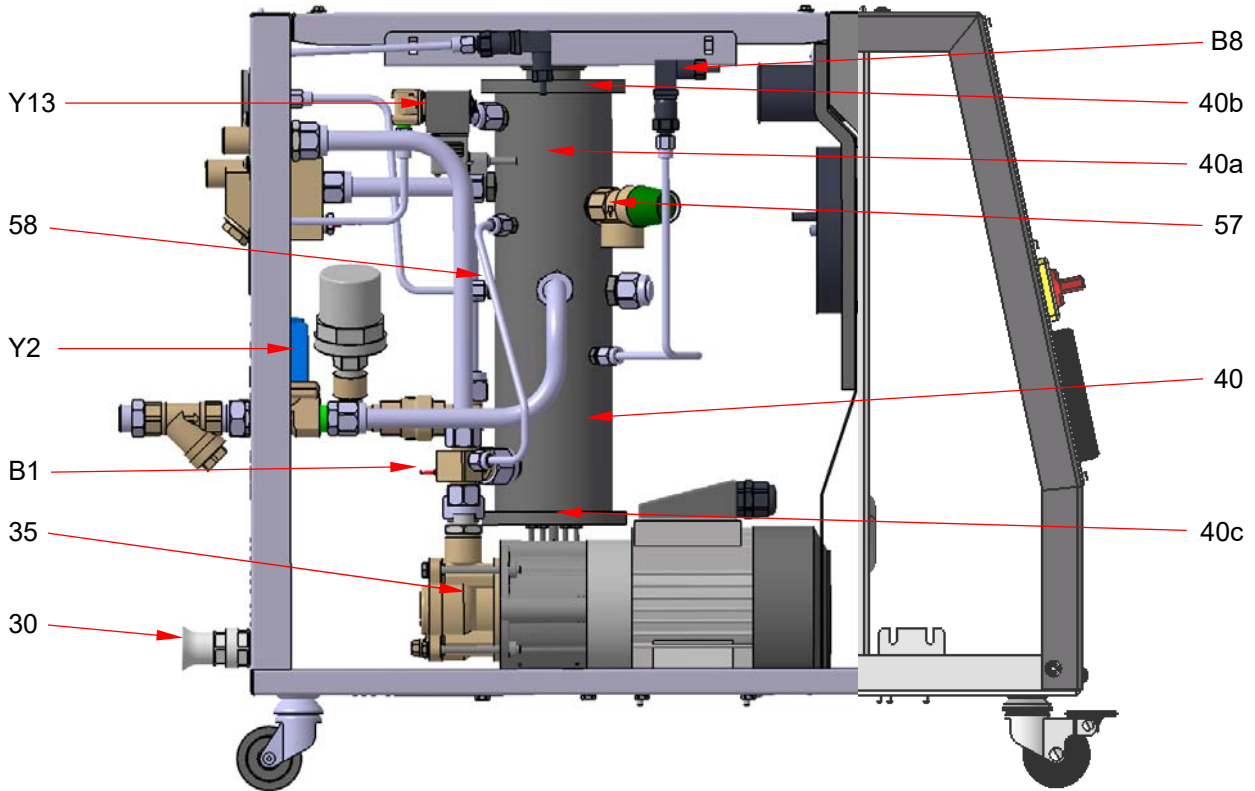


Graph (Cooling capacity)



Components/Spare parts P100smart





Item	Designation	Item	Designation
9	Castor with wheel lock	B1	Temperature probe - internal
30	Power cable	B8	Outlet pressure sensor
35	Pump	B14	Inlet temperature probe (option)
36a	Filter screen (inlet)	E21	Heating
40	System with heating	F5	Safety thermostat
40a	Insulation (system)	M10	Pump motor
40b	Insulation (cover)	P1	Control system
40c	Insulation (base)	Q1	Main switch
56	One way check-valve	S3	Level switch
57	Safety valve	T5	Control transformer
58	Bypass	V21	SSR relay with heat sink
60	Filter (cooling water)	V21a	Seal for SSR relay
61	System pressure gauge	Y2	Solenoid valve (auto. water refill)
63	System water (option)	Y8	Solenoid valve (pressure release)
65	Water hammer arrester	Y13	Solenoid valve (suction)
66	Cooling water IN		
67	Cooling water OUT		
72	Outlet		
72a	Outlet valve block		
73	Inlet		
73a	Inlet valve block		
75	Castor		

NOTE



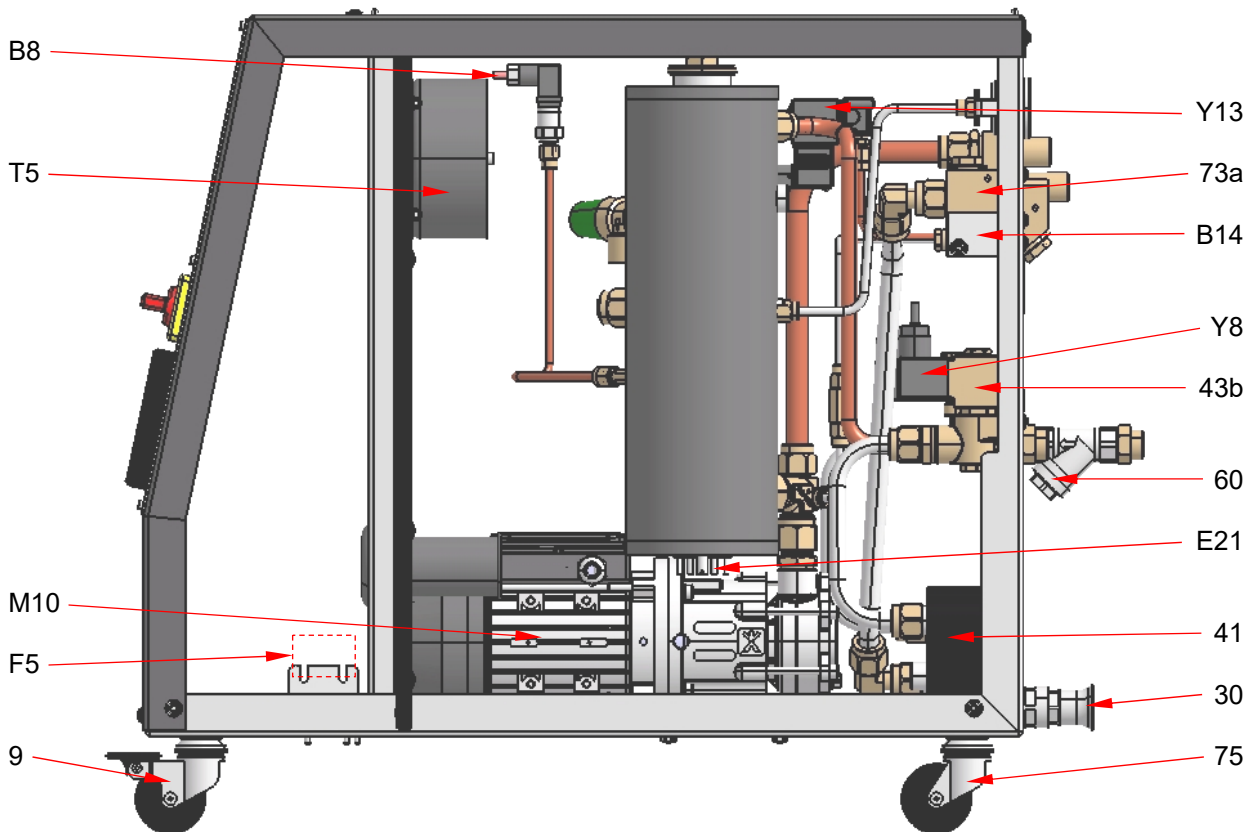
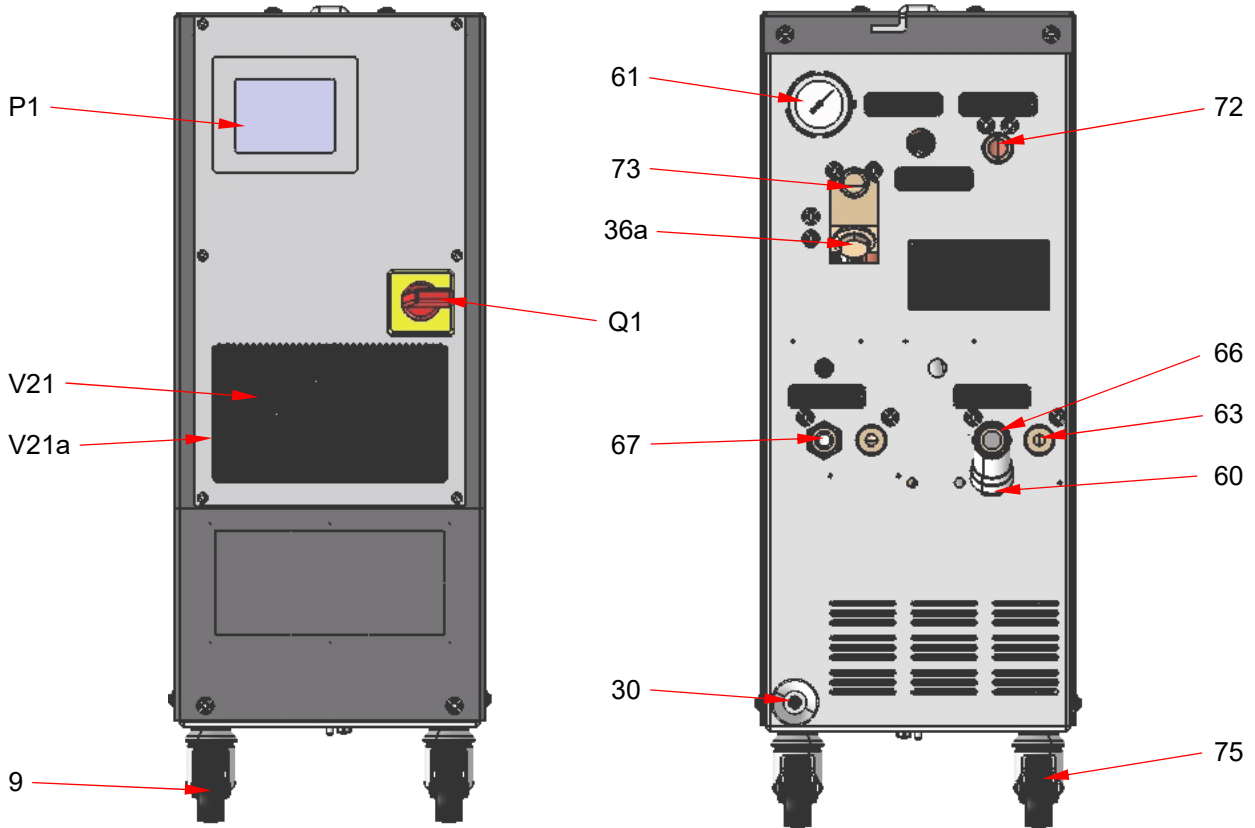
See electrical wiring diagram of the temperature control unit for additional electrical components.

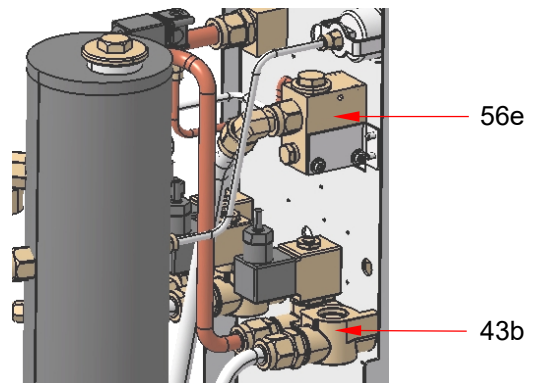
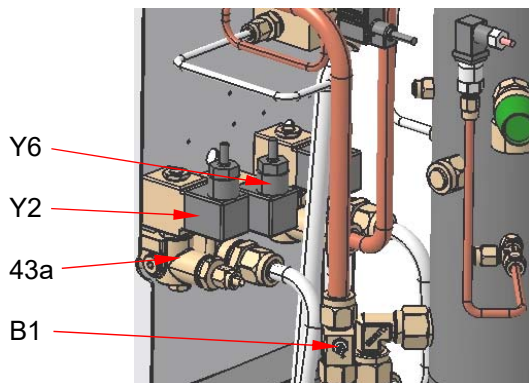
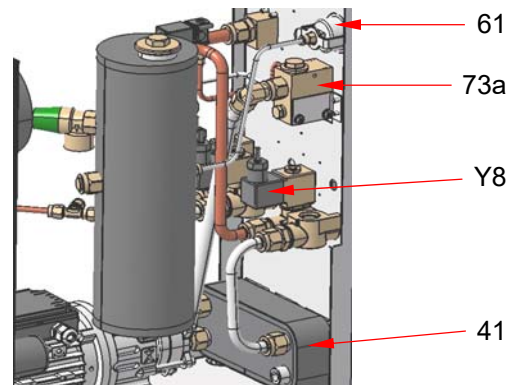
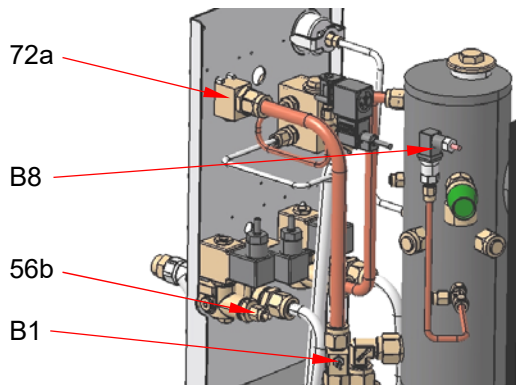
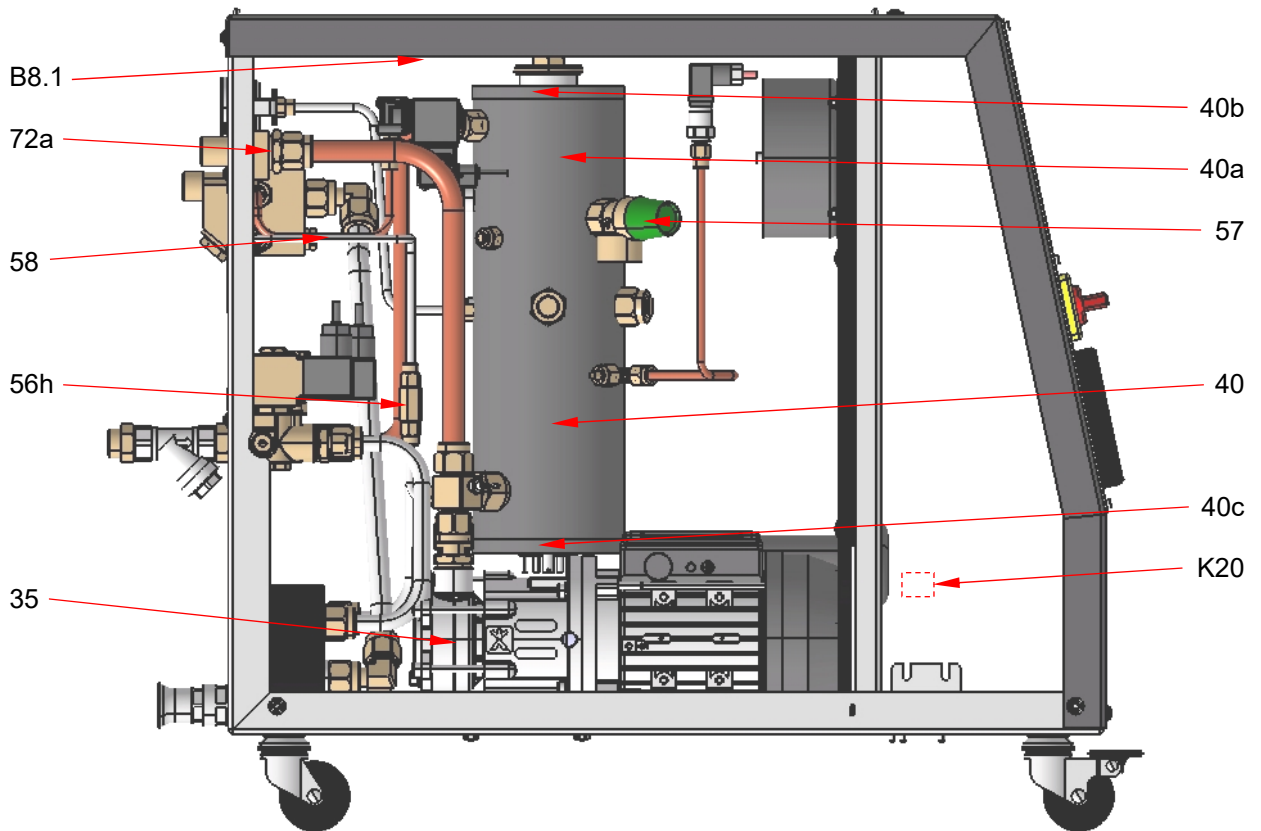
CAUTION



**Only authentic (OEM) Regloplas spare parts may be used!
In case of damage from the use of non-OEM parts, the warranty will be rendered null and void!**

Components/Spare parts P140smart





Item	Designation	Item	Designation
9	Castor with wheel lock	B1	Temperature probe - internal
30	Power cable	B8	System pressure sensor
35	Pump	B8.1	Outlet pressure sensor
36a	Filter screen - inlet	B14	Inlet temperature probe (option)
40	System with heating	E21	Heating
40a	Insulation (system)	F5	Safety thermostat
40b	Insulation (cover)	K20	Main contactor - heating
40c	Insulation (base)	M10	Pump motor
41	Cooler	P1	Control system
43a	Valve block Y2/Y6 (see corresponding chapter)	Q1	Main switch
43b	Valve block Y8 (see corresponding chapter)	T5	Control transformer
56b	One way check-valve (water refill)	V21	SSR relay with heat sink
56e	One way check-valve (inlet)	V21a	Seal for SSR relay
56h	One way check-valve (Bypass)	Y2	Solenoid valve (auto. water refill)
57	Safety valve (see corresponding chapter)	Y6	Solenoid valve (cooling)
58	Bypass	Y8	Solenoid valve (pressure release)
60	Filter - cooling water	Y13	Solenoid valve (suction)
61	System pressure gauge		
63	System water (option)		
66	Cooling water IN		
67	Cooling water OUT		
72	Outlet		
72a	Outlet valve block		
73	Inlet		
73a	Inlet valve block		
75	Castor		

NOTE



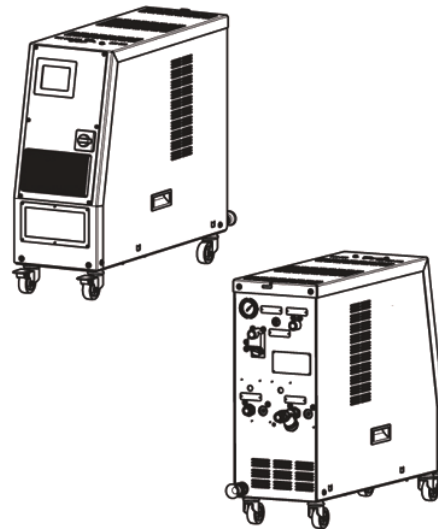
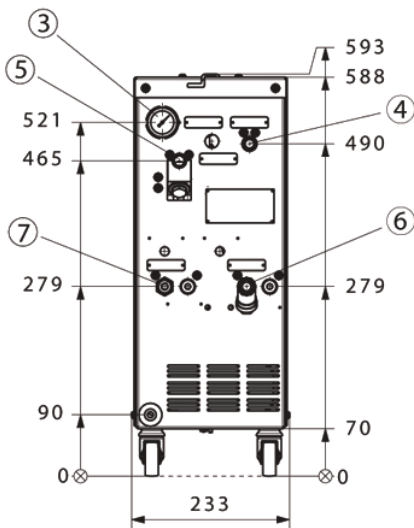
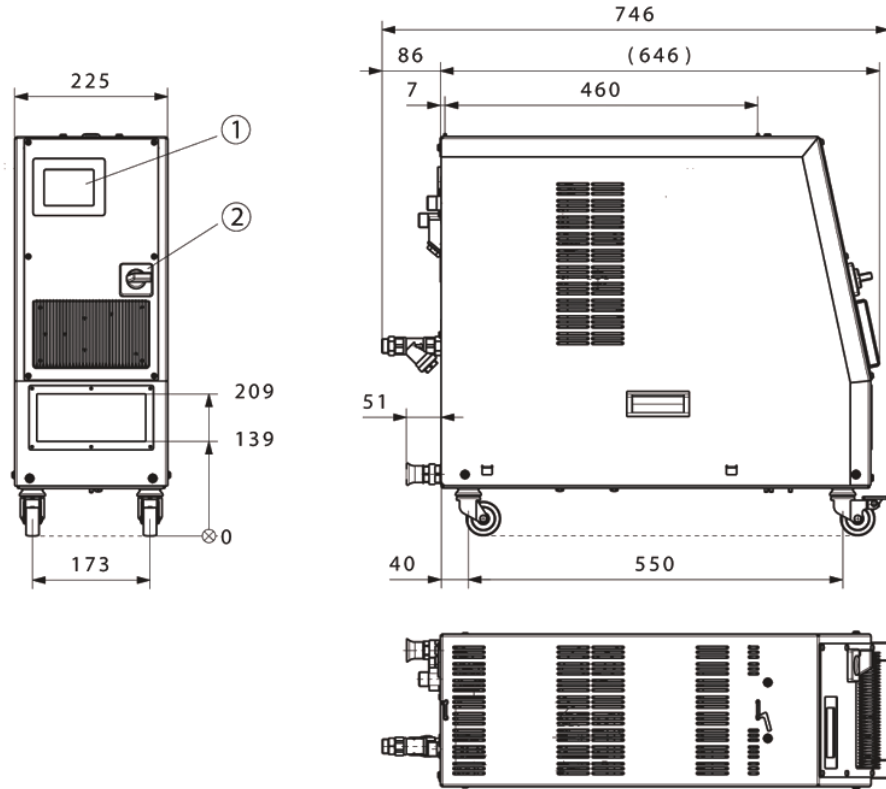
See electrical wiring diagram of the temperature control unit for additional electrical components.

CAUTION



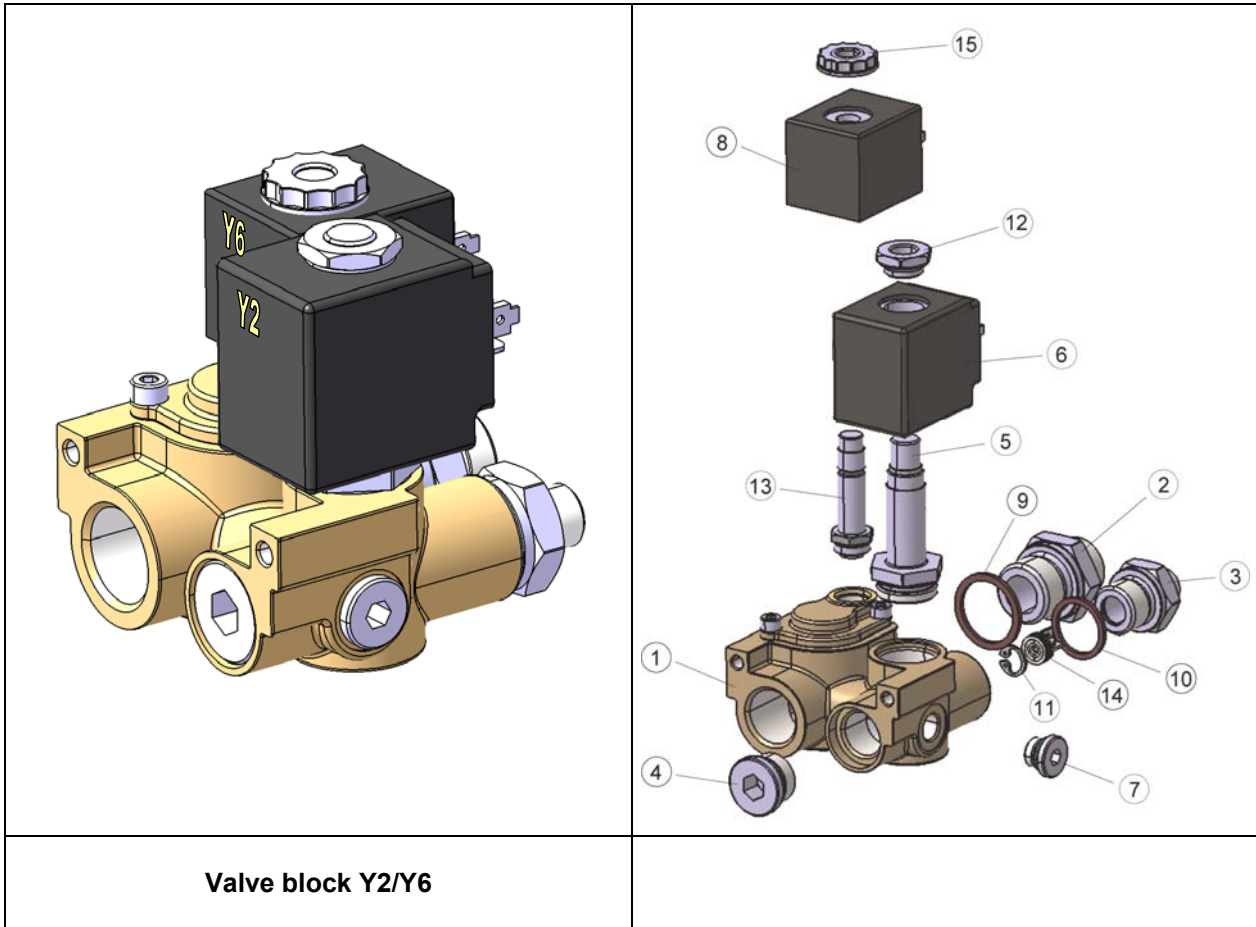
Only authentic (OEM) Regloplas spare parts may be used!
In case of damage from the use of non-OEM parts, the warranty will be rendered null and void!

Dimension sheet P100smart/P140smart



Item	Designation	Item	Designation
1	RT70 Control System	5	Inlet
2	Main switch	6	Cooling water IN
3	Pressure gauge	7	Cooling water OUT
4	Outlet		

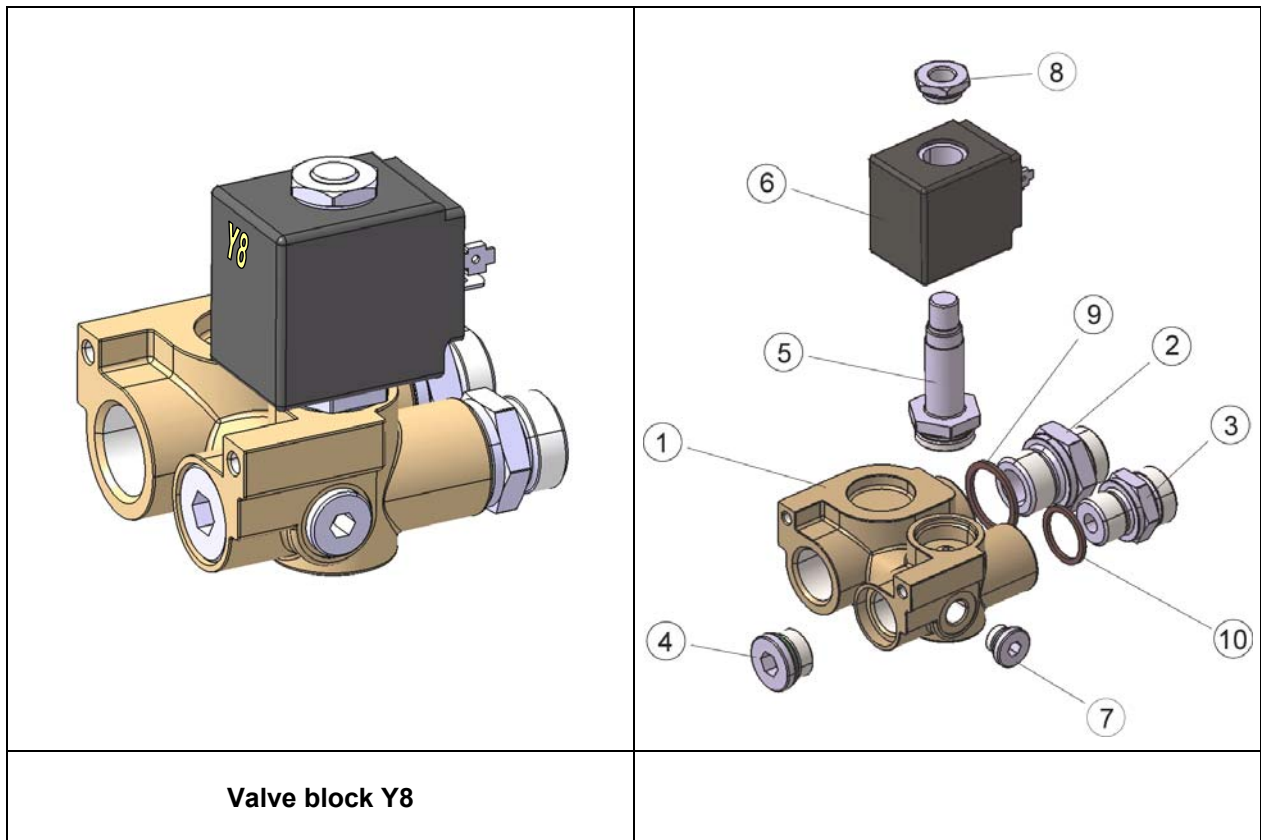
Valve block Y2/Y6



Valve block Y2/Y6

Item	Designation	Item	Designation
1	Valve block	9	Sealing washer (copper) 1/2"
2	Double nipple G 1/2"-M20x1.5	10	Sealing washer (copper) 3/8"
3	Double nipple G 3/8"-M12x1	11	Snap ring
4	Plug 1/8" with O-ring	12	Nut
5	Control member Y2	13	Control member Y6
6	Coil Y2	14	Check valve
7	Plug M5 with O-ring	15	Nut
8	Coil Y6		

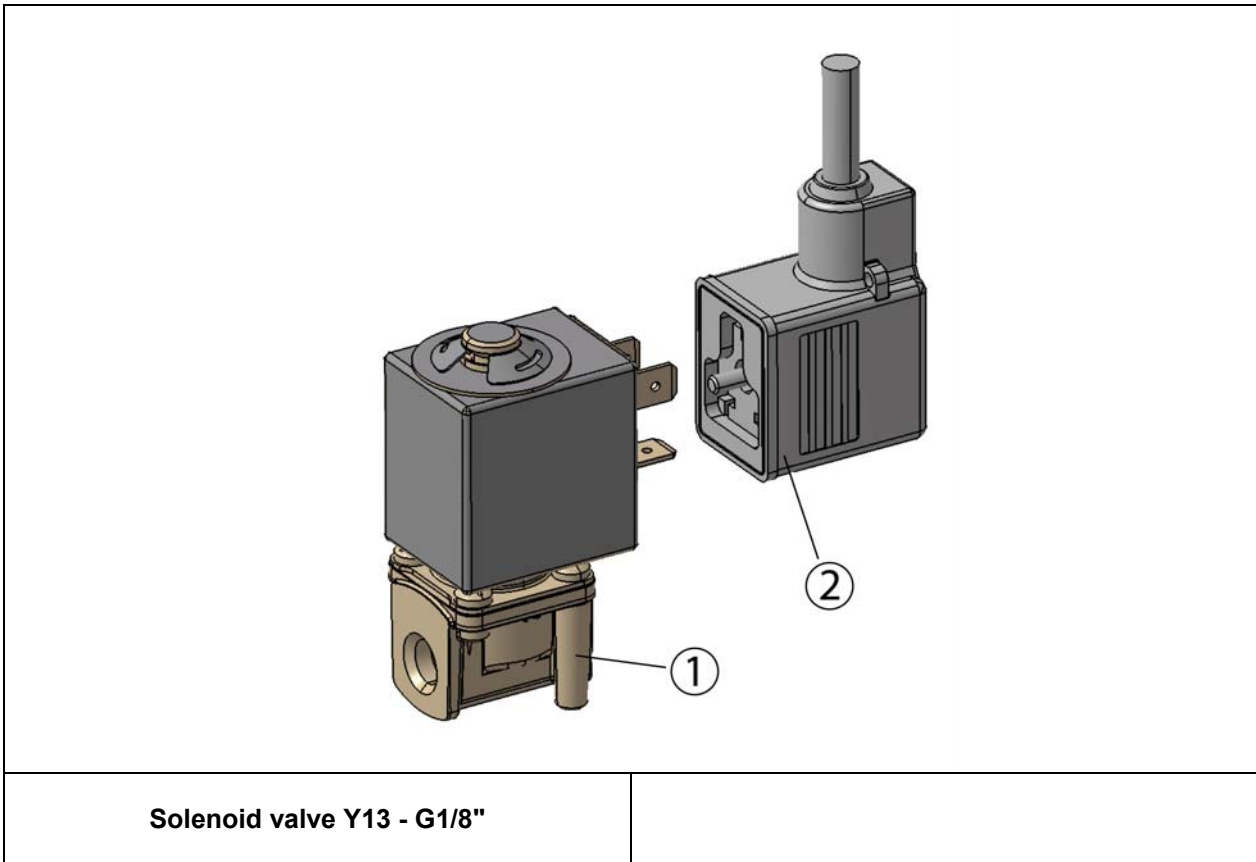
Valve block Y8



Item	Designation	Item	Designation
1	Valve block	6	Coil Y8
2	Double nipple G 1/2"-M20x1.5	7	Plug M5 with O-ring
3	Double nipple G 3/8"-M20x1.5	8	Nut
4	Plug 1/8" with O-ring	9	Sealing washer (copper) 1/2"
5	Control member Y8	10	Sealing washer (copper) 3/8"

Solenoid valve Y13 (Suction option)

Overview



Item	Designation	Item	Designation
1	Solenoid valve compl. with coil	2	Connecting plug