

REGLOPLAS⁺

En

Vario/energyBattery/coldWater

Operating Instructions



Documentation Vario/energyBattery/coldWater

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General Safety Information

Safety Symbols

 DANGER	
	<p>Denotes imminent danger. Failure to heed the information can result in death or grave personal injury (disability)!</p>
 WARNING	
	<p>Denotes a dangerous situation. Failure to heed the information can result in death or grave personal injury (disability)!</p>
 CAUTION	
	<p>Denotes a potentially dangerous situation. Failure to heed the information can result in property damage as well as minor or moderate personal injury!</p>
NOTE	
	<p>Denotes general information, useful advice to users and work recommendations, which, however, do not have any influence on the safety and health of personnel.</p>

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 normal use in the heating and/or cooling of injection molds and die casting dies, extruders, calenders, mixers and other energy-consuming loads ("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 operating conditions and/or with media deviating 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 that 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 operator 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 certification 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 malfunction of the temperature control system leads to endangerment of the operating personnel or destruction of the plant, an independent process monitor that reliably shuts down the plant 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 the use of third-party parts renders any and all warranty claims null and void.

 DANGER	
	<p>Danger of electric shock!</p> <ul style="list-style-type: none"> • The temperature control unit must be disconnected from electrical power supply before it is opened (unplug the mains plug and, if fitted, press the main switch on the temperature control unit)

Any leaks in the temperature control circuit (control unit, connecting lines, consumers, etc.) must be repaired immediately.

In the case of temperature control units that use oil as the heat transfer medium, please remember that oil is flammable under certain conditions. For this reason, the temperature control unit must not be located close to 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 an AFFF spray foam fire extinguisher, a powder fire extinguisher (to be avoided in the case of

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 from the temperature control circuit, first allow the temperature control unit to cool down, as a function of the outlet temperature, and then switch 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 and economical operation and 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 Vario/energyBattery/coldWater unit as well as important information for safe operation and optimal maintenance.

The Operating Instructions must be kept near the Vario/energyBattery/coldWater unit and must always be accessible to operating and maintenance personnel.

Operating Range

The operating range and heat transfer fluid of the Vario/energyBattery/coldWater unit are shown in the following table (in this regard, see also the chapter "Technical Data" in the Maintenance section).

Temperature Control Unit Type	Vario/energyBattery/coldWater
Temperature range	up to 200 °C (Water) up to 300 °C (Oil)
Heat carrier/medium	Water/Oil

NOTE





The technical data and information for installation, start-up and maintenance of the Vario/energyBattery/coldWater 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 Vario/energyBattery/coldWater unit

The Vario/energyBattery/coldWater unit is designed for an ambient temperature range of 10-40 °C. Sufficient ventilation must be provided during setup. The distance between the devices and/or between the Vario/energyBattery/coldWater unit and a wall must be at least 10 cm. The ventilation slits must not be covered.

- Check the Vario/energyBattery/coldWater unit to ensure that it is undamaged and complete
- Do not tip the Vario/energyBattery/coldWater 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 the fluid (medium)
- Position the Vario/energyBattery/coldWater unit on a horizontal surface and engage the wheel brake
- Position the Vario/energyBattery/coldWater unit in a way that the connection fittings are not directly accessible. If necessary, install a separating protective device as protection against contact (perforated plate or thermal insulation)

 WARNING	
	<p>Danger of injury due to hot surfaces and Vario/energyBattery/coldWater unit connection fittings - Regloplas AG recommends to install separating protective devices!</p>

 WARNING	
 	<p>The Vario/energyBattery/coldWater unit may be pressurised - Danger of injury in the event of escaping hot water or steam!</p> <p>Never start up the Vario/energyBattery/coldWater unit without the side panels and housing!</p> <p>Never use the Vario/energyBattery/coldWater unit in potentially explosive environments and protect it against sprays and cleaning agents that contain solvents!</p> <p>Any leaks in the temperature control circuit (Vario/energyBattery/coldWater, connecting lines, consumers, etc.) must be repaired immediately!</p> <p>Observe local laws during set-up!</p> <p>When the Vario/energyBattery/coldWater unit is running, don't touch housing, rear side, hoses and hose connections - Danger of injury!</p>

 CAUTION	
	<p>Before detaching connecting lines in the temperature control circuit, the Vario/energyBattery/coldWater unit must first be allowed to cool down. The shutdown procedure is initiated by pressing the ON/OFF button.</p> <p>Check that the pump is no longer running and that the system pressure gauge reads 0 bar (display on the screen reads OFF)!</p> <p>The corresponding chapters of the Operating Instructions must be read before starting up the Vario/energyBattery/coldWater unit!</p>

Operating Instructions

The Operating Instructions for the Vario/energyBattery/coldWater unit must be kept at all times close at hand for the personnel responsible for 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 Vario/energyBattery/coldWater unit, the consumer must be subjected to the following inspections:

- Verify that channels are unobstructed
- Remove residual fluid and dirt with compressed air (foreign objects such as shavings etc. can damage the pump)
- Rust and scale 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 Vario/energyBattery/coldWater unit, the cooler of the temperature control unit and the connected consumer:

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-resistant and temperature-resistant hoses and screw fittings. The cross-section of the connecting lines may not be reduced (see Maintenance section).

Vario unit

The Vario/energyBattery/coldWater unit must only be switched on after inspecting the consumer, connecting the connecting lines and electrical connections, and opening the outlet/inlet shut-off valves. The vent valves on the consumer and the shut-off valves (if present) must be open.

Vario - Function Description

The Vario (Vario switchover unit) is used for variable tempering of processes. This concerns a cycled switchover between a hot and a cold medium.

For this, the Vario unit needs two temperature control units set to different temperatures (TCU HOT and TCU COLD). The temperature control units are connected to the Vario and the Vario is connected to the tempering process. Alternatively, the cold temperature control unit (TCU COLD) can be replaced by the coldWater unit.

Vario - Controls

There are two different types of controls:

- Vario SPS includes a SPS Control unit with a Touch Panel
- The Vario 3/4" and 1" work without SPS Control unit

Control signals

The Vario unit is controlled by two external signals. The assignment of these signals is described as follows.

Vario SPS

Software-Version

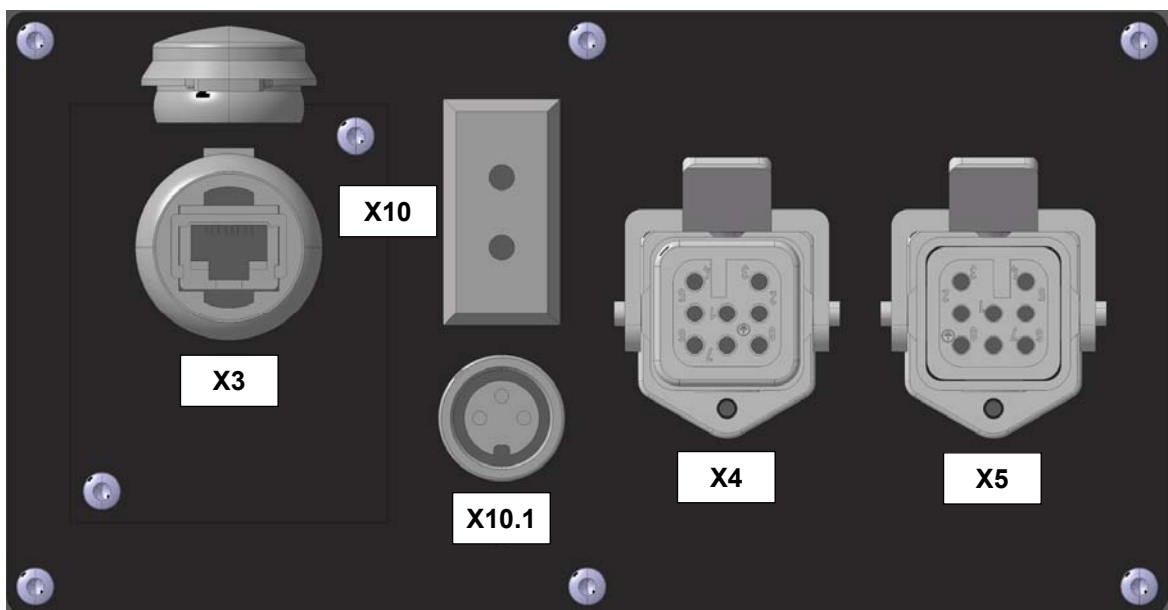
HINWEIS



The following description of the SIMATIC HMI® Control unit and its parameterization is valid for software version beginning with V509.

Vario - Interfaces

Overview



Vario - Interfaces

Interface X3

The **X3** Ethernet Interface is used to visualize the process data (e.g. on any PC monitor).

Signal Interface X4

The **X4** Interface is used for communication with an external control unit.



Signal Interface X4

Cable assignment X4

Pin no.	Signal
1	External Signal 1 (0/24 VDC)
2	External Signal 2 (0/24 VDC)
3	Temperature switch point 1 (Relay COM)
4	Temperature switch point 1 (Relay NO)
5	Temperature switch point 2 (Relay COM)
6	Temperature switch point 2 (Relay NO)
7	Earth/Ground

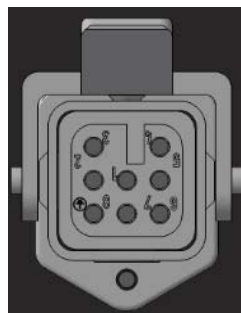
External signals

The assignment of the external signals is shown in relation to the pre-set modes. The **Vario SPS** mode is described in the following table:

Modus	External Signal 1	External Signal 2
Intern	No function	No function
Extern 1 H	Heating After the delay (Delay Time) has elapsed, heating is activated for a pre-set time (Heating Time). After that, cooling is activated again. The signal is queried as a trigger (rising edge)	Bypass
Extern 2 HC	Heating The signal is queried as a trigger (rising edge) or pending.	Cooling The signal is queried as a trigger (rising edge) or pending. Cooling has priority over heating.
Extern 3 HCB	Heating/Cooling If a signal is present, heating is activated. If no signal is present, cooling is activated	Bypass If a signal is present, the unit switches to Bypass mode
Extern 4 BHC	Heating If a signal is present, heating is activated. If no signal is present, the device changes to bypass mode	Cooling If a signal is present, cooling is activated. If no signal is present, the device changes to bypass mode

Interface X5

The **X5** Interface is used as signal interface for the energyBattery unit.



Interface X5

Cable assignment X5

Pin no.	Signal
1	Y0.4 Pneumatic valve Inlet (cold)
2	Y0.5 Pneumatic valve Inlet (hot)
3	Y0.6 Pneumatic valve Inlet (cold)
4	Y0.7 Pneumatic valve Inlet (hot)
5	---
6	---
7	Earth/Ground

Interface X10 Thermal element and X10.1 PT100

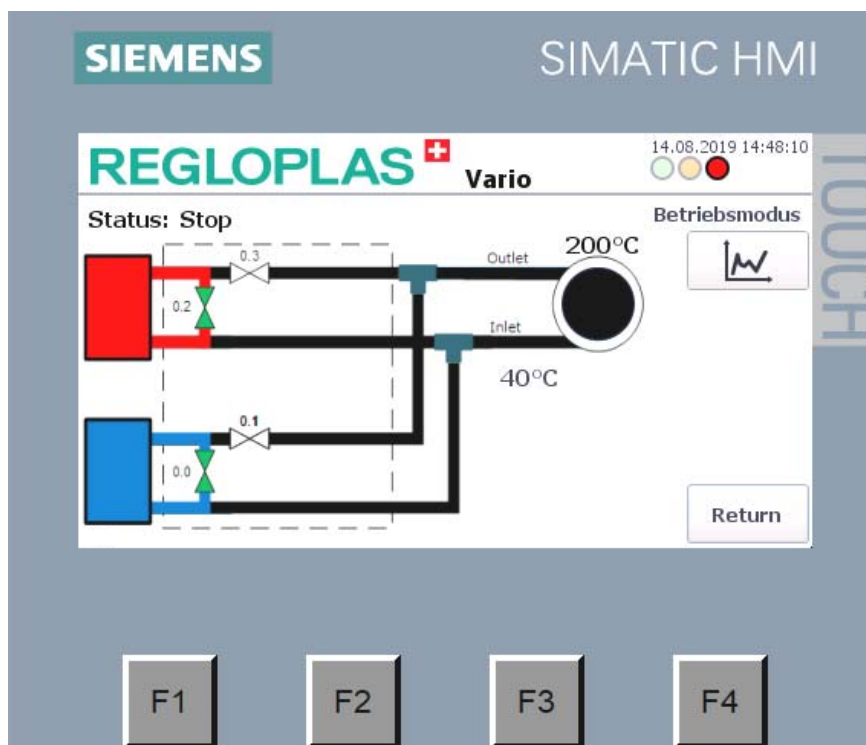
The **X10** Interface is used as connection for the external consumer and the **X10.1** Interface for the inlet in the Vario.

Vario SPS - Overview/Operation

The operation takes place by the 4 "display. The operation and the displays of the individual windows are described below.

SPS Operation

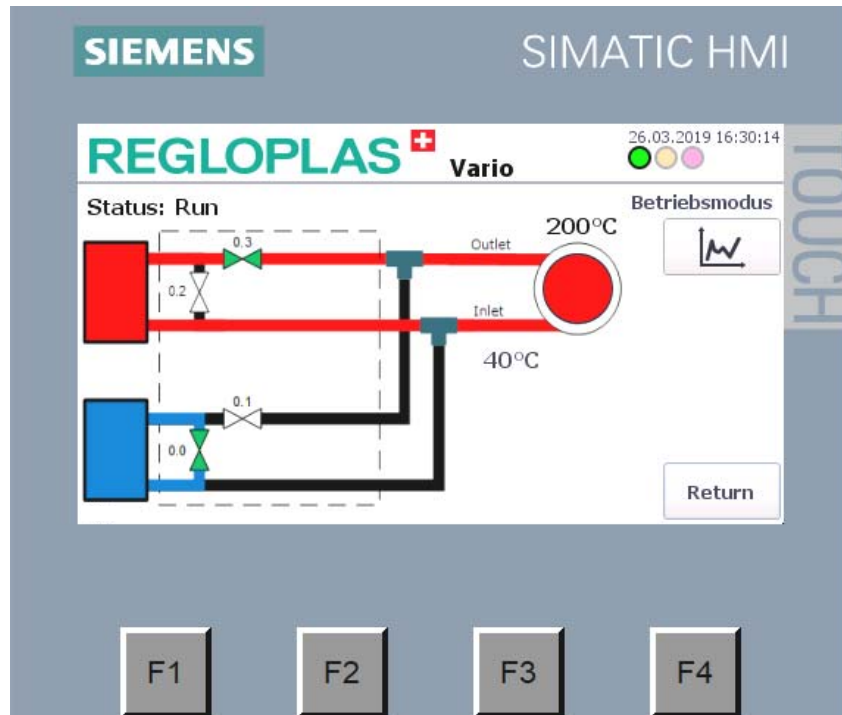
When switched on, the Vario is in bypass mode (status: Stop) and can be started with the **F1** key (status: Run). The current view of the Vario operation is made possible by pressing the **F2** key.

Bypass view (Home screen)

Bypass view (Home screen)

Heating circuit view

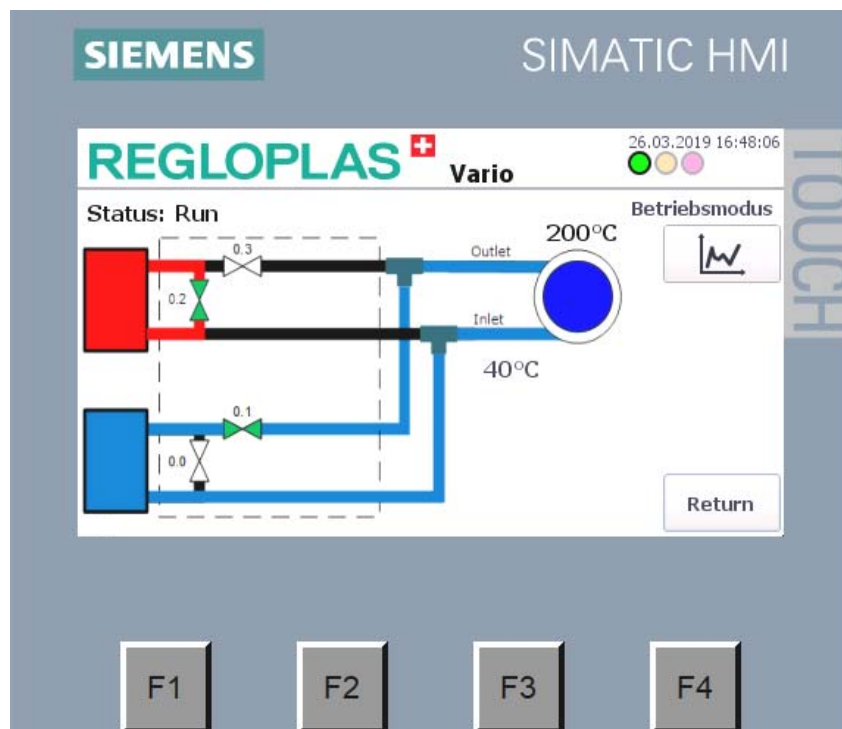
The display shows that the hot medium (red) - in heating mode - flows through the consumer/tool. The cold circuit (blue) is switched to bypass at this moment.



Heating circuit view

Cooling circuit view


In the cooling mode, the cold medium (blue) flows through the consumer/tool and the hot circuit (red) is switched to bypass.

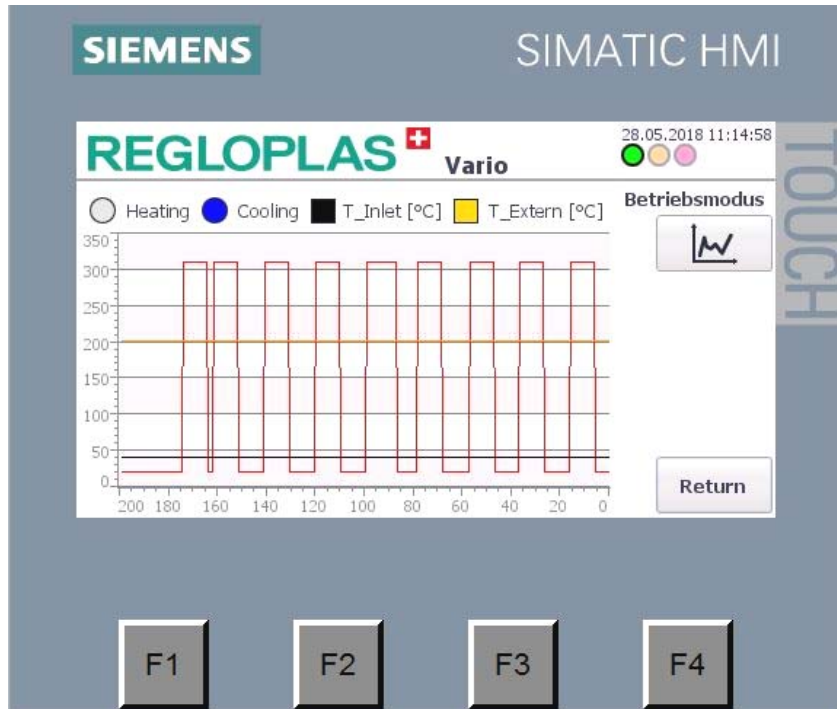


Cooling circuit view




Trend View window















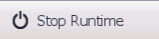




This window opens by pressing  and displays the progress of the Vario cycle with indication of the corresponding temperatures.



Trend View window

T_External		External temperature (consumer, in °C)
T_Inlet		Inlet temperature (in °C)
Heating_ON		Heating cycle (signal)

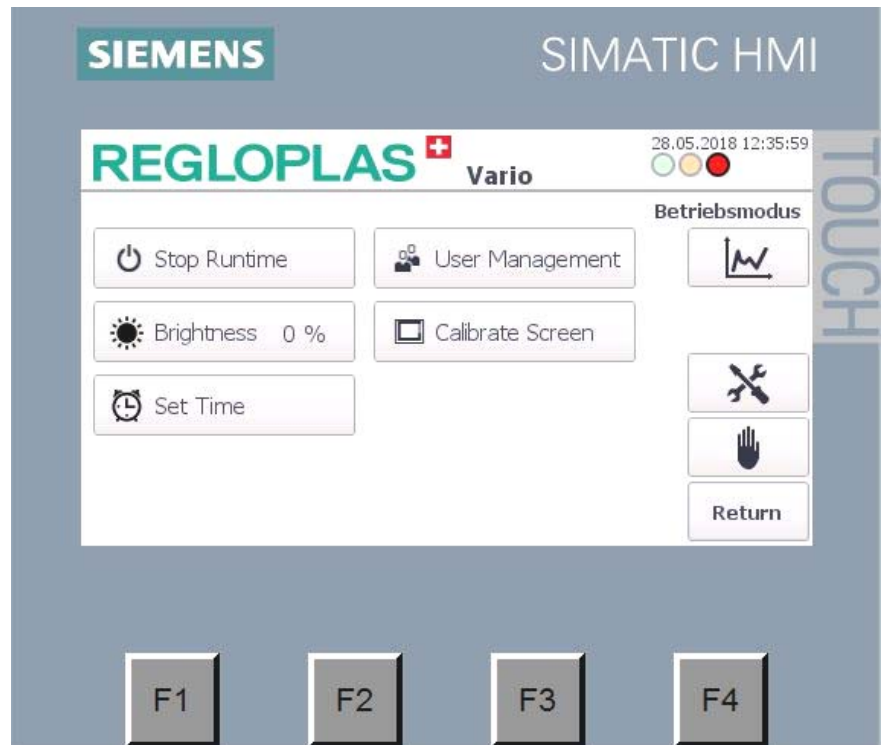
Keys/Symbols

Display	Function
	Start/Stop
	Operation basic screen
	Parameterization
	User settings
	Operation - normal
	Operation - malfunction
	Operation - Stop
	Trend View mode
	energyBattery mode-Shutdown (pressure release)
	Switchover Water/Oil operation
	Test mode
	Return to previous screen
	SPS operation will be stopped
	Screen brightness setting
	Screen time setting
	User management
	Screen position setting

SPS Configuration

Pressing the **F4** key opens the user settings view.

User settings



User settings view

Log-in

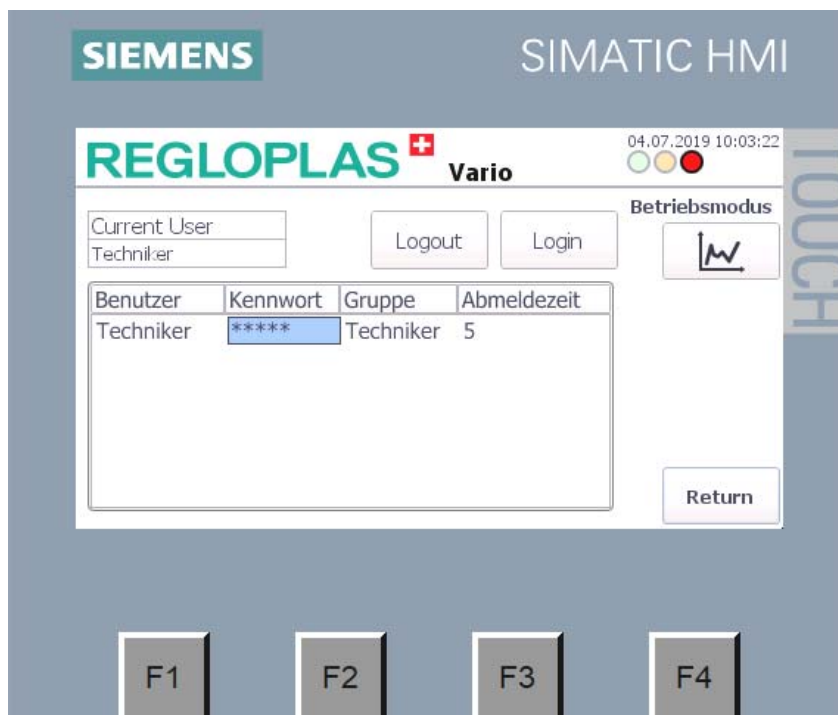
The changes of the user settings and the parameterization require a password (0100).



Log-in configuration view

User profiles

After successful login, the registered users are displayed in **User Management** under **F4**. The administration of the users can be done with the **Login/Logout** key.



User profiles view

Parameterization

The parameter-menu opens by pressing the **F3** key.

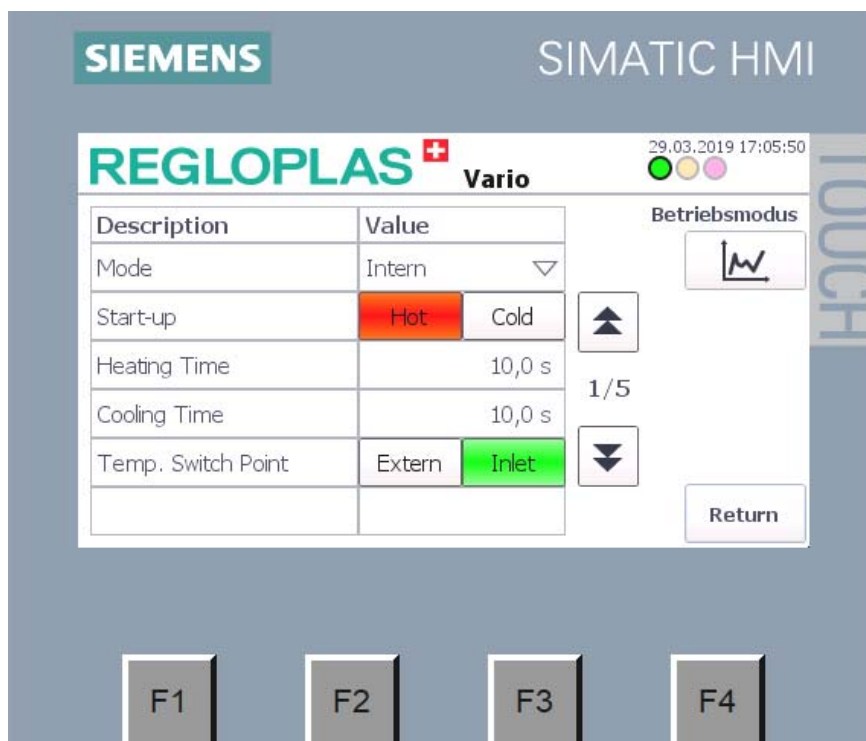
Mode

This menu is used to set the operating modes, start behaviour, heating and cooling time and temperature switch point. The functions are described in the following table.

Display	Function
Mode	Selection of operation modes (Intern , Extern 1 H , Extern 2 HC , Extern 3 HCB , Extern 4 BHC)
Start-up	Heating (Hot) or Cooling (Cold) is selected. When starting with F1 , heating or cooling takes place until the first signal
Heating Time	Heating time (in secs.)
Cooling Time	Cooling time (in secs.)
Temp. Switch Point	Extern - External temperature sensor
	Inlet - Temperature sensor in the inlet
Max. Heating time *	Max. heating time (in secs.)

**only for Mode Extern 2 HC*

Observe the chapter "Operating Modes"



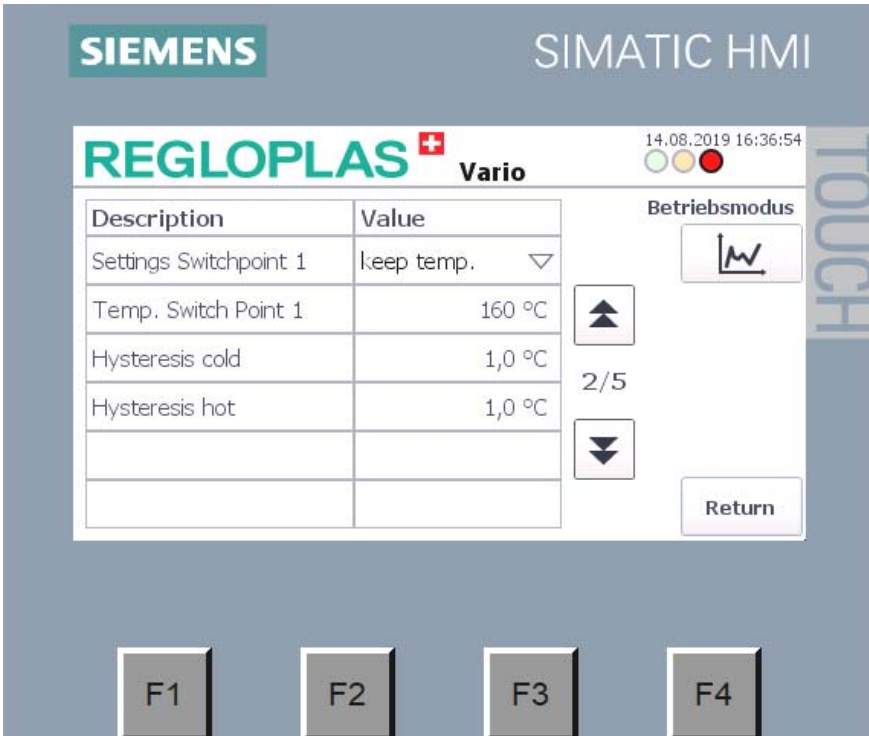
Configuration view - Overview 1/5

Temperature switch point / Keep temperature

The behaviour of the temperature switch point can be selected as "default" or "keep temp.". With "default" the temperature switch point is exactly at the entered temperature switch point and with "keep temp." under consideration of the hysteresis (see temperature switch points "keep temp." view). The functions are described in the following table.

Display	Function
Settings Switchpoint 1	Behaviour of the temperature switch point (default or keep temp.)
Temp. Switch Point 1	Temperature switch point (SWP)
Hysteresis cold *	Displacement of the switch point (cold)
Hysteresis hot *	Displacement of the switch point (hot)

**only possible with "keep temp."!*



The screenshot shows the SIMATIC HMI configuration interface for REGLOPLAS Vario. At the top, the Siemens logo and 'SIMATIC HMI' are visible. The main area contains a table with the following data:

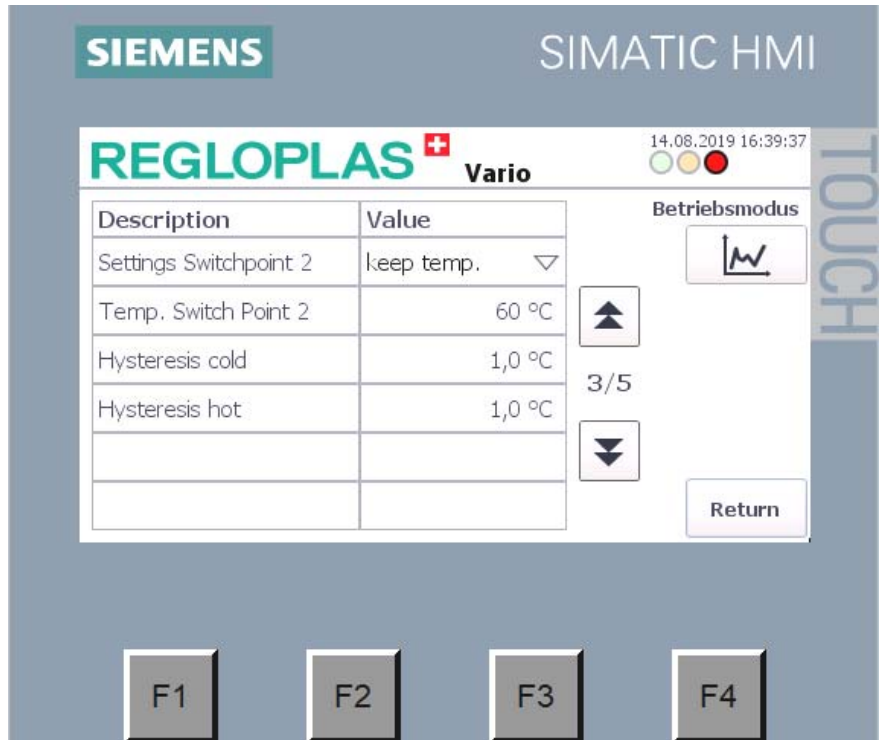
Description	Value
Settings Switchpoint 1	keep temp. ▾
Temp. Switch Point 1	160 °C
Hysteresis cold	1,0 °C
Hysteresis hot	1,0 °C

To the right of the table, there are navigation arrows (up and down) and a '2/5' indicator. Below the table is a 'Betriebsmodus' section with a graph icon and a 'Return' button. At the bottom of the screen, there are four function keys labeled F1, F2, F3, and F4.

Configuration view - Overview 2/5

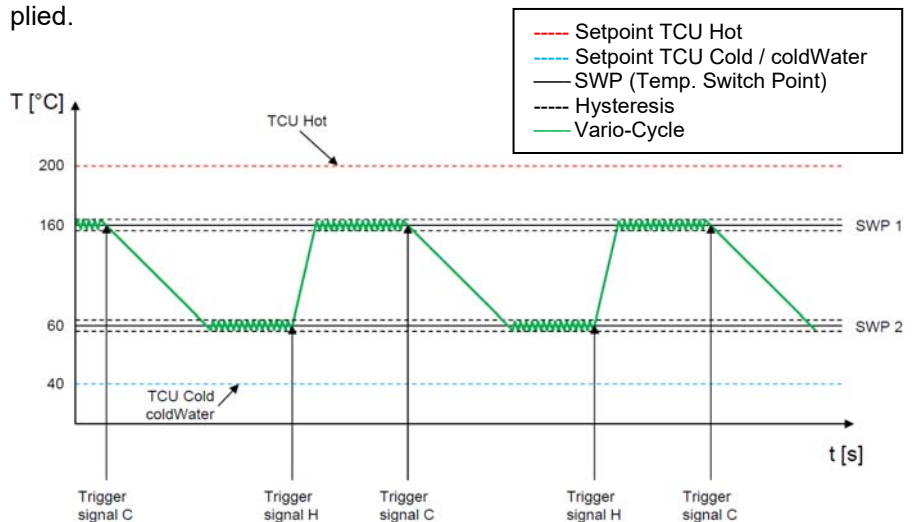
Display	Function
Settings Switchpoint 2	Behaviour of the temperature switch point (default or keep temp.)
Temp. Switch Point 2	Temperature switch point (SWP)
Hysteresis cold *	Displacement of the switch point (cold)
Hysteresis hot *	Displacement of the switch point (hot)

**only possible with "keep temp."!*



Configuration view - Overview 3/5

The following view shows the behaviour of the temperature switch point at "keep temp." in the Vario cycle. The temperature at the switch point is kept in the hysteresis range until the corresponding trigger signal is applied.

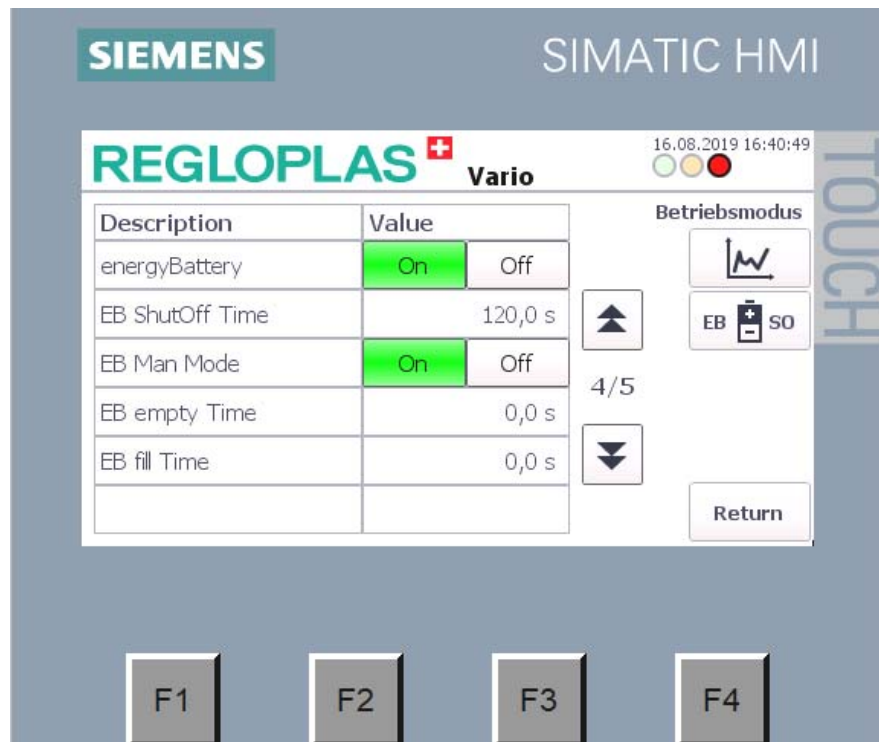


Temperature switch points "keep temp." view

energyBattery

In this menu the energyBattery is switched on and off. If an energyBattery is connected, "energyBattery" must be ON. The functions are described in the following table.

Display	Function
energyBattery	energyBattery mode (medium storage) ON/OFF
EB ShutOff Time	Flushing duration of the energyBattery unit when switching off (min. 2 mins.)
EB Man Mode ON	EB fill Time - energyBattery filling time
	EB empty Time - energyBattery emptying time (Filling and emptying time should have the same duration)
EB Man Mode OFF	EB MaxFill Time - max. permissible filling time to compensate the temperature difference



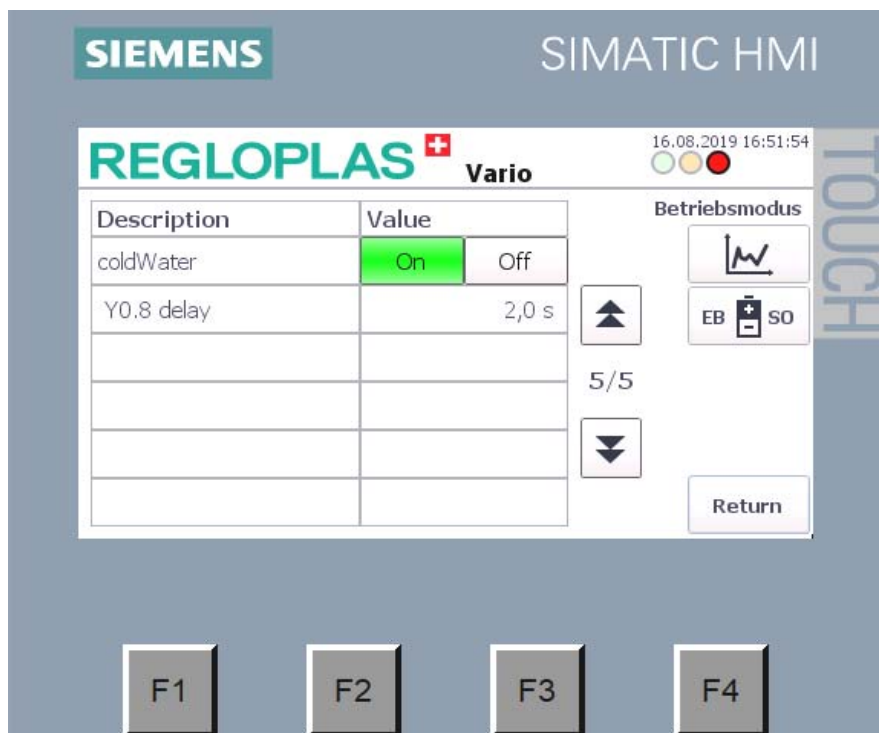
Configuration view - Overview 4/5

Observe the chapter "Shutdown the Vario SPS with energyBattery"

coldWater

In this menu the coldWater is switched on and off. If a coldWater is connected, "coldWater" must be ON. The functions are described in the following table.

Display	Function
coldWater	coldWater mode ON/OFF
Y0.8 delay	Delay time to build up the pump pressure in coldWater



Configuration view - Overview 5/5

Operating Modes

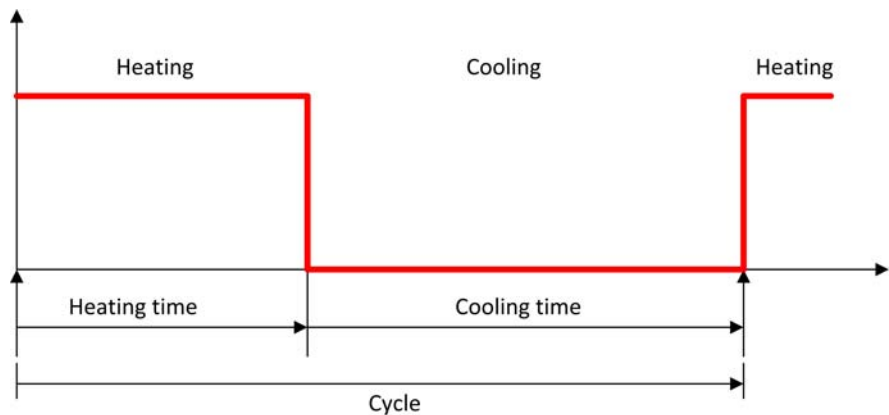
The Vario has various operating modes. These are described in more detail in the following chapters.

Intern mode

The Intern mode is used to test the system, without an external signal required. In this simulation mode, enter the heating and cooling time for cycling switchover.



Intern mode view

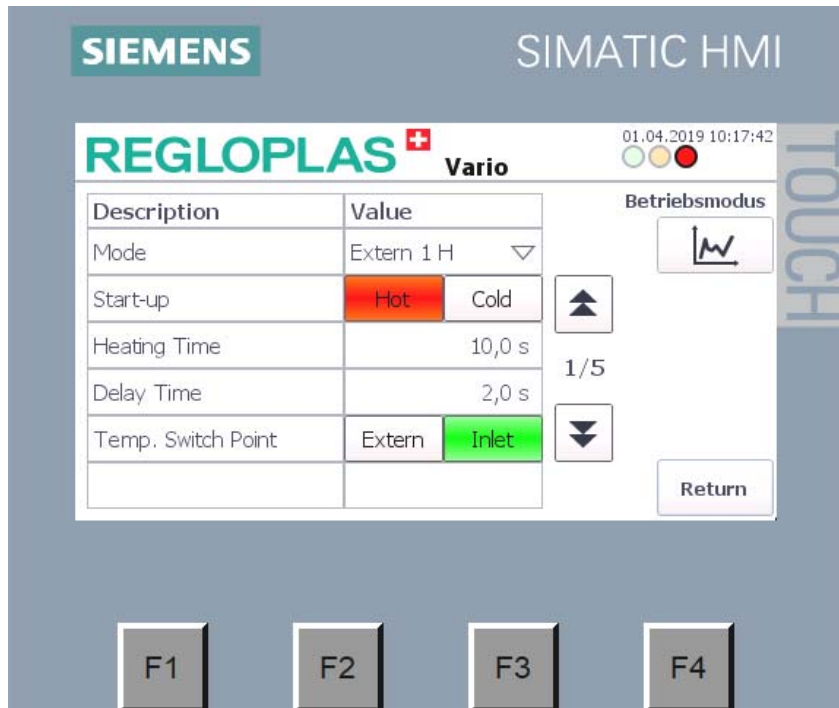


Intern mode cycle view

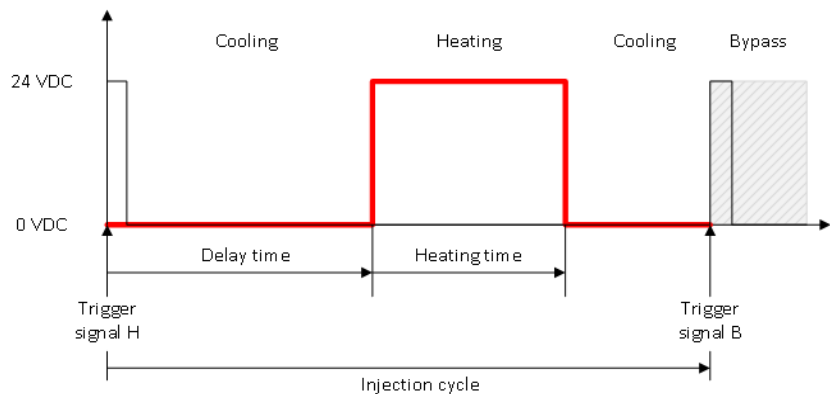
Extern 1 H mode

The Extern 1 H mode requires a signal for Heating and Cooling and a signal for the Bypass.

Once the control unit receives the trigger signal Heating, the Delay Time starts. After the Delay Time has finished, the heating cycle starts for the predetermined duration (Heating Time). When the heating process ends, the device switches to cooling operation (Cooling). If the control unit receives the trigger signal Bypass, the Vario unit switches to the Bypass mode.



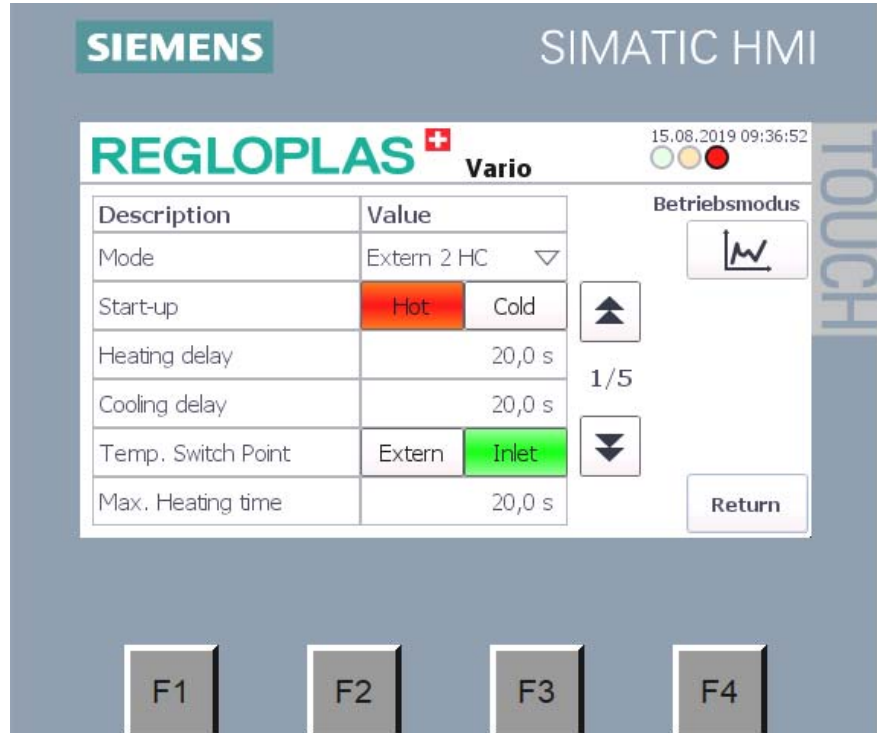
Extern 1 H mode view



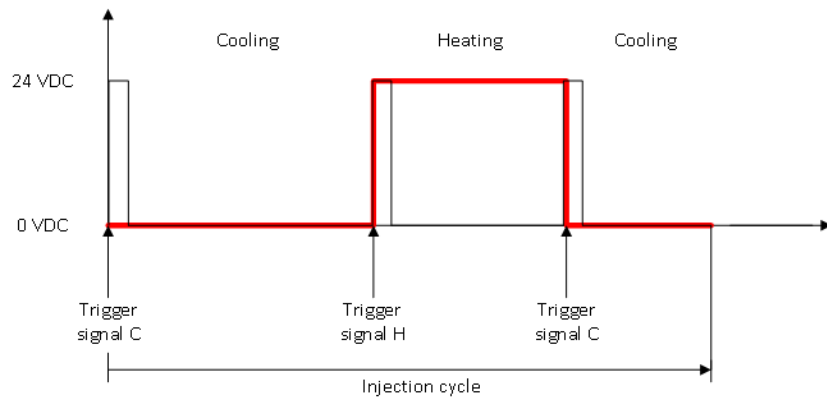
Extern 1 H mode cycle view

Extern 2 HC mode

The Extern 2 HC mode requires 2 signals (Heating/Cooling). Once the control unit receives the trigger signal Heating, the Heating process starts. The second trigger signal Cooling starts the Cooling process. The delay time can be set under Heating delay and Cooling delay. The maximum heating time can be set under Max. Heating time. The Bypass function is not available.



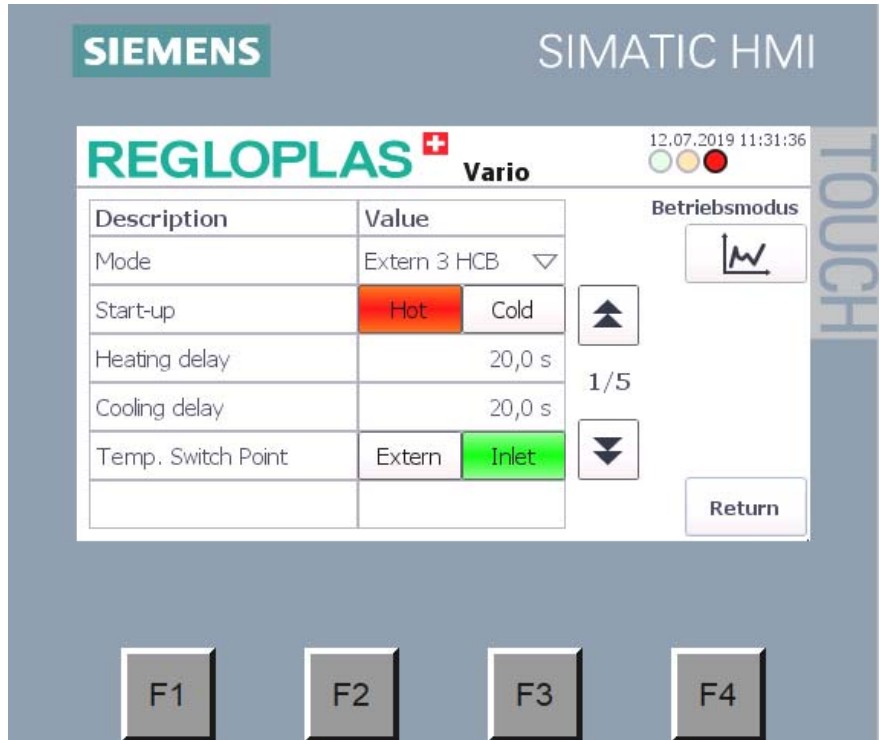
Extern 2 HC mode view



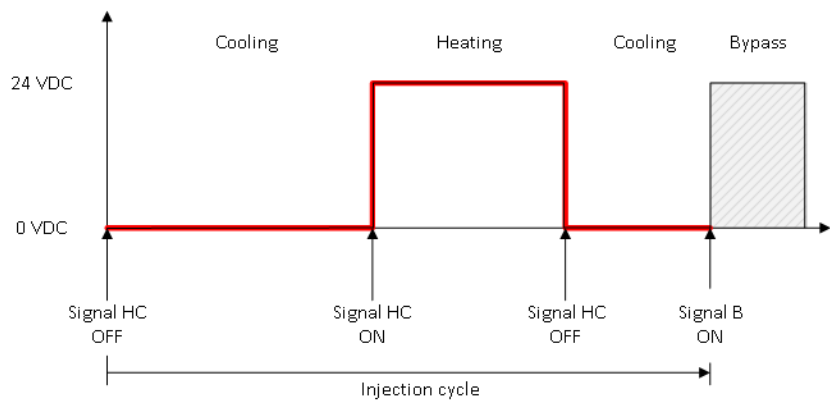
Extern 2 HC mode cycle view

Extern 3 HCB mode

The Extern 3 HCB mode requires 2 signals (Heating/Cooling and Bypass). The first signal means Heating at 24 VDC and Cooling at 0 VDC. As soon as the control receives the signal Heating, the Heating process starts. The second signal Bypass switches to the bypass mode. The delay time can be set under Heating delay and Cooling delay.



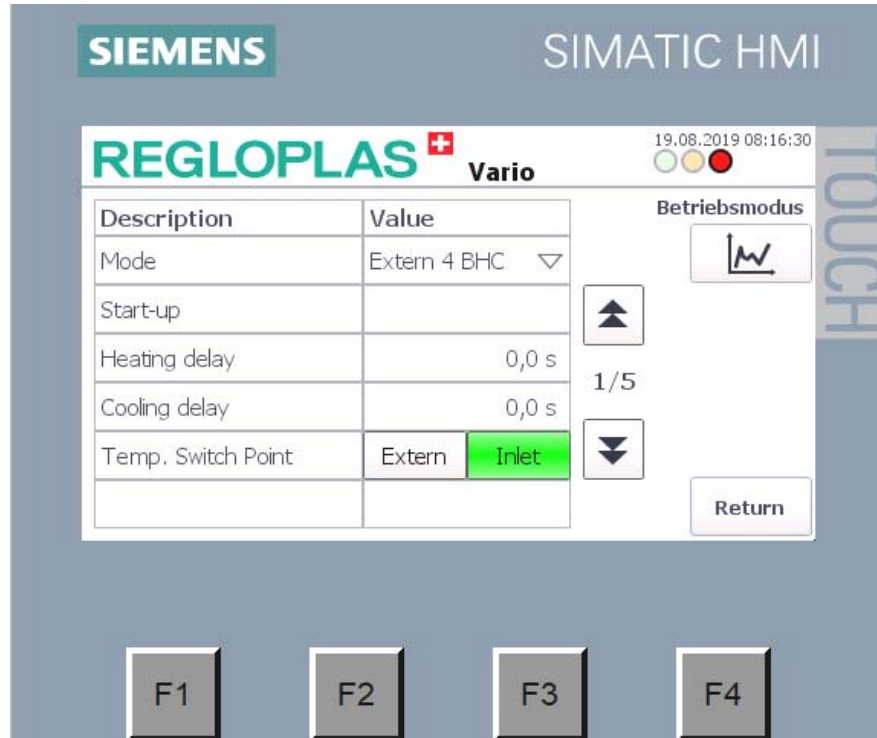
Extern 3 HCB mode view



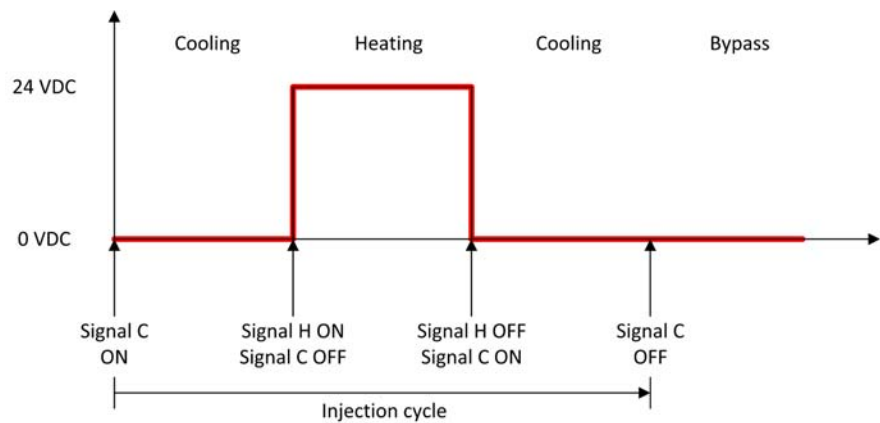
Extern 3 HCB mode cycle view

Extern 4 BHC mode

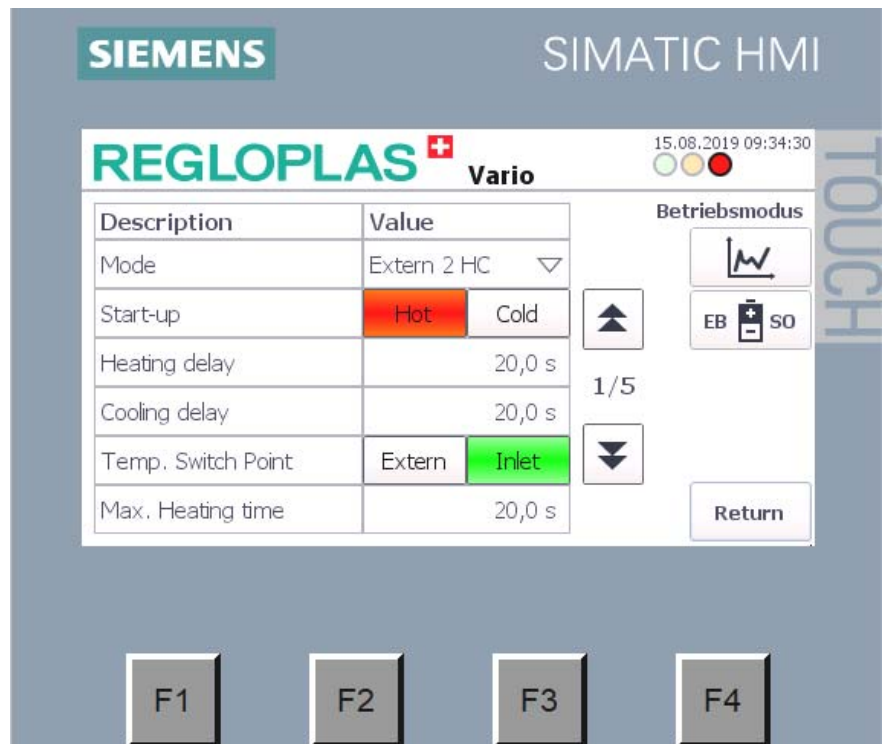
The Extern 4 BHC mode uses two signals (Heating/Cooling). As soon as the controller receives the heating signal, the heating process starts. The second signal Cooling starts the Cooling process. If no signal is present, the system switches to bypass mode. The delay time can be set under Heating delay and Cooling delay.



Extern 4 BHC mode view




Extern 4 BHC mode cycle view


Extern 2 HC mode view with energyBattery*Extern 2 HC mode view with energyBattery***Shutdown the Vario SPS without energyBattery**

- 1) Set the temperature control units (HOT/COLD unit) to the set-point 30 °C
- 2) Start the shutdown procedure with the **F1** key (**Stop**). Both circuits switch to Bypass mode
- 3) Switch off the temperature control units (HOT/COLD unit) - see therefore the user manual of the temperature control unit
- 4) Switch off the Vario SPS with the main switch

Shutdown the Vario SPS with energyBattery

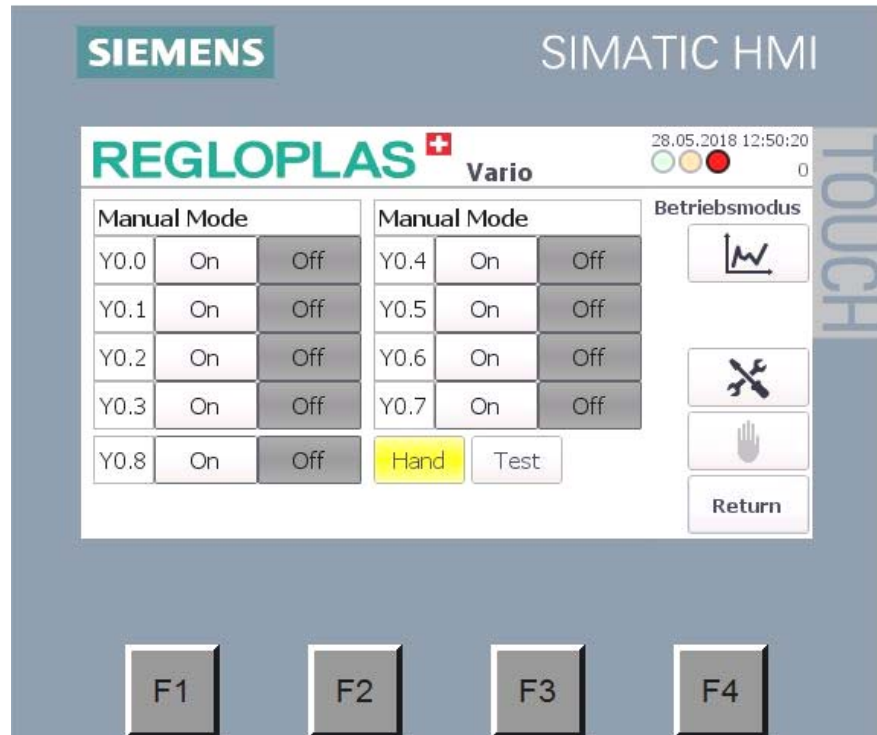
- 1) Set the temperature control units (HOT/COLD unit) to the set-point 30 °C
- 2) Start the shutdown procedure with the  key (minimum duration 2 minutes.). The energyBattery will be flushed, hot water and pressure will be reduced
- 3) Switch off the temperature control units (HOT/COLD unit) - see therefore the user manual of the temperature control unit
- 4) Switch off the Vario SPS with the main switch

SPS Test mode

The SPS test mode is called up under **F4** with the function key  and requires a password (technician). In the SPS test mode, "Hand" or "Test" can be selected.

Hand

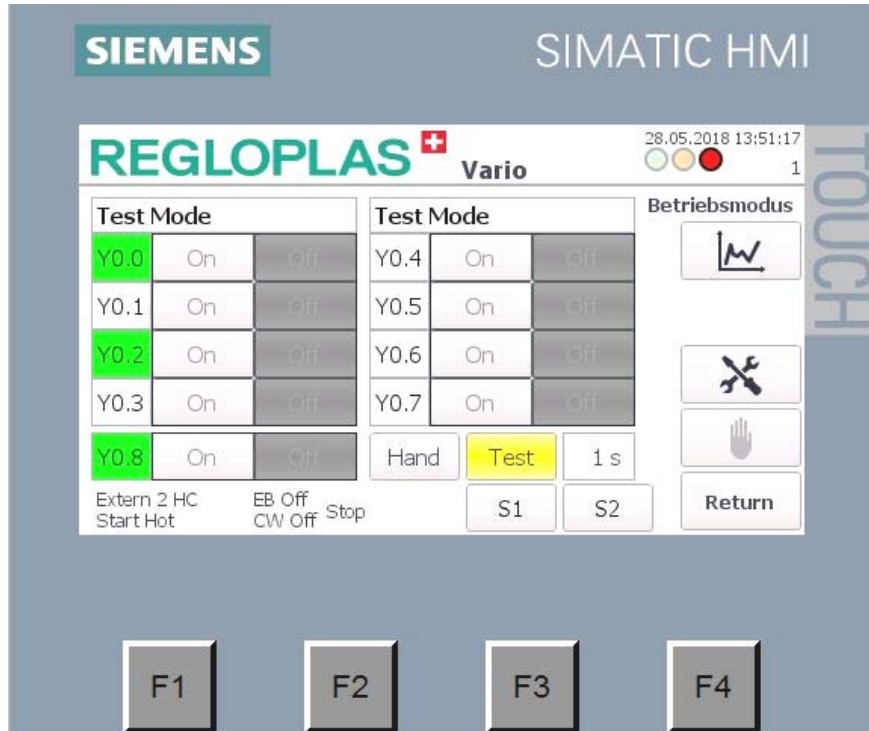
In the SPS test mode "Hand" the valves can be controlled manually (**ON/OFF**). The actuated valves are highlighted in green.



SPS test mode Hand View

Test

In the SPS test mode "Test" an automatic valve test run can be carried out. The automatic valve test run is started with the **F1** key. The actuated valves are highlighted in green.



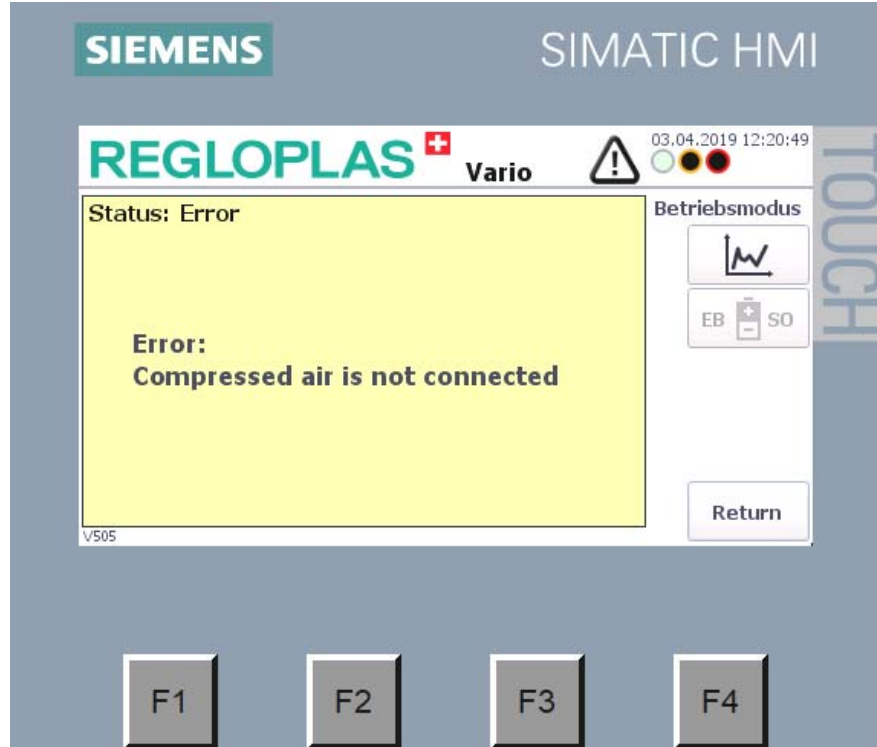
SPS test mode Test View

Keys/Symbols

Display	Function
Hand	Manual test (valve function)
Test	Autom. valve test run (valve switch positions)
1s	Autom. valve test run (adjustable switch duration)
S1	Valve switch point 1 (for the corresponding, displayed operating mode)
S2	Valve switch point 2 (for the corresponding, displayed operating mode)

Missing compressed air

If there is no compressed air supply, the following alarm message is displayed.



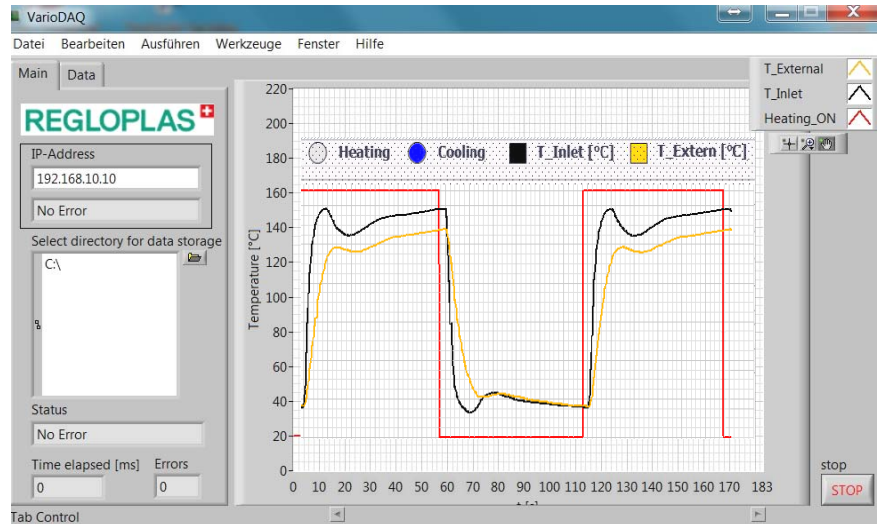
Alarm message view

Visualisation on PC screen

Data Recording VARIODAQ

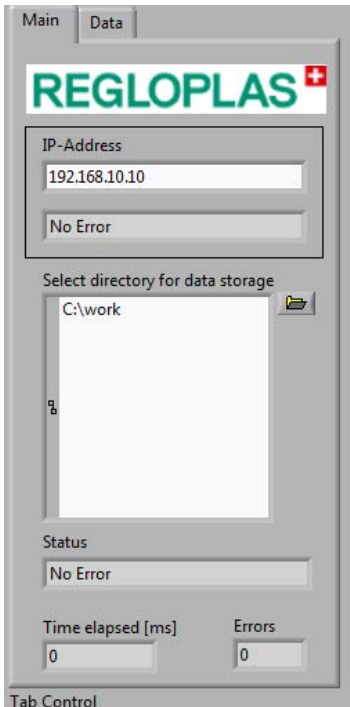

It is possible to visualize the Trend View display on a PC screen. Therefore, the **VarioDAQ** software tool is used. The PC/Laptop must be connected by Ethernet interface and the IP address must be entered in the corresponding input field.

The software size is 225 MB (Windows) and can be sent by request (for example, via FTP download).



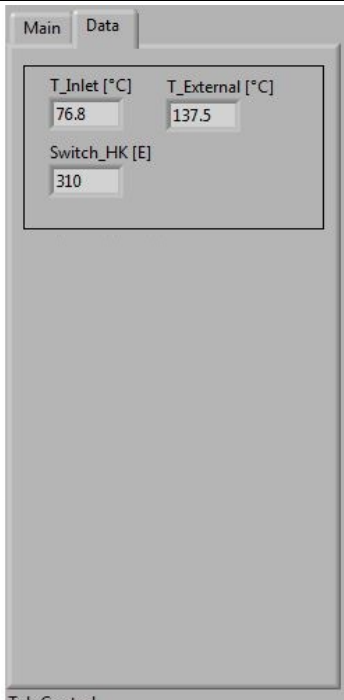
VarioDAQ view - Main window

Settings VarioDAQ - Main

<p>IP-Address Address of the CPU 192.168.10.10</p>	
<p>Select directory for data storage Determine the corresponding storage folder with key . A file with the format <i>LO[Year, Month, Day].a01</i> will be created. This file can be opened in the Editor</p>	
<p>Status Data Recording status</p>	
<p>Time elapsed [ms] Transmission time</p>	
<p>Errors Display of the number of errors</p>	

VarioDAQ view - Main


Settings VarioDAQ - Data

<p>T_Inlet (°C) Inlet temperature (in °C)</p>	
<p>T_External (°C) External temperature (consumer, in °C)</p>	
<p>Switch_HK [E] Heating cycle (Signal)</p>	

VarioDAQ view - Data

Start/Stop recording

The data recording is automatically activated when the program is started. The recording can be stopped with the STOP button, and by pressing

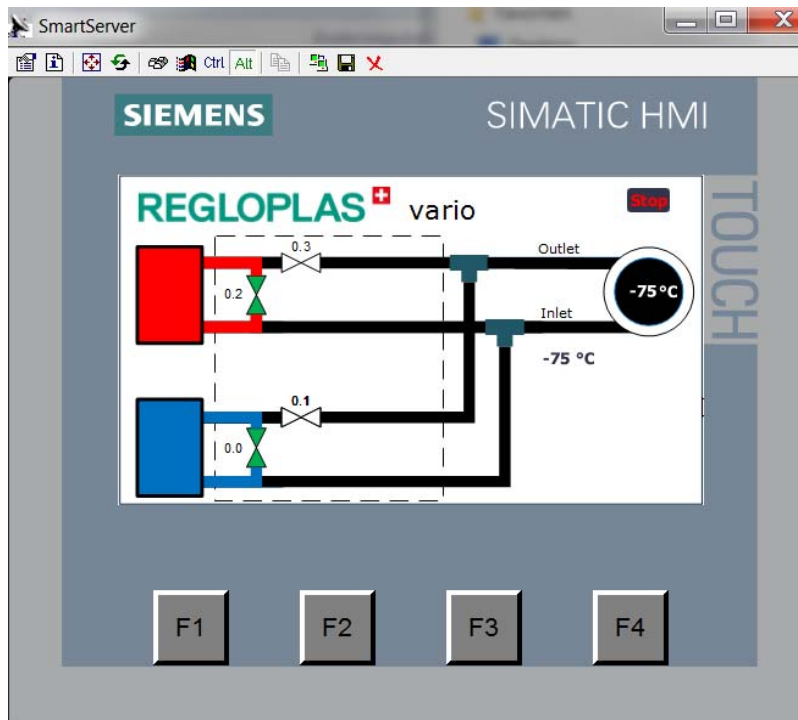
the  key, the recording starts again.

Remote Control Sm@rtServer

The WinCC Sm@rtServer option allows the remote control and monitoring of SIMATIC HMI[®] systems via Industrial Ethernet or via the Intra-net/Internet.

The display of the Sm@rtClient can be shown in "View only" mode by a so-called Sm@rtClient display. However, a fully-fledged, coordinated operator station can also be set up.

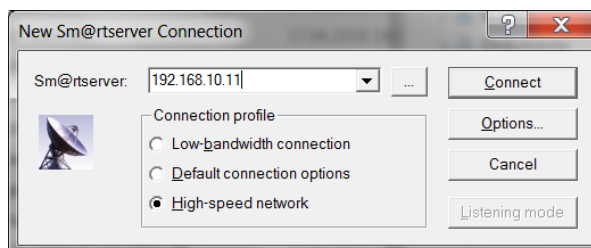
The software has 470 KB (Windows) and can be sent by request.



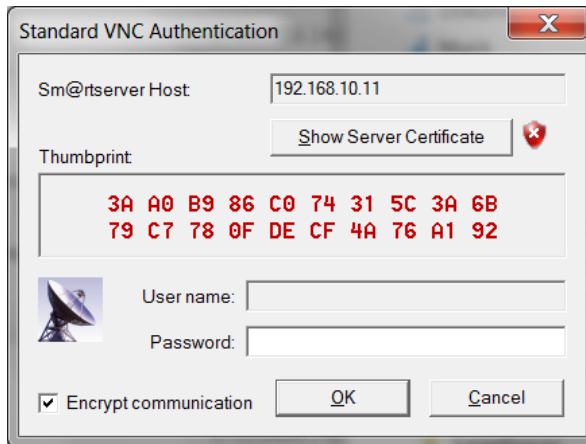
Sm@rtServer view - Main window

Remote Control instruction

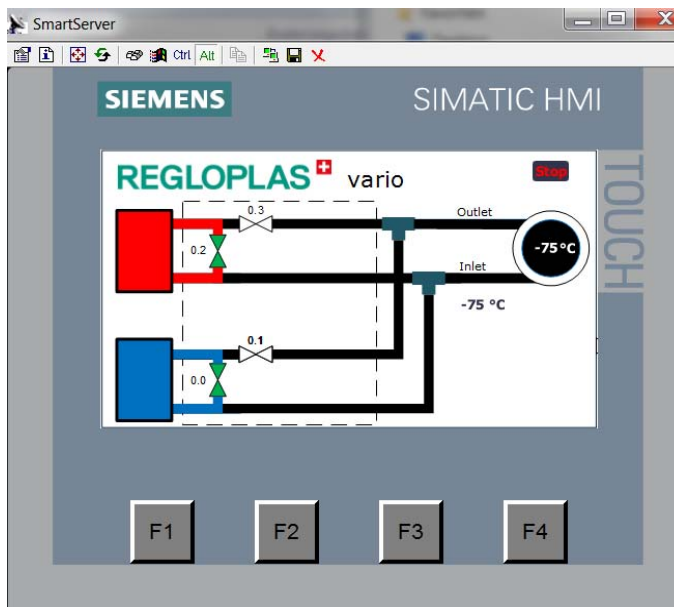
- 1) Connect the display with your Remote Control unit and change to the IP range 192.168.10.xxx (the HMI has the IP address 192.168.10.11)
- 2) Start the Sm@rtClient software
- 3) Enter the IP address 192.168.10.11 and press **Connect**



- 4) Enter the password „100“



- 5) Now you are connected with the SIMATIC® control unit and you can handle/operate it



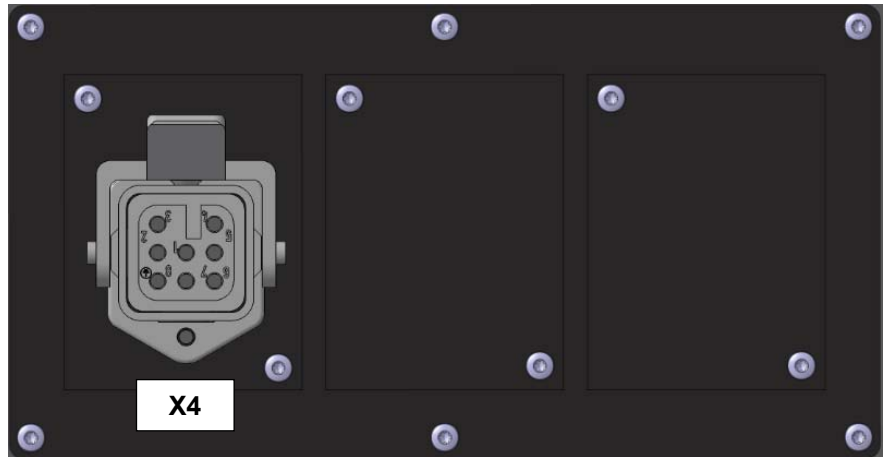
Vario 3/4" and 1"

General

The Vario 3/4" and Vario 1" versions work without SPS Control unit (PLC control). The control requires digital 24 VDC signals.

Interfaces

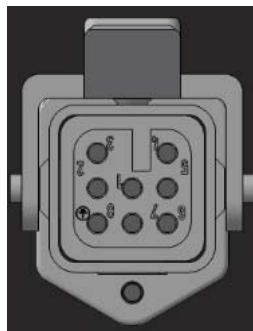
Overview



Vario - Signal Interface X4

Signal Interface X4

The X4 Signal Interface is used for communication to an external control unit.



Signal Interface X4

Cable assignment

Pin no.	Signal
1	External Signal 1 (0/24 VDC)
2	External Signal 2 (0/24 VDC)
7	Earth/Ground

External signals

The external signals for **Vario 3/4"** and **Vario 1"** are described in the following table.

External Signal 1	External Signal 2
Heating/Cooling If no signal is present, cooling is activated If a signal is present, heating is activated	Bypass If a signal is present, the unit switches to Bypass mode

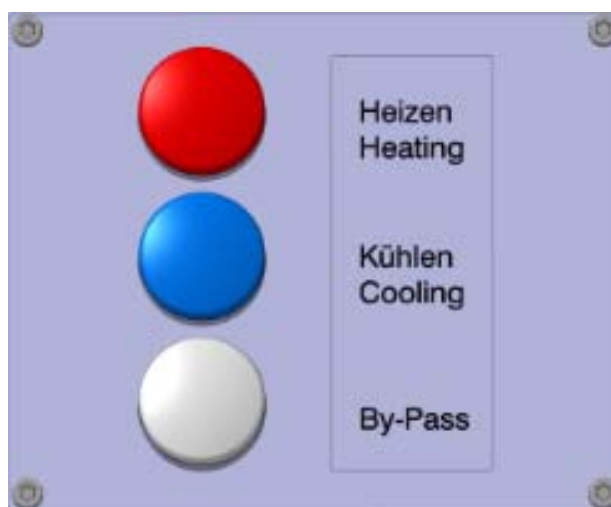
Vario 3/4" / 1" Operation

The operation takes place by interface **X3**. If no signal is applied or the interface is not connected, the Vario unit operates in the cold circuit and the hot circuit is in Bypass mode.

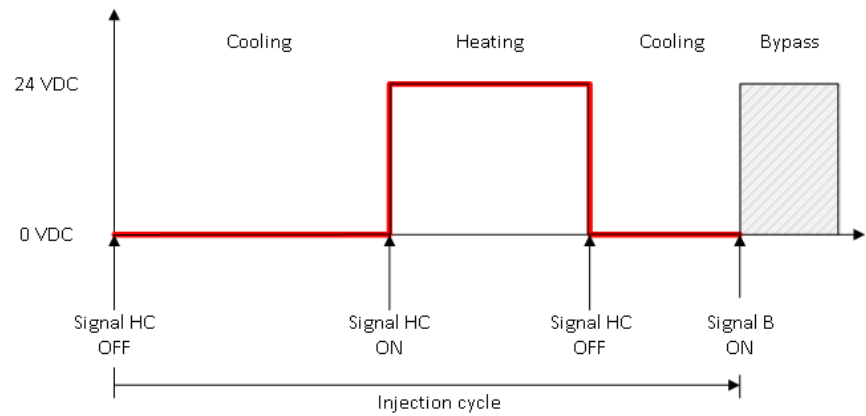
Displays

Three different operating modes are displayed:

- **Heating** - red LED
- **Cooling** - blue LED
- **By-Pass** - white LED



Vario 3/4" / 1" Display view

Cycle view

Vario 3/4" / 1" cycle view

Vario 3/4" / 1" Shutdown

- 1) Set the temperature control units (HOT/COLD unit) to the set-point 30 °C
- 2) Switch off the Vario 3/4" / 1" unit with the main switch

energyBattery

energyBattery - Function

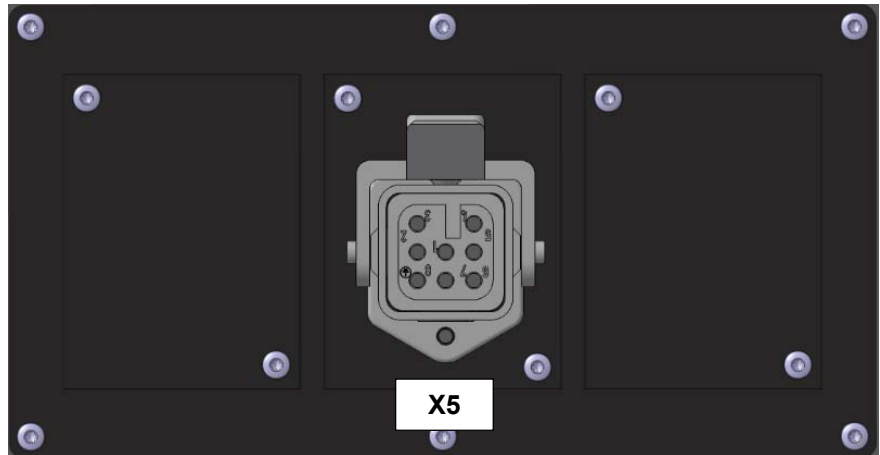
The energyBattery supports the Vario unit in reducing the energy costs. The energyBattery connects the two temperature circuits and prevents the mixing of the various medium temperatures. This will save energy and cycle time/duration.

HINWEIS	
	The energyBattery only works with the Vario SPS unit!

Interface

The energyBattery unit provides a Signal Interface.

Overview



energyBattery - Signal Interface X5

Signal interface X5

The **X5** Interface is used for communication with the Vario unit.



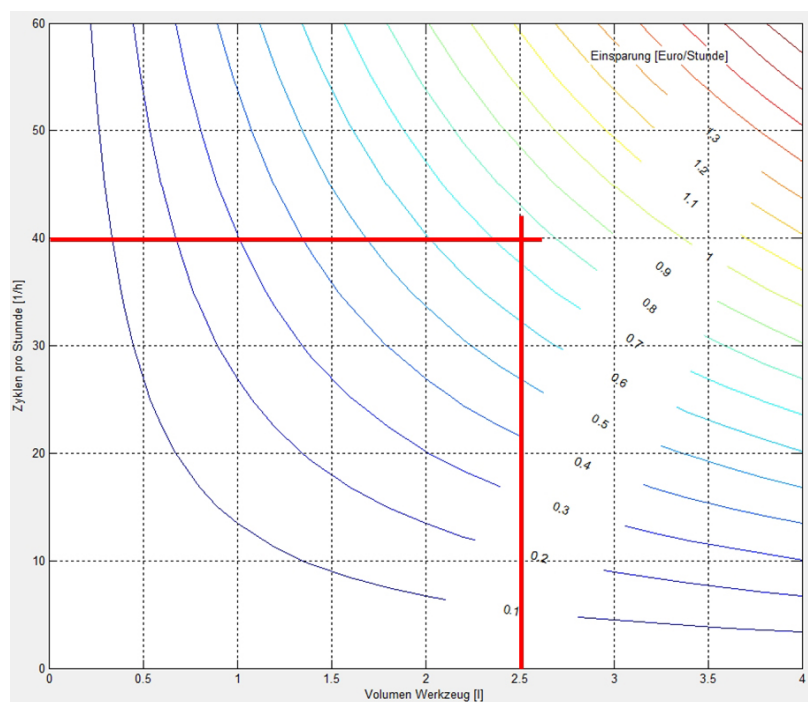
Signal Interface X5

Cable assignment

Pin no.	Signal
1	Y0.4 Pneumatic valve Inlet (cold)
2	Y0.5 Pneumatic valve Inlet (hot)
3	Y0.6 Pneumatic valve Inlet (cold)
4	Y0.7 Pneumatic valve Inlet (hot)
7	Masse/Ground

energyBattery - Calculation example

Electricity rate	0.08 Euro/kWh
Temperature 1	180° C
Temperature 2	25° C
Averaged temperature in energyBattery	110° C
Consumer content	2.5 l
Cycle time	90 Sek.
Economisation	0.75 Euro/h
Working time	24h x 300d = 7200h
Economisation	5400 Euro/Jahr



We gladly define a savings calculation for your application and determine your potential.

coldWater




coldWater - Function

Vario applications always require two temperature control units that are set to different temperatures (HOT/COLD). The cold unit can be replaced by a simplified device (coldWater) that works directly with cold water. Thus, cold temperatures of 40 °C and below are possible.

Changing Consumer/Decommissioning

Before detaching the connecting lines, it is necessary to verify that the Vario/energyBattery/coldWater unit is turned off and that all circuits are depressurised. The Vario/energyBattery/coldWater 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.

Maintenance

 WARNING	
 	<p>Risk of burns and scalding due to hot cooling water or steam!</p> <ul style="list-style-type: none"> • The Vario/energyBattery/coldWater unit must be switched off before carrying out any maintenance work - press the main switch and disconnect from the mains • The Vario/energyBattery/coldWater unit may still be pressurized - depressurise (see section "Shutdown the Vario") • Before disconnecting the feed lines to the temperature control unit/consumer, first allow the temperature control unit to cool down

Periodic Inspections and Maintenance Procedures

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.

- Vario/energyBattery/coldWater 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

Daily Inspections/Maintenance Procedures

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

Monthly Inspections/Maintenance Procedures

- Inspect the pressure controlled valves




Semi-annual Inspections/Maintenance Procedures

- Inspect the electrical equipment such as grounding wires, secure connection of power supply cord and connecting lines, etc.
- Dismantle the pressure controlled valves, inspect spindle and spring for lime deposits, damages and check for free movement. Clean or replace parts if necessary

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>Danger due to temperature, fire and explosion!</p> <ul style="list-style-type: none"> • Always allow the Vario/energyBattery/coldWater unit to cool down • Switch off the Vario/energyBattery/coldWater unit, press the main switch and unplug from the mains • 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

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

- 1) Drain the Vario/energyBattery/coldWater unit by suction or blowing out
- 2) 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>Danger due to improper repair!</p> <ul style="list-style-type: none"> • Repair work may only be carried out by technically trained specialist personnel • Allow the Vario/energyBattery/coldWater unit to cool down and, if necessary, drain it before any repair • Switch off the Vario/energyBattery/coldWater unit, press the main switch and unplug from the mains • Disconnect all hose couplings from the Vario/energyBattery/coldWater unit

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 specification plate on the Vario/energyBattery/coldWater 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 Vario/energyBattery/coldWater unit.

 CAUTION	
	<p>Danger due to the use of unsuitable spare parts!</p> <ul style="list-style-type: none"> • Only original Regloplas spare parts may be used! In case of damage from the use of non-original parts, the warranty will be rendered null and void!

Transport

 CAUTION	
	<p>Danger due to improper transport work!</p> <ul style="list-style-type: none"> • Cool down the temperature control unit, switch off, press the main switch and disconnect from mains (see chapter on "Shutdown the Vario") • Disconnect all hose couplings from the Vario/energyBattery/coldWater unit

Before shipping, the Vario/energyBattery/coldWater unit must be drained. Please use the original packaging and mark the top side clearly.

 CAUTION	
	<p>Danger due to improper transport work!</p> <ul style="list-style-type: none"> • Transport the Vario/energyBattery/coldWater unit suspended on ring eye-bolts or attached to a pallet, and protect it against external influences

Disposal

The Vario/energyBattery/coldWater unit must be drained completely and disposed of in accordance with local regulations.

The Vario/energyBattery/coldWater unit can also be returned to Regloplas AG, Switzerland, for disposal.


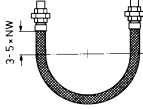
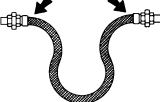

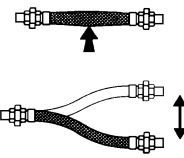
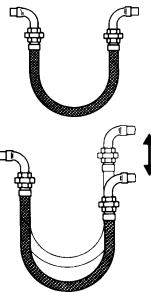
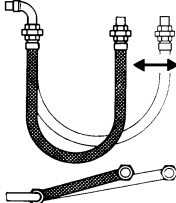
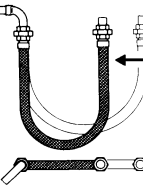
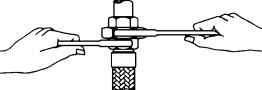
NOTE



The Vario/energyBattery/coldWater unit contains valuable raw materials that can be recycled separately (metals, plastics, electrical components, etc.)!

Maintenance

Guidelines for Connecting Hoses

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

Technical Data Vario 3/4"/Vario 1"

Unit type	Vario 3/4"	Vario 1"
Max. outlet temperature	200 °C	
Heat carrier/medium	Water	
Volume/Filling capacity	----	
Control System	----	
Input supply voltages	110-240 VAC, 50/60 Hz	
Ext. Control signal	24 VDC	
Connections		
Compressed air connection	G 1/4"	
Compressed air range	min. 4 bar, max. 10 bar	
Temperature control unit COLD IN (IN COLD TCU)	G 3/4" / BSP 60°	G 1" / BSP 60°
Temperature control unit HOT IN (IN HOT TCU)		
Temperature control unit COLD OUT (OUT COLD TCU)		
Temperature control unit HOT OUT (OUT HOT TCU)		
Mold (Consumer) COLD IN (IN COLD MOLD)		
Mold (Consumer) HOT IN (IN HOT MOLD)		
Mold (Consumer) COLD OUT (OUT COLD MOLD)		
Mold (Consumer) HOT OUT (OUT HOT MOLD)		
Pressure sensitive valves	2/2-way, 3/4", 200 °C	2/2-way, 1", 200 °C
Degree of protection	IP40	
Dimensions W/H/D	203/563/742 mm	266/705/797 mm
Weight	approx. 34 kg	approx. 48 kg
Colour	RAL 9006/7016	
Ambient temperature	max. 40°C	

Technical Data Vario SPS 3/4"/Vario SPS 1"

Unit type	Vario SPS 3/4"		Vario SPS 1"
Max. outlet temperature	200 °C	300 °C	200 °C
Heat carrier/medium	Water	Oil	Water
Volume/Filling capacity	----		
Control System	Siemens S7-1200		
Input supply voltages	110-240 VAC, 50/60 Hz		
Ext. Control signal	24 VDC		
Connections			
Compressed air connection	G 1/4"		
Compressed air range	min. 4 bar, max. 10 bar		
Temperature control unit COLD IN (IN COLD TCU)	G 3/4" / BSP 60°		G 1" / BSP 60°
Temperature control unit HOT IN (IN HOT TCU)			
Temperature control unit COLD OUT (OUT COLD TCU)			
Temperature control unit HOT OUT (OUT HOT TCU)			
Mold (Consumer) COLD IN (IN COLD MOLD)			
Mold (Consumer) HOT IN (IN HOT MOLD)			
Mold (Consumer) COLD OUT (OUT COLD MOLD)			
Mold (Consumer) HOT OUT (OUT HOT MOLD)			
Pressure sensitive valves	2/2-way, 3/4", 200 °C	2/2-way, 3/4", 300 °C	2/2-way, 1", 200 °C
Degree of protection	IP40		
Dimensions W/H/D	203/563/742 mm	266/705/791 mm	266/705/822 mm
Weight	approx. 34 kg	ca. 50 kg	approx. 50 kg
Colour	RAL 9006/7016		
Ambient temperature	max. 40°C		

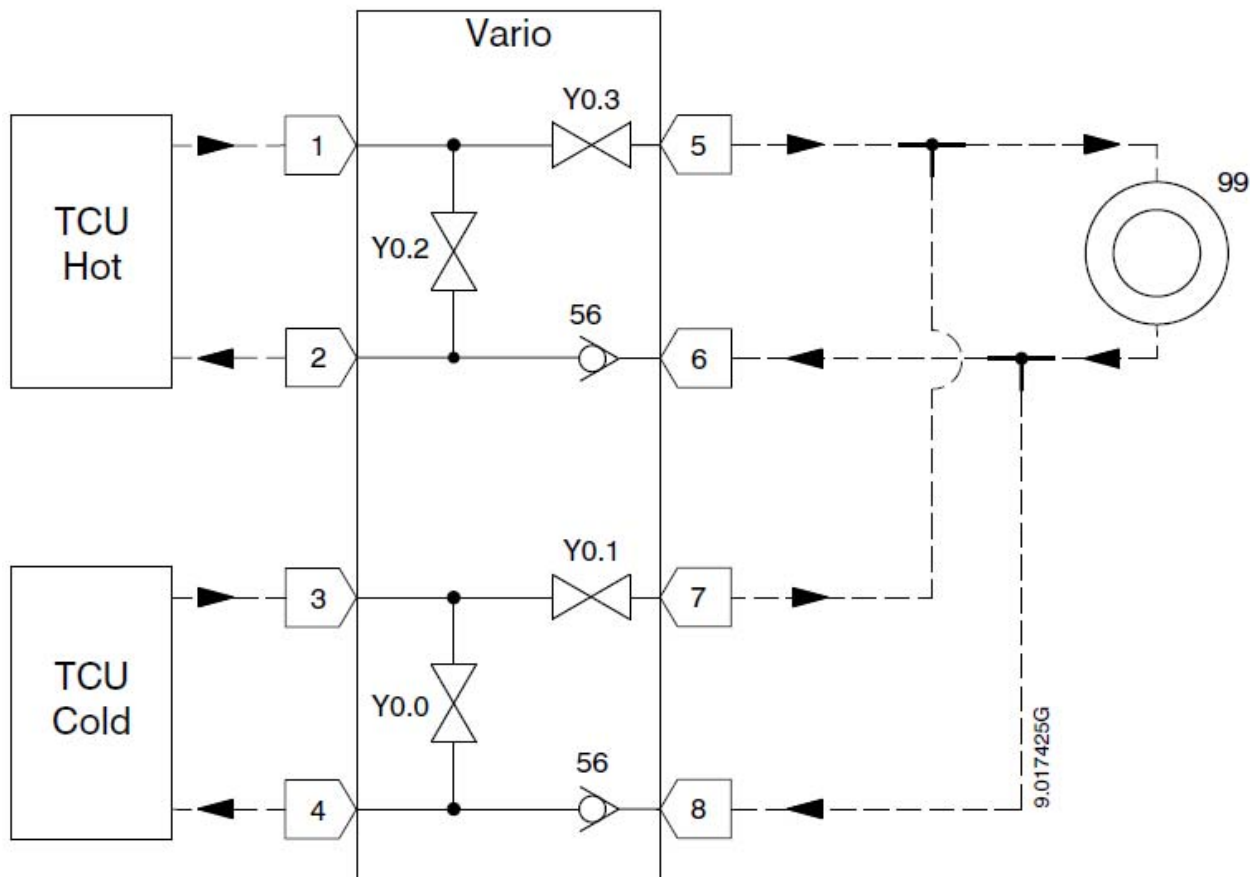
Technical Data energyBattery

Unit type	energyBattery
Volume	3.6 litres
Compressed air connection	G 1/4"
Compressed air range	min. 4 bar, max. 10 bar
Output Vario COLD (OUT COLD Vario)	G 3/4" / BSP 60°
Output Vario HOT (OUT HOT Vario)	
Input Consumer COLD (IN COLD MOLD)	
Input Consumer HOT (IN HOT MOLD)	
Pressure sensitive valves	2/2-way, 3/4", 200 °C
Degree of protection art	IP40
Dimensions W/H/D	203/563/715 mm
Weight	approx. 32 kg

Technical Data coldWater

Type	coldWater 160	coldWater 200
Max. outlet temperature	160 °C	200 °C
Heat carrier/medium	Water	
Volume/Filling capacity	----	
Pump type	CRI3H	CRIE
Motor power (pump)	0.75 kW	3.0 kW
Motor current (pump), 400 V/50 Hz	1.9 A	6.3 A
Max. delivery rate	50 l/min	70 l/min
Max. delivery pressure	4.6 bar	13.8 bar
Control System	----	
Input supply voltages	110-240 VAC, 50/60 Hz	
Outlet/inlet connections (standard)	G 3/4"	
System water connections (standard)	G 3/4"	
Degree of protection	IP40	
Dimensions W/H/D	316.5/820/748 mm	
Weight	approx. 48 kg	
Ambient temperature	max. 40°C	
Continuous sound pressure level	< 70 dB(A)	

Block diagram Vario

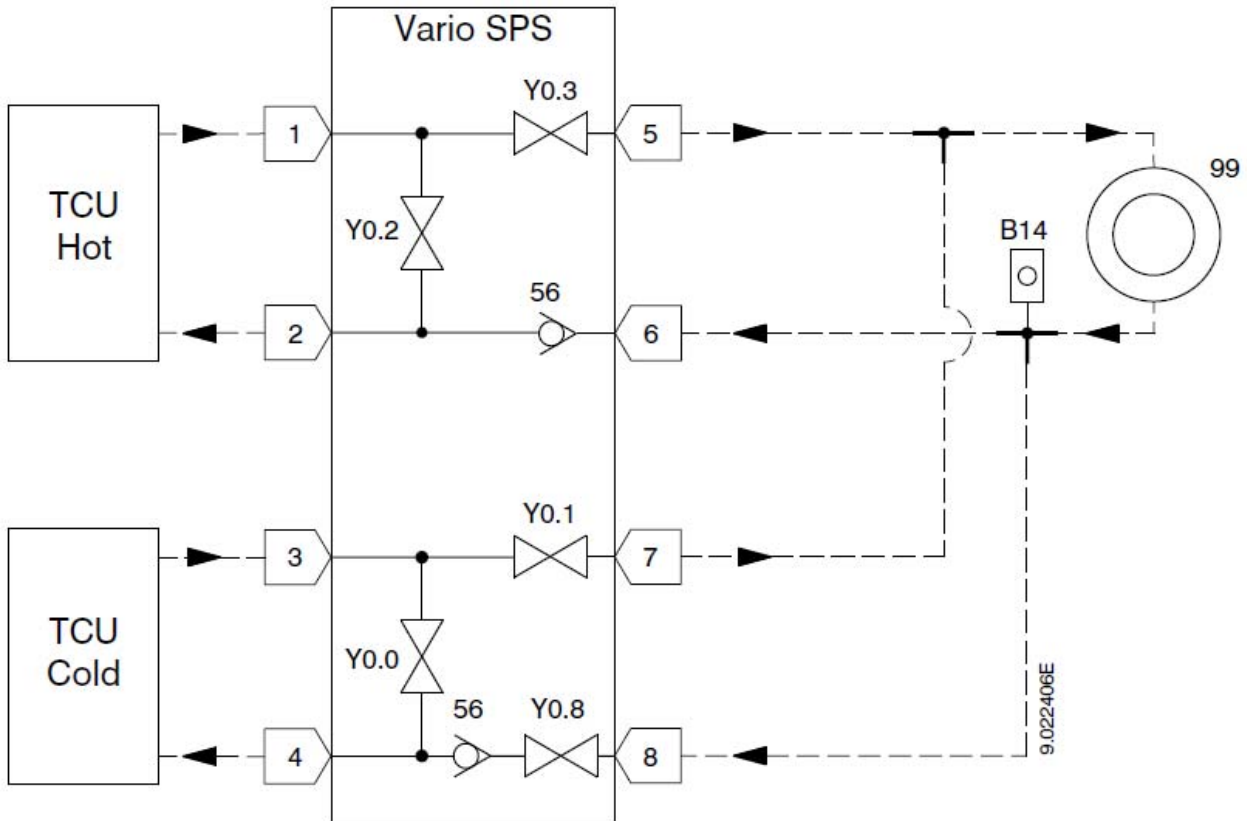


Block diagram Vario

Item	Designation	Item	Designation
56	Check valve	Y0.1	Pneumatic valve Outlet cold
99	Consumer (mold)	Y0.2	Pneumatic valve Bypass hot
Y0.0	Pneumatic valve Bypass cold	Y0.3	Pneumatic valve Outlet hot

Item	Designation	Connection
1	IN HOT TCU	Input Temperature Control Unit HOT
2	OUT HOT TCU	Output Temperature Control Unit HOT
3	IN COLD TCU	Input Temperature Control Unit COLD
4	OUT COLD TCU	Output Temperature Control Unit COLD
5	OUT HOT MOLD	Output Consumer circuit (to mold)
6	IN HOT MOLD	Input Consumer circuit (from mold)
7	OUT COLD MOLD	Output Consumer circuit (to mold)
8	IN COLD MOLD	Input Consumer circuit (from mold)

Block diagram Vario SPS

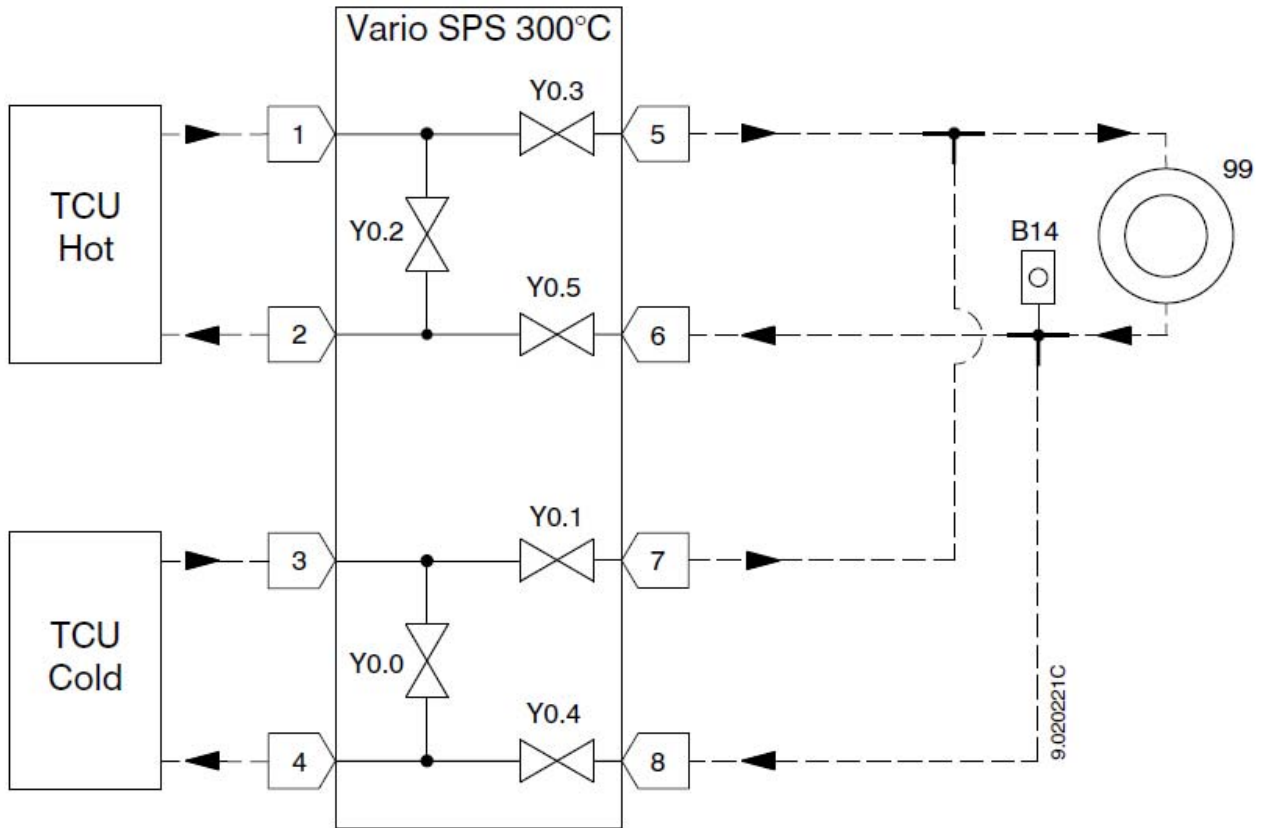


Block diagram Vario SPS

Item	Designation	Item	Designation
56	Check valve	Y0.1	Pneumatic valve Outlet cold
99	Consumer	Y0.2	Pneumatic valve Bypass hot
B14	Inlet temperature sensor	Y0.3	Pneumatic valve Outlet hot
Y0.0	Pneumatic valve Bypass cold	Y0.8	Pneumatic valve Inlet cold

Item	Designation	Connection
1	IN HOT TCU	Input Temperature Control Unit HOT
2	OUT HOT TCU	Output Temperature Control Unit HOT
3	IN COLD TCU	Input Temperature Control Unit COLD
4	OUT COLD TCU	Output Temperature Control Unit COLD
5	OUT HOT MOLD	Output Consumer circuit (to mold)
6	IN HOT MOLD	Input Consumer circuit (from mold)
7	OUT COLD MOLD	Output Consumer circuit (to mold)
8	IN COLD MOLD	Input Consumer circuit (from mold)

Block diagram Vario SPS 3/4" (Oil 300 °C)

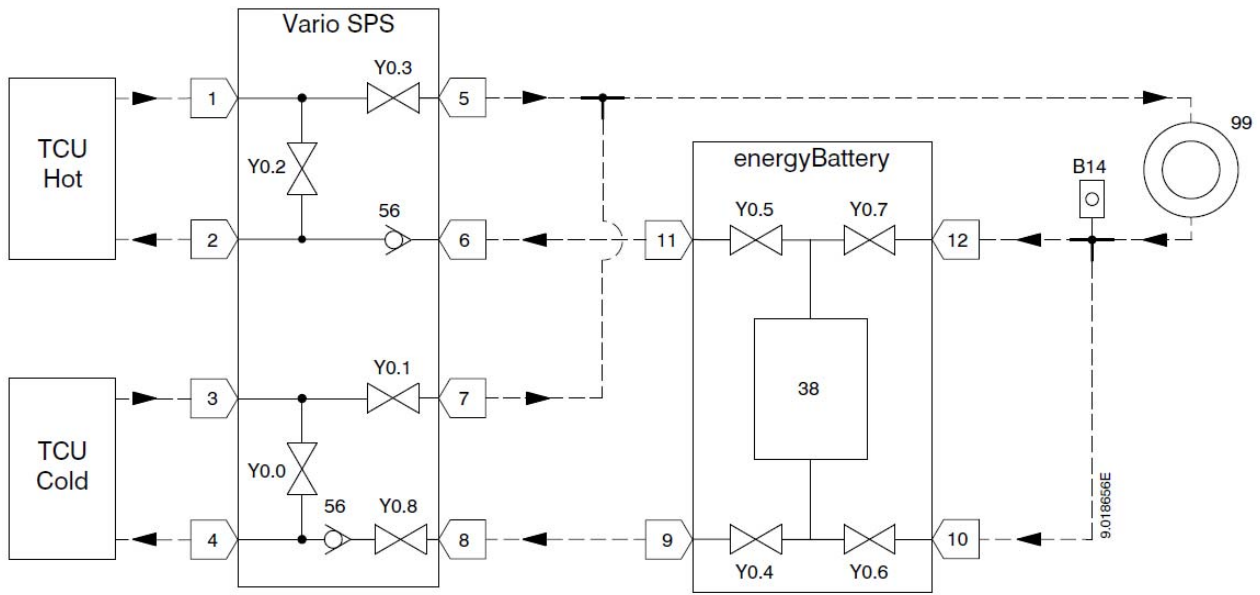


Block diagram Vario SPS (Oil 300 °C)

Item	Designation	Item	Designation
99	Consumer	Y0.2	Pneumatic valve Bypass hot
B14	Inlet temperature sensor	Y0.3	Pneumatic valve Outlet hot
Y0.0	Pneumatic valve Bypass cold	Y0.4	Pneumatic valve Inlet cold
Y0.1	Pneumatic valve Outlet cold	Y0.5	Pneumatic valve Inlet hot

Item	Designation	Connection
1	IN HOT TCU	Input Temperature Control Unit HOT
2	OUT HOT TCU	Output Temperature Control Unit HOT
3	IN COLD TCU	Input Temperature Control Unit COLD
4	OUT COLD TCU	Output Temperature Control Unit COLD
5	OUT HOT MOLD	Output Consumer circuit (to mold)
6	IN HOT MOLD	Input Consumer circuit (from mold)
7	OUT COLD MOLD	Output Consumer circuit (to mold)
8	IN COLD MOLD	Input Consumer circuit (from mold)

Block diagram Vario SPS with energyBattery

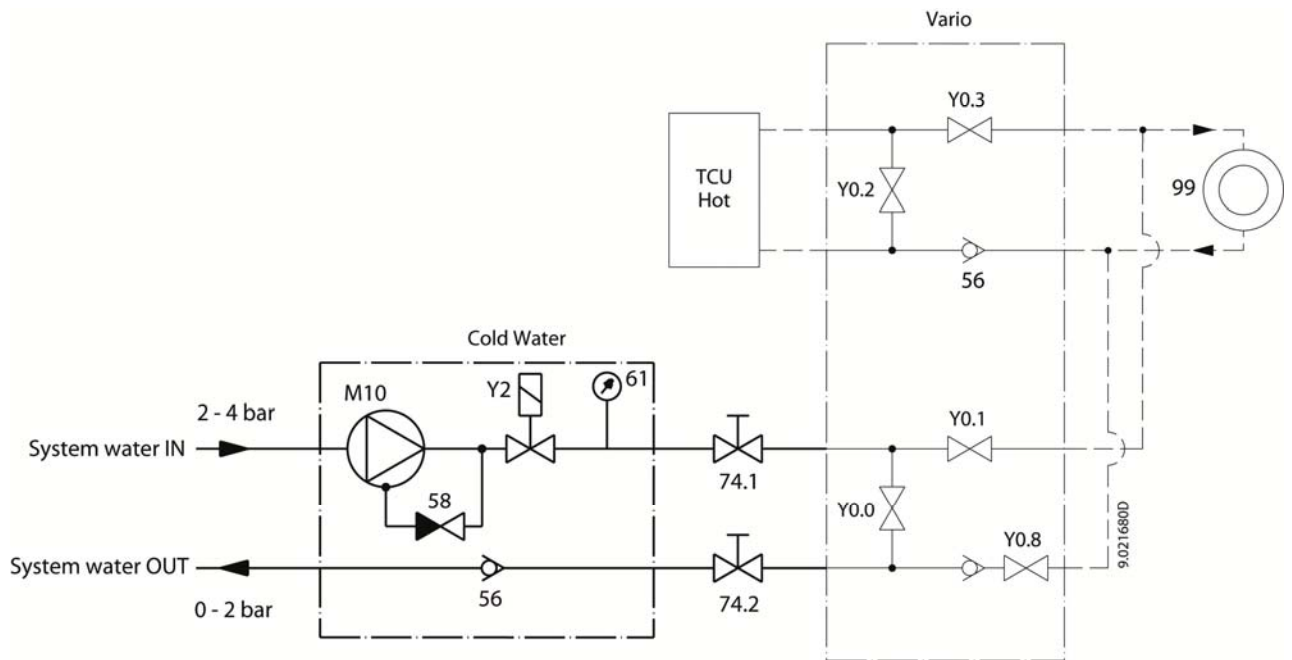


Block diagram Vario SPS with energyBattery

Item	Designation	Item	Designation
38	Tank	Y0.3	Pneumatic valve Outlet hot
56	Check valve	Y0.4	Pneumatic valve Inlet cold
99	Consumer	Y0.5	Pneumatic valve Inlet hot
B14	Temperature sensor (Inlet)	Y0.6	Pneumatic valve Inlet cold
Y0.0	Pneumatic valve Bypass cold	Y0.7	Pneumatic valve Inlet hot
Y0.1	Pneumatic valve Outlet cold	Y0.8	Pneumatic valve Inlet cold (Cold Water unit)
Y0.2	Pneumatic valve Bypass hot		

Item	Designation	Connection
1	IN HOT TCU	Input Temperature Control Unit HOT
2	OUT HOT TCU	Output Temperature Control Unit HOT
3	IN COLD TCU	Input Temperature Control Unit COLD
4	OUT COLD TCU	Output Temperature Control Unit COLD
5	OUT HOT MOLD	Output Consumer circuit (to mold)
6	IN HOT MOLD	Input Consumer circuit (from mold)
7	OUT COLD MOLD	Output Consumer circuit (to mold)
8	IN COLD MOLD	Input Consumer circuit (from mold)
9	OUT COLD VARIO	Output Vario COLD (from energyBattery)
10	IN COLD MOUD	Input mold circuit (from mold)
11	OUT HOT VARIO	Output Vario HOT (from energyBattery)
12	IN HOT MOLD	Input mold circuit (from mold)

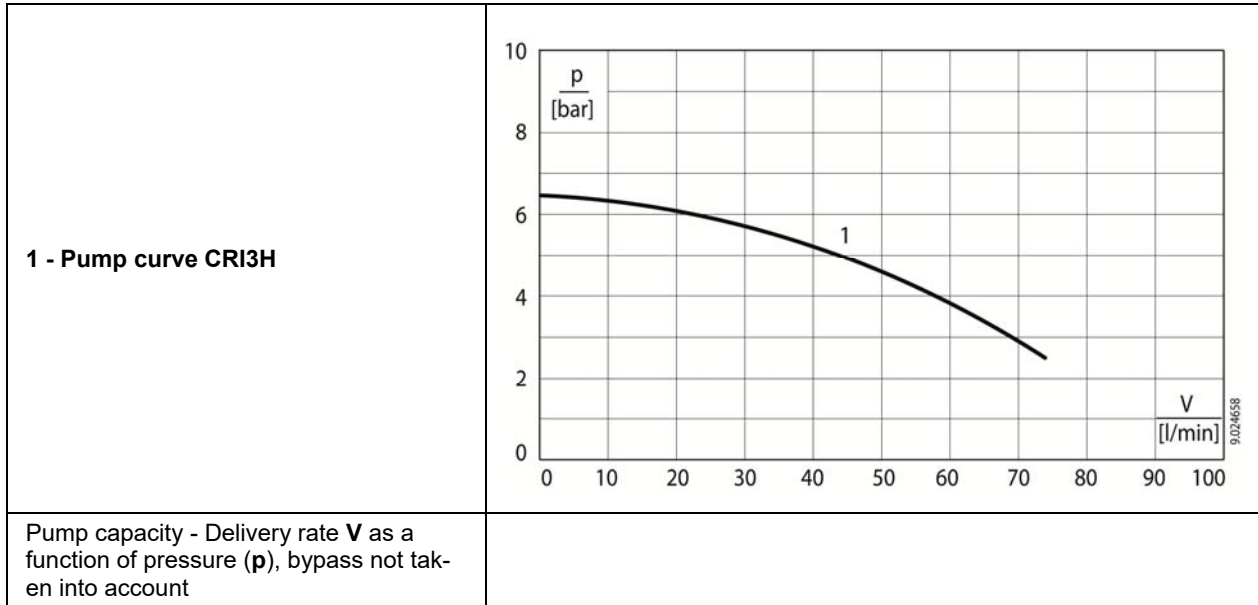
Block diagram coldWater



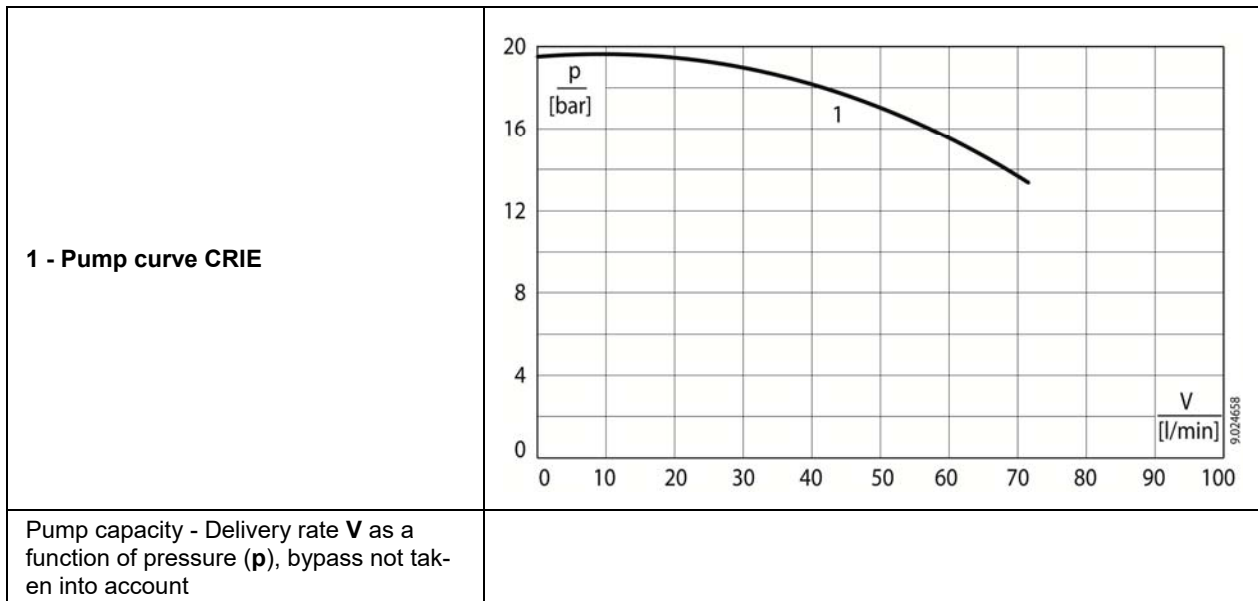
Block diagram coldWater

Item	Designation	Item	Designation
56	Check-valve	99	Consumer
58	Bypass	M10	Pump
61	Manometer	Y2	Solenoid valve (autom. water refill)
74.1	Hand valve		
74.2	Hand valve		

Graph pump capacity CRI3H (coldWater)



Graph pump capacity CRIE (coldWater)



Connection Temperature Control Unit - Vario 3/4"

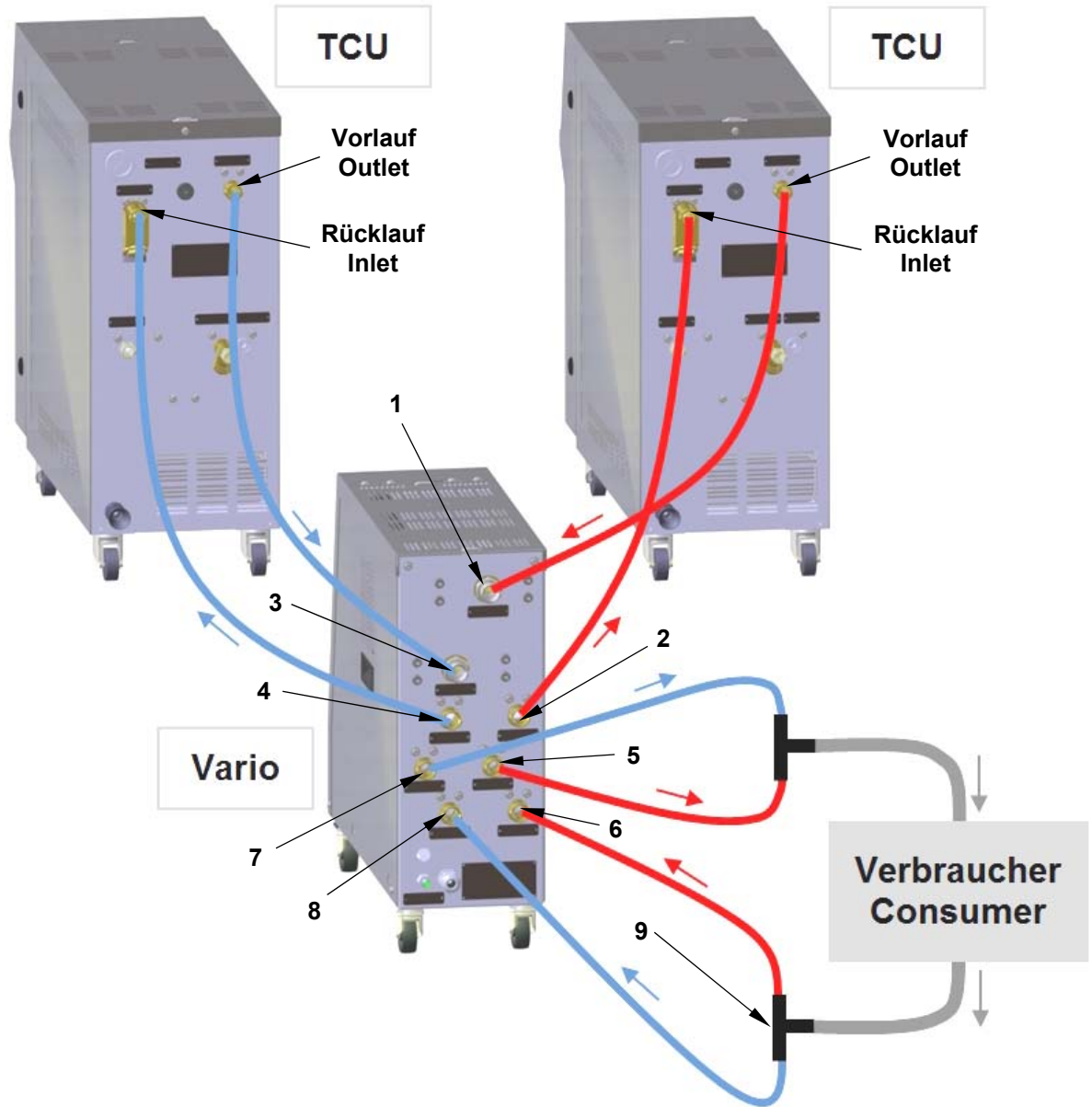


Illustration TCU PxxxS/M

Item	Designation	Connection
1	IN HOT TCU	Input Temperature Control Unit HOT
2	OUT HOT TCU	Output Temperature Control Unit HOT
3	IN COLD TCU	Input Temperature Control Unit COLD
4	OUT COLD TCU	Output Temperature Control Unit COLD
5	OUT HOT MOLD	Output Consumer circuit (to mold)
6	IN HOT MOLD	Input Consumer circuit (from mold)
7	OUT COLD MOLD	Output Consumer circuit (to mold)
8	IN COLD MOLD	Input Consumer circuit (from mold)
9	B14	Temperature sensor (Inlet)

Connection coldWater - Vario 3/4"

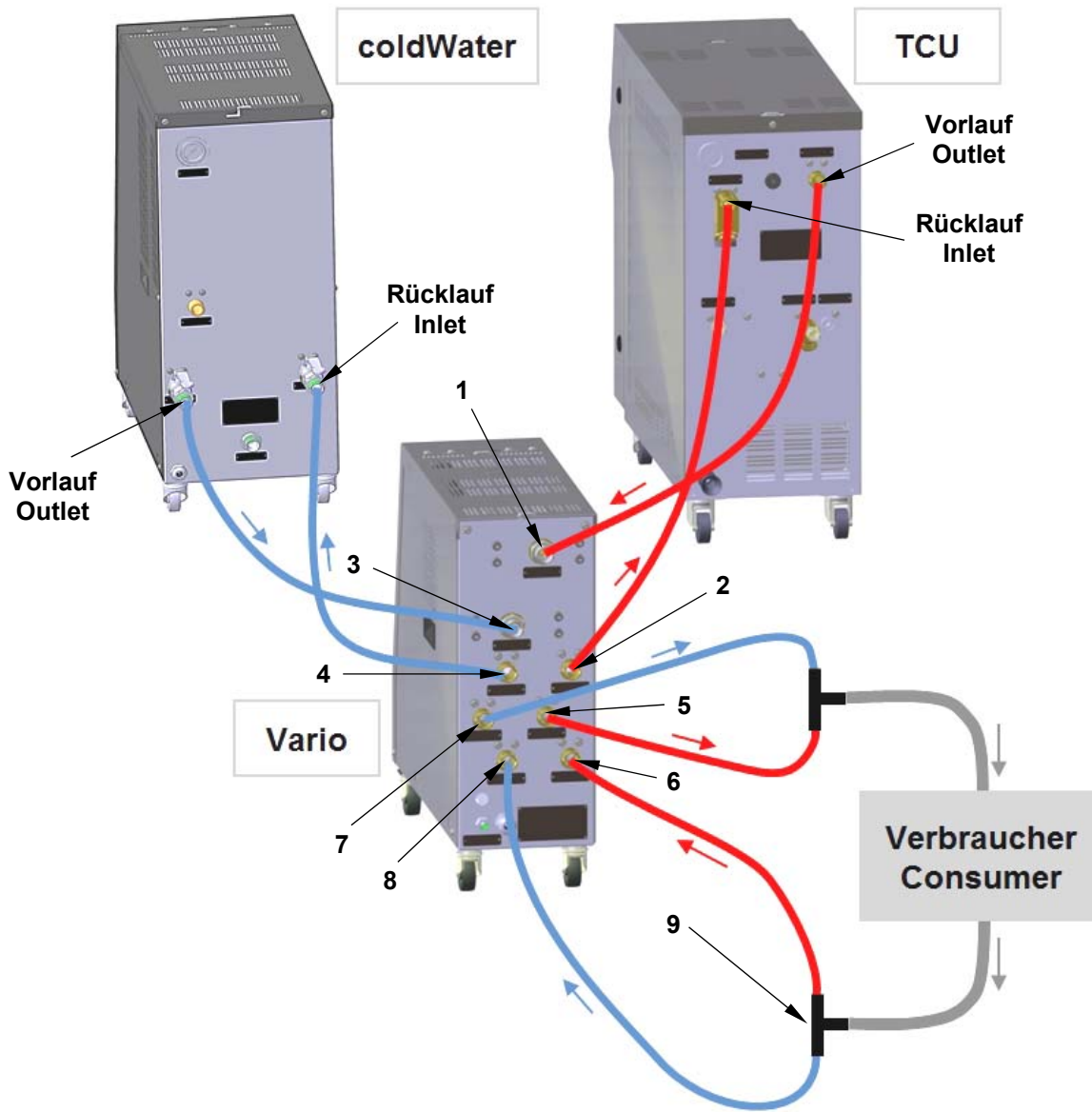


Illustration TCU PxxxS/M

Item	Designation	Connection
1	IN HOT TCU	Input Temperature Control Unit HOT
2	OUT HOT TCU	Output Temperature Control Unit HOT
3	IN COLD TCU	Input Temperature Control Unit COLD
4	OUT COLD TCU	Output Temperature Control Unit COLD
5	OUT HOT MOLD	Output Consumer circuit (to mold)
6	IN HOT MOLD	Input Consumer circuit (from mold)
7	OUT COLD MOLD	Output Consumer circuit (to mold)
8	IN COLD MOLD	Input Consumer circuit (from mold)
9	B14	Temperature sensor (Inlet)

Connection Vario 3/4" - energyBattery

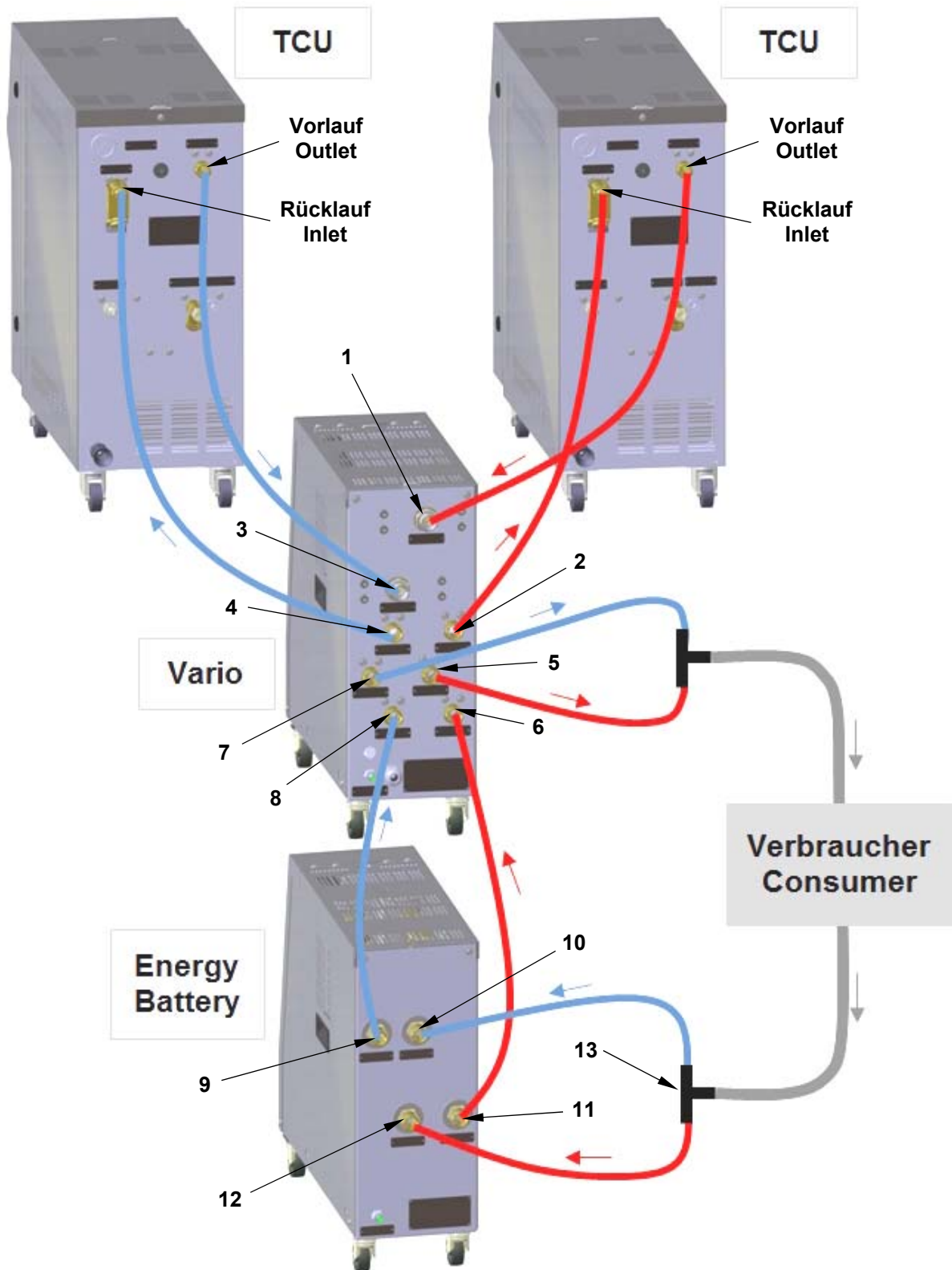


Illustration TCU PxxxS/M

Item	Designation	Connection
1	IN HOT TCU	Input Temperature Control Unit HOT
2	OUT HOT TCU	Output Temperature Control Unit HOT
3	IN COLD TCU	Input Temperature Control Unit COLD
4	OUT COLD TCU	Output Temperature Control Unit COLD
5	OUT HOT MOLD	Output Consumer circuit (to mold)
6	IN HOT MOLD	Input Consumer circuit (from mold)
7	OUT COLD MOLD	Output Consumer circuit (to mold)
8	IN COLD MOLD	Input Consumer circuit (from mold)
9	OUT COLD VARIO	Output Vario COLD (from energyBattery)
10	IN COLD MOLD	Input Consumer circuit (from mold)
11	OUT HOT VARIO	Output Vario HOT (from energyBattery)
12	IN HOT MOLD	Input Consumer circuit (from mold)
13	B14	Temperature sensor (Inlet)

Connection Temperature Control - Vario 1"

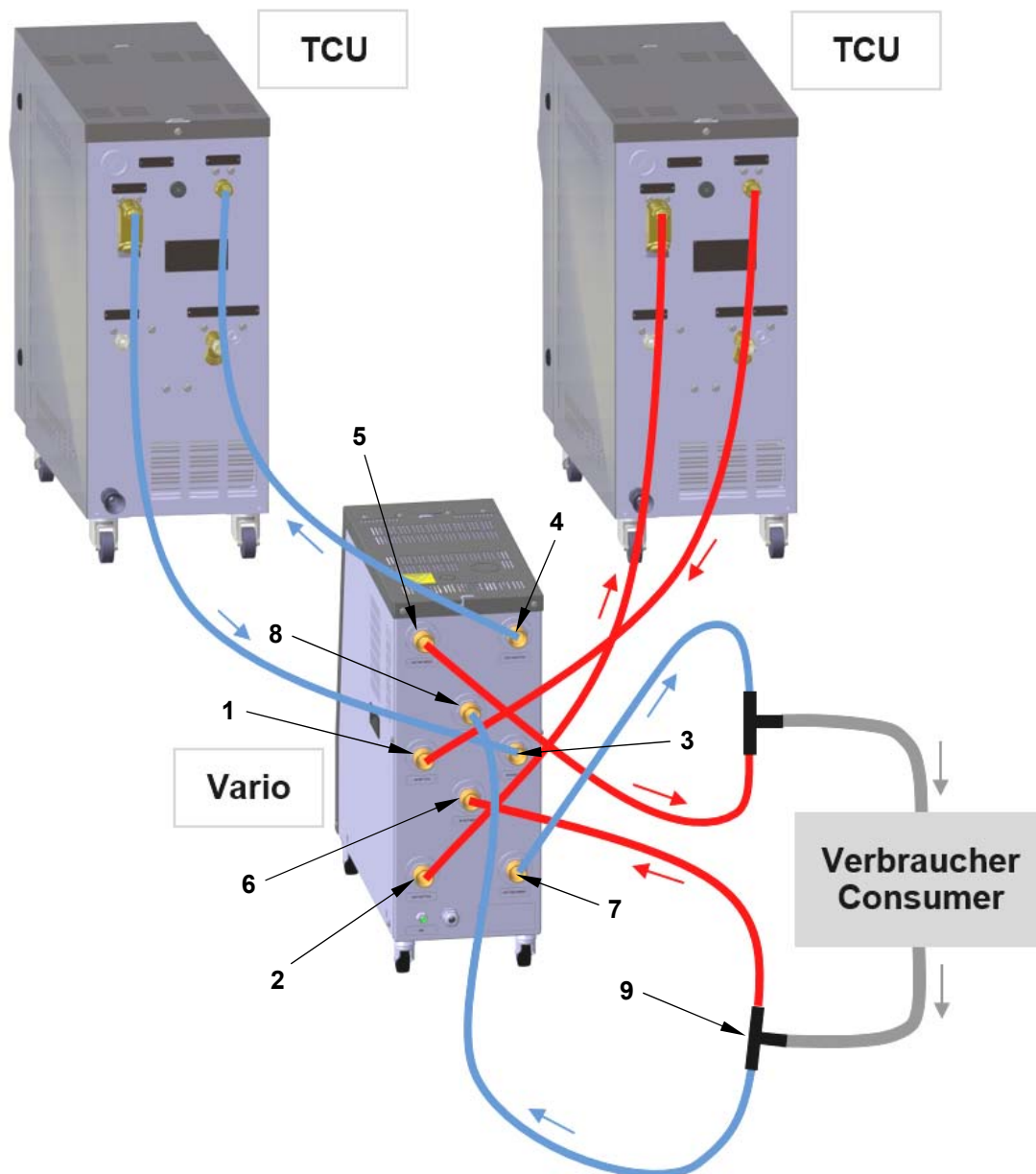
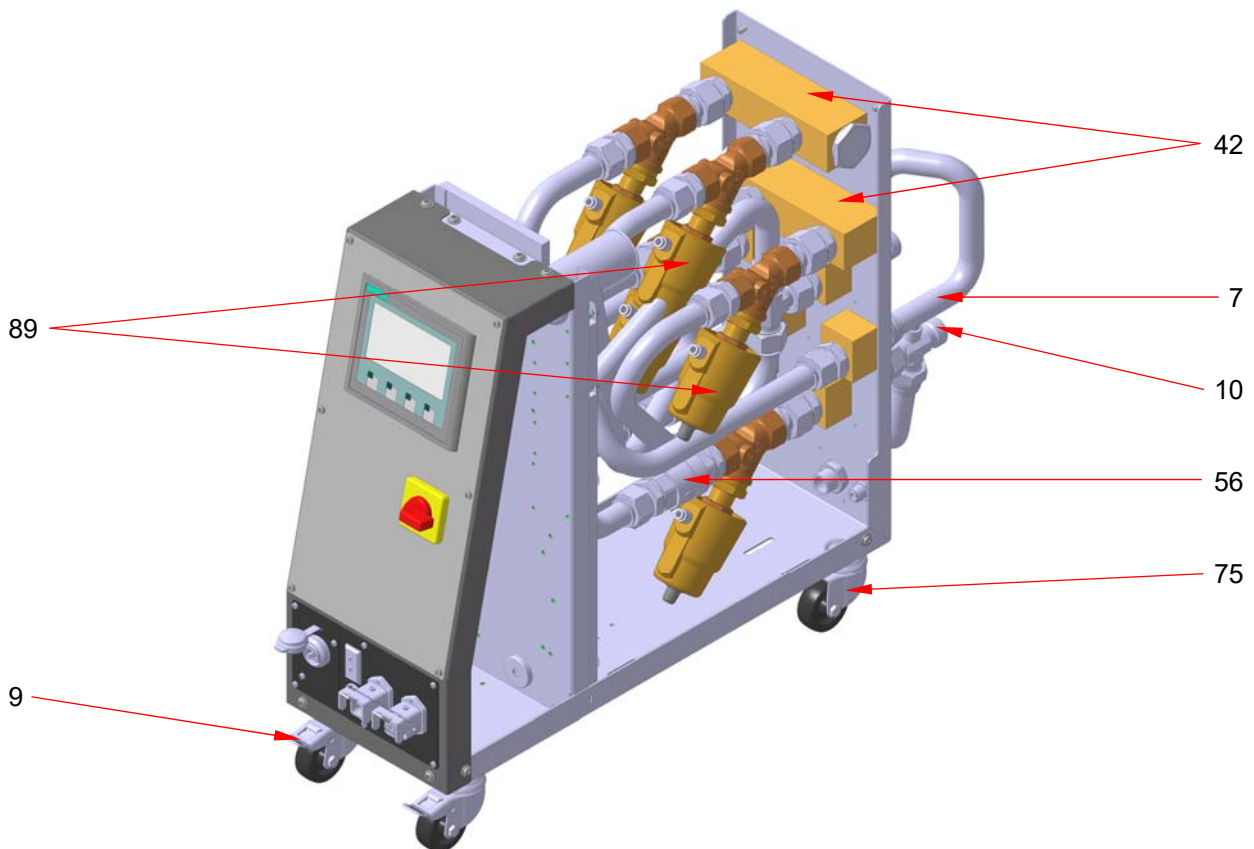
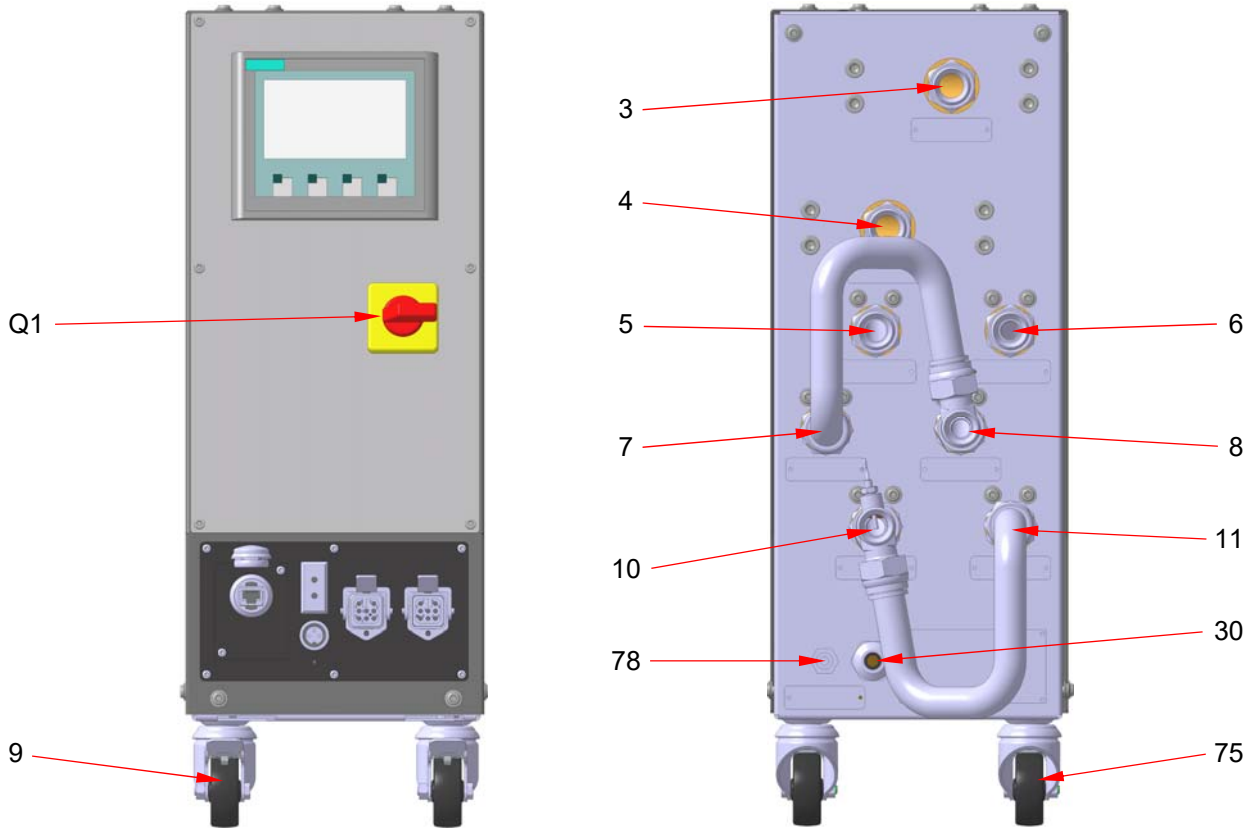
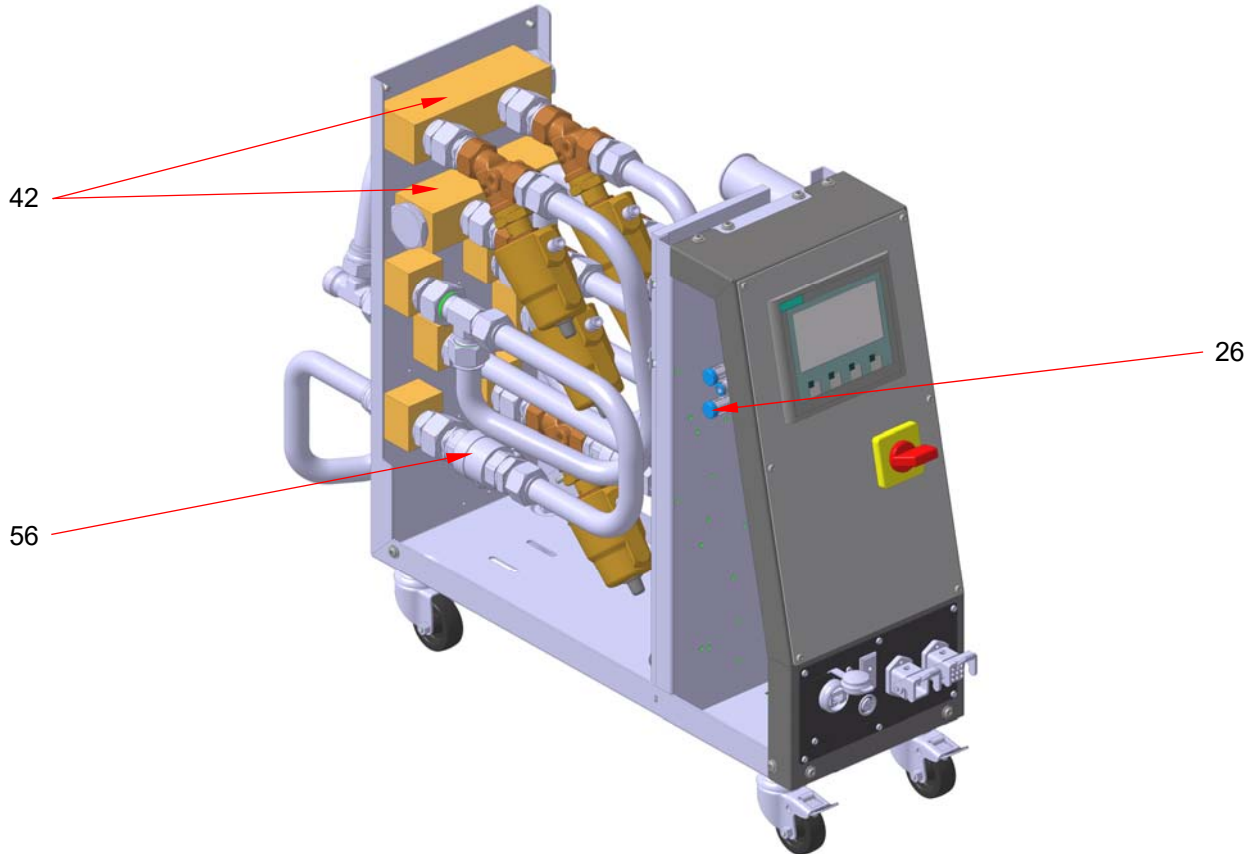


Illustration TCU PxxxS/M

Item	Designation	Connection
1	IN HOT TCU	Input Temperature Control Unit HOT
2	OUT HOT TCU	Output Temperature Control Unit HOT
3	IN COLD TCU	Input Temperature Control Unit COLD
4	OUT COLD TCU	Output Temperature Control Unit COLD
5	OUT HOT MOLD	Output Consumer circuit (to mold)
6	IN HOT MOLD	Input Consumer circuit (from mold)
7	OUT COLD MOLD	Output Consumer circuit (to mold)
8	IN COLD MOLD	Input Consumer circuit (from mold)
9	B14	Temperature sensor (Inlet)


Components/Spare parts Vario SPS 3/4"






Item	Designation	Item	Designation
3	Temperature control unit IN HOT	26	Terminal box
4	Temperature control unit IN COLD	30	Power cable
5	Temperature control unit OUT COLD	42	Connection block
6	Temperature control unit OUT HOT	56	Check valve
7	Mold (Consumer) OUT COLD	75	Castor
8	Mold (Consumer) OUT HOT	78	Compressed air connection
9	Castor with wheel brake	89	Pressure sensitive valve (2-way)
10	Mold (Consumer) IN COLD	Q1	Main switch
11	Mold (Consumer) IN HOT		

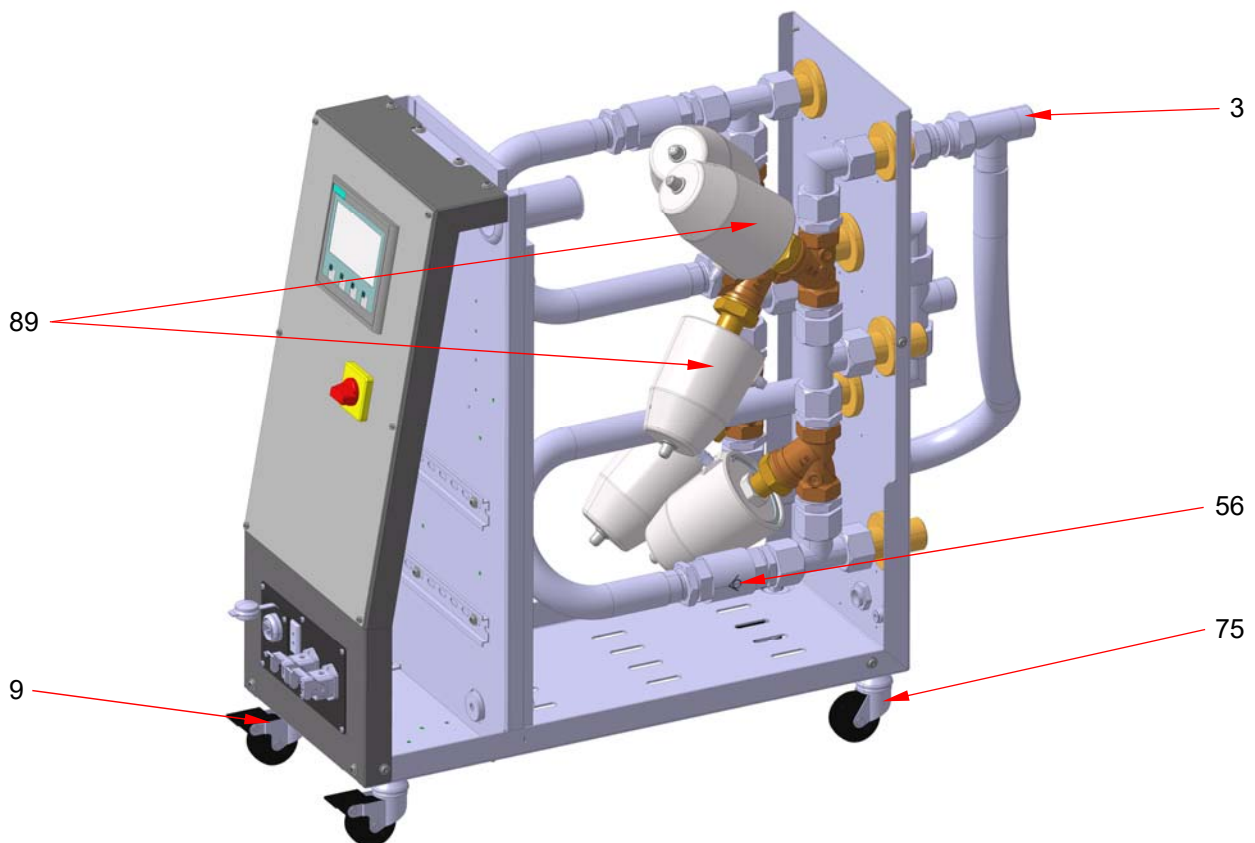
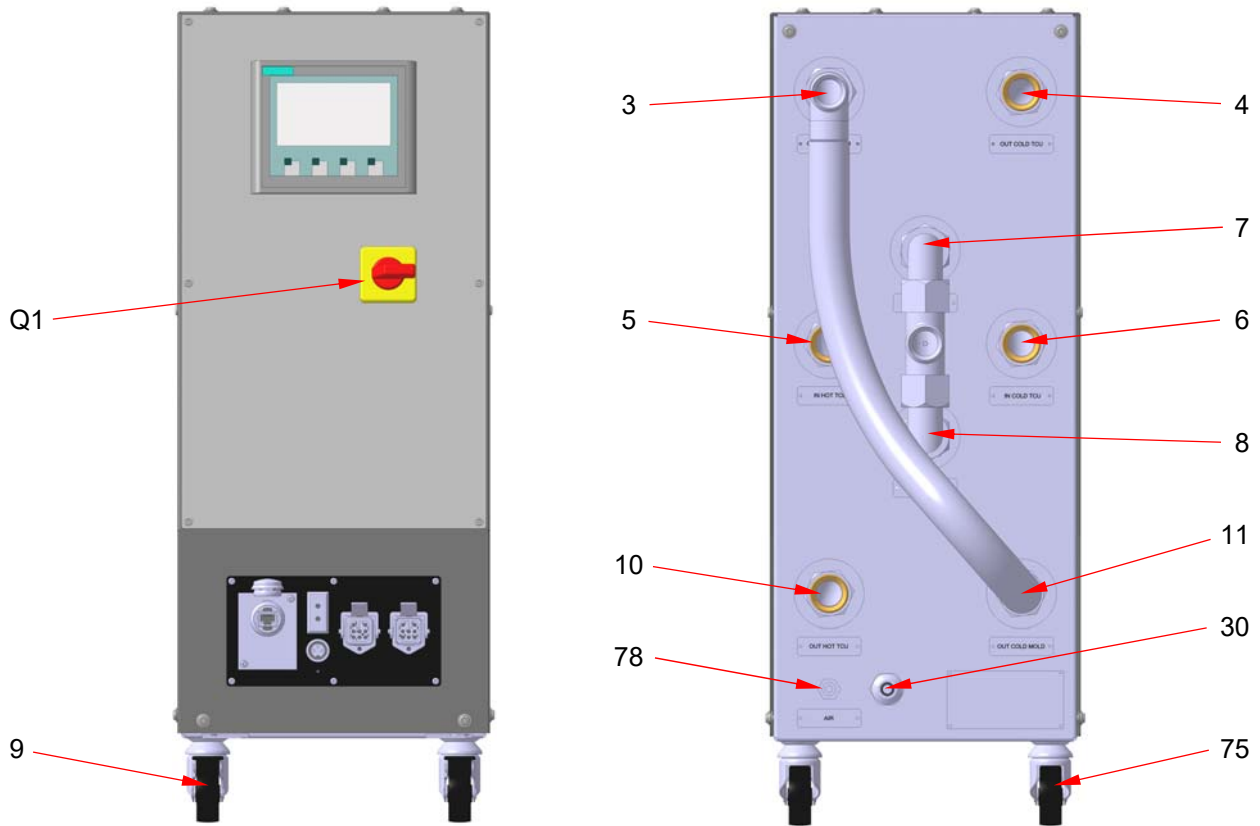
 **CAUTION**

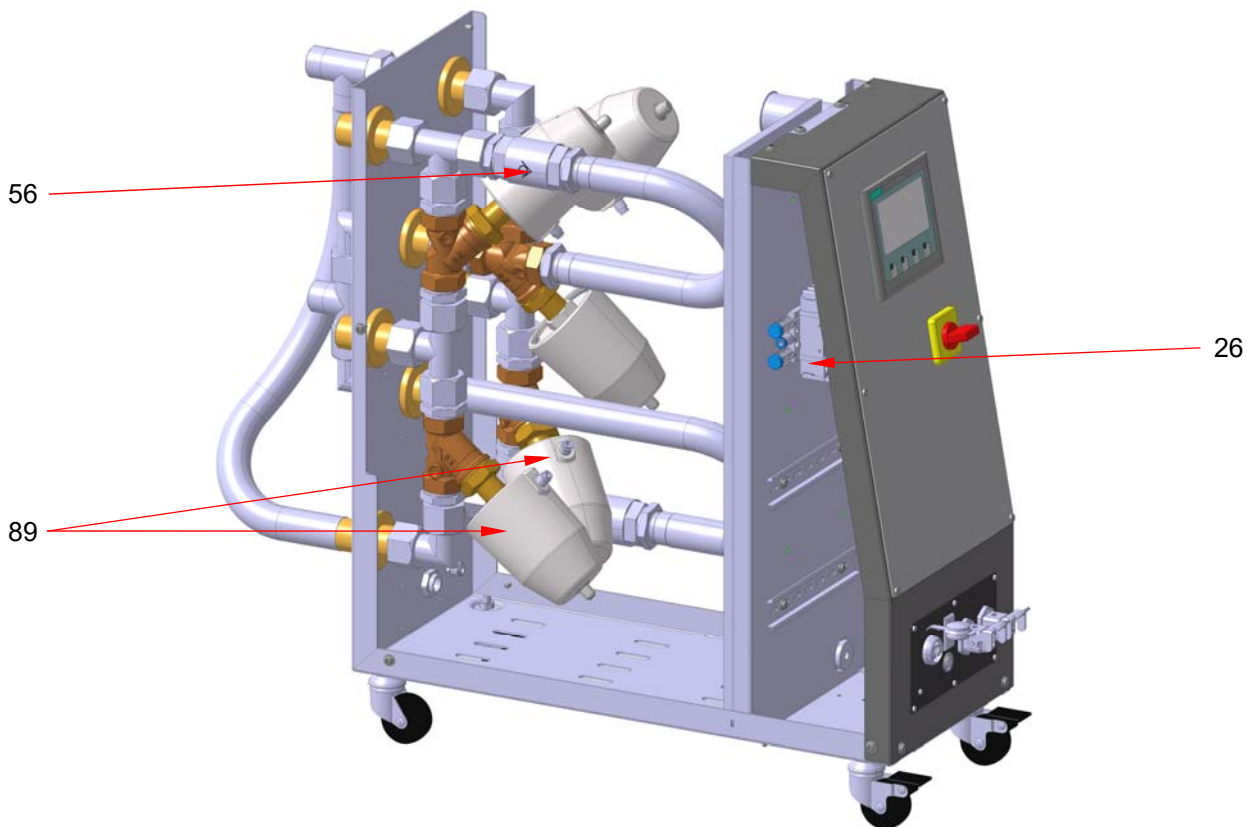
	<p>Danger due to the use of unsuitable spare parts!</p> <ul style="list-style-type: none"> • Only original Regloplas spare parts may be used! In case of damage from the use of non-original parts, the warranty will be rendered null and void!
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NOTE

	<p>See electrical wiring diagram of the temperature control unit for additional electrical components!</p>
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Components/Spare parts Vario SPS 1"






Item	Designation	Item	Designation
3	Temperature control unit IN HOT	11	Mold (Consumer) IN HOT
4	Temperature control unit IN COLD	26	Terminal box
5	Temperature control unit OUT COLD	30	Power cable
6	Temperature control unit OUT HOT	56	Check valve
7	Mold (Consumer) OUT COLD	75	Castor
8	Mold (Consumer) OUT HOT	78	Compressed air connection
9	Castor with wheel brake	89	Pressure sensitive valve (2-way)
10	Mold (Consumer) IN COLD	Q1	Main switch

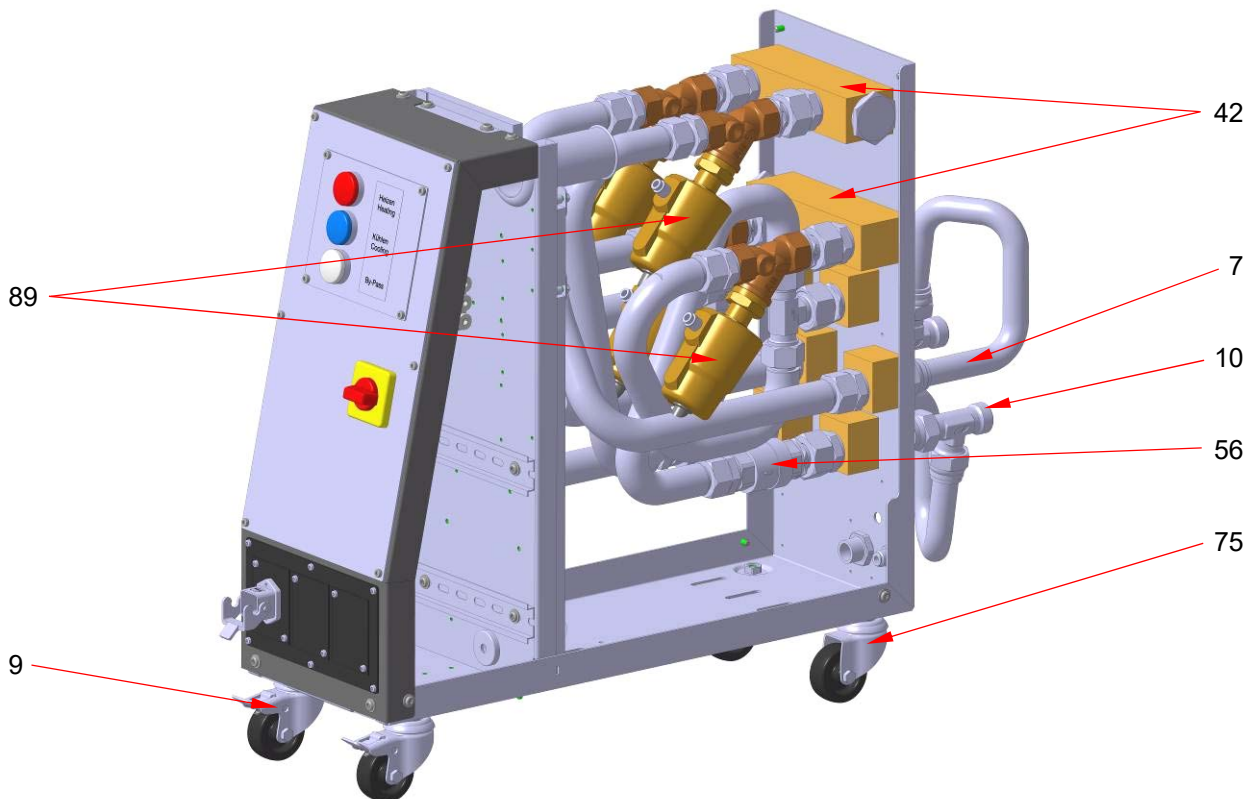
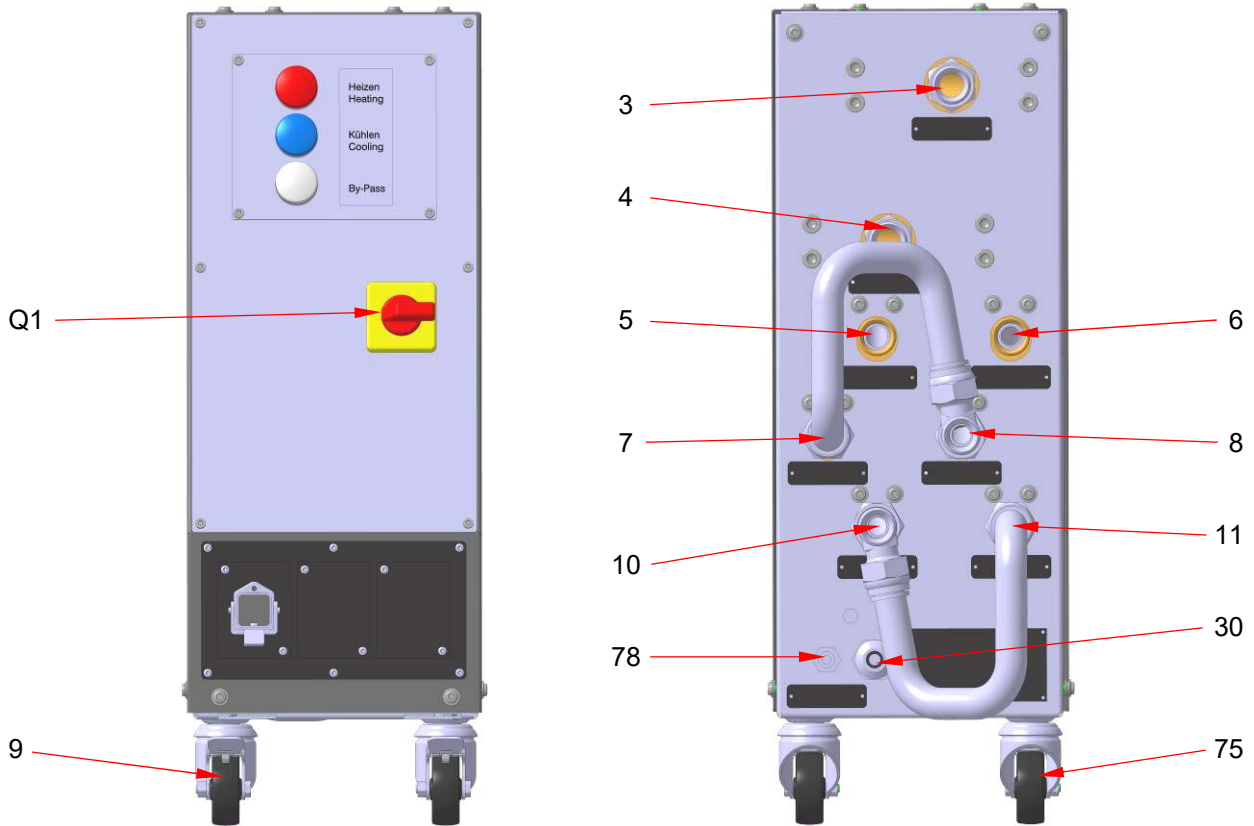
 **CAUTION**

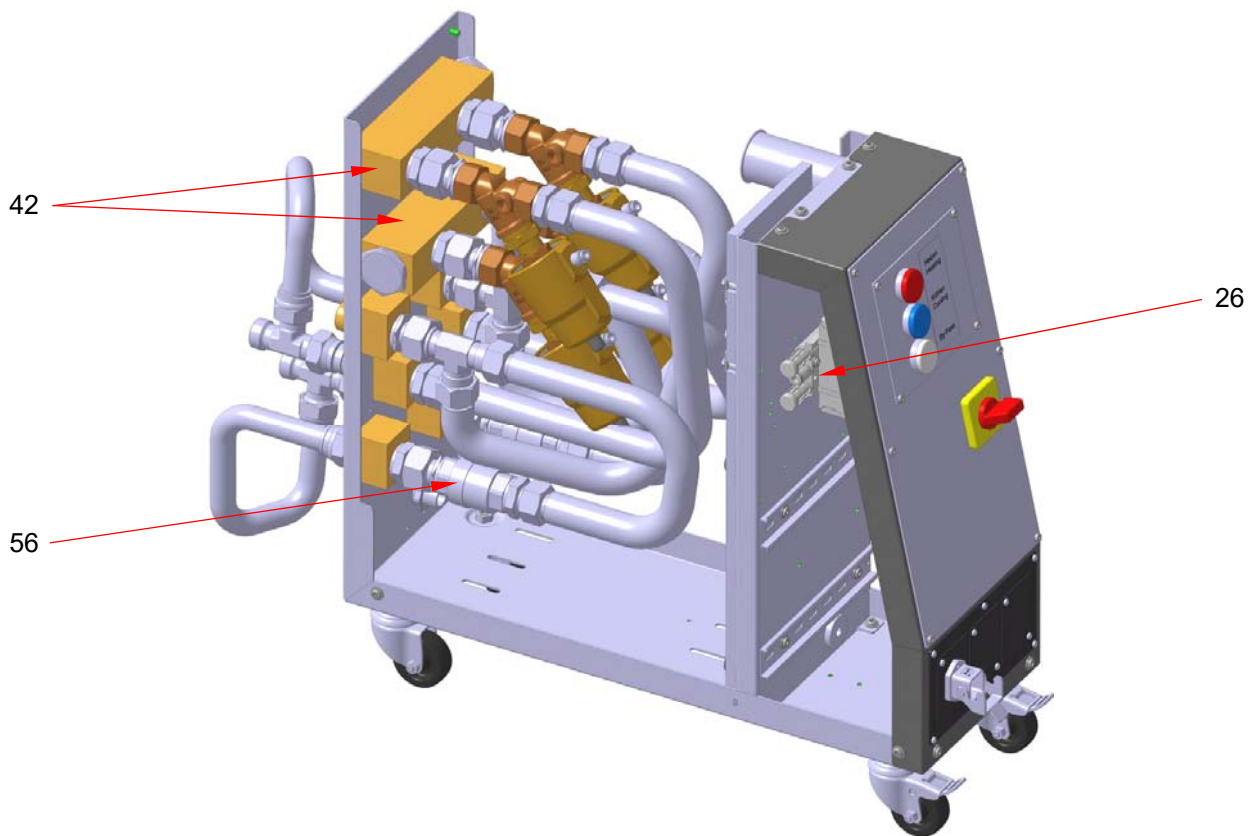
	<p>Danger due to the use of unsuitable spare parts!</p> <ul style="list-style-type: none"> • Only original Regloplas spare parts may be used! In case of damage from the use of non-original parts, the warranty will be rendered null and void!
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NOTE



	<p>See electrical wiring diagram of the temperature control unit for additional electrical components!</p>
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Components/Spare parts Vario 3/4"



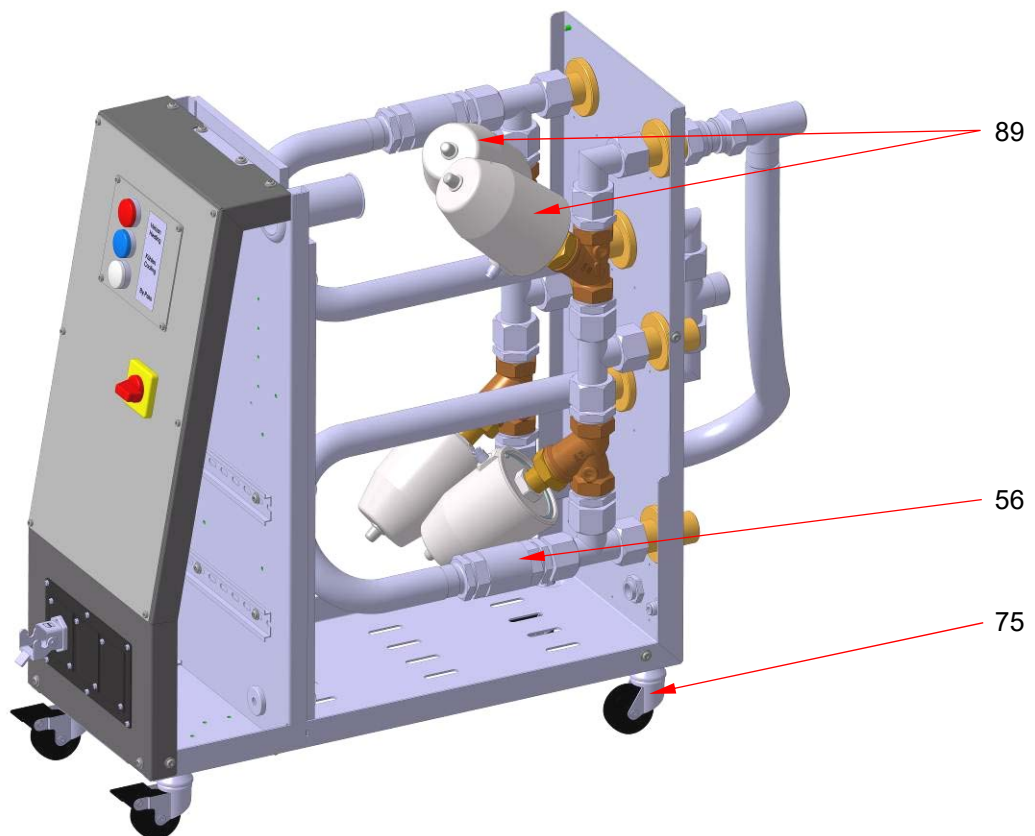
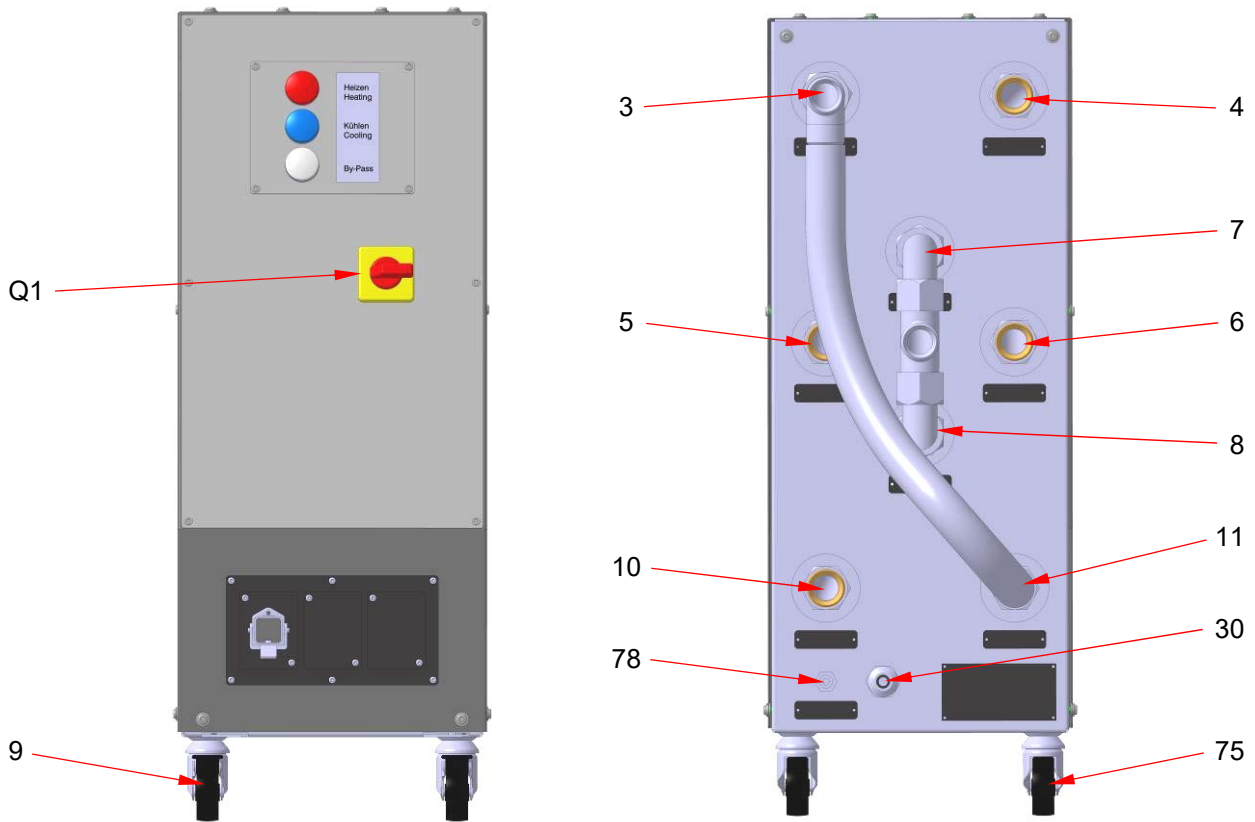


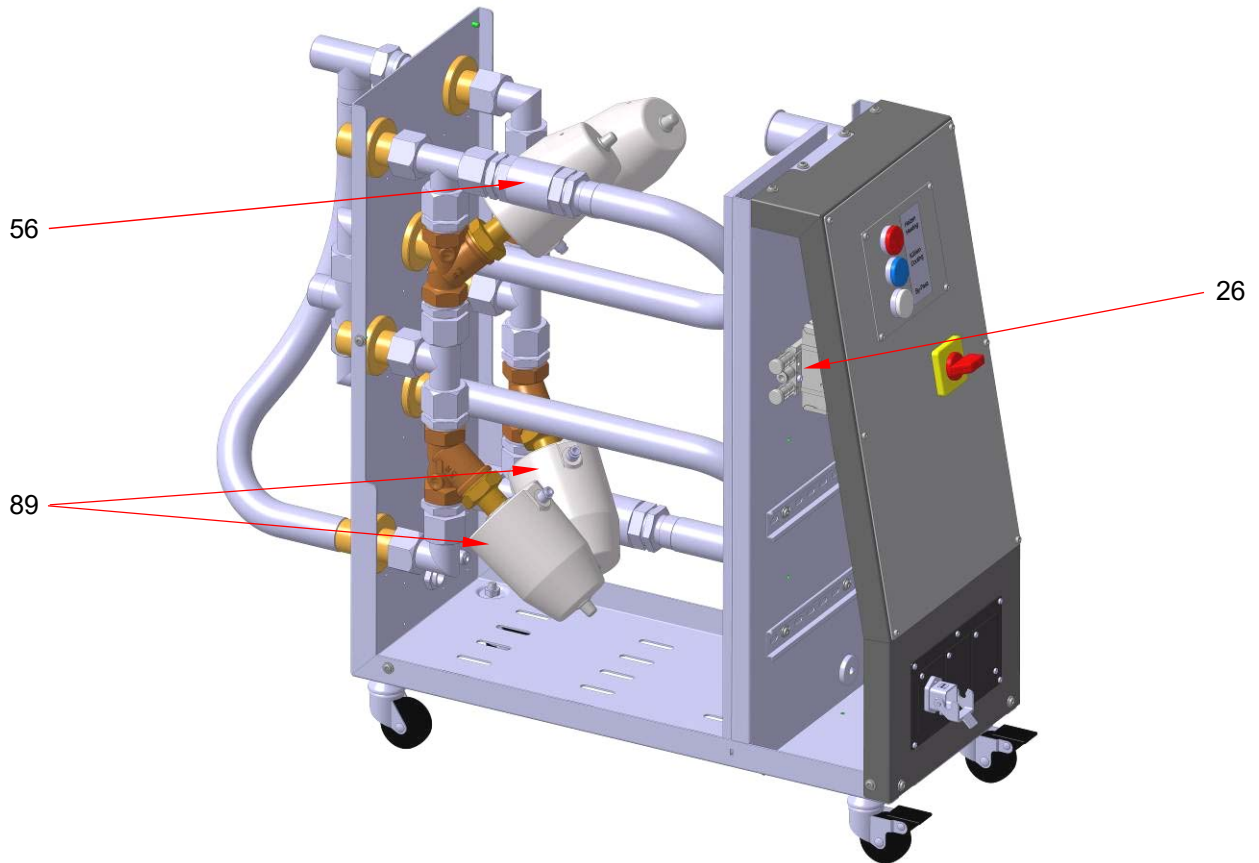
Item	Designation	Item	Designation
3	Temperature control unit IN HOT	26	Terminal box
4	Temperature control unit IN COLD	30	Power cable
5	Temperature control unit OUT COLD	42	Connection block
6	Temperature control unit OUT HOT	56	Check valve
7	Mold (Consumer) OUT COLD	75	Castor
8	Mold (Consumer) OUT HOT	78	Compressed air connection
9	Castor with wheel brake	89	Pressure sensitive valve (2-way)
10	Mold (Consumer) IN COLD	Q1	Main switch
11	Mold (Consumer) IN HOT		

 CAUTION	
	<p>Danger due to the use of unsuitable spare parts!</p> <ul style="list-style-type: none"> • Only original Regloplas spare parts may be used! In case of damage from the use of non-original parts, the warranty will be rendered null and void!

NOTE	
	<p>See electrical wiring diagram of the temperature control unit for additional electrical components!</p>


Components/Spare parts Vario 1"






Item	Designation	Item	Designation
3	Mold (Consumer) OUT HOT	11	Mold (Consumer) OUT COLD
4	Temperature control unit OUT COLD	26	Terminal box
5	Temperature control unit IN HOT	30	Power cable
6	Temperature control unit IN COLD	56	Check valve
7	Mold (Consumer) IN HOT	75	Castor
8	Mold (Consumer) IN COLD	78	Compressed air connection
9	Castor with wheel brake	89	Pressure sensitive valve (2-way)
10	Temperature control unit OUT HOT	Q1	Main switch

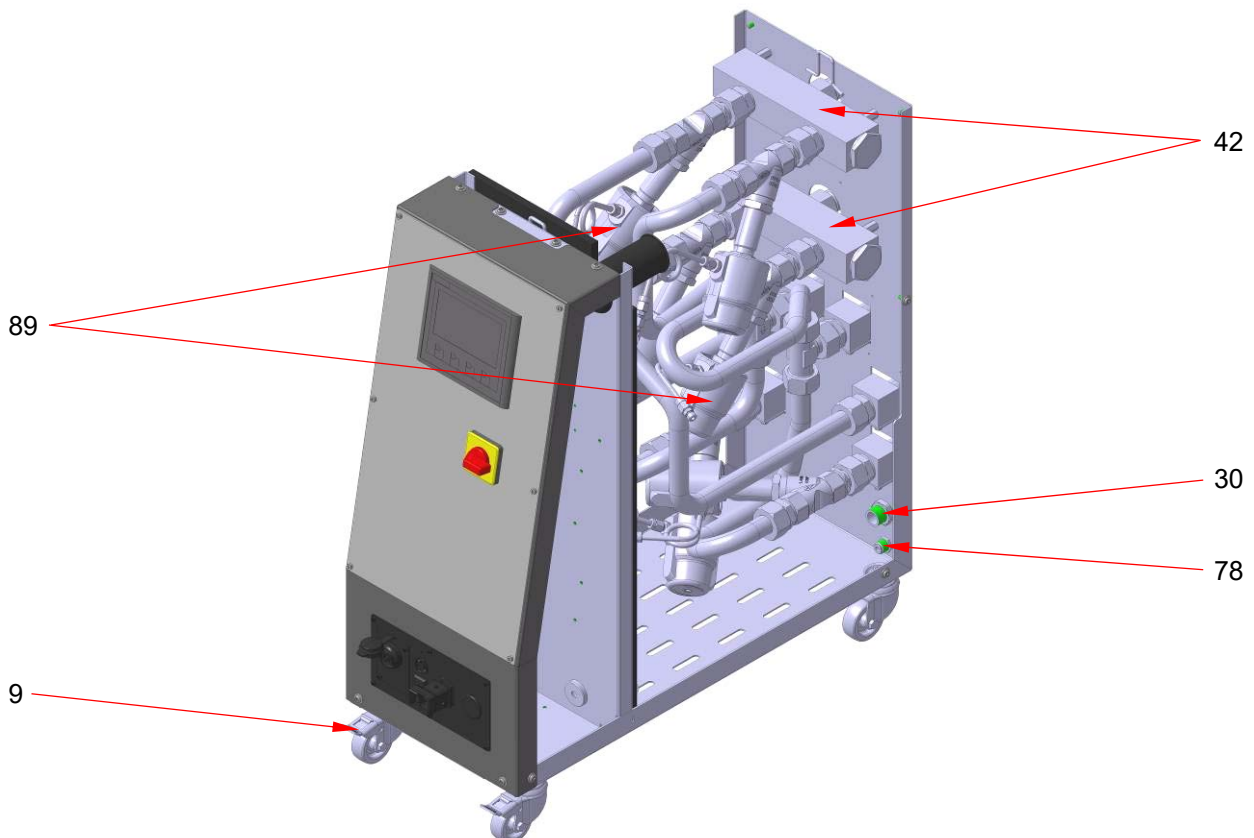
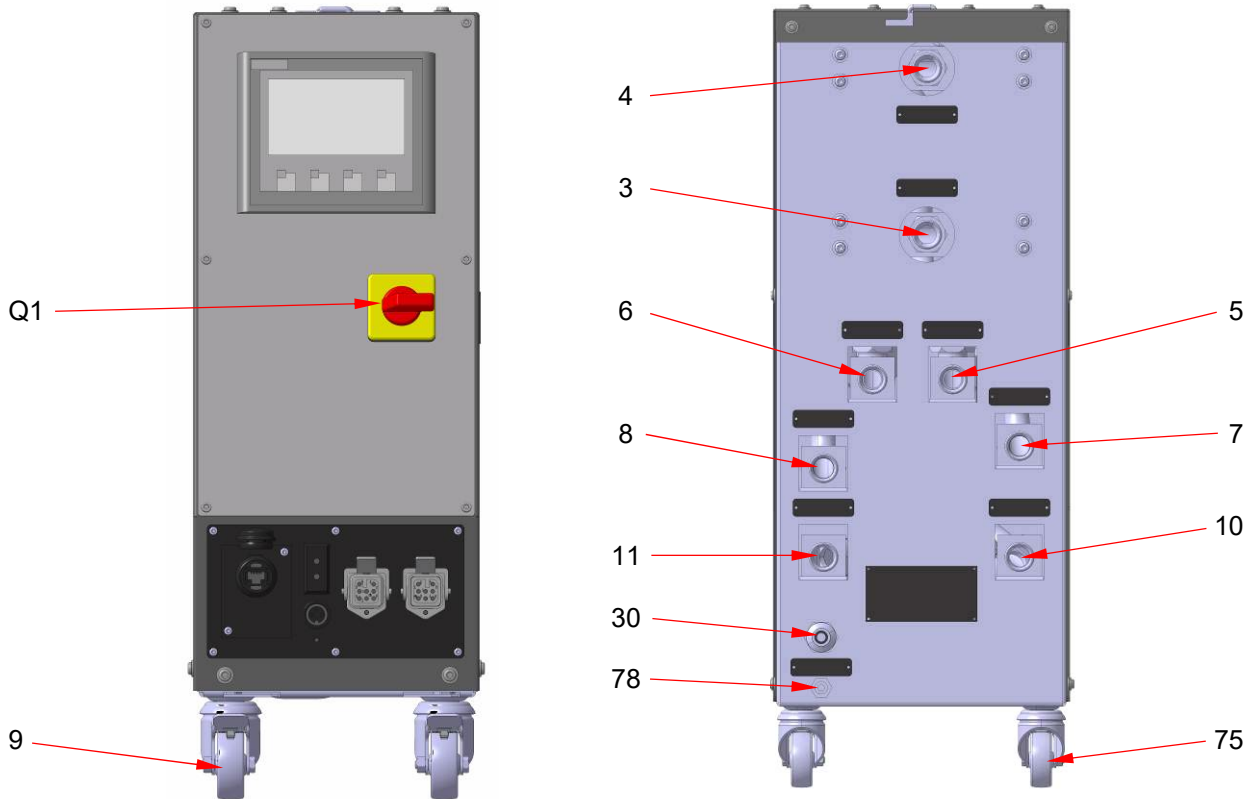
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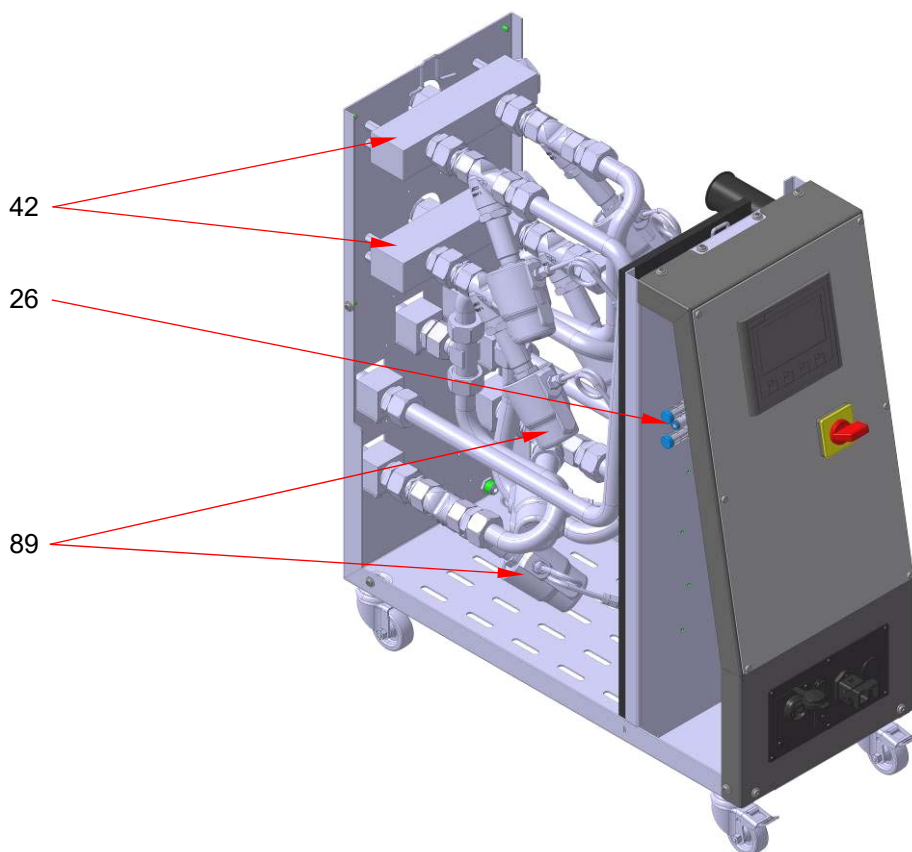
	<p>Danger due to the use of unsuitable spare parts!</p> <ul style="list-style-type: none"> • Only original Regloplas spare parts may be used! In case of damage from the use of non-original parts, the warranty will be rendered null and void!
---	---

NOTE


	<p>See electrical wiring diagram of the temperature control unit for additional electrical components!</p>
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Components/Spare parts Vario SPS 3/4" (Oil 300 °C)





Item	Designation	Item	Designation
3	Temperature control unit IN HOT	11	Mold (Consumer) IN HOT
4	Temperature control unit IN COLD	26	Terminal box
5	Temperature control unit OUT COLD	30	Power cable
6	Temperature control unit OUT HOT	42	Connection block
7	Mold (Consumer) OUT COLD	75	Castor
8	Mold (Consumer) OUT HOT	78	Compressed air connection
9	Castor with wheel brake	89	Pressure sensitive valve (2-way)
10	Mold (Consumer) IN COLD	Q1	Main switch


 **CAUTION**



Danger due to the use of unsuitable spare parts!

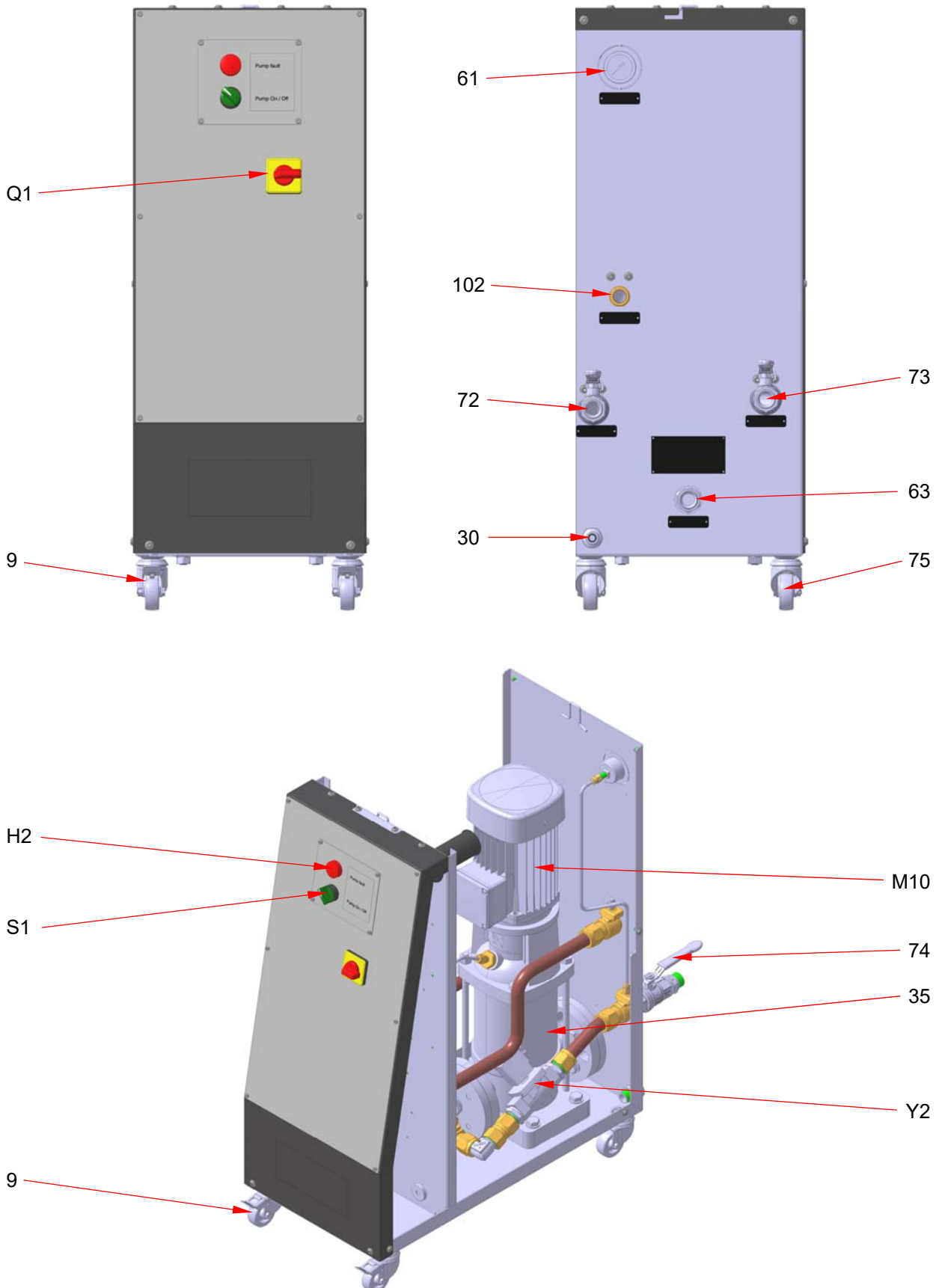
- **Only original Regloplas spare parts may be used!**
In case of damage from the use of non-original parts, the warranty will be rendered null and void!

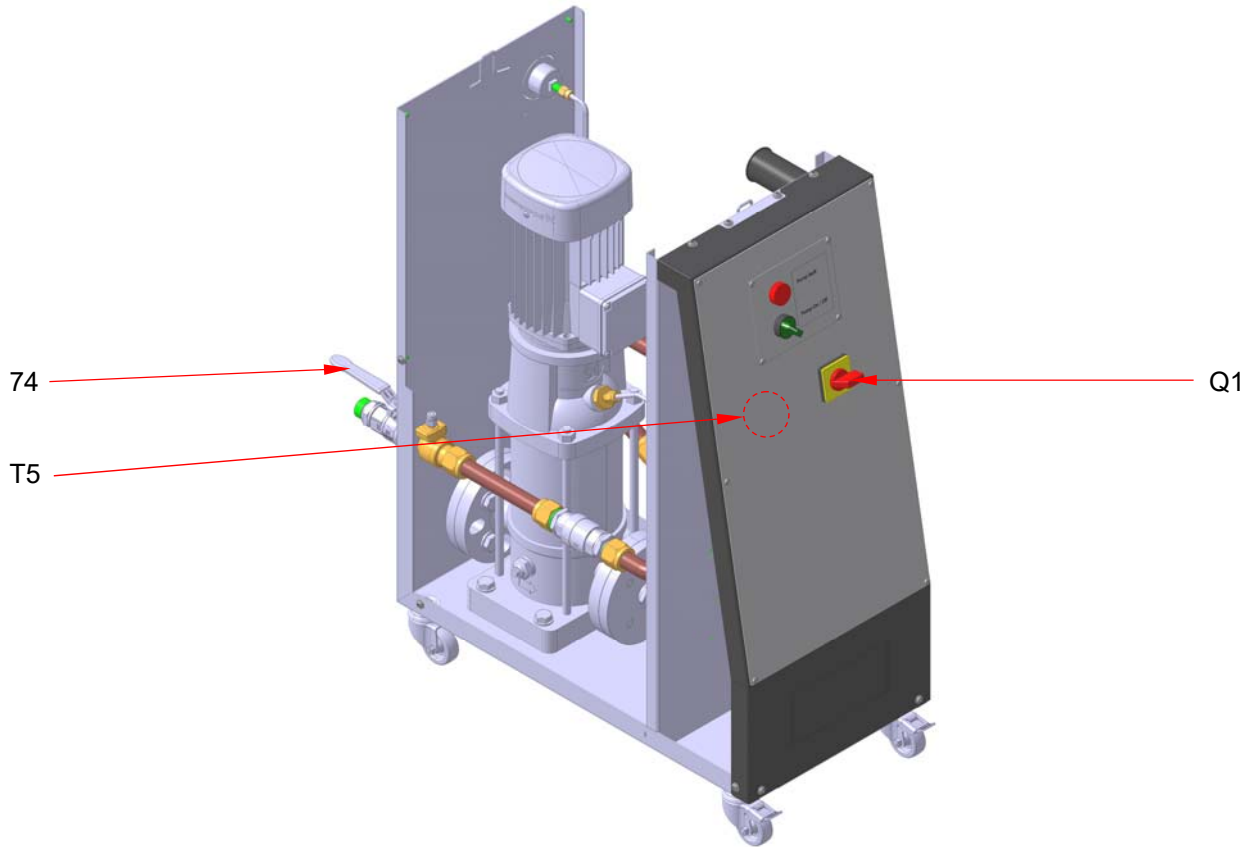
NOTE





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


Components/Spare parts coldWater



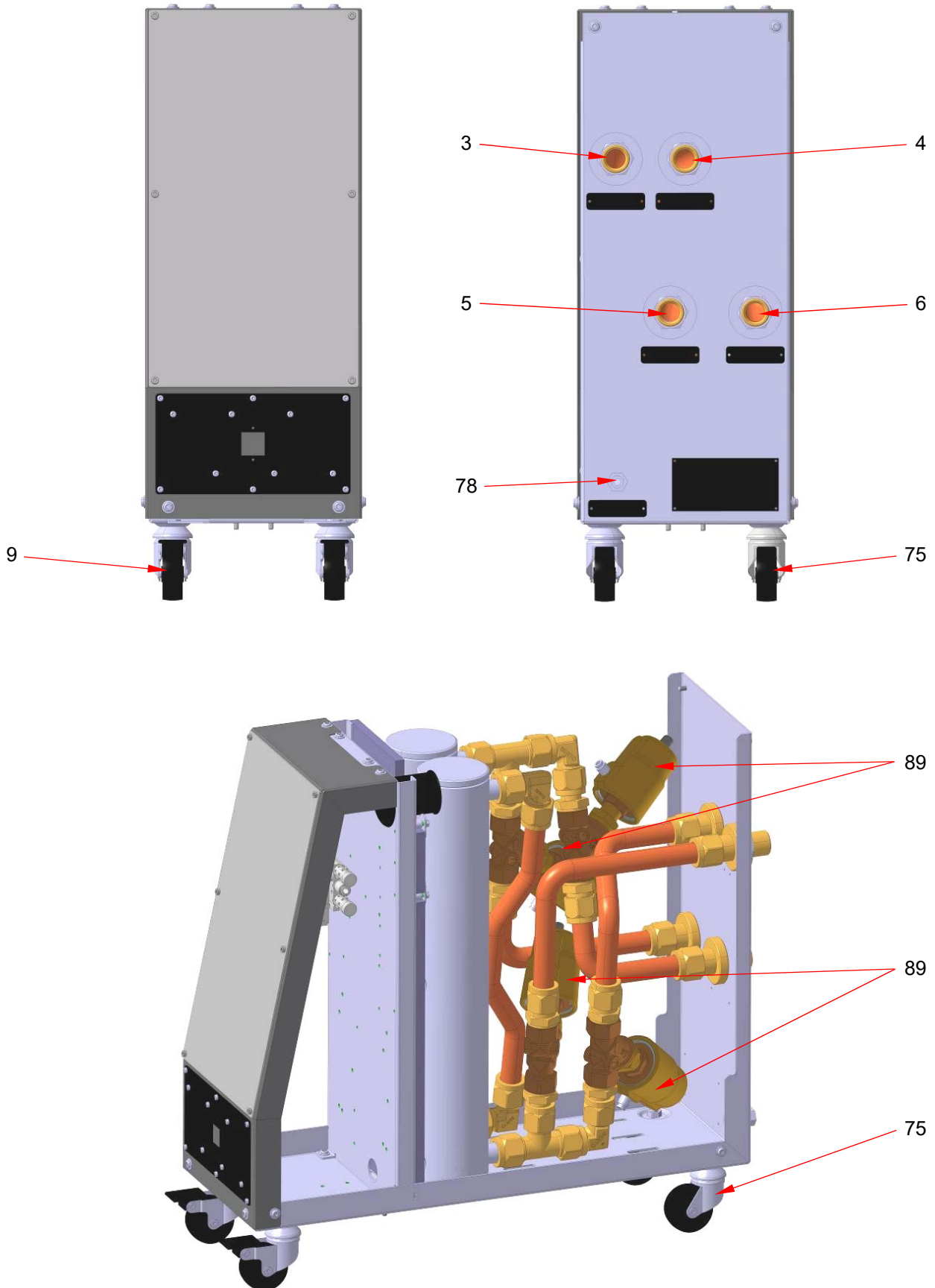


Item	Designation	Item	Designation
9	Castor with wheel lock	75	Castor
30	Power cable	102	System water OFF
61	Manometer	H2	Control lamp (pump)
63	System water ON	Q1	Main switch
72	Outlet	S1	Switch (Pump ON/OFF)
73	Inlet	T5	Control transformer
74	Hand valve	Y2	Solenoid valve (auto. water refill)

 CAUTION	
	<p>Danger due to the use of unsuitable spare parts!</p> <ul style="list-style-type: none"> • Only original Regloplas spare parts may be used! In case of damage from the use of non-original parts, the warranty will be rendered null and void!


NOTE	
	<p>See electrical wiring diagram of the temperature control unit for additional electrical components!</p>

Components/Spare parts energyBattery




Item	Designation	Item	Designation
3	Output Vario COLD	9	Castor with wheel lock
4	Input Consumer COLD	75	Castor
5	Input Consumer HOT	78	Compressed air connection
6	Output Vario HOT	89	Pressure sensitive valve (2-way)

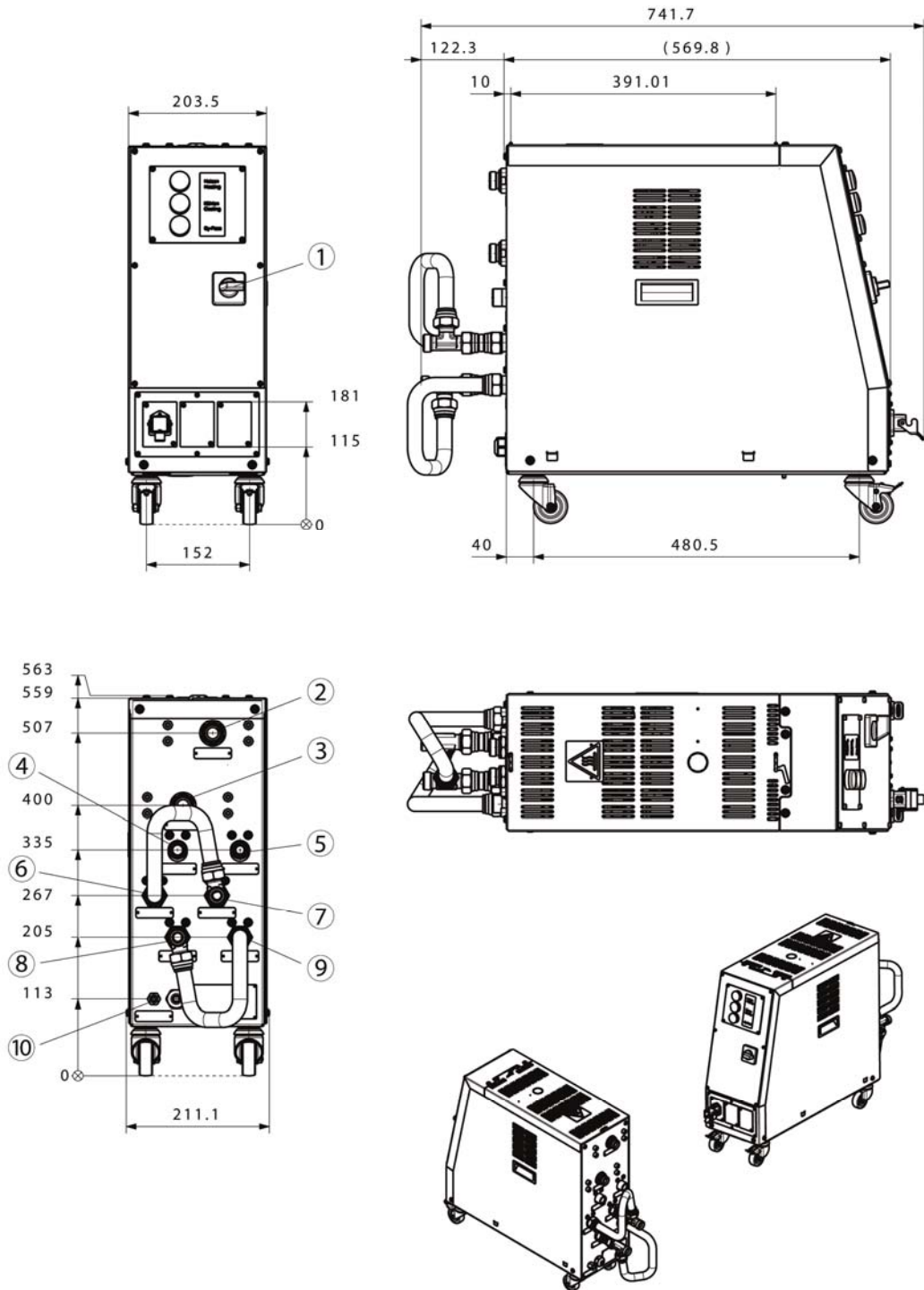
 **CAUTION**

	Danger due to the use of unsuitable spare parts!
	<ul style="list-style-type: none"> • Only original Regloplas spare parts may be used! In case of damage from the use of non-original parts, the warranty will be rendered null and void!

NOTE

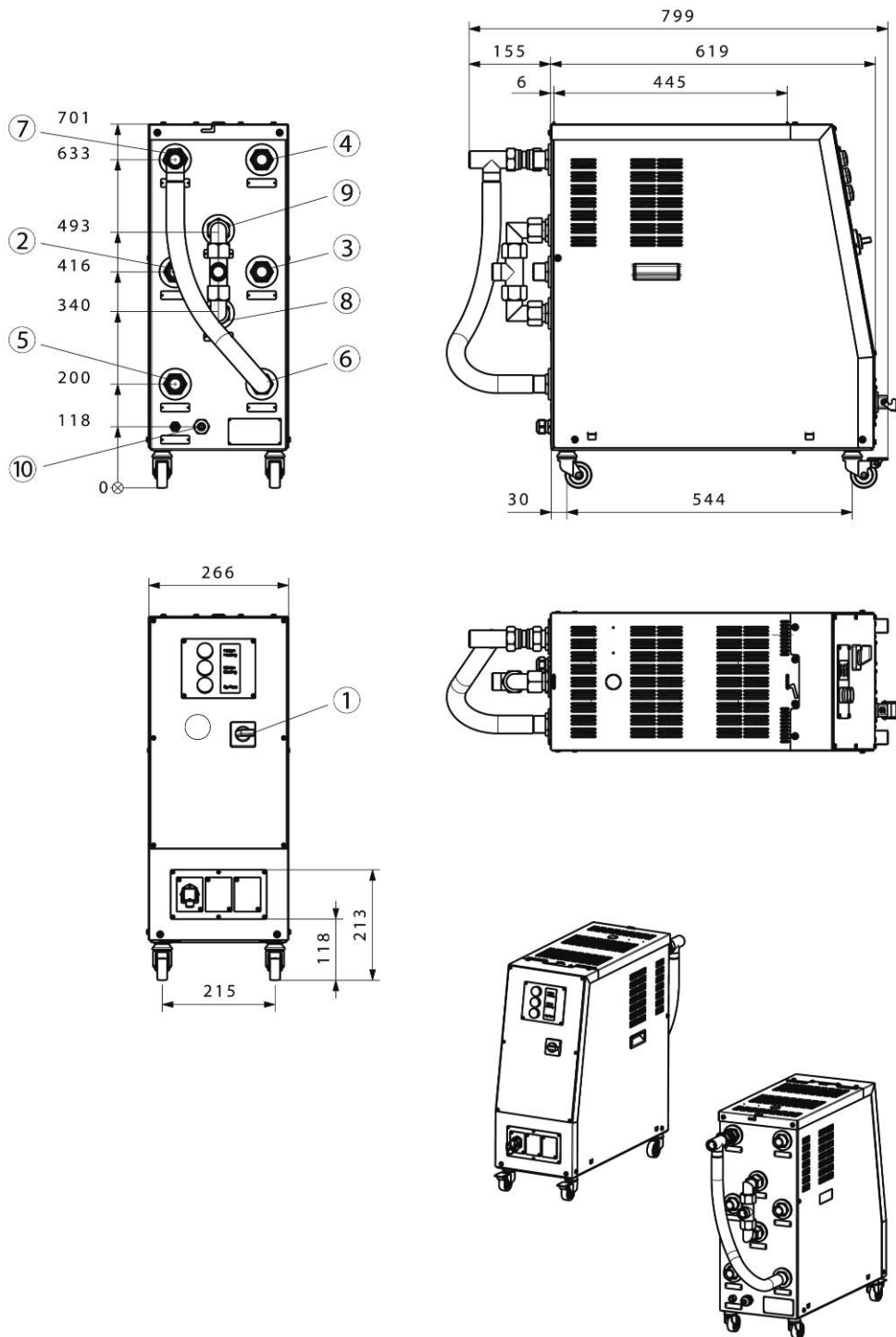
	See electrical wiring diagram of the temperature control unit for additional electrical components!

Dimension sheet Vario 3/4" / Vario SPS 3/4"



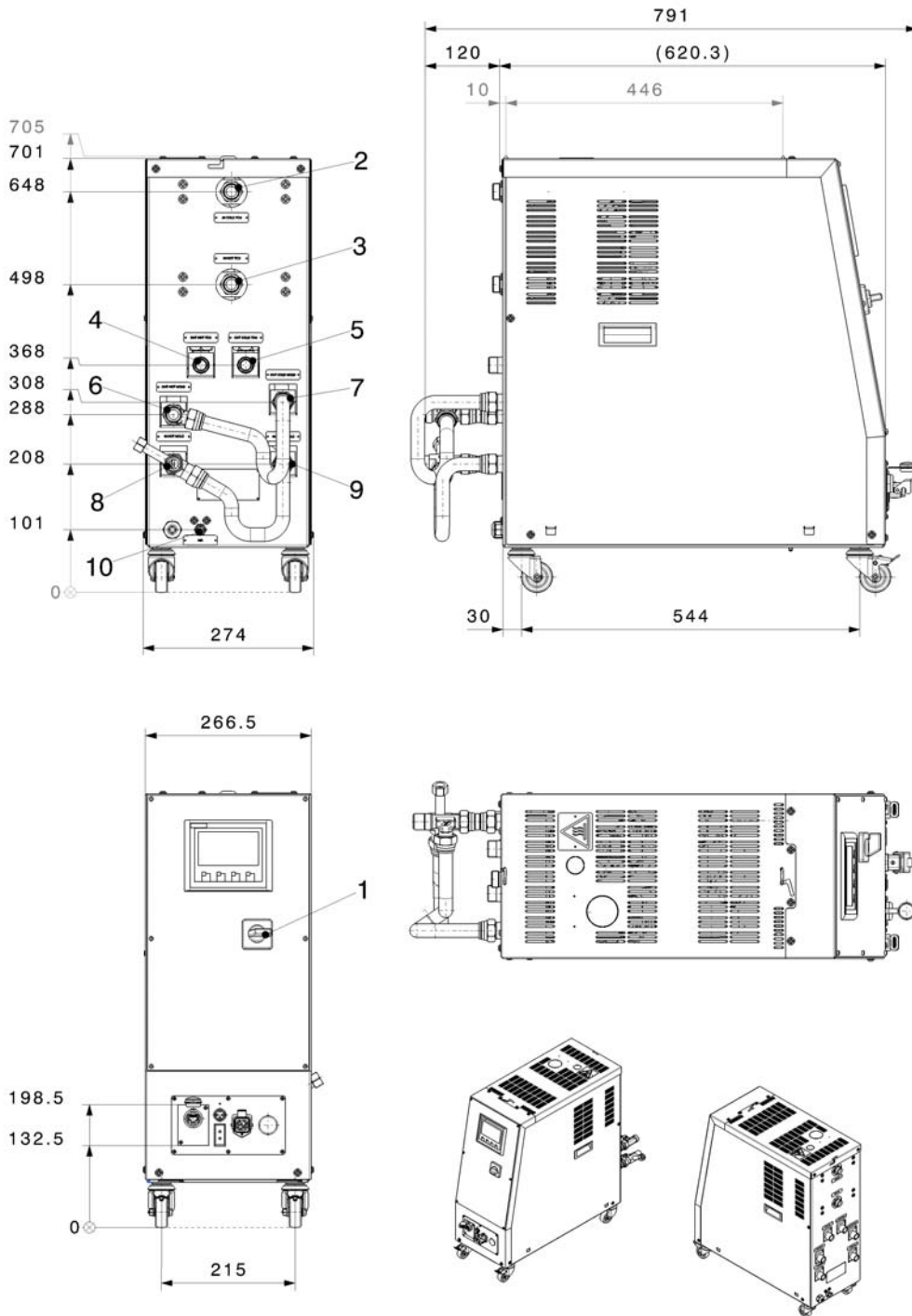
Item	Designation	Item	Designation
1	Main switch	6	Mold (Consumer) OUT COLD
2	Temperature control unit IN HOT	7	Mold (Consumer) OUT HOT
3	Temperature control unit IN COLD	8	Mold (Consumer) IN COLD
4	Temperature control unit OUT COLD	9	Mold (Consumer) IN HOT
5	Temperature control unit OUT HOT	10	Compressed air connection

Dimension sheet Vario 1" / Vario SPS 1"



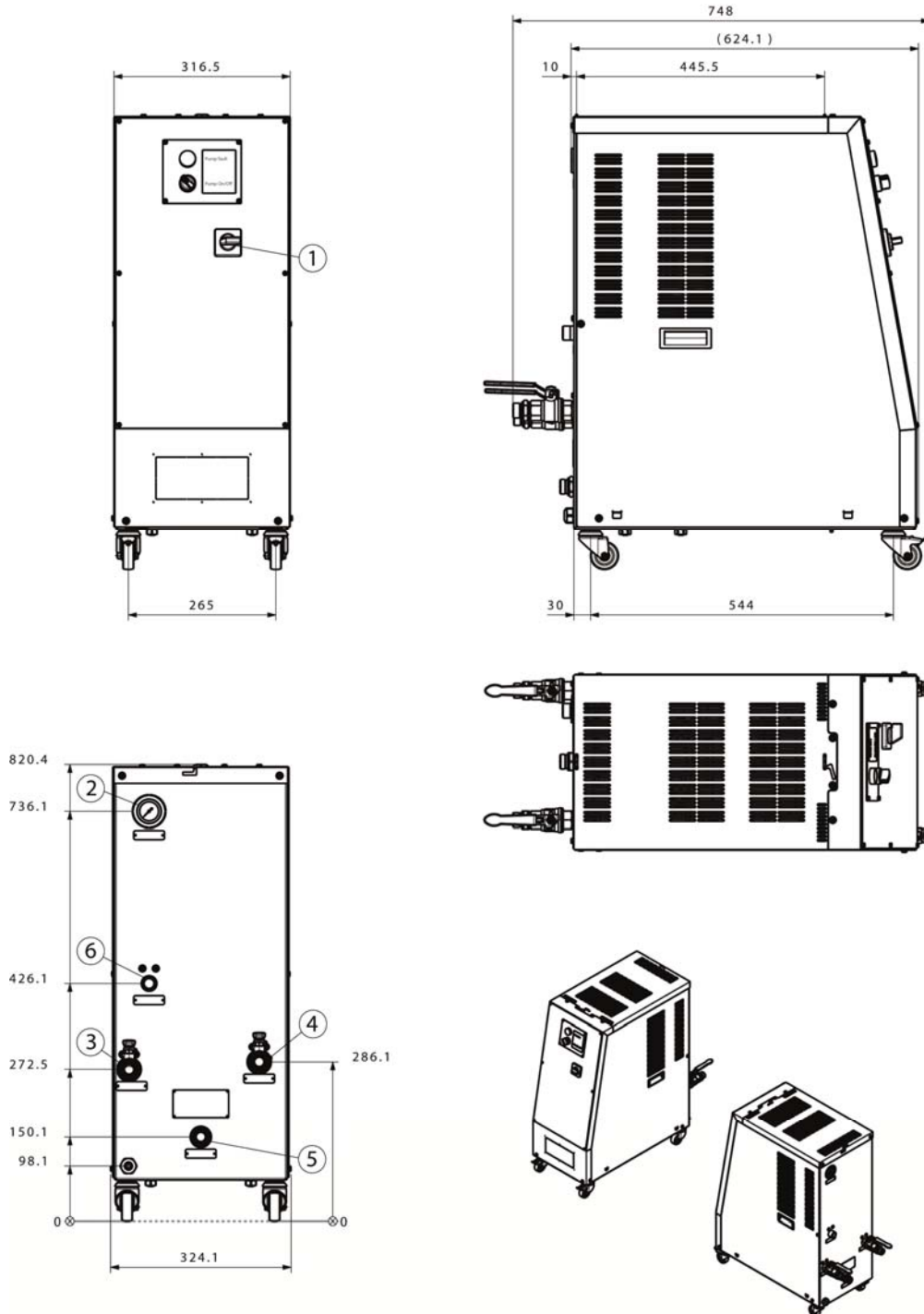
Item	Designation	Item	Designation
1	Main switch	6	Mold (Consumer) OUT COLD
2	Temperature control unit IN HOT	7	Mold (Consumer) OUT HOT
3	Temperature control unit IN COLD	8	Mold (Consumer) IN COLD
4	Temperature control unit OUT COLD	9	Mold (Consumer) IN HOT
5	Temperature control unit OUT HOT	10	Compressed air connection

Dimension sheet Vario SPS 3/4" (Oil 300 °C)



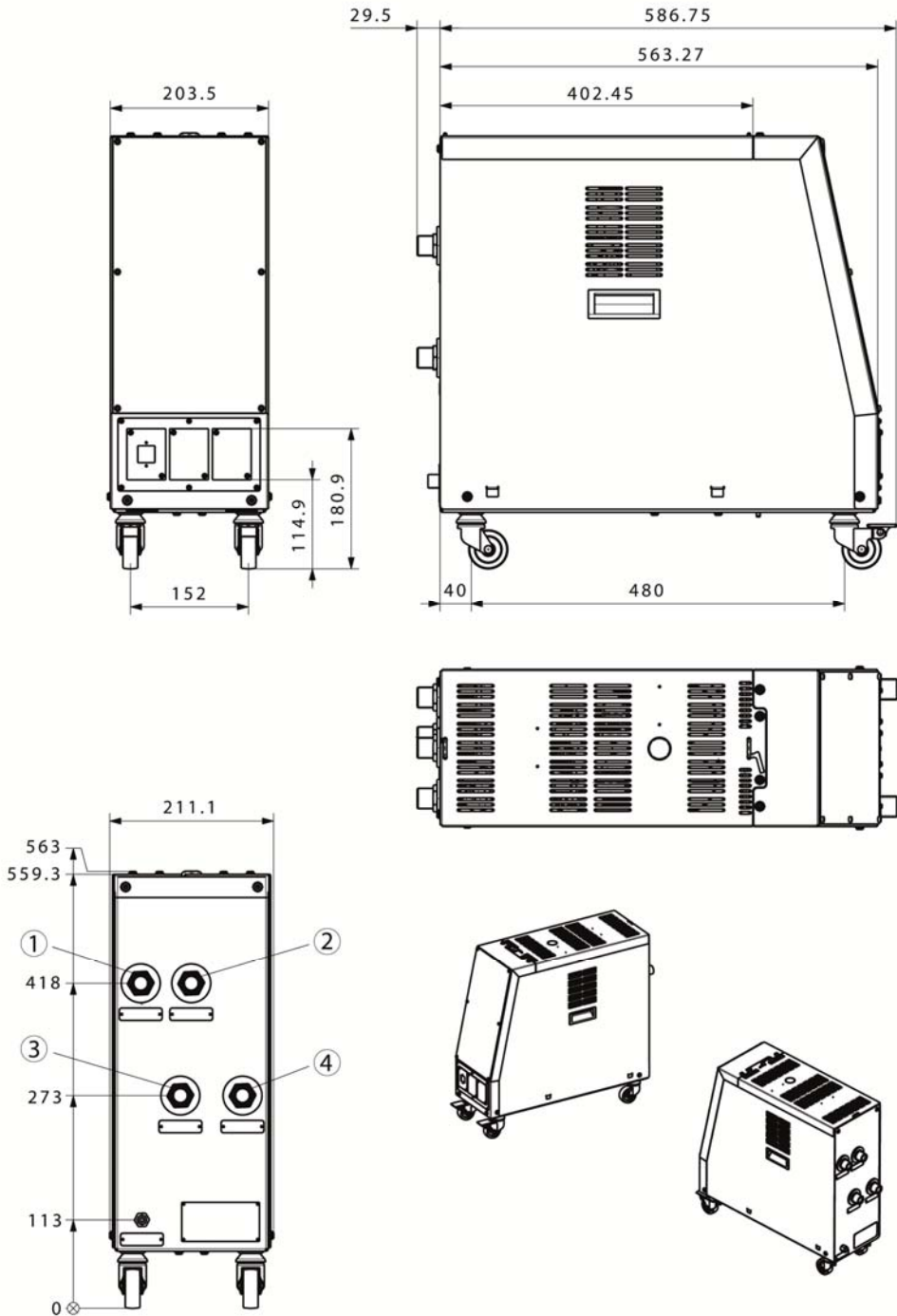
Item	Designation	Item	Designation
1	Main switch	6	Mold (Consumer) OUT HOT
2	Temperature control unit IN COLD	7	Mold (Consumer) OUT COLD
3	Temperature control unit IN HOT	8	Mold (Consumer) IN HOT
4	Temperature control unit OUT HOT	9	Mold (Consumer) IN COLD
5	Temperature control unit OUT COLD	10	Compressed air connection

Dimension sheet coldWater



Item	Designation	Item	Designation
1	Main switch	4	Inlet
2	Manometer	5	System water ON
3	Outlet	6	System water OFF

Dimension sheet energyBattery



Item	Designation	Item	Designation
1	Output Vario COLD	3	Input Consumer HOT
2	Input Consumer COLD	4	Output Vario HOT