reflex

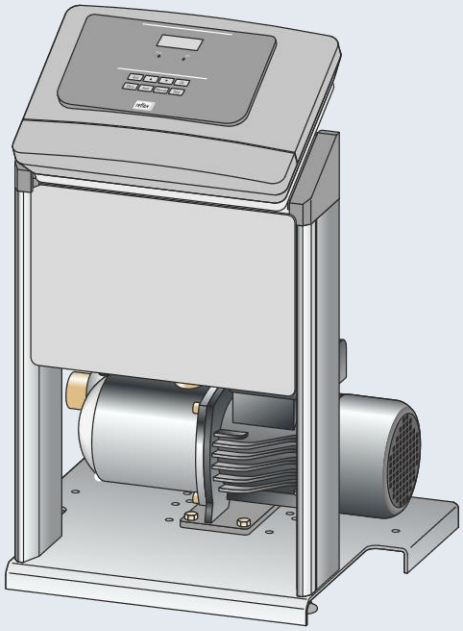
Thinking solutions.

Fillcontrol Auto

GB

Operating manual

Original operating manual



1 Notes on the operating manual

This operating manual is an important aid for ensuring the safe and reliable functioning of the device.
Reflex Winkelmann GmbH accepts no liability for any damage resulting from failure to observe the information in this operating manual. In addition to the requirements set out in this operating manual, national statutory regulations and provisions in the country of installation must also be complied with (concerning accident prevention, environment protection, safe and professional work practices, etc.).
This operating manual describes the device with basic equipment and interfaces for optional equipment with additional functions.

Notice!
Every person installing this equipment or performing any other work at the equipment is required to carefully read this operating manual prior to commencing work and to comply with its instructions. The manual is to be provided to the product operator and must be stored near the product for access at any time.

2 Liability and guarantee

The device has been built according to the state of the art and recognised safety rules. Nevertheless, its use can pose a risk to life and limb of personnel or third persons as well as cause damage to the system or other property.
It is not permitted to make any modifications at the device, such as to the hydraulic system or the circuitry.
The manufacturer shall not be liable nor shall any warranty be honoured if the cause of any claim results from one or more of the following causes:

- Improper use of the device.
- Unprofessional commissioning, operation, service, maintenance, repair or installation of the device.
- Failure to observe the safety information in this operating manual.
- Operation of the device with defective or improperly installed safety/protective equipment.
- Failure to perform maintenance and inspection work according to schedule.
- Use of unapproved spare parts or accessories.

Prerequisite for any warranty claims is the professional installation and commissioning of the device.

Note!
Arrange for Reflex Customer Service to carry out commissioning and annual maintenance, see chapter 12.1 "Reflex Customer Service" on page 16 .

3 Safety

3.1 Explanation of symbols

3.1.1 Symbols and notes used

The following symbols and signal words are used in this operating manual.

⚠ DANGER
Danger of death and/or serious damage to health
- The sign, in combination with the signal word 'Danger', indicates imminent danger; failure to observe the safety information will result in death or severe (irreversible) injuries.

⚠ WARNING
Serious damage to health
- The sign, in combination with the signal word 'Warning', indicates imminent danger; failure to observe the safety information can result in death or severe (irreversible) injuries.

⚠ CAUTION
Damage to health
- The sign, in combination with the signal word 'Caution', indicates danger; failure to observe the safety information can result in minor (reversible) injuries.

ATTENTION
Damage to property
- The sign, in combination with the signal word 'Attention', indicates a situation where damage to the product itself or objects within its vicinity can occur.

Note!
This symbol, in combination with the signal word 'Note', indicates useful tips and recommendations for efficient handling of the product.

3.2 Personnel requirements

Assembly, commissioning and maintenance as well as connection of the electrical components may only be carried out by knowledgeable and appropriately qualified electricians.

Only specialist personnel or specifically trained personnel may install and operate the equipment.
The electric connections and the wiring of the device must be executed by a specialist in accordance with all applicable national and local regulations.

3.3 Personal protective equipment

Use the prescribed personal protective equipment as required (e.g. ear protection, eye protection, safety shoes, helmet, protective clothing, protective gloves) when working on the system.
Information on personal protective equipment requirements is set out in the relevant national regulations of the respective country of operation.

3.4 Intended use

The device is a pressurisation unit for heating and cooling water systems. It is intended to maintain the water pressure and to add water within a system circuit. Operation can only take place in system circuits with static pressurisation that are sealed against corrosion using the following water types:

- Non-corrosive
- Chemically non-aggressive
- Non-toxic

The ingress of atmospheric oxygen by permeation into the entire heating and cooling water system, make-up water and similar must be reliably minimized during operation.

3.5 Inadmissible operating conditions

The device is not suitable for the following applications:

- Mobile system operation.
- Outdoor operation.
- For use with mineral oils.
- For use with flammable media.
- For use with distilled water.

Note!
It is not permitted to make any modifications to the hydraulic system or the circuitry.

3.6 Residual risks

This device has been manufactured to the current state of the art. However, some residual risk cannot be excluded.

⚠ CAUTION
Risk of burns on hot surfaces
Hot surfaces in heating systems can cause burns to the skin.
- Wear protective gloves.
- Please place appropriate warning signs in the vicinity of the device.

CAUTION

Risk of injury due to pressurised liquid

If installation, removal or maintenance work is not carried out correctly, there is a risk of burns and other injuries at the connection points, if pressurised hot water or hot steam suddenly escapes.

- Ensure proper installation, removal or maintenance work.
- Ensure that the system is de-pressurised before performing installation, removal or maintenance work at the connection points.

WARNING

Risk of injury due to heavy weight

The devices are heavy. Consequently, there is a risk of physical injury and accidents.

- Use suitable lifting equipment for transportation and installation.

4 Description of the device

4.1 Description

The device is a make-up unit that is intended to maintain the water pressure and provide mains make-up water in a system circuit.

- The pump draws water from a mains water supply via a system separator tank and pumps it into the system circuit.
- The controller regulates and monitors the make-up process.

The device is designed for these system circuits:

- Heating water systems
- Cooling water systems
- Solar circuits

The device is used in combination with a user-supplied open system separator tank.

Note!

An application without system separator tank is possible.

– For customised design and adjustment, see chapter 12.1 "Reflex Customer Service" on page 16 .

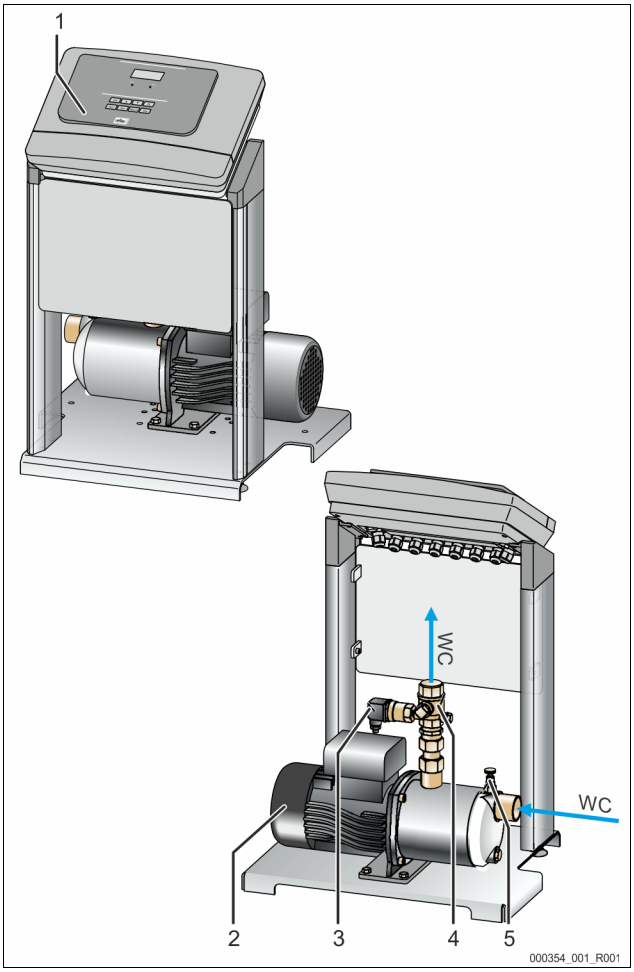
Note!

In a solar circuit, you must have installed a system separator tank to ensure a water/glycol mixture for the circuit.

Note!

It is possible to use the device for the initial filling with mains water into the system circuit.

4.2 Overview



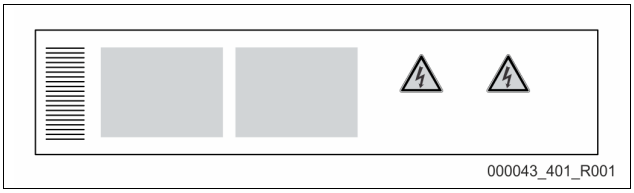
1	Control Basic controller
2	"PIS" pressure transducer
3	Shut-off valve to "BV" system
4	"AV" venting screw
5	Pump

WC	Connections for the mains water make-up lines • Intake line to pump • Pressure line to the system circuit

4.3 Identification

4.3.1 Nameplate

The nameplate provides information about the manufacturer, the year of manufacture, the manufacturing number and the technical data.



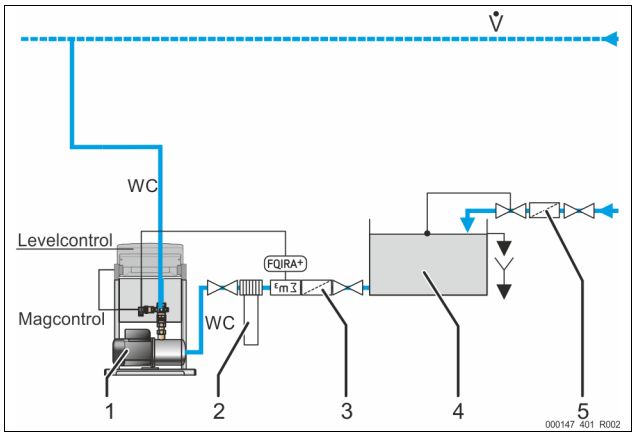
Information on the type plate	Meaning
Type	Device name
Serial No.	Serial number
min. / max. allowable pressure P	Minimum/maximum permissible pressure
max. continuous operating temperature	Maximum temperature for continuous operation
min. / max. allowable temperature / flow temperature TS	Minimum / maximum permissible temperature / TS flow temperature
Year built	Year of manufacture
min. operating pressure set up on shop floor	Factory set minimum operating pressure

Information on the type plate	Meaning
at site	Set minimum operating pressure
max. pressure saftey valve factory - aline	Factory set actuating pressure of the safety valve
at site	Set actuating pressure of the safety valve

4.3.2 Type code

No.		Type code (example)
1	Device designation	Fillcontrol Auto A 5,5
2	Auto	
3	Maximum working pressure (in bar)	1 2 3

4.4 Function



1	Pump "PU"
2	"Fillsoft" softening system
3	"FQIRA+" contact water meter
4	"BT" system separator vessel
5	"ST" dirt trap
WC	Make-up lines • From the system separator tank to the pump (intake line) • From the pump to the system circuit (pressure line)
Levelcontrol	External signal line for the Levelcontrol make-up variant
Magcontrol	Internal signal line for the Magcontrol make-up variant • From the "PIS" pressure transducer to the controller

The device controller uses the pump to regulate the make-up with mains water for the system circuit.
The controller monitors the following parameters:
- Make-up time
- Make-up cycles
- Make-up quantity, if an optional contact water meter is installed

The controller will detect small leaks in the system. When a leak is detected, the controller interrupts the make-up with as soon as the make-up time or the make-up cycles are exceeded. An integrated insufficient water protection sensor deactivates the pump to prevent it from running dry.

You can set two make-up variants in the device, "Magcontrol" or "Levelcontrol". These variants depend on the system circuit.
- Adding water to system circuits with a diaphragm expansion vessel (Magcontrol).
  The pressure transducer sends a signal to the controller if the pressure drops below the minimum working pressure of the system circuit. The controller activates the pump. mains water is added to the system circuit from the system separator vessel. For calculating the filling pressure into the system circuit, see chapter 7.2 "Determining the P_0 minimum operating pressure for the controller" on page 9 .
- Adding water to system circuits with a pressurisation unit (Levelcontrol).
  A pressurisation unit monitors the filling level in the expansion vessel. When the filling level falls below the minimum level, the pressurisation unit sends a signal to the device controller. The controller activates the pump. mains water is added to the system circuit from the system separator vessel.

The make-up variant is set in the Customer menu, see chapter 9.2.1 "Customer menu" on page 13 .

The controller may monitor additional function, if you combine various accessories.
The following components are available as optional accessories:
- "Reflex Fillsoft" water softening system
- "FQIRA+" contact water meter

Note!
For optional accessories, see chapter 4.6 "Optional equipment and accessories" on page 5 .

4.5 Scope of delivery

The scope of delivery is described in the shipping document and the content is shown on the packaging.
Proceed as follows:
1. Immediately after receipt of the goods, please check the shipment for completeness and damage.
2. Please notify us immediately of any transport damage.

Basic make-up equipment:
- The pre-wired device.
- Operating manual.

4.6 Optional equipment and accessories

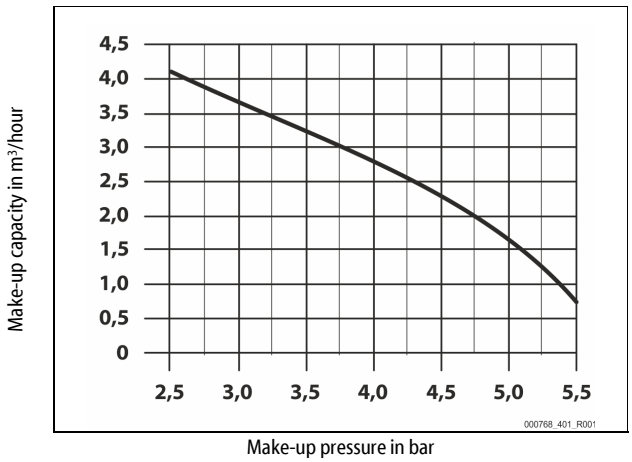
The following optional equipment and accessories are available for this device:
- "FQIRA+" contact water meter.
- Expansions for Reflex Basic controllers.
  - Bus modules
    - Profibus DP
    - Ethernet

Note!
Separate operating instructions are supplied with accessories.

5 Technical data

Permissible ambient temperature	0 – 35 °C
Degree of protection	IP 54
Noise level	55 dB
Electric output	750 W
Power supply	230 V / 50 Hz
Fusing	4 A
Number of RS-485 interfaces	2
Weight	18.6 kg
Height	690 mm
Width	470 mm
Depth	440 mm
Inlet connection	G 1 ¼"
Outlet (return) connection	G 1"
Delivery rate	4.2 m³/h
Max. supply pressure	10 bar
Max. working pressure	5.5 bar
Permissible gauge operating pressure	10 bar
Permissible operating temperature	70 °C

Performance chart



6 Installation

DANGER

Risk of serious injury or death due to electric shock.

If live parts are touched, there is risk of life-threatening injuries.

- Ensure that the system is voltage-free before installing the device.
- Ensure that the system is secured and cannot be reactivated by other persons.
- Ensure that installation work for the electric connection of the device is carried out by an electrician, and in compliance with electrical engineering regulations.

CAUTION

Risk of injury due to pressurised liquid

If installation, removal or maintenance work is not carried out correctly, there is a risk of burns and other injuries at the connection points, if pressurised hot water or hot steam suddenly escapes.

- Ensure proper installation, removal or maintenance work.
- Ensure that the system is de-pressurised before performing installation, removal or maintenance work at the connection points.

CAUTION

Risk of burns on hot surfaces

Hot surfaces in heating systems can cause burns to the skin.

- Wear protective gloves.
- Please place appropriate warning signs in the vicinity of the device.

CAUTION

Risk of injury due to falls or bumps

Bruising from falls or bumps on system components during installation.

- Wear personal protective equipment (helmet, protective clothing, gloves, safety boots).

Note!

Confirm that installation and start-up have been carried out correctly using the installation and commissioning certificate. This action is a prerequisite for the making of warranty claims.

– Have the Reflex Customer Service carry out commissioning and the annual maintenance.

6.1 Installation conditions

6.1.1 Incoming inspection

Prior to shipping, this device was carefully inspected and packed. Damages during transport cannot be excluded.

Proceed as follows:

1. Upon receipt of the goods, check the shipment for
   - completeness and
   - possible transport damage.
2. Document any damage.
3. Contact the forwarding agent to register your complaint.

6.2 Preparatory work

Preparing the device installation:

- Frost-free, well-ventilated room.
  – Room temperature range: 0 °C to 35 °C.
- Filling connection.
  – If necessary, provide a DN 15 filling connection according to DIN 1988 T 4.
- Electric connection: 230 V~, 50 Hz, 16 A with upstream ELCB: Tripping current 0.03 A.

6.3 Execution

ATTENTION

Damage due to improper installation

Additional device stresses may arise due to the connection of pipes or system equipment.

- Ensure that pipes are connected from the device to the system without them being stressed or strained.
- If necessary, provide support structures for the pipes or equipment.

Note!

Starting up of the pump causes vibration in the device. This transfers loud noises into the system pipes.

– Connect the pipes to the device using flexible connections.

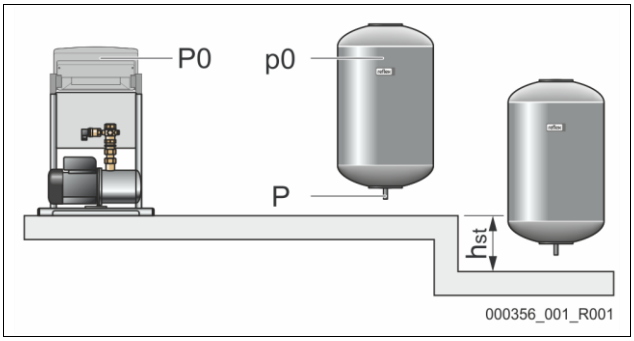
In systems with a diaphragm expansion tank, the device must be installed in the vicinity of the tank. To ensure that the required filling pressure for water make-up is recorded by the pressure transducer in the device. The filling pressure depends on the minimum operating pressure of the facility system. For calculating the minimum operating pressure, see chapter 7.2 "Determining the P_0 minimum operating pressure for the controller" on page 9 .

Proceed as follows for the installation:

1. Position the device.
2. Create the water-side connections of the device to the system.
   – Use connections with the same dimensions at the device for all lines.
3. If required, create the interfaces according to the terminal plan.

6.3.1 Floor mounting

The device is installed on the floor. Select the attachment means according to the floor properties.



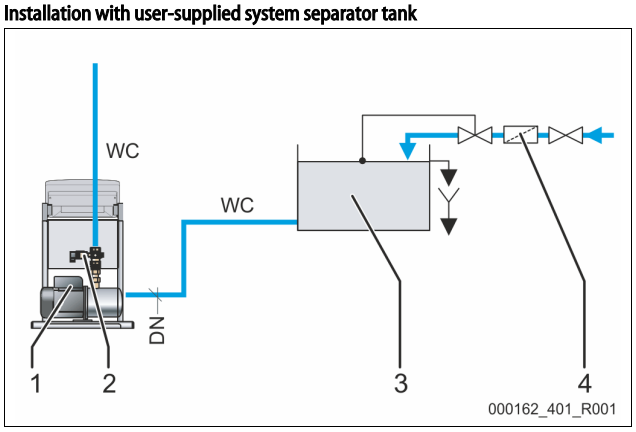
Comply with the following instructions:

- The device is installed sufficiently close to the diaphragm expansion vessel. You ensure so that the "PIS" pressure sensor is able to measure the filling pressure.
- That it is possible to open and close the valves.
- Ensure sufficient space for installing the connection lines.

Note!

The "h_{st}" static height is required to determine the minimum operating pressure of the system circuit.

Installation with user-supplied system separator tank



1	Pump "PU"	3	"BT" system separator vessel
2	"PIS" pressure transducer	4	"ST" dirt trap

During installation, observe the following points:

- Ambient temperatures up to 35 °C
- Pipe length (see table)
- "WC" make-up connection at must be least 100 mm above the "PU" pump intake connection.
- Minimum diameter of the intake line and the pressure line (see table).
- Adherence to EN 1717
- Recommended nominal volume of the system separator tank of ≤ 200 l
- Overflow with sufficient dimensions to match the maximum possible water supply is installed.
- A shut-off valve is installed in the supply to the system separator tank.

Nominal diameters of the intake and pressure lines depending on the required make-up pressure

Make-up pressure	> 3.7 bar	≤ 3.7 bar
Pressure line ≤ 10 m	DN 32	DN 40
Pressure line ≤ 2 m	DN 32	DN 40

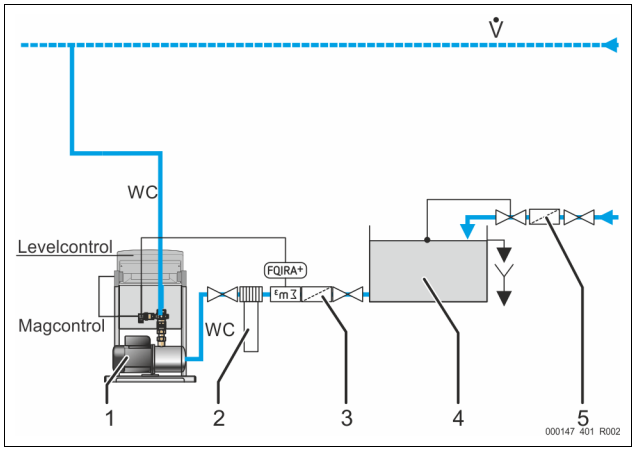
Note!
For installation at the same level, open the Customer menu to set the "P_0" minimum operating pressure to the "p_0" initial pressure of the "MAG" diaphragm expansion vessel, otherwise, you must correct with "hst", see chapter 7.2 "Determining the P_0 minimum operating pressure for the controller" on page 9 .

6.3.2 Hydraulic connection

6.3.2.1 Connection to the facility system

Note!
Starting up of the pump causes vibration in the device. This transfers loud noises into the system pipes.
– Connect the pipes to the device using flexible connections.

Connection to the system circuit with a system separator tank for the make-up with mains water.



1	Pump "PU"	WC	Make-up lines for mains water • Intake line to pump • Pressure line to the system circuit
2	"Fillsoft" softening system		
3	Contact water meter		
4	"BT" system separator vessel		
5	"ST" dirt trap		

Comply with the following requisites for the installation and connection of an open system separator tank.

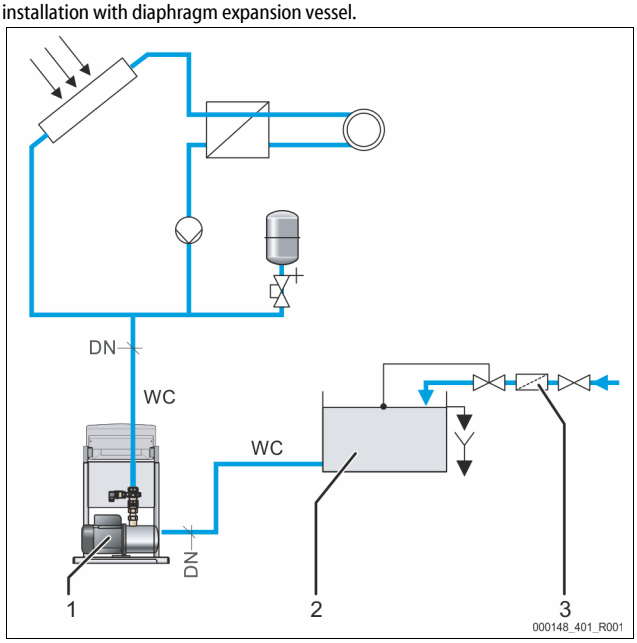
- Make-up temperatures up to 70° C
- Pipeline lengths, see chapter 6.3.1 "Floor mounting" on page 6 .
- Outlet from the system separator tank at least 100 mm above the intake connection of the "PU" pump.

– "WC" intake line to "PU" pump with constant incline to the system separator tank.

Note!
At make-up temperatures > 70 °C and the use in system circuits without system separator tanks, you must plan according to the local conditions, see chapter 12.1 "Reflex Customer Service" on page 16 .

6.4 Switching and make-up variants

Example diagram for a pressure-dependent make-up with water in a solar installation with diaphragm expansion vessel.



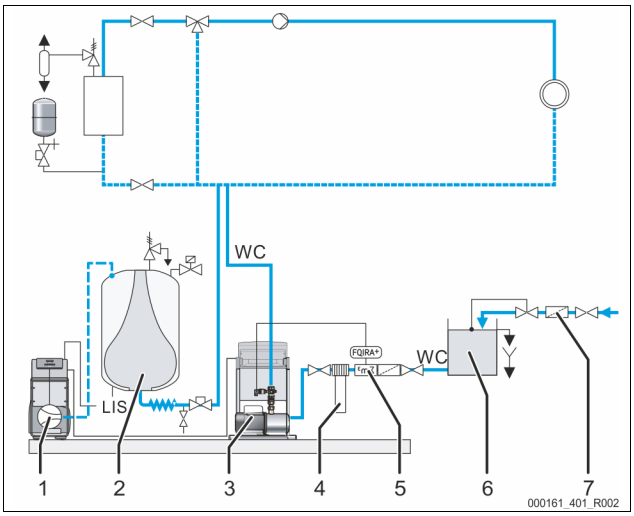
1	Pump "PU"	WC	Make-up lines • Intake line to "PU" pump • Pressure line to the system circuit
2	"BT" system separator vessel		
3	"ST" dirt trap		
DN	Nominal diameter of the make-up lines		

In system circuits with a diaphragm expansion vessel, the "PIS" pressure transducer in the device monitors the make-up with mains water. When the required filling pressure for water make-up drops below the minimum value, the pressure transducer sends a signal to the device controller. The controller activates the pump. Mains water from the system separator tank is added to the system circuit.

Proceed as follows:

1. In the Customer menu, set the device to "Magcontrol", see chapter 9.2.1 "Customer menu" on page 13 .
2. Connect the pressure line near the connection to the diaphragm expansion vessel.
   – This ensures that the "PIS" pressure transducer detects the filling pressure required for the make-up with mains water.
   – For calculating the filling pressure, see chapter 7.2 "Determining the P_0 minimum operating pressure for the controller" on page 9 .
3. Do not use nominal diameters below the specified diameters for the "WC"make-up lines, see chapter 6.3.1 "Floor mounting" on page 6 .
   – You will avoid an undesired cycling of the make-up.
4. In solar plants, use the "BT" system separator tank to prepare the water/glycol mixture.
   – Size the system separator tank with at least 1.5 times the system volume.

Typical diagram for level-dependent make-up with water in a system circuit with a pressurisation unit.



1	Controller unit with a compressor for maintaining the pressure
2	Expansion vessel for pressurisation
3	Pump "PU"
4	"Fillsoft" softening system, optional accessory
5	Contact water meter, optional accessory
6	"BT" system separator vessel
7	"ST" dirt trap
WC	Make-up pipe • Intake line to "PU" pump • Pressure line to the system circuit
LIS	Pressure pick-up for calculating the filling level in the expansion vessel

A pressurisation unit monitors the filling level in the expansion vessel. When the filling level in the expansion vessel falls below the minimum level, the pressurisation unit sends a signal to the device controller. The controller activates the pump. Mains water from the system separator tank is added to the system circuit.

Proceed as follows:

1. In the Customer menu, set the device to "Levelcontrol", see chapter 9.2.1 "Customer menu" on page 13 .
2. The filling pressure for make-up with mains water must be at least 1.7 bar higher than the "P_0" minimum working pressure, see chapter 7.2 "Determining the P_0 minimum operating pressure for the controller" on page 9 .

Note!
You may combine the device with softening systems (Fillsoft, for example); available as optional accessories, see chapter 4.6 "Optional equipment and accessories" on page 5 .

6.5 Electrical connection

DANGER

Risk of serious injury or death due to electric shock.

If live parts are touched, there is risk of life-threatening injuries.

- Ensure that the system is voltage-free before installing the device.
- Ensure that the system is secured and cannot be reactivated by other persons.
- Ensure that installation work for the electric connection of the device is carried out by an electrician, and in compliance with electrical engineering regulations.

DANGER

Risk of serious injury or death due to electric shock

Some parts of the device's circuit board may still carry 230 V voltage even with the device physically isolated from the power supply.

- Before you remove the covers, completely isolate the device controller from the power supply.
- Verify that the main circuit board is voltage-free.

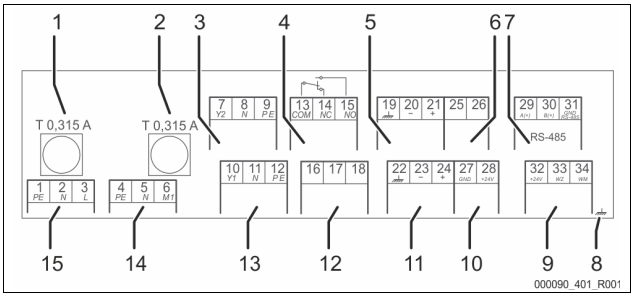
The following descriptions apply to standard systems and are limited to the necessary user-provided connections.

1. Disconnect the system from the power source and secure it against unintentional reactivation.
2. Remove the cover.

   DANGER Risk of serious injury or death due to electric shock. Some parts of the device's circuit board may still be live with 230 V even after the device has been physically isolated from the power supply by pulling out of the mains plug. Before you remove the covers, completely isolate the device controller from the power supply. Verify that the main circuit board is voltage-free.
3. Install a screwed cable gland suitable for the respective cable. M16 or M20, for example.
4. Thread all cables to be connected through the cable gland.
5. Connect all cables as shown in the terminal diagram.
   – For installer supplied fusing, comply with the connected loads of the device , see chapter 5 "Technical data" on page 5 .
6. Install the cover.
7. Connect the mains plug to the 230 V power supply.
8. Activate the system.

The electrical connection is completed.

6.5.1 Terminal diagram



1	"L" fuse for electronics and solenoid valves
2	"N" fuse for solenoid valves
3	Solenoid valve (not for motor ball valve)
4	Group message
5	Not used
6	Not used
7	RS-485 interface
8	Shielding
9	Digital inputs • Water meter • Insufficient water
10	Not used
11	Pressure analogue input
12	External make-up demand (only with "Levelcontrol")
13	Not used
14	Not used
15	Mains supply

Terminal number	Signal	Function	Wiring
1	PE	230 V power supply via mains cable and plug.	Factory
2	N		
3	L		
13	COM	Group message (floating).	User, optional
14	NC		
15	NO		
16	Not assigned	External make-up demand for level-dependent make-up. • From a pressurisation controller, for example. (Set the controller to "Levelcontrol")	User, optional
17	Make-up (230 V)		
18	Make-up (230 V)		

Terminal number	Signal	Function	Wiring
22	PE (shield)	Pressure analogue input. • Display at the controller. • For make-up actuation For the "Magcontrol" make-up variant	Factory
23	- Pressure (signal)		
24	+ Pressure (+ 18 V)		
29	A	RS-485 interface.	User, optional
30	B		
31	GND		
32	+ 24 V (supply) E1	Supply for E1 and E2.	Pre-wired, bridged
33	E1	Contact water meter (in "Fillset Impulse", for example) • Evaluation of the make-up. • Contact 32/33 closed = meter pulse.	User, optional

6.5.2 RS-485 interface

The following options are available via the interface:
- Data polling by the controller.
  - Pressure
  - Pump operating states.
  - Cumulated quantity of the "FQIRA+" contact water meter.
  - All messages, see chapter 9.3 "Messages" on page 14 .
  - All entries in the fault memory.
- Communication with control centres.
- Communication with other equipment.

Note!
If required, please request the RS-485 interface protocol from the Reflex Customer Service.
- Connection details.
- Accessory information and data.

6.5.2.1 Connecting the RS-485 interface

Connect the interface as follows:
1. For connecting the interface use only a cable with these properties:
   - LJYCY (TP), 4 × 2 × 0.8, maximum overall bus length 1000 m.
2. Use a shielded cable to connect the interface to terminals 29, 30, 31 of the main board in the control cabinet.
   - For connecting the interface, see chapter 6.5 "Electrical connection" on page 8 .
3. When using the device with a control centre not supporting an RS-485 interface (RS-232, for example), you must use a corresponding adapter.

6.6 Installation and commissioning certificate

Note!
The installation and commissioning certificate can be found at the end of the operating manual.

7 Commissioning

Note!
Confirm that installation and start-up have been carried out correctly using the installation and commissioning certificate. This action is a prerequisite for the making of warranty claims.
- Have the Reflex Customer Service carry out commissioning and the annual maintenance.

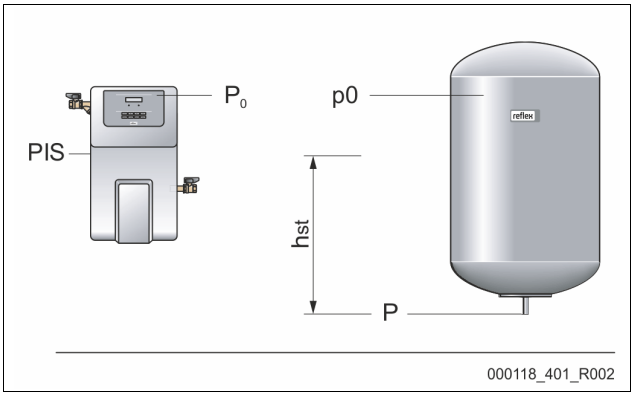
7.1 Requirements for initial commissioning

The device will be ready for initial commissioning when the tasks described in the "Installation" chapter have been completed. Note the following information on initial commissioning:
- The device is installed.
- The water connections to the system circuit are established.
- The device shut-off valves are closed.
  - Shut-off valve from the "DC" make-up line to the system circuit.
  - Shut-off valve of the "WC" make-up line to the fresh water main.
- "PIS" pressure monitoring is ready.
- The electrical connection has been created according to applicable national and local regulations.

Establish a 230 V power supply by plugging the power plug into a corresponding outlet. The controller is in Stop mode.

7.2 Determining the P_0 minimum operating pressure for the controller

The "P_0" minimum working pressure for the device is used in system circuits with a diaphragm expansion vessel.
Calculate the "P_0" minimum working pressure for the device:



- The device is installed at the same level as the diaphragm expansion vessel:
  - hst = 0, P0 = p0*
- The device is installed at a lower level than the diaphragm expansion vessel:
  - $P_0 = p0 + h_{st}/10$*
- The device is installed at a higher level than the diaphragm expansion vessel:
  - $P_0 = p0 - h_{st}/10$*

*p0 in bar, h_{st} in metres

Note!
Calculate the filling pressure for system circuit make-up using fresh water as follows:
Filling pressure ≥ P_0 + 0.3 bar

Note!
When planning, note that the working range of the device must come within the pressurisation working range, which extends from the initial pressure "PA" to the final pressure "PE".

7.3 Filling the device with water

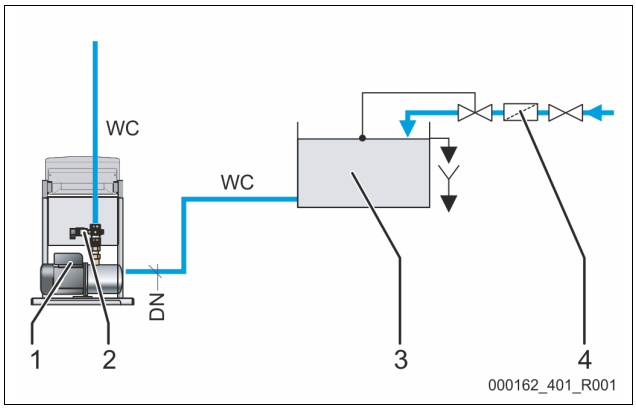
⚠ CAUTION

Risk of injury due to pump start-up
Hand injuries may occur when the pump starts up if you turn the pump motor at the impeller using a screwdriver.
- Switch the pump to a zero-volts state before turning the pump at the fan wheel with a screwdriver.

ATTENTION

Device damage due to pump start-up
Pump damage may occur when the pump starts up if you turn the pump motor at the impeller using a screwdriver.
- Switch the pump to a zero-volts state before turning the pump at the fan wheel with a screwdriver.

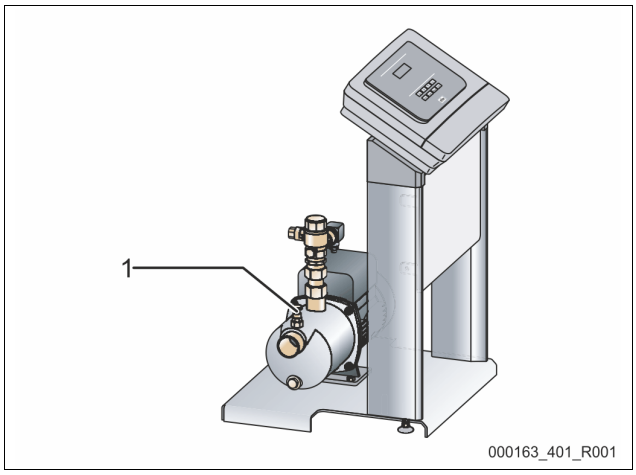
Fill water into the device:



1	Pump "PU"	3	"BT" system separator vessel
2	"PIS" pressure transducer	4	"ST" dirt trap

1. Open the shut-off valve to the mains water supply.
   – The "BT" system separator vessel is filled with water from the public water system.
2. Check the proper closing of the float valve in the system separator vessel.
   – Water must not flow from the device overflow.
3. Slowly open the "BV" shut-off valve in the intake line from the system separator vessel to the pump.
   – The intake line and the pump are filled with water from the system separator vessel.

Vent the pump:



1	"AV" vent screw

4. Remove the vent screw from the pump and vent the pump until bubble-free water escapes.
   – If necessary, manually turn the pump using a screwdriver at the fan wheel until bubble-free water escapes.
5. Tighten the vent screw and ensure that is does not leak.

The device is filled with water.

7.4 Modifying the controller's start routine

Note!
During commissioning, you must once execute the start routine.
- For information about controller operation, see chapter 9.1 "Operator panel" on page 12 .

The start routine is used to set the required parameters for the device commissioning. It commences with the first activation of the controller and can be run only once. Parameter changes or checks are possible after the start routine in the customer menu is exited, see chapter 9.2.1 "Customer menu" on page 13 .

Note!
Plug in the mains plug to provide power (230 V) to the controller.

You are now in Stop mode. The "Auto" LED on the operator panel has extinguished.

Indication on the display	Meaning
Fillcontrol A	Device name
Language	Standard software in various languages.
Read the operating instructions	Prior to commissioning, read all of the operating instructions and verify the proper assembly.
Min. op. pressure	Specify the value for the minimum operating pressure (only with "Magcontrol" make-up variant). • Calculation of the minimum operating pressure, see chapter 7.2 "Determining the P_0 minimum operating pressure for the controller" on page 9 .
Safety valve pressure	Enter the value for the release pressure of the safety valve. • This value may be the same as the release pressure of the system circuit safety valve.
Time	Change the flashing display items for "Hour", "Minute", and "Seconds" to the current time. • The time of an alarm will be stored in the fault memory.
Date	Change the flashing display items for "Day", "Month", and "Year" to the current date. • The date of an alarm will be stored in the fault memory.
Terminate routine? Yes	The system displays this message after a successfully completed start routine. Select "Yes" or "No" on the controller display and confirm with "OK" on the controller operator panel. • **Yes**: The start routine is terminated, the device automatically switches to Stop mode. • **No**: The start routine restarts.
2.0 bar STOP	The pressure is displayed only in "Magcontrol" make-up mode.

Note!
After successful conclusion of the start routine, you are in Stop mode. Do not yet switch to Automatic mode.

Note!
Set the "Magcontrol" or "Levelcontrol" make-up variant in the Customer menu, see chapter 9.2.1 "Customer menu" on page 13 .

7.5 Parametrising the controller in the Customer menu

Use the Customer menu to display or correct system-specific values. In the course of commissioning, the factory settings must be adjusted for the system-specific conditions.
– For adjusting the default settings, see chapter 9.2 "Configuring settings in the controller" on page 12 .
– For information about controller operation, see chapter 9.1 "Operator panel" on page 12 .

7.6 Function test

At the device, execute a function test for the "PU" pump. Set the device controller to manual mode. In manual mode, you manually activate and deactivate the pumps.
- Press "Manual" on the controller's operator panel.
  – The "Manual" LED at the operator panel illuminates to visually indicate that Manual mode is active.

Select the "PU" pump. Selecting the pump depends on the set make-up variant, "Levelcontrol" or "Magcontrol".

	2.0 bar
PU!	Filling

Proceed as follows:
1. Press "Manual" on the controller's operator panel.
   – "PU" flashes on the display to visually indicate that the pump has been selected for the "Levelcontrol' make-up variant.
   – Use the arrow keys at the operator panel to select "PU" on the display. – "PU" flashes on the display to visually indicate that the pump has been selected for the "Magcontrol' make-up variant.
2. Press "OK" on the controller's operator panel.
   – The pump is switched on and the displays shows "PU!".
   – The display must show values of ≥ 5 bar for the pressure for the activated pump.
3. Press "OK" on the controller's operator panel.
   – The pump is switched off and the displays shows "PU".

The function test for the pump is completed. Slowly open the "BV" shut-off valve in the pressure line from the pump to the system circuit.

Note!
If the pressure does not rise when the pump is activated:
- Shut down the pump.
- Vent the pump, see chapter 7.3 "Filling the device with water" on page 9 .

Note!
Execute a function test of the system separator tank according to the user-supplied specifications.

7.7 Use the device to fill the facility system with water

You have the option to use the device to fill the system circuit with water. These requirements must be met for the filling with water:
- The system circuit has not been previously filled with water.
- The system circuit has a maximum water volume up to 3,000 litres.
- It is a system circuit with a diaphragm expansion system.

Set the following operating modes at the controller:
- "Magcontrol" make-up, see chapter 9.2.1 "Customer menu" on page 13 .
- Manual operation, see chapter 8.1.2 "Manual mode" on page 11 .

Proceed as follows:
1. Press "Manual" on the controller's operator panel.
2. Use the arrow keys at the operator panel to select "Fill" on the display.

10 h	2.0 bar
PU! Filling	

   – "Fill" flashes on the display to visually indicate the selection.
3. Press "OK" on the controller's operator panel.
   – The pump is switched on and the displays shows "Fill!".
   – The controller calculates the required filling pressure. As soon as this value has been attained, the controller automatically stops the filling process.

The system circuit is filled with water.

Note!
Monitor the system for the entire automatic filling process.

Note!
If the maximum filling time (10 hours by default) is exceeded, the system aborts the make-up process with an error message.
- After the cause has been found, acknowledge the error message by pressing "Quit" at the controller's operating panel and continue with the filling process, see chapter 9.3 "Messages" on page 14 .

7.8 Starting Automatic mode

Automatic operation can be started after initial commissioning. The following prerequisites must be met for automatic operation:
- "P_0" minimum working pressure is entered in the controller.
- The device is filled with water.
- All required parameters are defined in the controller.
- The function test has been concluded.

Start the automatic mode at the operator panel of the controller:
- Press "Auto" for automatic operation.
  - The "Auto" LED at the operator panel illuminates to visually signal automatic operation.

Note!
The commissioning process is now concluded.

8 Operation

8.1 Operating modes

8.1.1 Automatic mode

Use:
After initial commissioning has been successfully completed

Start:
Press "Auto" on the controller. The Auto LED lights up.

Functions:
Automatic operation is suitable for continuous operation of the device.
The controller monitors the make-up functions.

8.1.2 Manual mode

Use:
For testing and maintenance tasks.

Start:
Press "Manual" on the controller. The Auto LED at the operator panel flashes to visually indicate that Manual mode is active.

Functions:
Selecting the functions depends on the set make-up variant, "Levelcontrol" or "Magcontrol".
Manual mode allows you to select the following functions and to perform a test run:
- Manual and deactivation of the "PU" pump with "Levelcontrol"
- Manual switching on and off of the "PU" pump or "Filling" in the "Magcontrol" make-up variant.

1. At the controller's operator panel, use the arrow keys to select the "PU" pump or "Fill" function.
2. Press "OK" at the controller's operator panel to switch on the "PU" pump or "FIll" function. – "PU!" or "Fill!" is displayed to visually indicate that the pump is being switched on.
3. Press "OK" at the controller's operator panel to switch off the "PU" pump or "FIll" function. Displays "PU" or "Fill" to visually indicate that the pump is being switched off.

Note!
The controller calculates the pressure required for filling. As soon as this value has been attained, the controller automatically stops the filling process.

Note!
Manual operations cannot be performed if safety-relevant parameters would be exceeded. Switching is then disabled.

8.1.3 Stop mode

Use:
For device commissioning

Start:
Press "Stop" on the controller. The Auto LED at the operator panel extinguishes.

Functions:
Except for the display of information, the device is non-functional in Stop mode.
Function monitoring is stopped.
- The "PU" pump is switched off.

Note!
The system returns an alarm if the Stop mode is activated for more than 4 hours.
If "Floating alarm contact?" in the Customer menu is set to "Yes", the system outputs the alarm to the group alarm contact.

8.1.4 Summer operation

Use:
The make-up with mains water must be ensured even when the heating and cooling systems are not operating. Do not shut down the device when the pressurisation of the heating and cooling systems are in operation.

8.1.5 Restarting

CAUTION

Risk of injury due to pump start-up

Hand injuries may occur when the pump starts up if you turn the pump motor at the impeller using a screwdriver.

- Switch the pump to a zero-volts state before turning the pump at the fan wheel with a screwdriver.

ATTENTION

Device damage due to pump start-up

Pump damage may occur when the pump starts up if you turn the pump motor at the impeller using a screwdriver.

- Switch the pump to a zero-volts state before turning the pump at the fan wheel with a screwdriver.

After an extended standstill time (the device is de-energised or in Stop mode), the "PU" pump may jam.

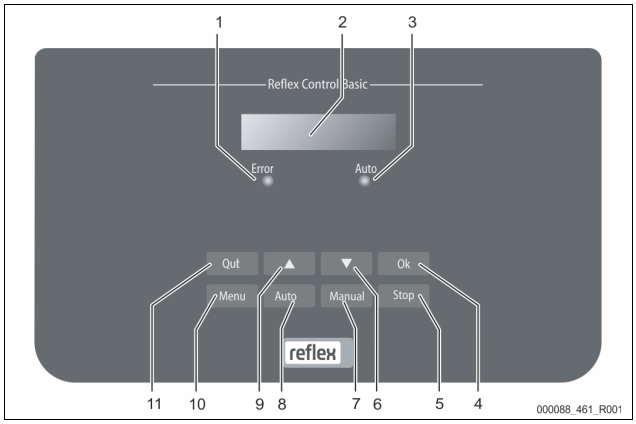
- Use a screwdriver to rotate the pump at the fan wheel of the pump motor before restarting.

Note!

A jamming of the "PU" pump is prevented during automatic operation thanks to forced starting action (after 24 hours).

9 Controller

9.1 Operator panel



1	Error LED • The Error LED illuminates in the event of a fault
2	Display
3	Auto LED • The Auto LED illuminates green in Automatic mode • The Auto LED flashes green in Manual mode • The Auto LED is not illuminated when the system is stopped
4	OK • Confirm actions
5	Stop • For commissioning and entry of new values in the controller
6	"Back" to the previous menu
7	Manual • For tests and maintenance tasks
8	Auto • For continuous operation
9	"Forward" to the next menu
10	Menu • Call up the Customer menu
11	Quit • Acknowledge messages

Selecting and changing parameters

1. Use "OK" (5) to select the parameter.
2. Use the "▼" (7) or "▲" (9) arrow keys to change the parameter.
3. Use "OK" (5) to confirm the parameter.
4. Use the "▼" (7) or "▲" (9) arrow keys to switch to a different menu option.
5. Use "Quit" (11) to switch to a different menu level.

9.2 Configuring settings in the controller

System-specific values can be corrected via the customer menu. In the course of initial commissioning, the factory settings must first be adjusted for the system-specific conditions.

Note!

For a description of the operation, see chapter 9.1 "Operator panel" on page 12 .

All grey marked menu items must be reviewed during commissioning.

Press "Manual" to switch to manual operation.
Press "Menu" to display the first main menu option "Customer menu".

To navigate and set the values:

- Use the "▼ ▲" arrow keys to navigate and set the values in the selected main menu.
- Press "OK" to open the next sub-menu.
- Press "OK" to confirm the changed setting in the sub-menu.

Indication on the display	Meaning
Customer menu	Switch to the next main menu option.
Language	Standard software in various languages.
Time:	Adjust the "Hour", "Minute", and "Second" display when each begins to flash. This time is used for entries in the fault memory.
Date:	Adjust the "Day", "Month", and "Year" display when each begins to flash. This date is used for entries in the fault memory.
Fillcontrol / Magcontrol	Select between the make-up variants "Levelcontrol" and "Magcontrol".
Min.op.pressure 01.8 bar	The system displays the "Minimum working pressure" message when you have set the "Magcontrol" make-up variant. Enter the value for the minimum operating pressure. **Note!** Calculation of minimum operating pressure, see chapter 7.2 "Determining the P_0 minimum operating pressure for the controller" on page 9 .
Safety valve pressure	The system displays the "Safety valve pressure" message when you have set the "Magcontrol" make-up variant. Specify the tripping pressure of the applicable safety valve for the device protection. This is usually the safety valve at the system heat generator.
Make-up	Switch to the "Make-up" sub-menu. • Press "OK" to open the menu. • Use the "▼ ▲" buttons to open the sub-menu.
Max. make-up time 010 min.	Pre-selected time for a make-up cycle. Upon expiry of this set time, the system interrupts the make-up and returns the "Make-up time" fault message.
Max. make-up cycles 003 / 2 h	If the set number of make-up cycles is exceeded within two hours, the system interrupts the make-up and returns the "Make-up cycles" fault message.

Indication on the display	Meaning
With water meter. YES	• **YES:** FQIRA+ contact water meter is installed, see chapter 4.6 "Optional equipment and accessories" on page 5 . This is the prerequisite for the make-up volume monitoring and the operation of a softening system. • **NO:** A contact water meter is not installed (standard model).
Make-up volume 000020 l	Only displayed if "YES" has been set in the "With water meter" menu option. • Press "**OK**" to delete the counter. • Press "**YES**" to reset the value displayed to "0". • Press "**NO**" to retain the displayed value.
Max. make-up volume 000100 l	This value is only displayed if "YES" has been set in the "With water meter" menu option. • When the set volume is exceeded, the system interrupts the make-up process and returns the error message "Max. make-up volume exceeded".
With softening YES	This value is only displayed if "YES" has been set in the "With water meter" menu option. • **YES**: Further queries follow about softening. • **NO**: The system does not offer more queries regarding the softening process.
Disable make-up? YES	This value is only displayed if "YES" has been set in the "With softening" menu option. • **YES**: The system stops the make-up process when the set soft water capacity is exceeded. • **NO**: The system does not stop the make-up process. The system displays the "Softening" message.
Hardness reduction 10 °dH	This value is only displayed if "YES" has been set in the "With softening" menu option. • Hardness reduction is calculated from the difference of the overall water hardness GH_{actual} and the target water hardness GH_{target}. Hardness reduction = GH_{actual}-GH_{target}l °dH Enter the value in the controller. Consult the manufacturer information for third-party products.
Cap. soft water 05000 l	This value is only displayed if "YES" has been set in the "With softening" menu option. The attainable soft water capacity is calculated from the type of softening used and the specified hardness reduction. • Fillsoft I, soft water capacity ≤ 6000/hardness red. l • Fillsoft II, soft water capacity ≤ 12000/hardness red. l Enter the value in the controller. Consult the manufacturer information for the values of third-party products.
Remaining cap. soft w. 000020 l	This value is only displayed if "YES" has been set in the "With softening" menu option. • Available soft water capacity.
Replacement 18 months	This value is only displayed if "YES" has been set in the "With softening" menu option. • Manufacturer specification for the replacement interval of the softening cartridges, regardless of the calculated soft water capacity. The system displays the "Softening" message.
Next maintenance 012 months	Recommended maintenance messages. • Off: Without maintenance recommendation. • 001 – 060: Maintenance recommendation in months.
Floating fault contact YES	For the output of messages to the floating contact, see chapter 9.3 "Messages" on page 14 . • **YES**: Output of all messages. • **NO**: Output of all messages identified with "xxx" ("01", for example).

Indication on the display	Meaning
Fault memory>	Switch to the "Fault memory" sub-menu. • Press "OK" to open the menu. • Use the "▼▲" buttons to open the sub-menu.
ER 01…xx	The last 20 alarms are stored with fault type, date, time, and fault code. See the chapter "Messages" for more information about the ER... messages.
Parameter memory>	Switch to the "Parameter memory" sub-menu. • Press "OK" to open the menu. • Use the "▼▲" buttons to open the sub-menu.
P0 = xx.x bar Date | Time	The last 10 entries of the minimum working pressure are stored with date and time.
V0.60	Information about the software version

9.2.1 Customer menu

The device controller is shipped with the following default settings. Use the Customer menu to adjust these values to local conditions. In special cases, it is possible to further adjust the values in the Service menu.

Parameter	Setting	Comment
Language	EN	Display language
Fillcontrol XX	Magcontrol	For systems with diaphragm-type expansion vessel
Minimum operating pressure P_0	1.5 bar	Only Magcontrol see chapter 7.2 "Determining the P_0 minimum operating pressure for the controller" on page 9
Safety valve, pressure	3.0 bar	Tripping pressure for the safety valve at the heat generator in the system
Next maintenance	12 months	Time left to the next due maintenance
Volt-free contact	NO	Only the messages marked in the "Messages" list
Make-up		
Maximum make-up volume	5000 litres	Only if controller with "With water meter yes"
Maximum make-up time	20 minutes	Magcontrol
Maximum make-up cycles	3 cycles within 2 hours	Magcontrol
Softening (Only if "With softening yes")		
Shut off make-up	NO	In the event of soft water residual capacity = 0
Hardness reduction	8°dH	= Setpoint – Actual
Maximum make-up volume	0 litres	Attainable make-up quantity
Soft water capacity	0 litres	Attainable water capacity
Cartridge replacement	18 months	Replace cartridge

9.2.2 Service menu

The Service menu is password-protected. Only Reflex service technicians are able to access this menu, see chapter 12.1 "Reflex Customer Service" on page 16 .

Parameter	Setting	Comment
Make-up		
Pressure differential, "NSP" make-up	0.2 bar	Only Magcontrol
Pressure differential, filling pressure PF – P0	0.3 bar	Only Magcontrol
Water volume per contact	10 l / K	Only if a water meter is installed.
Maximum filling contacts	OFF	Limits the filling volume. Only if a water meter is installed.

9.3 Messages

The display provides alarms in plain text and the ER codes shown in the list. Use the arrow buttons to scroll through multiple alarms displayed at the same time.
The fault memory stores the last 20 alarms for review, see chapter 7.5 "Parametrising the controller in the Customer menu" on page 10 .
Alarm causes can be eliminated by the operator or a specialist workshop. If this is not possible, contact the Reflex Customer Service.

Note!
Clearing of the cause must be confirmed by pressing the "Ack" button on the operator panel. All other alarms are automatically reset as soon as the cause has been eliminated.

Note!
Floating contacts, setting in the Customer menu, see chapter 7.5 "Parametrising the controller in the Customer menu" on page 10 .

ER Code	Alarm	Group alarm	Causes	Remedy	Alarm reset
01	Min. pressure • Only with Magcontrol	YES	The set value for the "P_0" minimum working pressure has been exceeded. • Water loss in the system. • Expansion vessel defective. • Fault at the "PU" pump.	• Check the system for leaks. • Replace the expansion vessel. • Check the function in manual mode. – "PU" pump	"Quit"
02.1	Insufficient water		No water in the system separator vessel. • Ball valve in make-up line closed. • Dirt trap clogged. • Float valve defective.	• Open the ball valve in the make-up line. • Clean the dirt trap. • Replace the float valve.	
04.1	Pump	YES	Pump does not start. • "PU" pump is stuck. • Pump motor defective. • 10 A fuse defective. • Contractor (Klixon) tripped.	• Manually turn the pump to start. • Replace the pump motor. • Replace the fuse. • Check the mechanical and electrical functions of the pump motor.	"Quit"
06	Make-up time		Set time for the make-up time has been exceeded. • Severe water loss in the system. • Make-up line not connected. • Make-up rate insufficient. • Make-up hysteresis too high.	• Check the system for leaks. • Connect the make-up system. • Check the make-up rate. • Check the make-up hysteresis.	"Quit"
07	Make-up cycles		Set value for the make-up cycles has been exceeded. • Leakage in the system.	• Check the system for leaks.	"Quit"
08	Pressure measurement • Only with Magcontrol	YES	Controller receives incorrect signal. • Pressure transducer plug not plugged in. • Broken wire from "PIS" pressure transducer. • "PIS" pressure transducer defective.	• Plug in the plug. • Replace the wire. • Replace the "PIS" pressure transducer.	"Quit"
10	Maximum pressure • Only with Magcontrol		Set value for the maximum pressure has been exceeded. • Safety valve defective. • Pipe to system has insufficient diameter.	• Check the actuating pressure of the safety valve. • Replace the safety valve. • Install new pipe to the system with sufficient diameter.	"Quit"
11	Make-up volume • Only if "With water meter" is activated in the Customer menu.		Set value of the water meter has been exceeded. • Leakage in the system. • Water volume per contact incorrectly set in the Service menu.	• Check the system for leaks. • Check the set value.	"Quit"
12	Filling time • Only with Magcontrol		Set value for the maximum filling time has been exceeded. • System volume too large (≤ 3000Liter).	• Restart the filling process	"Quit"
13	Filling volume • Only with Magcontrol and contact water meter		• System volume too large (≤ 3000Liter). • Water volume per contact incorrectly set in the Service menu.	• If necessary, restart the filling process • Set the water quantity per contact in the Service menu.	"Quit"
16	Power failure		No power.	Check power supply.	–

ER Code	Alarm	Group alarm	Causes	Remedy	Alarm reset
19	Stop > 4 h		The device is in Stop mode for more than 4 hours.	Select Automatic mode.	–
20	Max. make-up volume		Set value for the make-up quantity has been exceeded.	Reset the "Make-up volume" meter in the Customer menu.	"Quit"
21	Maintenance recommended		Set value exceeded.	Carry out maintenance.	"Quit"
24	Softening		• Set value for the water capacity has been reached. • Time interval for replacement of the softening cartridge has been reached.	Replace the softening cartridge.	"Quit"
30	I/O module fault		• I/O module defective. • Connection between option card and controller faulty. • Option card defective.	Inform Reflex Customer Service.	
31	EEPROM defective	YES	• EEPROM defective. • Internal calculation error.	Inform Reflex Customer Service.	"Quit"
32	Under voltage	YES	Supply voltage too low.	Check power supply.	
33	Adjustment parameter faulty		EEPROM parameter memory defective.	Inform Reflex Customer Service.	
34	Main board communication faulty		• Connecting cable defective. • Main board defective.	Inform Reflex Customer Service.	
35	Digital input voltage faulty		Short-circuit of input voltage.	Check the wiring at the digital inputs (water meter, for example).	
36	Analogue input voltage faulty		Short-circuit of input voltage.	Check the wiring at the analogue inputs (pressure/level).	

10 Maintenance

⚠ CAUTION

Risk of burns

Escaping hot medium can cause burns.

- Maintain a sufficient distance from the escaping medium.
- Wear suitable personal protective equipment (safety gloves and goggles).

⚠ DANGER

Risk of serious injury or death due to electric shock.

If live parts are touched, there is risk of life-threatening injuries.

- Ensure that the system is voltage-free before installing the device.
- Ensure that the system is secured and cannot be reactivated by other persons.
- Ensure that installation work for the electric connection of the device is carried out by an electrician, and in compliance with electrical engineering regulations.

⚠ CAUTION

Risk of injury due to pressurised liquid

If installation, removal or maintenance work is not carried out correctly, there is a risk of burns and other injuries at the connection points, if pressurised hot water or hot steam suddenly escapes.

- Ensure proper installation, removal or maintenance work.
- Ensure that the system is de-pressurised before performing installation, removal or maintenance work at the connection points.

The device is to be maintained annually.

- The maintenance intervals depend on the local operational conditions.

The annual maintenance is displayed upon expiry of the set operating time. Use "Quit" to acknowledge the "Maintenance recommended" message. Reset the maintenance counter in the Customer menu.

▶ **Note!**
Arrange for maintenance tasks must be carried out only by specialist personnel or Reflex Customer Service.

10.1 Maintenance schedule

The maintenance schedule is a summary of maintenance tasks to be carried out regularly.

Activity	Check	Wait	Clean	Interval
Check for leaks, see chapter 10.2 "Exterior leak test" on page 15 . • "PU" pump • Screw connections	x	x		Annually
Cleaning the dirt trap • see chapter 10.3 "Cleaning the dirt trap" on page 16 .			x	Depending on the operating conditions
Check the make-up function • see chapter 7.6 "Function test" on page 10 .	x			Annually
Check the system-specific set values in the controller, see chapter 9.2.1 "Customer menu" on page 13 . • Minimum operating pressure "P_0". • Safety valve pressure "P_{SV}".	x			Annually

▶ **Note!**
Compare the minimum working pressure with the initial pressure in the diaphragm expansion vessel.

– If necessary, adjust the initial pressure in the diaphragm expansion vessel.

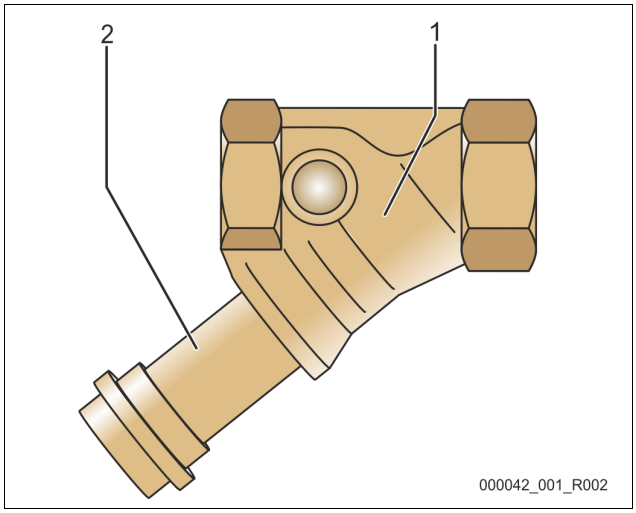
10.2 Exterior leak test

Check the following device components for leaks:

– "PU" pumps and screw fittings.
  - Seal any leaks at the connections or replace the connections, if required.
  - Seal leaking screw connections or replace, if required.

10.3 Cleaning the dirt trap

Clean the "ST" dirt trap according to the following intervals:
- Commissioning.
- Long lasting operation.
  – Depending on the operating conditions.
- Long lasting standstill.
- At the latest, after one year in continuous operation.



1. Press "Stop" on the controller's operator panel.
   – The device is non-functioning and the pumps are shut down.
2. Connect the ball valve upstream of the "ST" dirt trap in the make-up line to the mains separator tank.
3. Slowly unscrew the dirt trap insert (2) from the dirt trap (1) in order for the residual pressure to escape from the pipeline segment.
4. Pull the sieve from the dirt trap insert.
5. Rinse the sieve with clean water.
6. Use a soft brush to clean the sieve.
7. Reinsert the cleaned sieve into the dirt trap insert.
8. Check the seal of the dirt trap insert for damage.
9. Screw the dirt trap insert back into the housing of the "ST" dirt trap (1).
10. Open the ball valve upstream of the "ST" (1) dirt trap.
11. Switch to Automatic mode.

The dirt trap has been cleaned.

Note!
Clean all other installed dirt traps in the system circuit (in the Fillset, for example).
- Repeat the steps described above to clean the dirt trap.

11 Disassembly

DANGER

Risk of serious injury or death due to electric shock.
If live parts are touched, there is risk of life-threatening injuries.
- Ensure that the system is voltage-free before installing the device.
- Ensure that the system is secured and cannot be reactivated by other persons.
- Ensure that installation work for the electric connection of the device is carried out by an electrician, and in compliance with electrical engineering regulations.

DANGER

Risk of serious injury or death due to electric shock
Some parts of the device's circuit board may still carry 230 V voltage even with the device physically isolated from the power supply.
- Before you remove the covers, completely isolate the device controller from the power supply.
- Verify that the main circuit board is voltage-free.

CAUTION

Risk of burns
Escaping hot medium can cause burns.
- Maintain a sufficient distance from the escaping medium.
- Wear suitable personal protective equipment (safety gloves and goggles).

CAUTION

Risk of burns on hot surfaces
Hot surfaces in heating systems can cause burns to the skin.
- Wait until hot surfaces have cooled down or wear protective safety gloves.
- The operating authority is required to place appropriate warning signs in the vicinity of the device.

CAUTION

Risk of injury due to pressurised liquid
If installation or maintenance work is not carried out correctly, there is a risk of burns and other injuries at the connection points, if pressurised hot water or steam suddenly escapes.
- Ensure proper disassembly.
- Ensure that the system is de-pressurised before performing the disassembly.

Proceed as follows:
1. Prior to dismantling, block off all "water"-side connections to the device.
2. Disconnect the system from the power supply and secure it against unintended reactivation.
3. Disconnect the power cable of the device from the power supply.
4. Disconnect and remove all cables from the terminals of the device controller.
5. Undo all hose and pipe connections between the device and the system and remove them completely.
6. Drain all water from the device.
7. If necessary, physically remove the device from the system.

The device is removed.

12 Annex

12.1 Reflex Customer Service

Central customer service
Central telephone number: +49 (0)2382 7069 - 0
Customer Service extension: +49 (0)2382 7069 - 9505
Fax: +49 (0)2382 7069 - 9523
E-mail: service@reflex.de

Technical Hotline
For questions about our products
Telephone number: +49 (0)2382 7069-9546
Monday to Friday 8:00 to 16:30

12.2 Conformity and standards

Device conformity declarations are available on the Reflex homepage.
www.reflex-winkelmann.com/konformitaetserklaerungen

Alternatively, scan the QR code:

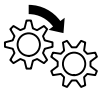
12.3 Guarantee

The respective statutory guarantee regulations apply.

EN	**Installation and commissioning certificate** - This device has been installed and commissioned in accordance with the instructions provided in the operating manual. The settings in the controller match the local conditions.

Typ / Type:	
P_0	
P_{SV}	
Fabr. Nr. / Serial-No.	



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