reflex

Thinking solutions.

Servitec Mini

GB Operating manual

Original operating manual

1 Information concerning the operating manual 5
2 Liability and warranty 6
3 Safety 7
3.1 Explanation of symbols 7
3.2 Personnel requirements 7
3.3 Personal protective equipment 8
3.4 Intended use 8
3.5 Impermissible operating conditions 8
3.6 Residual risks 9
4 Description of the device 10
4.1 Overview 10
4.2 Identification 11
4.3 Function 12
4.4 Scope of delivery 13
4.5 Optional equipment and accessories 13
5 Technical data 14
5.1 Electrical system 14
5.2 Dimensions and connections 14
5.3 Operation 14
6 Installation 15
6.1 Switching and make-up variants 16
6.2 Incoming inspection 16
6.3 Preparatory work 17
6.4 Execution 18
6.4.1 Installation of the pipe run 19
6.4.2 Wall mounting 19
6.4.3 Hydraulic connection 20
7 Commissioning 21
7.1 Requirements for initial commissioning 21
7.2 Determination of the minimum operating pressure 21

7.3 Filling the device with water 22
7.4 Execution 23
7.5 Installation and commissioning certificate 24
8 Operation 25
8.1 Automatic mode 25
8.2 Stop mode 25
8.3 Recommissioning 25
9 Controller 26
9.1 Operator panel 26
9.2 Messages 26
9.3 Reset 28
10 Maintenance 29
10.1 Maintenance schedule 30
10.2 Cleaning 31
10.3 Maintenance certificate 32
11 Removal 33
12 Disposal 35
13 Appendix 35
13.1 Reflex Customer Service 35
13.2 Warranty 35
13.3 Conformity and standards 36

1 Information concerning the operating manual

This operating manual is an important aid for ensuring the safe and reliable functioning of the device.
The operating manual will help you to:

- avoid any risks to personnel.
- become acquainted with the device.
- achieve optimal functioning.
- identify and rectify faults in good time.
- avoid any faults due to improper operation.
- cut down on repair costs and reduce the number of downtimes.
- improve the reliability and increase the service life of the device.
- avoid causing harm to the environment.

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.).

Note!
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 device operator and must be stored near the device for access at any time.

2 Liability and warranty

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 specialist personnel to carry out commissioning and annual maintenance.

3 Safety

3.1 Explanation of symbols

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.

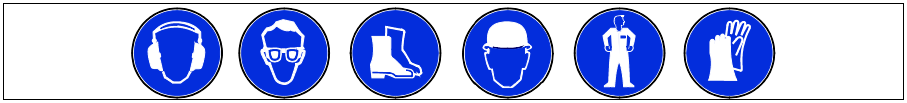
3.2 Personnel requirements

Installation and operation tasks are to be carried out by specialist personnel or specially trained personnel only.

The electric connections and the wiring of the device must be executed by a trained electrician 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 at the system in which the device is installed.



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 used in plant systems for stationary heating and cooling circuits. The devices may be used only in systems that are sealed against corrosion and with the following water types:

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

Minimise the entry of atmospheric oxygen throughout the plant system and into the make-up water.

Note!

Ensure the quality of the make-up water as specified by national regulations.

- For example, VDI 2035 or SIA 384-1.

3.5 Impermissible operating conditions

The device is not suitable for the following applications:

- Outdoor operation.
- For use with mineral oils.
- For use with flammable media.
- For use with distilled water.
- For use with reverse osmosis water.

Note!

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

3.6 Residual risks

The device has been manufactured using state-of-the-art technology. Despite this, residual risks 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.

⚠ CAUTION

Risk of injury due to heavy device weight

The device weight may cause physical injury or accidents.

- If necessary, work with a second person during assembly or disassembly.

ATTENTION

Device damage during transport

If the device is not transported correctly, it may be damaged.

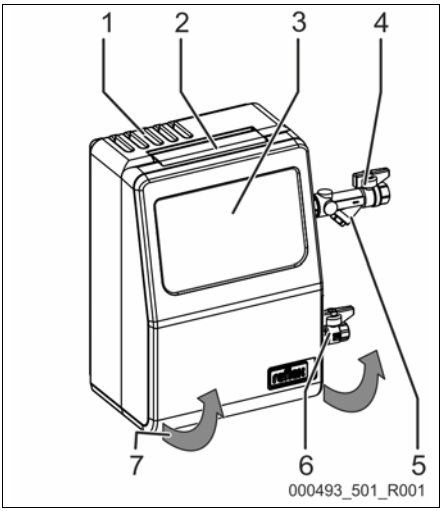
- Use suitable covers to protect the connections against damage.

4 Description of the device

The Servitec Mini is a water degassing system for use in small systems of up to 1 m^3 system volume.

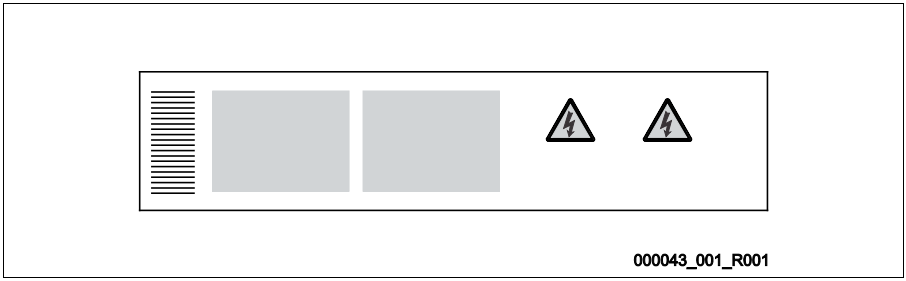
4.1 Overview

1	Venting grille
2	Hinge for folding up
3	Controller
4	Gas-rich water inlet
5	Dirt trap
6	Degassed water outlet
7	Folds up in the direction of the arrow



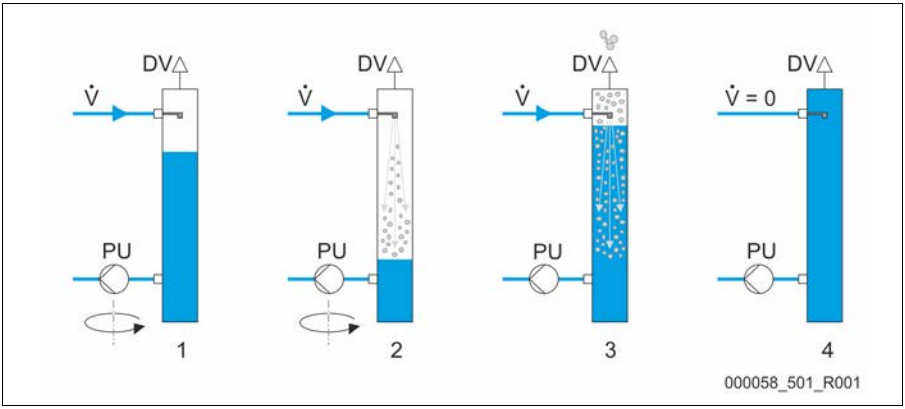
4.2 Identification

The nameplate provides information on manufacturer, year of manufacture, part number and technical data. The nameplate is located on the rear side of the controller inside the system.



Information on nameplate	Meaning
Type	Device name
Serial No.	Serial number
min. / max. allowable pressure P	Minimum/maximum permissible pressure
min. / max. continuous operating temperature	Minimum/maximum continuous operation temperature
Year built	Year of manufacture

4.3 Function



1	Vacuum is drawn	3	Discharge
2	Injection	4	Idling time

The Reflex Servitec Mini can degas the system water in a spray tube. Gas-rich water is sprayed into the spray tube via a nozzle. A pump sucks the water out of the spray tube and transports it into the system. The system is set up so that the pump draws more water from the pipe that can flow through the nozzle. The result is a vacuum in the spray tube, that causes the degassing effect. When the pump switches off, water flows into the spray tube and pushes the driven out gas to the outside via a special valve.

4.4 Scope of delivery

The scope of delivery is described in the shipping document for the initial shipment and the content is shown on the packaging.

Immediately after receipt of the goods, please check the shipment for completeness and damage. Please notify us immediately of any transport damage.

Basic degassing equipment:

- Device
- 2 ball valves for the degassing connections
- Operating manual

4.5 Optional equipment and accessories

The following optional equipment and accessories are available for this device:

- Fillcontrol Plus Compact for make-up with water.
- Fillsoft/Fillsoft zero for softening/desalinating the make-up water from the public water network.

Note!
Separate operating manuals are supplied with accessories.

5 Technical data

Note!

The following values apply for all systems:

- Permissible flow temperature: 60 °C
- Permissible ambient temperature: 0 °C - 45 °C
- Permissible operating gauge pressure: 4.0 bar
- Separation level, dissolved gases: ≤ 90 %
- Separation level, free gases: 100 %
- Degree of protection: IP 54

5.1 Electrical system

Type	Power output (W)	Power supply (V / Hz)	Power consumption (A)	Electrical voltage control unit (V, A)	-
Mini	60	230 / 50	0.3	230 V	-

5.2 Dimensions and connections

Type	Weight (kg)	Height (mm)	Width (mm)	Depth (mm)	Connection (inches)
Mini	5.6	420	295	220	1/2

5.3 Operation

Type	System volume (m^3)	Working pressure (bar)	Permissible operating gauge pressure (bar)	Operating temperature (°C)
Mini	1	0.5-2.5	4	60

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, start-up and maintenance certificate. This action is a prerequisite for the making of warranty claims.

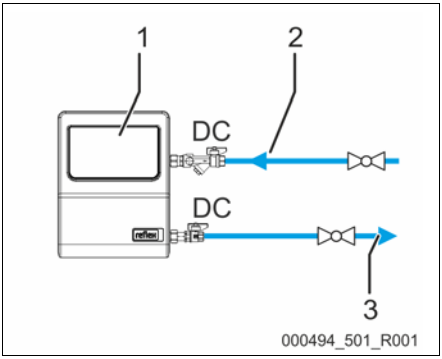
– Arrange for specialist personnel to carry out commissioning and annual maintenance.

6.1 Switching and make-up variants

Basic system variant Servitec Mini

1	Servitec Mini
2	Gas-rich water
3	Degassed water

- Connection 2 x DN 15
- Max. pipe length 5m



Note!

Shut-off valves must be used at the connection point to the pipe network.

6.2 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.

6.3 Preparatory work

Condition of the delivered device:

- Check all screw connections of the device for tight seating. Tighten the screws as necessary.

Preparing the connection of the device to the plant system:

- Barrier-free access to the plant system.
- Level and solid installation surface for the device.
- Frost-free, well-ventilated room.
  - Room temperature > 0 - 45 °C.
- Electric connection.
  - 230 V~, 50 Hz, 16 A with upstream ELCB (tripping current: 0.03 A).

6.4 Execution

Note!

The screw connections at the device may loosen when the device is moved to another location.

- Before using the device check the screw connections for proper seating and sealing

Note!

Avoid leaks at the connections.

- When connecting the device to the plant system, ensure that the connections for degassing and make-up are not twisted.

Proceed as follows:

- Connect the device at the return flow side of the plant system.
  - In this manner, you ensure that the device is operated within the permissible pressure and temperature ranges.
- In the case of a plant system with return flow admixture or a hydraulic switching point, connect the device upstream of the switching point.
  - In this manner, you ensure the water degassing in the 'V' main volume flow at temperatures ≤ 60 °C.

CAUTION – damage due to improper connection! Bear in mind that the device may be subject to additional stresses through the connection of piping or hose connections to the plant system. Ensure that all connections to the plant system are free from stresses. If necessary, provide support structures for the pipes.

CAUTION – Property damage caused by leaks! Leaks in the connection pipes to the device can cause material damage to the plant system. Use only connection pipes with appropriate resistance against the plant system temperature.

Proceed as follows:

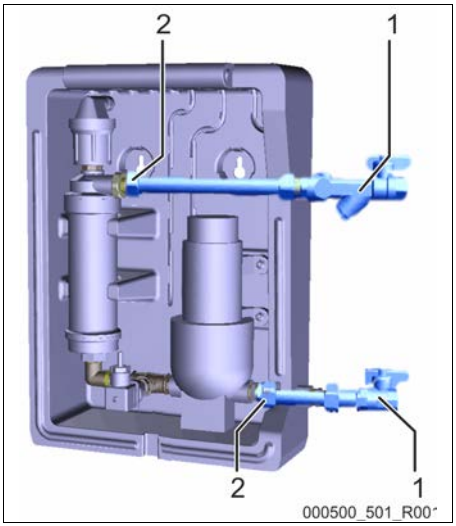
1. Attach the supplied pipe sections to the device, see chapter 6.4.1 "Installation of the pipe run" on page 19 .
2. Mount the device on the wall, see chapter 6.4.2 "Wall mounting" on page 19 .
3. Comp the water side connections from the device to the plant system, see chapter 6.4.3 "Hydraulic connection" on page 20 .

Note!

When connecting, ensure the valves and supply element options of the connecting pipes can be operated.

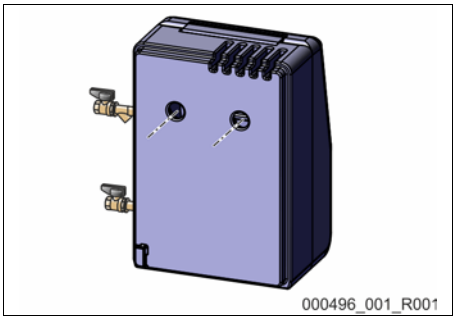
6.4.1 Installation of the pipe run

The two required pipe sections (1, blue) are pre-assembled and included in the scope of delivery. Before wall mounting they must attached to the device by the end-user (position 2).



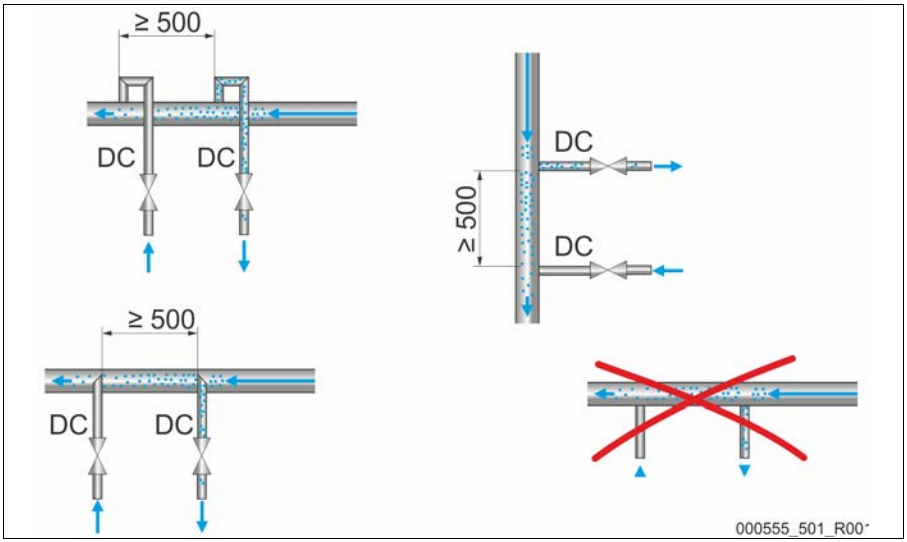
6.4.2 Wall mounting

Use the bores provided at the housing rear to attach the device at the wall. Select the attachment means according to the wall properties and the weight of the device.



6.4.3 Hydraulic connection

1. Install the 'DC' degassing pipes as shown below:



Comply with the following points:

- Prevent overloading of the dirt trap in the device resulting from coarse dirt.
- Install the gas-rich degassing pipe upstream of the gas-poor degassing pipe (when viewed in the system flow direction).
- Preferably install at the return flow side of the plant system.
  - The water temperature must be in the range of 0 °C – 60 °C to ensure sufficient degassing capacity.

7 Commissioning

Note!
Arrange for specialist personnel to carry out commissioning and annual maintenance.

7.1 Requirements for initial commissioning

The device will be ready for commissioning when the tasks described in the "Installation" chapter have been completed.

- The device is securely mounted.
- The connections of the device to the system have been created and plant system pressure maintenance is operational.
  - One degassing pipe to the plant system (device outlet).
  - One degassing pipe from the plant system (device inlet).
- Optional: Where an automatic water replenishment system is provided, the connection of the device to the water make up is created.
- If required, the connection pipes of the device have been purged and cleaned of welding residue and dirt prior to commissioning.
- The plant system is filled with water and the majority of the gas has been vented.
  - Circulation through the entire plant system is thus ensured.

7.2 Determination of the minimum operating pressure

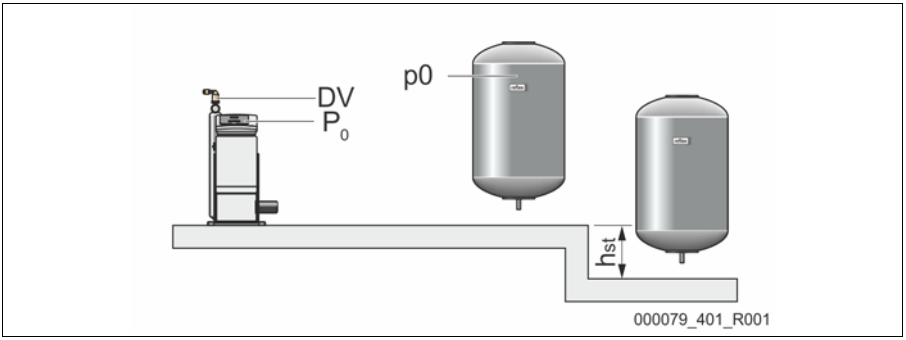
The minimum operating pressure 'P_0' is automatically determined via the integrated pressure sensor based on the actual values in the system. Therefore during commissioning always ensure that the system operating pressure is set correctly.

Note!
We recommend rechecking of the pressure maintenance target value (static pressure range) 2 weeks after commissioning of the Servitec Mini and if necessary, replenishing of the system.

Proceed as follows:

1. Set the controller to 'Auto'.
2. Determine the 'P_0' minimum operating pressure of the device relative to the 'p0' initial pressure of the diaphragm expansion tank.

Calculate the minimum operating pressure as follows:



- The device is installed at the same level as the diaphragm expansion tank (hst = 0).
  - $P_0 = p0$*
- The device is installed at a lower level than the diaphragm expansion tank.
  - $P_0 = p0 + h_{st}/10$*
- The device is installed at a higher level than the diaphragm expansion tank.
  - $P_0 = p0 - h_{st}/10$*

* p0 in bar, h_{st} in m

Note!

- Comply with the Reflex planning guideline.
  - During planning, take into account that the working range of the device must be between the 'pa' initial pressure and the 'pe' final pressure in the working range of the pressure maintenance.

$P_a = p_0 + 0.3$ bar

7.3 Filling the device with water

Use the system to fill water into the device.

1. Open the device ball valves.
   - Water flows in and air escapes from the system via the degassing valve.

7.4 Execution

1. Create the power supply.
   - The device starts in commissioning mode (Stop LED lights up).
   - The device checks the pressure and calculates the minimum operating pressure P0 from it. If P0 is greater than 0.5 bar, the system enters auto mode (Auto LED flashes and the Stop LED goes out).

Note!
If P0 is less than 0.5 bar, a low water error is triggered. Increase the operating pressure accordingly.

2. If the Auto LED is flashing, press the Auto button.
   - The device starts, checks the previously calculated P0 and adjusts it as necessary.
   - Continuous degassing starts (6 h).

Note!
The dirt trap in the degassing pipe must be cleaned no later than after the continuous degassing time has elapsed, see chapter 10.2 "Cleaning" on page 31.

7.5 Installation and commissioning certificate

Data shown on the nameplate:	P_0
Type:	P_{SV}
Manufacturing number:	

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.

Note!

When any factory-set values of the device are changed, you must enter this information in the Maintenance certificate, see chapter 10.3 "Maintenance certificate" on page 32 .

For the installation

Place, date	Company	Signature

For the commissioning

Place, date	Company	Signature

8 Operation

8.1 Automatic mode

Automatic mode includes the two operating modes continuous degassing and interval degassing.

Continuous degassing

This mode starts automatically after the start routine. Multiple degassing cycles without pause times are carried out over a fixed period (6 h for 4 days).

Interval degassing

This mode comprises repeating intervals of 10 degassing cycles. There is a pause time between the intervals. Once continuous degassing has completed, interval degassing starts automatically.

8.2 Stop mode

On the controller, press 'Stop' to activate stop mode. The Auto LED of the operating panel goes out, the Stop LED lights up.

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

Note!

The system triggers an error message if Stop mode is activated for more than 4 hours.

8.3 Recommissioning

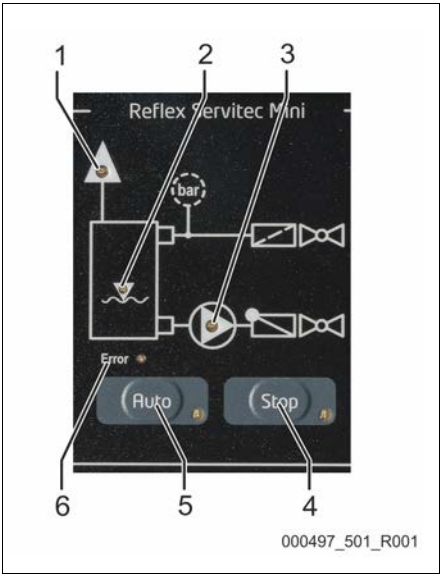
Note!

Recommissioning after a long shut-down takes place by pressing the 'Auto' button.

9 Controller

9.1 Operator panel

1	Degassing LED • Lights up green during the injection function, see chapter 4.3 "Function" on page 12 .
2	Water level LED • Lights up red if a warning exists
3	Pump LED • Lights up green during operation
4	Stop button/LED • For stop mode • Lights up yellow
5	Auto button/LED • For continuous operation • Acknowledge error messages • Lights up green
6	Error LED • Lights up red if an error exists



9.2 Messages

If errors occur during operation of the system, these are visualised via the Error LED in combination with other LEDs. If an error clears by itself, the error indicator light goes out.

Exception: Er 02.1, ER07. These errors must be reset by pressing the 'AUTO' button.

The errors are recorded locally and listed and sequentially number in the sequence in which they occur. The file can be read out on any PC. A maximum of 50 errors are saved.

ER Code	Error	Cause	Remedy
01	Water level LED lights up (Minimum pressure)	• Water loss in the system. • Vacuum pump fault. • Expansion tank defective.	• Check water level. • Check vacuum pump. • Check expansion tank.
02.1	Error LED and Water level LED light up (low water)	• Dirt trap clogged. • Incoming pipe shut-off. • Insufficient pressure in the vacuum pump.	• Clean the dirt trap. • Unblock the incoming pipes.

ER Code	Error	Cause	Remedy
02.2	Error LED lights up and the Water level LED flashes at 5 Hz (low water)	Vacuum is not generated quickly enough. • Vacuum pump defective. • Gas in the vacuum pump. • Degassing valve leaking.	• Check the vacuum pump and replace as necessary. • Replace the degassing valve.
07	Error LED and Pump LED light up (make-up cycles)	Set value exceeded.	• Seal the leak in the system.
10	Error LED flashes at 5 Hz (maximum pressure)	• Set value exceeded.	• Set the tripping pressure of the safety valve.
14	Error LED and Degassing LED light up (discharge period)	• Degassing pipe closed. • Dirt trap clogged. • Set value exceeded.	• Open the degassing pipe. • Clean the dirt trap.
19	Error LED lights up and Water level LED flashes at 5 Hz (stop > 4 hours)	Device is in stop mode for more than 4 hours.	Set the controller to Automatic mode.

Note!

- 5 Hz: fast flashing
- 2 Hz: slow flashing

9.3 Reset

If the system is to be reset to factory settings, you can perform a reset.

1. Simultaneously press the Auto button and the Stop button for longer than 10 seconds. All LEDs flash briefly.
2. Release the Stop/Auto buttons again.
   The reset is performed and the device commences the start routine.

Note!

If you press the Stop button during the Start routine, the reset process in interrupted.

Note!

After the reset, the continuous degassing and interval degassing operating times are automatically synchronised from this new point in time, see chapter 8.1 "Automatic mode" on page 25 .

10 Maintenance

⚠ 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, 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 'Servitec' must be serviced annually.

Note!

Maintenance work must only be carried out and confirmed by specialist personnel.

10.1 Maintenance schedule

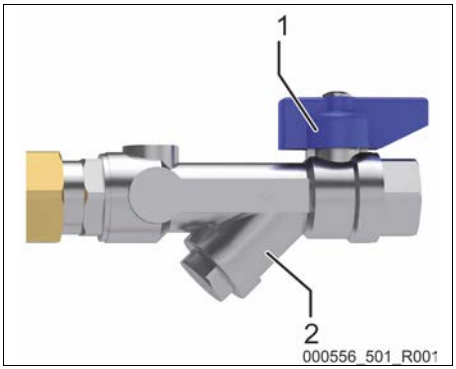
The maintenance schedule is a summary of maintenance tasks to be carried out regularly.

Maintenance task	Conditions			Interval
▲ = Check, ■ = Service, ● = Clean				
Check for leaks. • Screw connections • Degassing valve	▲	■		Annually
Function test of the vacuum pump. • Press and hold Stop mode for at least 2 seconds. The press on Automatic. • The pump should now run-up.	▲			Annually
Clean the dirt trap. – see chapter 10.2 "Cleaning" on page 31	▲	■	●	Depending on the operating conditions

10.2 Cleaning

Cleaning the dirt trap

The dirt trap in the degassing pipe must be cleaned no later than after the expiry of the continuous degassing time. Check the dirt traps after every filling action or extended operation.



1. Press 'Stop' on the controller's operator panel.
   – The device is non-functioning and the vacuum pump is shut down.
2. Close the ball valve (1) upstream of the dirt trap (2).
3. Slowly unscrew the cap with the sieve.
   – The residual pressure in the pipe segment is released.
4. Pull the sieve out of the cap.
5. Clean the sieve with a soft brush and rinse it with clear water.
6. Check the seal for damage and replace as necessary.
7. Insert the sieve in the cap and turn the cap with the sieve in the housing of the dirt trap (2).
8. Open the ball valve (1) upstream of the dirt trap (2).
9. Press 'Auto' on the controller's operator panel.
   – The device is switched on and the vacuum pump is in operation.

10.3 Maintenance certificate

All maintenance tasks have been completed according to the Reflex Installation, Operating and Maintenance Manual.

Date	Service organisation	Signature	Remarks

11 Removal

⚠ 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 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.

Prior to disassembly, shut off the degassing pipes from the system to the device and de-pressurise the device. Then disconnect the device from all electrical power sources.

Proceed as follows:

1. Set the device controller to stop mode.
2. Close the connections from the device for the degassing pipes.
3. Disconnect the device from all electrical power sources.
4. Disconnect the power cable of the device from the power supply.
5. Secure the plant system to prevent it being switched back on.

   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.
6. Remove the degassing pipes from the device.
   - Ensure that the device shut-offs are not twisted when you remove the pipes.
   - Slowly disconnect the pipes and if necessary catch any escaping residual water in a container.
7. Physically remove the device from the system.
8. Drain all residual water from the device.
   - At the device, open the connections for the degassing pipes.
   - Use a suitable container to catch the residual water.

The device is removed.

12 Disposal

The intentional or unintentional reuse of used components can result in a hazard for persons, the environment and the system.

Therefore, please observe the following points:

- The operating company is responsible for proper disposal.
- Only to be disposed of by specialist personnel.
- Upon conclusion of the useful life, strip the system down into different separable materials and deliver to a specialist company for recycling.

Note!

The following included materials are fully recyclable:

- EPP (housing)
- ABS (front cover of the controller)
- PP (back cover of the controller)

13 Appendix

13.1 Reflex Customer Service

Central customer service

Switchboard: Telephone number: +49 (0)2382 7069 - 0

Customer Service extension: +49 (0)2382 7069 - 9505

Fax: +49 (0)2382 7069 - 523

E-mail: service@reflex.de

Technical hotline

For questions about our products

Telephone number: +49 (0)2382 7069-9546

Monday to Friday, 8:00 a.m. – 4:30 p.m.

13.2 Warranty

The respective statutory warranty regulations apply.

13.3 Conformity and standards

EU-Declaration of conformity for the electrical devices in pressure maintenance, make-up and degassing systems	
1. This is to certify that the products conform with the most important protection requirements set forth in the Council Directives on the harmonization of the laws of the member states relating to electromagnetic compatibility (2004/108/EEC). The following standards were used to evaluate the products:	DIN EN 61326 – 1:2013-07
2. This is to certify that the control boxes conform with the most important requirements of the low voltage directive (2006/95/EEC). The following standards were used to evaluate the products:	DIN EN 61010 – 1:2011-07 BGV A2
Manufacturer certificate of Reflex degassing system	Design – Manufacturing – Product Verification
Vacuum spray-tube / degassing system: Servitec Mini universally applicable in heating, solar and cooling systems	
type	according to name plate of vessel
Serial no.	according to name plate of vessel
Year of manufacture	according to name plate of vessel
max. allowable pressure (PS)	according to name plate of vessel
Test pressure (PT)	according to name plate of vessel
min. / max. allowable temperature (TS)	according to name plate of vessel
max. continious operating temperature	according to name plate of vessel
Operating medium	water
The conformity of the product described above with the provisions of the applied Directive(s) is demonstrated by compliance with the following standards / regulations:	Pressure Equipment Directive, AD 2000 according to name plate of vessel

The manufacturer herewith declares that the Vacuum spray-tube / degassing system: Servitec Mini is designed and manufactured in accordance to the directive 2014/68/EU article 4 paragraph 3 listed requirements of the sound engineering practice of a member state.

The chosen technical specification for the fulfillment of the basic safety requirements of the directive 2014/68/EU are according to the name plate.

Signed for and on behalf of

Manufacturer

Reflex Winkelmann GmbH
Gersteinstraße 19
D - 59227 Ahlen - Germany
Telefon: +49 (0)2382 7069 -0
Telefax: +49 (0)2382 7069 -588
E-Mail: info@reflex.de

Ahlen,
19.07.2016

Norbert Hülsmann Volker Mauel
Members of the Management

SI1736en / 9126573 / 07-17

Thinking solutions.

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