reflex 'servitec magcontrol 15'
vacuum spray tube deaeration

Mounting, operating, and maintenance instructions

as of 06/03

reflex 'servitec magcontrol 15'
General

Table of contents

General notes on safety

'servitec magcontrol 15' is a deaeration and water make-up station for heating and cooling systems that mainly consists of a control unit and a vacuum spray tube.

Assembly, operation
according to the national regulations, in Germany the Operational Safety Regulation (Betriebssicherheitsverordnung). Correspondingly, the assembly and operation are to be performed according to the state of the art by specialized personnel and especially trained staff. Only vacuum spray tubes without visible damages of the pressure part may be installed.

Caution! 'servitec magcontrol 15' has been designed for the stationary, **not** for the mobile system operation. The set warranty periods are only applicable if a maximum of 10,000 deaeration intervals per year is observed.

Modifications of the 'servitec magcontrol 15'
such as welding works at the spray tube or interventions into the circuit are not allowed.

Observing the parameters
Specifications regarding the manufacturer, year of construction, production number, and the technical data are to be gathered from the typeplate. You must perform appropriate measures with respect to the temperature and pressure protection in the supply system to ensure that the specified permissible maximum and minimum operating parameters are neither exceeded nor fallen short. The use is only allowed in systems with non-aggressive and non-toxic waters.

Heat insulation
The operator of heating water systems must provide a warning in the vicinityof the vacuum spray tube if there is a personal risk due to excessively high surfaces temperatures. Alternatively, he can provide for an appropriate heat insulation.Be careful when working on a hot system. In particular at the screwed connections, the vent screw for the pump, and the dipstick deaeration there is a risk of scalds in case of penetrating water and a risk of injury due to high temperatures in case of contact with specific parts, in particular the vacuum spray tube.

Electrical connection
The electrical cabling and the connection must be performed by a specialist according to the applicable local EVU, VDE, and EN provisions. Prior to performing any work on electrical components, it must be ensured that the system is not alive.

The non-compliance with the present instruction, in particular the safety instructions, may lead to the destruction and faults of the 'servitec magcontrol 15', to personal injuries and may affect the function. In case of the violation of such instruction, any and all claims for warranty and liability are excluded.

Scope of delivery

Note: Please check the delivery for completeness
and damages immediately after the receipt of the system!
Transport damages must be reported immediately!

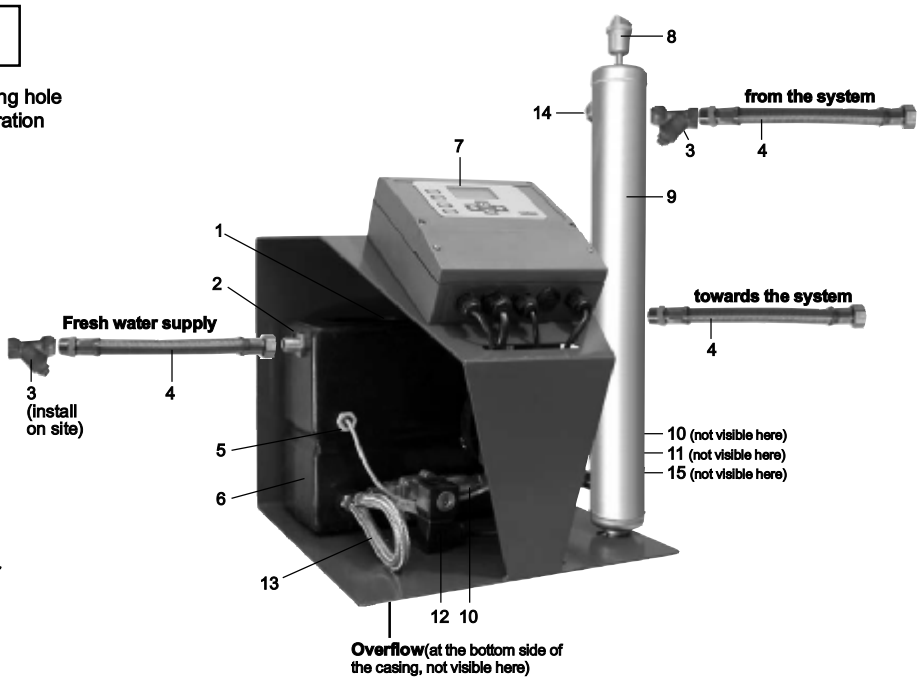
The scope of delivery is described on the delivery note, and the contents are indicated on the cardboard box.

1 cardboard box with
- 'servitec magcontrol 15' (pre-assembled)
- 1 dirt trap G ⅜
- 3 reinforced hoses G ⅜, 500 mm
- 1 dipstick deaeration
- Assembly, operating, and maintenance instructions

reflex 'servitec magcontrol 15'
General

Overview diagram

1 Cover of the mounting hole in the network separation container (6)
2 float valve
3 Dirt trap
4 Reinforced hose (install on site)
5 Low-water switch
6 Network separation container
7 Control unit
8 Dipstick deaeration
9 Spray tube
10 Return valve
11 Pump
12 Water make-up solenoid valve
13 Reinforced hose Water make-up
14 Nozzle connector
15 Pressure transducer



Operating panel

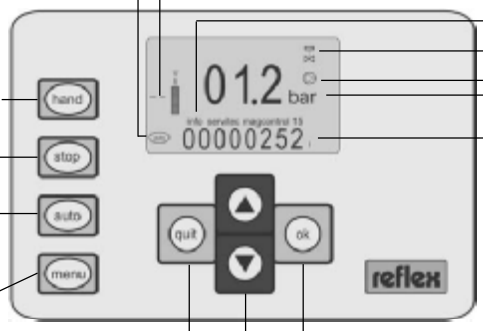
Operating mode buttons

Manual operation (p. 11)

Stop operation (p. 11)
System out of operation

Automatic operation (p. 11)

Calling the customer menu (p. 12)



Control keys

in the customer menu
cancel the parameter entry, exit the customer menu

in the auto, manual, stop operation
acknowledge messages (e.g. "ER06 water make-up time exceeded")

Scroll through the customer menu, modify parameters

select parameters, confirm entry

Symbols

selected operating mode (here: auto)

deaeration programs (p. 11)

if "info" is displayed, there is a pending message

Solenoid valve water make-up

pump

In the automatic, manual, stop operation
display of the current system pressure, flashes in case of a pressure failure
In the customer menu
parameter name

Info display
display of messages, display of parameter values

Note:

means "press key" throughout the assembly, operating, and maintenance instructions

reflex 'servitec magcontrol 15'
General

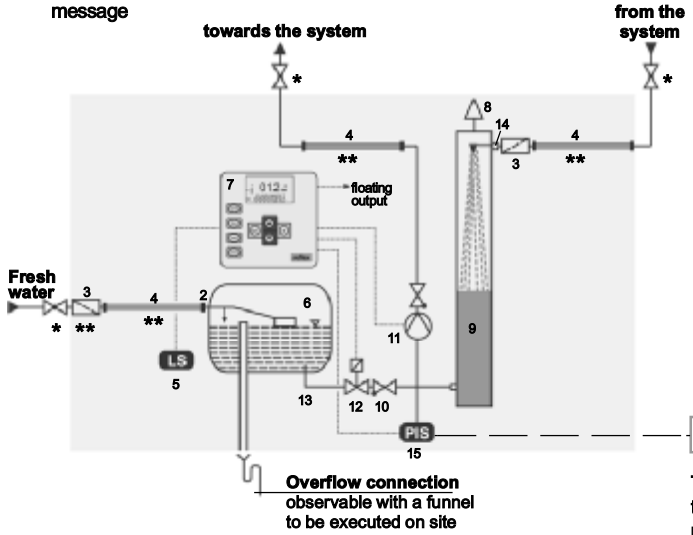
Technical data

Item no.	: 6821600
permissible operating excess pressure	: 6 bar
permissible operating temperature System deaeration	: 70°C
Water make-up	: 30°C
Working pressure	: 1,0 ... 2.5 bar
max. system volume	: 1000 litres
Water make-up capacity	: ca. 0.02 m³/h
max. water make-up admission pressure different setting possible)	: 6 bar (default setting,
Heating connection	: 2 x G ¾ reinforced hose, included
Drinking water connection	: 1 x G ¾ reinforced hose, included
Overflow connection	: DN 32
Width x depth x height	: 350 mm x 350 mm x 580 mm
Weight without water filling	: 16.6 kg
Electrical connection	: 230 V, 50 Hz, 95 W, shock-proof plug with a 2-m-cable
average energy consumption per day	: 0.045 kWh
floating output (change-over contact) for group message	: max. contact load 230 V, 4 A

Convincing:
Deaeration, water make-up, pressure monitoring

- Deaeration:
  - no circulation problems caused by free bubbles in the circuit water
  - Reducing the risk of corrosion
- Water make-up:
  - direct connection to drinking water networks possible, the network separation according to DIN 1988 is guaranteed by means of an open network separation container
  - The water make-up quantity is determined and monitored electronically. If the set water make-up time or the set number of cycles per hour is exceeded, the water make-up
- is interrupted and a message is issued.

Pressure monitoring:
- pressure is permanently shown on the display
- no direct aspiration of air by means of a controlled pressure maintenance



reflex 'servitec magcontrol 15' pressure recording

The internal switch signal from the pressure transducer PIS triggers a water make-up process if the system filling pressure or the initial pressure are fallen short of.
In addition, the march of pressure in the spray tube is monitored via this signal.

* Shut-off on site
** 1 dirt trap and 3 reinforced hoses as loose addition

reflex 'servitec magcontrol 15'
Assembly

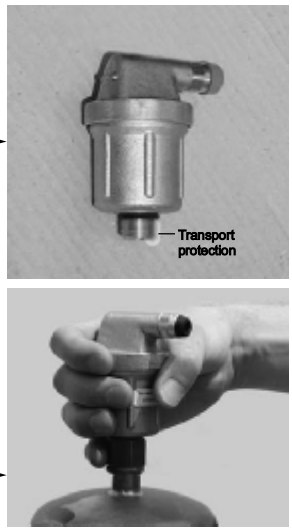
Assembly

The 'servitec magcontrol 15' is to be mounted horizontally on the wall using the borings provided. 3 flexible reinforced hoses (4) are included in the delivery for an off-circuit installation and for the noise decoupling.

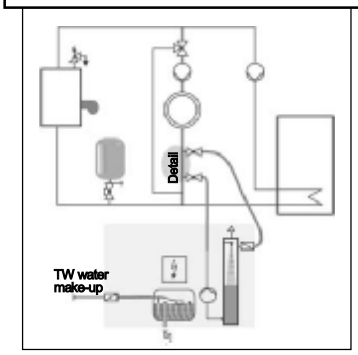
Shut-offs towards the system and the drinking water network are to be provided on site. The overflow must be connected on site to the waste water system in such a manner that allows the observance. Connect the included dirt trap (3) horizontally with the point of use of the drinking water. Then connect the dirt trap and the float valve (2) using one of the delivered reinforced hoses.

Caution! The integration into the tubes (see "Integration details") must be performed from the top or laterally in such a manner that no coarse dirt particles can enter the 'servitec'.

Remove the transport protection of the dipstick deaeration (8) , and hand-screw it at the spray tube (9). The sealing is performed by means of an O ring.

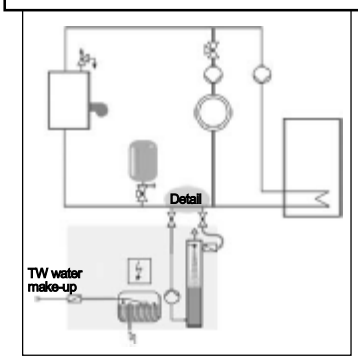


'servitec magcontrol 15' in a heating system with return flow addition



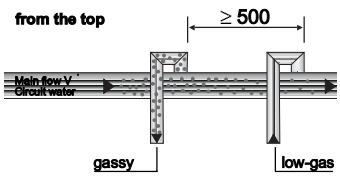
If the heating system of the building is operated with a return flow addition, then the 'servitec' is integrated into the return of the building heating before the branch-off point of the return flow addition.

'servitec magcontrol 15' in a heating system without return flow addition



In heating systems without a return flow addition, the 'servitec' is directly installed in the common boiler return at the diaphragm pressure expansion vessel.

Integration details



Electrical connection

The power supply is wired in a plug ready manner. Only a 230 V shock-proof plug must be provided on site, and the electrical cabling as well as the connection of the floating group signal contact must be performed by a technician according to the valid local (EVU) and VDE regulations.

The terminal plan (see p. 6) must be considered in any case.

Prior to performing any work on electrical components, the mains plug must be disconnected or it must be ensured that the system is not alive.

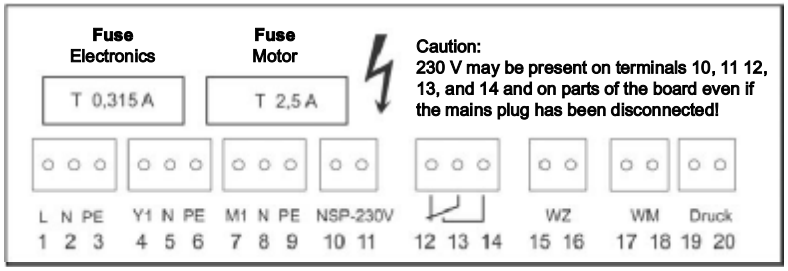
reflex 'servitec magcontrol 15'
Assembly, initial operation

Installing the cables on site in the control box (7):

– Loosen the 2 recessed head screws of the lower control box cover
– Open the cover
– Lead all the cables to be installed through the PG screwing
  Caution! Only use a PG screwing which is suited for the corresponding cable
– Connect all cables (see also the following terminal plan)

Terminal plan

Description	Terminal	Signal	Notes
Voltage supply 230 V	1 2 3	L N PE	is cabled
Water make-up solenoid valve	4 5 6	Y1 N PE	is cabled
Pump	7 8 9	M1 N PE	is cabled
not occupied	10 11		not cabled
Group signal (floating)	12 13 14	NC COM NO	perform cabling on site, optional
not occupied	15 16	+24 V DC E1	not cabled
Low water switch	17 18	+24 V DC E1	is cabled
Pressure transducer	19 20	+18 V AE	is cabled



Requirements for the initial operation

– The installation of the 'servitec magcontrol 15' is complete.
- The water-side connection to the system has been established.
- The electrical network connection according to the valid VDE and local EVU regulations has been established.
- The tubes to the 'servitec magcontrol 15' must be washed and must be free from dirt and welding residuals.

Steps to take the system into operation

Performing the water connection
Before the parameterization of the control can be performed, the shut-offs for the inputs and outputs must be opened. The network separation container is flooded, and the low water switch releases the pump.

Setting of system-specific parameters
The control unit provides two operating levels: the **password-protected service menu** (see p. 12) and the **customer menu**. During the initial operation, the factory settings of the system-specific conditions must be adjusted here.

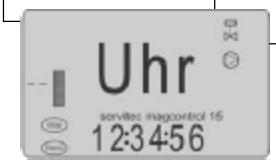
Setting of system-specific parameters in the customer menu

Once the distribution voltage has been established (shock-proof plug), the current system pressure is shown on the display. The (stop) operating mode is enabled.

Please press (menu) to open the customer menu:

Select parameters | Select or modify parameters (flashing values) | Confirm parameters | Exit menu

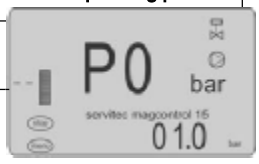
Time



Set the current hour first (here: 12) using the arrow buttons and confirm with "ok". Then, continue with the minute (here: 34) and the second (here: 56).

Changing the menu item

Minimum operating pressure



Set the minimum operating pressure corresponding to the static height of your system here (see also diagram), and confirm with "ok".
This value must be identical with the advance pressure p_0 of the MAG.
1.0 bar = factory setting at the control

p_{SV} [bar] = Safety valve pick-up pressure at the heat generator

0.3 bar

p_{max} [bar]

³ 0,5 bar *

p_e [bar] = final pressure of the MAG

p_a = water make-up when pressure drops below lower limit

p_a [bar] = Initial pressure or filling pressure p_F of the MAG

p_0 [bar] = p_{static} + 0.2 bar** (recommended)

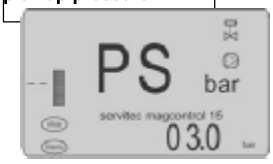
³ 0.3 bar *

0...0.2 bar

p_{st} [bar] = static pressure (= static height [m] / 10)

* Message if pressure is fallen short of or exceeded
** p_0 must correspond to the gas advance pressure of the MAG

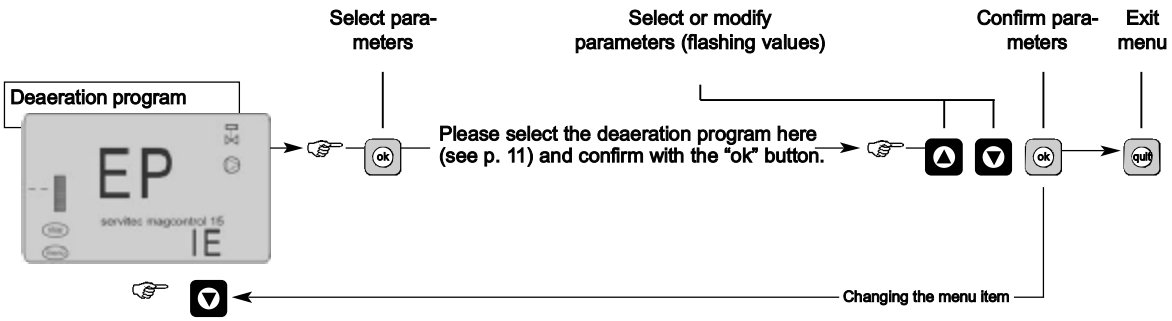
Safety valve pick-up pressure



Set the safety valve pick-up pressure of the heat generator here, and confirm with "ok".

3.0 bar = factory setting

reflex 'servitec magcontrol 15'
Initial operation



Deaeration duration

Select a duration for the continuous deaeration-
here (see p. 11). Confirm with the "ok" button.

5 h = factory setting

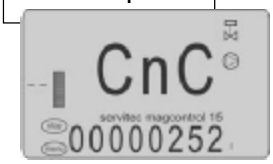
Vacuum test

This menu item serves for the vacuum test of the spray tube. You are obliged to perform the vacuum test at the time of the initial operation and during the maintenance.
Perform the vacuum test as follows:
- the spray tube must be filled with water (system pressure)
- close the shut-off on the supply side towards the spray tube
- perform the vacuum test (select "1" and confirm with "ok")

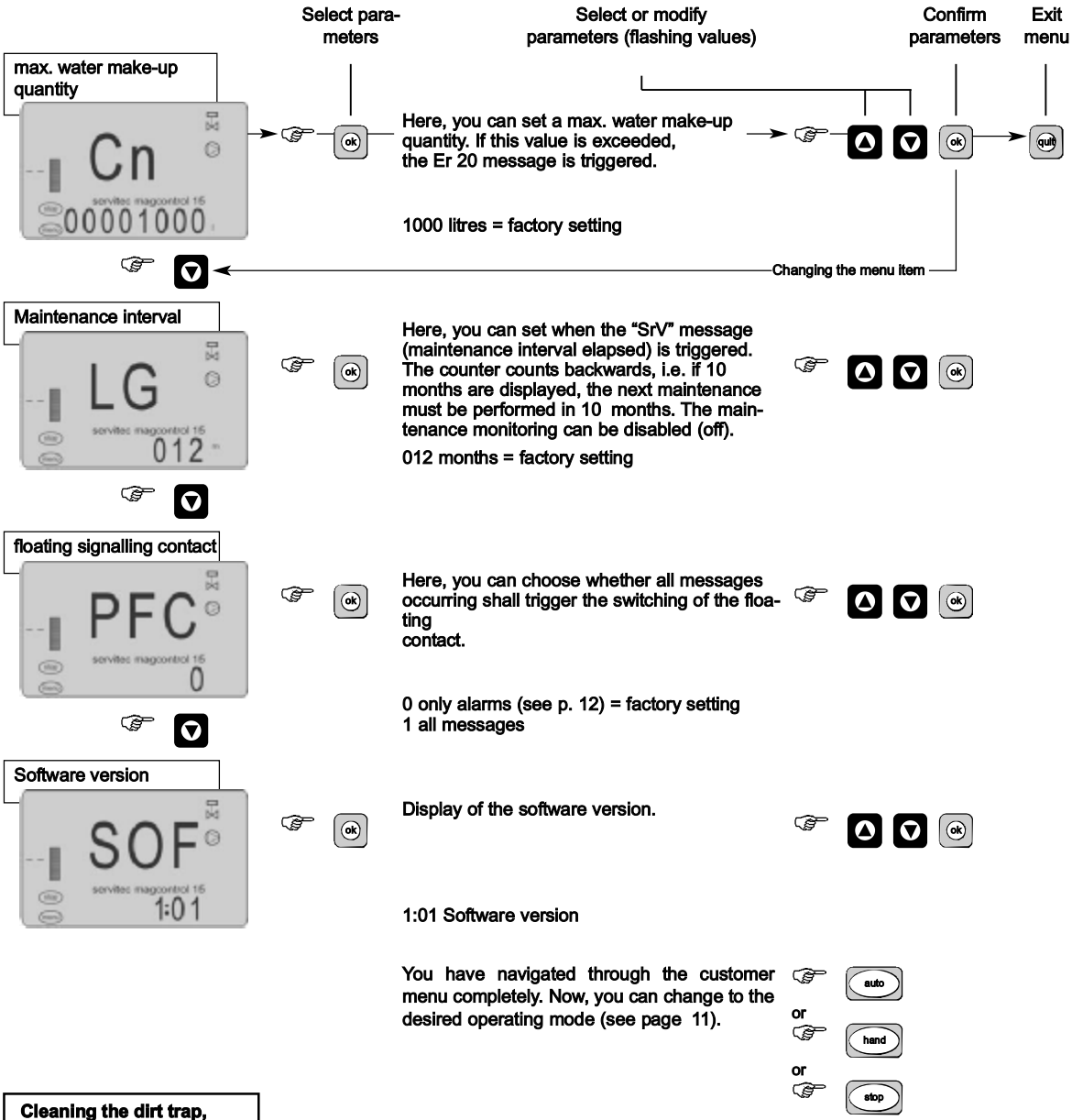
The behaviour of the pressure is monitored and evaluated in to time intervals (counter countdown to 0 s). This test takes 2 min. If the test is passed, "UP i.O" is shown on the display. Continue with:

If the test was not passed, "UP ni. O" is displayed. Resolve the error (see p. 12, Messages), and repeat the vacuum test until it is successful.

Water make-up



Display of the total water make-up quantity put through in litres. This value is calculated internally by the control and can be reset to 0 (CnC = 1).



Cleaning the dirt trap, checking the float valve

The dirt traps (3) in the fresh water supply pipe and at the nozzle inlet must be cleaned, and the tightness of the float valve (2) is to be checked at the overflow.
If problems occur see "Maintenance" section on p. 13 for further information.

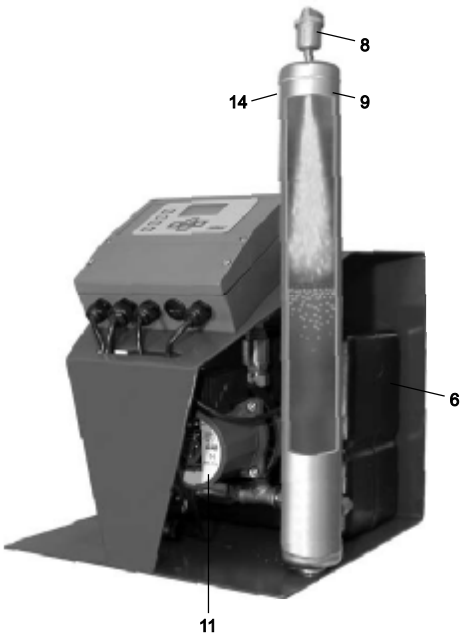
The initial operation is completed at this point!

reflex 'servitec magcontrol 15'
Operation

Function

General description

'servitec magcontrol 15' is a deaeration and water make-up station. It can be used under various system conditions. The mainfield of use are heating and cooling circuits and all locations where "air problems" by dissolved or free gases lead to system failures. The 'servitec' vacuum spray tube deaeration withdraws up to 90 % of the dissolved gases from the network content water. The vacuum deaeration of a partial flow of the circuit water is performed according to an optimized schedule with selectable deaeration programs (see p. 11). A partial flow of the circuit water is atomized through the nozzle (14). The vacuum is generated by the pump (11). The large surface of the sprayed water and the large negative pressure lead to the extremely high deaeration performance. The deaerated water is delivered to the system again. There, it is able to dissolve gases again. The gases deposited in the vacuum spray tube are diverted to the outside by means of the dipstick deaeration. This deaeration interval is repeated, and free and dissolved gases are removed from the circuit water.



The deaeration interval

The deaerationinterval is a time-controlled, predefined sequence consisting of a deaeration period, a discharge period, and a rest period. A modification of the timely sequences can only be performed in the service menu by the Reflex service. The deaeration intervals are repeated according to the mode **continuous deaeration** (default = 5 h per day) or **interval deaeration** (default = 16 x per day).

Injection period

The pump (11) starts running. After a short period of time, a negative pressure (temperature-dependent) is shown on the display. This is possible because the pump (11) withdraws more water from the vacuum spray tube by means of the suction connection than can flow in through the pressure connection with nozzle (14). The spraying process through the nozzle starts when a negative pressure is achieved. While the pump (11) is running, the water level in the vacuum spray tube (9) is continuously falling. The time program and the pressure setting have been chosen in such a manner that the pump will not run out of water.

Discharge period

The pump (11) is turned off. The water continues to be atomized into the vacuum spray tube by means of the system pressure (at least 1.0 bar). During the discharge period, the water level in the vacuum spray tube rises slowly. In this phase of the interval, the vacuum is still maintained. At the end of the elimination phase, the rising water column condenses the expulsed gas within a few seconds and diverts it towards the atmosphere through the dipstick deaeration (8).

Rest period

The process is concluded by the rest period during which a post-process water make-up takes place.

Water make-up

For the 'servitec magcontrol 15', the pressure in the heating or cooling system is registered and monitored by means of the pressure transducer (15). If the filling pressure falls below $p_F = p_0 + 0.2$ bar, the water make-up deaeration is activated until $p_F = p_0 + 0.3$ is achieved. During this process, the time (default: 20 min.), cycle (3 in 2 h), and quantity monitoring is active. During the water make-up, the solenoid valve (12) opens towards the network separation container (6). The pump directly sucks from the container. During the pump run, a pressure of approximately -0.1 bar arises at the spray tube (pressure display). The system pressure is checked during the cyclical pump stop. If necessary, the water make-up is continued.

Automatic operation

auto

The automatic operation may only be activated if the initial operation is complete. If you are in the automatic operating mode, you can choose between three **deaeration programs**. The system monitoring is active for all three programs. The water make-up is performed automatically. Selection in the customer menu (see p. 8)

Continuous deaeration - intensive deaeration after start-up and repairs
The deaeration cycles for the set time of the continuous deaeration (default: 5 h) are performed one after the other. Then, the control automatically continues with the interval deaeration. At the start-up of water systems, at least half of the system volume should flow once through the 'servitec'. Referred to a system volume of 1 m³, this corresponds to a continuous deaeration of approximately 11 h. A continuous deaeration of 48 h is absolutely sufficient for systems with an extremely high gas content. Together with the subsequent interval deaeration, this results in 10,000 intervals per year. To avoid an unnecessary wear of the 'servitec', this number must not be exceeded per year. The control registers the total number of intervals performed.

Interval deaeration – economic operating mode during the automatic operation After 8 intervals (default), a break period (default: 23 h) is observed before the subsequent 8 deaeration intervals are started. This program is started automatically after the completion of the continuous deaeration. With respect to systems that already have been deaerated, you can also manually select the programme. Then, the interval deaeration is started each day at 08:00 o'clock.

No deaeration – only water make-up
There is no deaeration of the system water. This operation mode is recommended for the summer operation or if a deaeration of the system water is, in general, not desired.

Display automatic operation with continuous deaeration ——

Display automatic operation with interval deaeration – –

Display automatic operation "No deaeration - - - only water make-up"

Manual operation

hand

The manual operation may only be performed if the initial operation is complete. This operating mode mainly serves for the function check of the pump and the water make-up solenoid valve.

☞ ▲ ▼ Select pump or solenoid valve, activate the blinking symbol using the "ok" button

☞ ok Pump starts/solenoid valve opens *

☞ ok by pressing the "ok" button again, the pump is stopped or the solenoid valve is closed.
Alternatively, you can directly press the "quit" button.
Then, the pump and the solenoid valve are turned off one after the other.

* If the pressure in the spray tube falls below 0.1 bar, the pump is automatically turned off after 10 s. The solenoid valve is always closed after 10 s.

Stop operation

stop

In the stop operation, the 'servitec magcontrol 15' provides no functionality, except from the information shown on the LCD display. There is no function monitoring. The pump is turned off. If you press the "stop" button, the following is shown on the display:

reflex

Automatic operation

auto

The automatic operation may only be activated if the initial operation is complete. If you are in the automatic operating mode, you can choose between three **deaeration programs**. The system monitoring is active for all three programs. The water make-up is performed automatically. Selection in the customer menu (see p. 8)

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There is no deaeration of the system water. This operation mode is recommended for the summer operation or if a deaeration of the system water is, in general, not desired.

Display automatic operation with continuous deaeration ——

Display automatic operation with interval deaeration – –

Display automatic operation "No deaeration - - - only water make-up"

Manual operation

hand

The manual operation may only be performed if the initial operation is complete. This operating mode mainly serves for the function check of the pump and the water make-up solenoid valve.

☞ ▲ ▼ Select pump or solenoid valve, activate the blinking symbol using the "ok" button

☞ ok Pump starts/solenoid valve opens *

☞ ok by pressing the "ok" button again, the pump is stopped or the solenoid valve is closed.
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Stop operation

stop

In the stop operation, the 'servitec magcontrol 15' provides no functionality, except from the information shown on the LCD display. There is no function monitoring. The pump is turned off. If you press the "stop" button, the following is shown on the display:

reflex

Customer menu


The customer menu serves for the entry and modification of the most important operating parameters. These have been edited during the initial operation (see page 7). You use the "menu" button to open the customer menu. Here, you can modify operating parameters or view statuses.
Use  to exit the customer menu.

Password-protected default settings in the service menu

Parameters and switching hystereses are pre-set on the data storage of the 'servitec magcontrol 15'. The pre-set values are based on the research and operationexperience. The most important, password-protected settings are described in the following table:

Parameter	Setting	Remark
Pressure		
Water make-up ON	p_0 + 0.2 bar	p_0 (minimum operating pressure, see p. 7)
Water make-up OFF	p_0 + 0.3 bar	
Minimum operating pressure fallen short of	= p_0	
Maximum operating pressure exceeded	p_{SV} = 0.2 bar	p_{SV} (pick-up pressure of the SV (see p. 7)
Water make-up		
max. water make-up time	20 min	If the water make-up time or the number of cycles are exceeded, the corresponding message is issued.
max. water make-up cycles in 2 h	3	
Deaeration interval		
Injection phase	15 s	The pump is running, atomization is performed at the same time
max. discharge time	120 s	Discharge phase: pump off, injection and gas discharge

Messages

Messages are signalled by the "info" symbol on the display. At the same time, "Er" and the corresponding error code (e.g. Er 06) are shown on the info display. If there are several pending messages, these can be viewed using. 

Most of the messages are acknowledged automatically after the issue has been resolved (see table). Errors such as "make-up time 06" or "make-up cycle 07" must be acknowledged manually. 

The floating change-over contact can be used for the remote transmission for the group signal. In the customer menu (see p. 9), you can choose whether only those messages marked as alarms or all messages should be issued in a floating manner.

ER-Code	Error type		Error causes	Error finding Troubleshooting
01	**min. pressure p_e** fallen short of	Alarm	– Water loss in the system – Pressure maintenance set incorrectly or defect	– Remove leakage – Check advance pressure p_0, adjust if required
2-1	**Dry-running protection** Pressure fallen short of	Alarm	– no water in the spray tube, pressure < 0.1 bar – Dirt trap is clogged – Shut-off closed on the inlet side	– Open shut-offs – Clean the dirt trap – Open the shut-off
2-2	**Dry-running protection** incorrect pressure behaviour during the deaeration process	Alarm	– Negative pressure is generated too slow – 'servitec' was temporarily operated with temperatures exceeding 70°C – Negative pressure is not low enough → Accumulation of gas in the pump → Pump got stuck → Dipstick deaeration absorbs air	– Acknowledge the message, enable automatic operation – Check the integration point of the 'servitec' – Start the pump in the manual operation mode (see p. 11), → Check the screwed connections on the suction side of the pump, renew sealing if required, perform vacuum test → Start rotating the pump, perform vacuum test → Check the dipstick deaeration, clean if necessary, perform vacuum test
2-3	**Dry-running protection** Time-out	Alarm	– Network separation container is empty – Low water switch not connected	– Check the supply pipe (shut-off open?) – Connect the low water switch
2-4	**Dry-running protection** water make-up process	Alarm	– an excessive negative pressure was generated in the spray tube during the water make-up – Water make-up solenoid valve does not open	– Check the function of the solenoid valve clean if necessary (see p. 13), acknowledge message
06	**Water make-up time** exceeded (default: 20 min)	—	– Leakages in the system – Water make-up time too short	– Remove leakages, acknowledge message – Increase water make-up time, if required, contact the Reflex service
07	**Water make-up cycles** exceeded (default: 3 in 2 h)	—	– minor leakages in the system – Connection line from the 'servitec' to the system dimensioned too long or too short	– Remove leakages, acknowledge message – Check the connection line and increase or reduce if required

ER-Code	Error type		Error causes	Error finding Troubleshooting
08	**Pressure measurement** Failure	Alarm	– Pressure transducer connected improperly or defect	– Check cabling, exchange if necessary
10	**max. pressure** exceeded	—	– MAG in the system has incorrect advance pressure – Safety valve pick-up pressure PS in the customer menu set to a value that is too low	– Check MAG advance pressure – Adjust PS setting to SV pick-up pressure of the system
14	**Discharge time** exceeded	—	– Shut-off closed on the inlet side – Dirt trap is clogged	– Open the shut-off – Clean the dirt trap – Acknowledge message
19	**Stop > 4 h**	—	– The control is in stop operation for more than 4 hours	– enable auto operation, if necessary, or acknowledge message
20	**max. water make-up quantity Cn** exceeded	—	– The max. water make-up quantity set in the customer menu under Cn was exceeded	– Acknowledge message
SrV	**Maintenance interval LG** elapsed	—	– Reminder of the annual maintenance	– Perform maintenance – Acknowledge message

Maintenance instructions

Maintenance work may only be performed by skilled personnel. After an operation time of one year, the "SrV" message is generated on the display to remind you of the annual maintenance. You can acknowledge this message using the "quit" button.

Leak test
– check the external tightness
– seal if necessary

Cleaning the dirt trap
– The dirt traps (3) located in the drinking water supply and at the nozzle (14) are to be cleaned.

Perform the vacuum test
– see p. 8

Functional check of the pump, solenoid valve, float valve
If the network separation container (6) is filled, the pump (11) is turned on and the water make-up solenoid valve (12) is open, the following process flow must start:
The water level in the network separation container (6) falls. Subsequently, the float valve (2) opens after a short period of time, and water flows into the network separation container. If the pump (11) is turned off and the solenoid valve (12) is closed, the float valve (2) must close tightly once the maximum water level in the network separation container (6) has been achieved.

– ☞ hand Enable the manual operation
– ☞ ok Start the pump (11) (▷ flashes)
– ☞ ▲ ▼ ok Select and open the water make-up solenoid valve (12)

The water level does not fall after the pump (11) has been started and the solenoid valve (12) has been opened:
– turn on the pump (11) if necessary, exchange the T2, 5 A fuse (see p. 6)
– clean the solenoid valve (12) if required (remove dirt particles and deposits).
The water does not continue to flow after the water level in the network separation container (6) has been lowered:
– remove the float valve, if necessary, and clean the sealing

– ☞ stop Stop the pump (11), close the solenoid valve (12)

Water continues to flow through the float valve (2) in spite of the maximum water level, and the overflow drips:
– remove the float valve, if necessary, and clean the sealing

– ☞ auto switch to the automatic operation

Perform maintenance of the diaphragm expansion vessel (MAG)
– Check the advance pressure p_0
– the value must correspond to the values of the control

Check the set values of the control
– see "Steps to take the system into operation", p. 7-9

Disassembly

Prior to the removal of the 'servitec magcontrol 15 system' or pressure-carrying parts, the system must be unpressurized on the fresh water and system sides. ⚠

1. Shut off the built-in fittings of the 'servitec magcontrol 15',
2. set the control to "manual operation" (see p. 11) and open the water make-up solenoid valve (12) until a pressure compensation with the atmosphere occurs.

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reflex 'servitec magcontrol 15'
Reflex service, declaration of conformity

Central factory service

	++49 (0) 23 82/70 69-... Extension	Fax	Email
Paul Stahl	- 550	- 523	paul.stahl@reflex.de
Volker Lysk	- 512	- 523	volker.lysk@reflex.de

Regional service

Please contact our central office in Ahlen to inquire about your competent regional service.

Declaration of conformity for the electronic control unit of the pressure maintaining, water make-up or deaeration systems reflex 'control P', reflex 'magcontrol', and reflex 'servitec magcontrol 15'

This is to certify that the products comply with the most important protection requirements that are set forth in the Council Directives on the approximation of the laws of the Member States relating to the electromagnetic compatibility (89/336/EEC).

The evaluation of the products was based on the following standards: EN 61000 - 6 - 1 (August 2002)
EN 61000 - 6 - 2 (August 2002)

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Customer menu


The customer menu serves for the entry and modification of the most important operating parameters. These have been edited during the initial operation (see page 7). You use the "menu" button to open the customer menu. Here, you can modify operating parameters or view statuses.
Use  to exit the customer menu.

Password-protected default settings in the service menu

Parameters and switching hystereses are pre-set on the data storage of the 'servitec magcontrol 15'. The pre-set values are based on the research and operationexperience. The most important, password-protected settings are described in the following table:

Parameter	Setting	Remark
Pressure		
Water make-up ON	p_0 + 0.2 bar	p_0 (minimum operating pressure, see p. 7)
Water make-up OFF	p_0 + 0.3 bar	
Minimum operating pressure fallen short of	= p_0	
Maximum operating pressure exceeded	p_{SV} = 0.2 bar	p_{SV} (pick-up pressure of the SV (see p. 7)
Water make-up		
max. water make-up time	20 min	If the water make-up time or the number of cycles are exceeded, the corresponding message is issued.
max. water make-up cycles in 2 h	3	
Deaeration interval		
Injection phase	15 s	The pump is running, atomization is performed at the same time
max. discharge time	120 s	Discharge phase: pump off, injection and gas discharge

Messages

Messages are signalled by the "info" symbol on the display. At the same time, "Er" and the corresponding error code (e.g. Er 06) are shown on the info display. If there are several pending messages, these can be viewed using. 

Most of the messages are acknowledged automatically after the issue has been resolved (see table). Errors such as "make-up time 06" or "make-up cycle 07" must be acknowledged manually. 

The floating change-over contact can be used for the remote transmission for the group signal. In the customer menu (see p. 9), you can choose whether only those messages marked as alarms or all messages should be issued in a floating manner.

ER-Code	Error type		Error causes	Error finding Troubleshooting
01	**min. pressure p_e** fallen short of	Alarm	– Water loss in the system – Pressure maintenance set incorrectly or defect	– Remove leakage – Check advance pressure p_0, adjust if required
2-1	**Dry-running protection** Pressure fallen short of	Alarm	– no water in the spray tube, pressure < 0.1 bar – Dirt trap is clogged – Shut-off closed on the inlet side	– Open shut-offs – Clean the dirt trap – Open the shut-off
2-2	**Dry-running protection** incorrect pressure behaviour during the deaeration process	Alarm	– Negative pressure is generated too slow – 'servitec' was temporarily operated with temperatures exceeding 70°C – Negative pressure is not low enough → Accumulation of gas in the pump → Pump got stuck → Dipstick deaeration absorbs air	– Acknowledge the message, enable automatic operation – Check the integration point of the 'servitec' – Start the pump in the manual operation mode (see p. 11), → Check the screwed connections on the suction side of the pump, renew sealing if required, perform vacuum test → Start rotating the pump, perform vacuum test → Check the dipstick deaeration, clean if necessary, perform vacuum test
2-3	**Dry-running protection** Time-out	Alarm	– Network separation container is empty – Low water switch not connected	– Check the supply pipe (shut-off open?) – Connect the low water switch
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07	**Water make-up cycles** exceeded (default: 3 in 2 h)	—	– minor leakages in the system – Connection line from the 'servitec' to the system dimensioned too long or too short	– Remove leakages, acknowledge message – Check the connection line and increase or reduce if required

ER-Code	Error type		Error causes	Error finding Troubleshooting
08	**Pressure measurement** Failure	Alarm	– Pressure transducer connected improperly or defect	– Check cabling, exchange if necessary
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20	**max. water make-up quantity Cn** exceeded	—	– The max. water make-up quantity set in the customer menu under Cn was exceeded	– Acknowledge message
SrV	**Maintenance interval LG** elapsed	—	– Reminder of the annual maintenance	– Perform maintenance – Acknowledge message

Maintenance instructions

Maintenance work may only be performed by skilled personnel. After an operation time of one year, the "SrV" message is generated on the display to remind you of the annual maintenance. You can acknowledge this message using the "quit" button.

Leak test
– check the external tightness
– seal if necessary

Cleaning the dirt trap
– The dirt traps (3) located in the drinking water supply and at the nozzle (14) are to be cleaned.

Perform the vacuum test
– see p. 8

Functional check of the pump, solenoid valve, float valve
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– ☞ ok Start the pump (11) (▷ flashes)
– ☞ ▲ ▼ ok Select and open the water make-up solenoid valve (12)

The water level does not fall after the pump (11) has been started and the solenoid valve (12) has been opened:
– turn on the pump (11) if necessary, exchange the T2, 5 A fuse (see p. 6)
– clean the solenoid valve (12) if required (remove dirt particles and deposits).
The water does not continue to flow after the water level in the network separation container (6) has been lowered:
– remove the float valve, if necessary, and clean the sealing

– ☞ stop Stop the pump (11), close the solenoid valve (12)

Water continues to flow through the float valve (2) in spite of the maximum water level, and the overflow drips:
– remove the float valve, if necessary, and clean the sealing

– ☞ auto switch to the automatic operation

Perform maintenance of the diaphragm expansion vessel (MAG)
– Check the advance pressure p_0
– the value must correspond to the values of the control

Check the set values of the control
– see "Steps to take the system into operation", p. 7-9

Disassembly

Prior to the removal of the 'servitec magcontrol 15 system' or pressure-carrying parts, the system must be unpressurized on the fresh water and system sides. ⚠

1. Shut off the built-in fittings of the 'servitec magcontrol 15',
2. set the control to "manual operation" (see p. 11) and open the water make-up solenoid valve (12) until a pressure compensation with the atmosphere occurs.

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