

Automatic continuous desalting valve



Model 560/560-A

1. Start-up

The flange connections must be screwed tightly and must be leaktight.
The gland follower must be tightened if leaks appear in this area.

1.1. Determining the necessary desalting rate

For a rough estimate, the amount of boiler water to be drained is determined according to the following formula:

$$P = \frac{R \cdot S}{C - S}$$

- P: Amount of water extracted in the bleeding process [kg/h]
- R: Real steam production of the boiler [kg/h]
- S: Conductivity of the water supply [$\mu\text{S}/\text{cm}$]
- C: Desired conductivity inside the boiler [$\mu\text{S}/\text{cm}$]

Example:

- Differential pressure: 15 bar
- Nominal size of continuous blowdown valve: DN25
- Boiler production: $R = 800 \text{ kg/h}$
- Conductivity of feedwater: $S = 800 \mu\text{S}/\text{cm}$
- Admissible conductivity of boiler water: $C = 6200 \mu\text{S}/\text{cm}$
- Boiler water to be discharged: $P = 118 \text{ kg/h}$ approx. 10% by means of continuous blowdown: $\sim 11,8 \text{ kg/h}$
- Set control lever according to scale to an opening of 18% approx. According Diagram from DN15 to DN25, purge flows to 310 kg/h at page 5.5

Important: In addition to the electrical conductivity, the content of silicic acid (SiO_2) is one of the most important parameters, the maximum value of which may not be exceeded in the boiler water. If these parameters are reached because of thickening (an increase in concentration) in the boiler water, this parameter is decisive for desalting. Because the desalting is regulated via the conductivity measurement, the measured conductivity value in the boiler water in which one of the other parameters has reached its permitted limit value replaces the conductivity limit value.

1.2. Setting the desalting rate at the manual desalting control valve

The desalting rate necessary according to the operating conditions is set with the control lever at the desalting control valve. To do this, please use the purge flow diagrams at pages 5,6 and 7 and the calculus of the necessary desalting rate according formula of point 1.1.

1.3. Setting the desalting rate at the automatic desalting control valve

After proper installation and electrical connection, the desalting control valve is ready for operation. The limit switches are preset by the factory. In the boiler control, the specified conductivity values for the boiler water must be set. Depending on the conductivity setpoint, the servo motor regulates the desalting control valve automatically.

The central position of the desalting control valve should be set in such a way that the necessary desalting volume can be discharged with the mean conductivity CM.

With smaller boilers, it can be necessary to limit the full open position by adaptation of the cam switch. Otherwise too much water might be discharged in the full open position causing a water shortage.

Note: The adjusting valve positions (scale on the adjusting lever) must be matched with the catalog flow diagram during operation.

An adjustment of the limit switch for the full open or central position may only be made by the boiler manufacturer's Service or personnel authorized by the boiler manufacturer.

2. Operation

The servo drive motor is synchronous and reacts with brief left / right rotation. The gear may be damaged in the event of valve blockage and mechanical / electrical elements may be damaged.

Danger: The servo drive operates the hand lever of the automatic desalting control valve. This can cause serious injury from crushing. Do not reach into the circle of rotation of the opening lever. Do not touch the valve when it is operating. Automatic desalting control valves are controlled automatically and can open and close abruptly.

Danger: The control lever of the desalting control valve and the coupling of the servo drive are hot during operation. Touching these parts can cause serious burns to the hands and arms. Always wear insulated, temperature-resistant safety gloves to touch the valve.

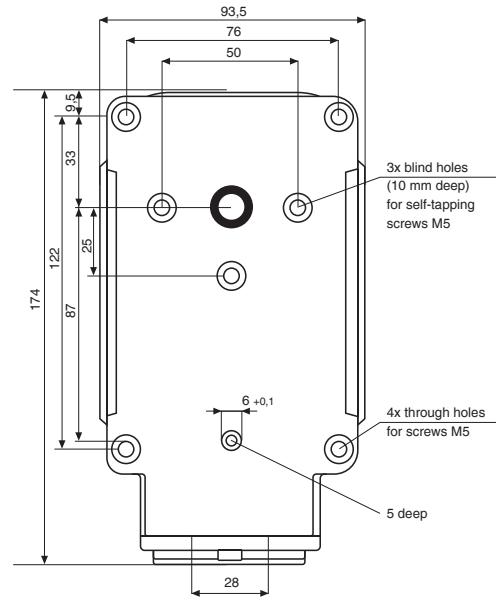
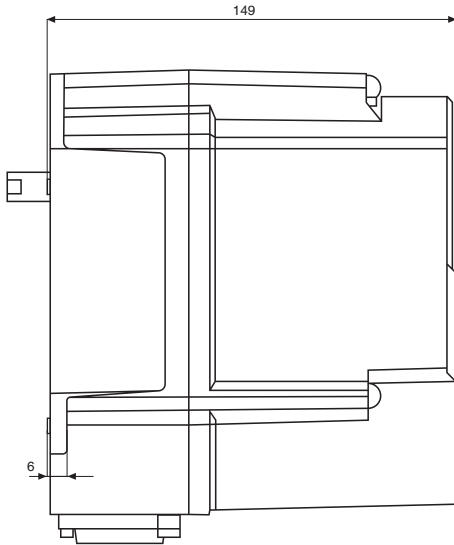
2.1. Sample extraction

The boiler water must be inspected at regular intervals. The use of a water sample cooler is essential for removing the boiler water sample. We recommend the use of the sample water-cooled DRM-1. If water samples are analyzed which are taken incorrectly or from unsuitable water sample coolers, errors in the analysis are bound to occur. The sample removing procedure set out in the DRM-1 catalogue.

The boiler sample extraction points are either the sample extraction valve at the desalting control valve (if a boiler is equipped with two desalting devices, only one desalting control valve is equipped with a sample extraction valve) or the sample extraction valve at the measuring and water level indicating module.

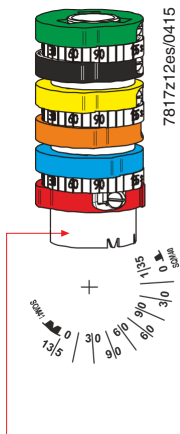
The conductivity electrode EC-1 with its desalting controller RD-1 can be used for checking the boiler water conductivity. The device has been set by the factory. If the measuring results do not appear to be plausible the device can be readjusted with the desired values.

3. Assembly instructions for the servo-motor



Position indication SQM41

Internal angles scale
Arrow marking



3 points version			
Cam	Color	Position	Preadjustment
Cam I	Red	Open	35
Cam II	Blue	Closed	0
Cam III	Oranje	Service	8
Cam IV	Yellow	Auxiliary switch	-
Cam V	Black	Auxiliary switch	-
Cam VI	Green	Auxiliary switch	-

Pay attention to markings

Micro adjustments by VYC

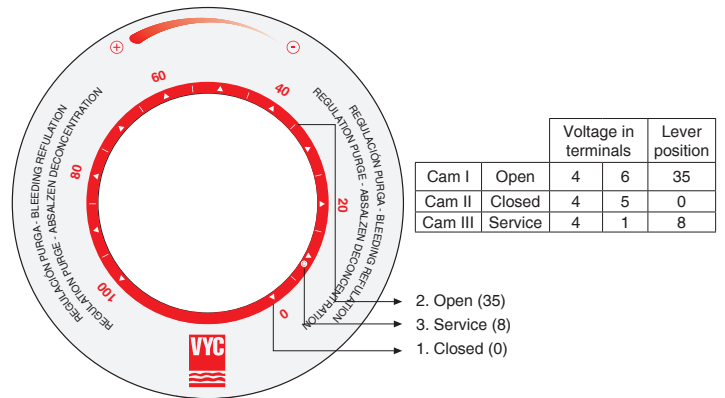
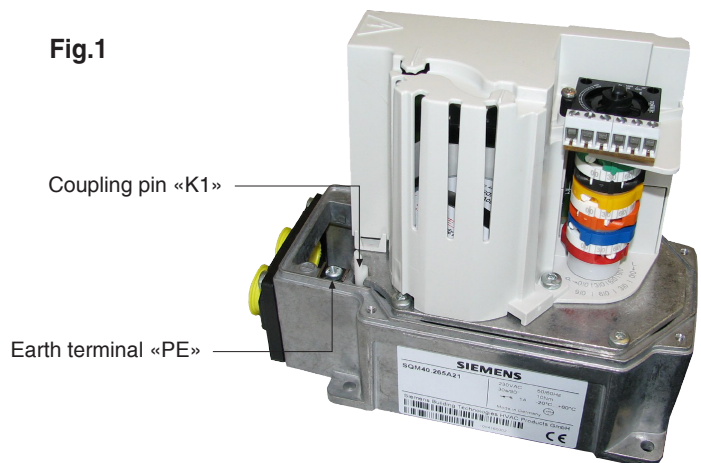


Fig.1



Connection diagrams and connection terminals (cont'd)

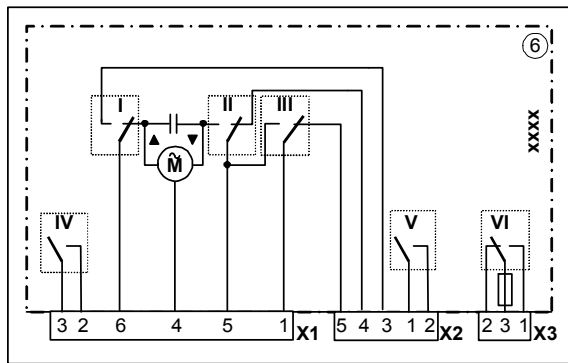
SQM4x.x6xxxx

3-position version with 2 end switches and 4 auxiliary switches



Note!

For the sake of clarity, the plug-in contacts do not appear in sequential order in the circuit diagram. Consecutive numbers are printed on the unit, however, e.g. 1...7.



Mains voltage terminals			Dimensioning
X1-1	Move to ignition position (III)	Input	AC 120 V / AC 230 V max. 1 A, $\cos\phi > 0.9$
X1-2	Auxiliary switch AUX (IV) NO contact	Output	AC 120 V / AC 230 V max. 1 A, $\cos\phi > 0.9$
X1-3	Auxiliary switch AUX (IV)	Input	AC 120 V / AC 230 V max. 1 A, $\cos\phi > 0.9$
X1-4	Neutral		AC 120 V / AC 230 V max. 1 A, $\cos\phi > 0.9$
X1-5	Closing (II)	Input	AC 120 V / AC 230 V max. 1 A, $\cos\phi > 0.9$
X1-6	Opening (I)	Input	AC 120 V / AC 230 V max. 1 A, $\cos\phi > 0.9$
X2-1	Auxiliary switch AUX (V)	Input	AC 120 V / AC 230 V max. 1 A, $\cos\phi > 0.9$
X2-2	Auxiliary switch AUX (V) NO contact	Output	AC 120 V / AC 230 V max. 1 A, $\cos\phi > 0.9$
X2-3	Open position reached (I)	Output	AC 120 V / AC 230 V max. 0.3 A, $\cos\phi > 0.8$
X2-4	Close position reached (II)	Output	AC 120 V / AC 230 V max. 0.3 A, $\cos\phi > 0.8$
X2-5	Ignition position reached (III)	Output	AC 120 V / AC 230 V max. 0.3 A, $\cos\phi > 0.8$
X3-1	Auxiliary switch AUX (VI) NO contact	Output	AC 120 V / AC 230 V max. 1 A, $\cos\phi > 0.9$ **
X3-2	Auxiliary switch AUX (VI) NC opener	Output	AC 120 V / AC 230 V max. 1 A, $\cos\phi > 0.9$ **
X3-3	Auxiliary switch AUX (VI)	Input	AC 120 V / AC 230 V max. 1 A, $\cos\phi > 0.9$ **



Notice!

** When connecting a fuel valve:
Max. 0.3 A, $\cos\phi > 0.8$ inductive.

Diagram from DN15 to DN25, summary purge flows

