SCHROEDAHL

we protect your business

Series SUL

Installation and
maintenance instructions

Content

1. Dangers and safety precautions

Minimum flow valves have the same potential danger as pressure vessels. Therefore planning, installation, operation and maintenace shall be done according to the necessary safety precautions.

1.1 Danger to persons and materials

- The minimum flow valves should only be operated within their limits of design and layout.
- No changes to be made without our approval. Only use original spare parts
- Safety regulations, site regulations and installation safety precautions are to be followed
- Please follow the instructions as given in this installation and maintenance instructions

1.2 Avoid dangers

- Maintenance of the Automatic Recirculation Valve shall only be done by trained personnel
- Before disassembly, the installation has to be shut off and the valve pressureless and cooled down
- Please make sure that these safety precautions can only be cancelled after ending the assembly of the valve
- Please be aware that also in a pressureless valve there might still be medium
- Wear protective clothing

2. Description

The SCHROEDAHL automaticrecirculationvalve model SUL is applied in centrifugal pump systems in order to provide an automatic leak-off flow in case of low load conditions. The application range of the series SUL is, independent of the temperature, up to 63 bar.

The valve consists of an upper and a lower housing, each provided with a flange.
The bypass housing is located horizontally at the side of the valve. The valve trim comprises a check valve as also a control- and throttle section.

The valve protects centrifugal pumps, especially boiler feed pumps, against overheating by maintaining, automatically, a minimum flow. In fact it is a checkvalve (pos.7), which position is determined by the flow of the centrifugal pump .The modulating bypass is activated by the lifting movement of the checkvalve.

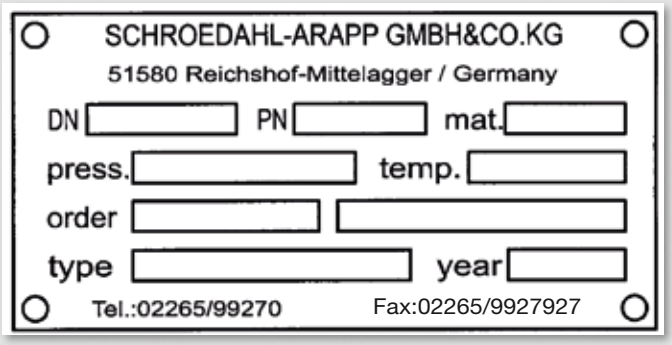
Due to the hydraulic forces, the bypass follows the lift of the checkvalve. The Kv-value of the bypass is adjustable.

The valve housing is made of cast steel or highgrade cast steel, the valve internals are machined from forged stainless steel.

3. Packing and marking

The automatic recirculation valve is shipped, depending on size, in an aluminium box (reusable), skid-carton or in a wooden crate. The standard factory conservation is sufficient to protect the valve for a period of approx. 6 month (the stocking area should be dry and ventilated). If special packing or conservation is required, this should be stated with the order.

Specific valve data are indicated on the valve nameplate as per sample below.
The valve nameplate is attached to every valve housing.



If spare parts are required, the following valve date should be provided with the inquiry (order):
production number K ..... (stamped in valve body), valve model number and part number (check parts list)

4. Assembly and disassembly

The automatic recirculation valve type SUL is usually installed vertically, with the mainflow upward, and directly on the pump discharge flange. The bypass housing is connected to the bypass piping (and the piping consequently to the feedwater tank or other tank), so that a recirculation flow will be possible. Other installation positions of the valve (horizontal, upside-down) are possible, if so ordered only! No special tools are required for the installation, assembly or disassembly of the valve.

4.1 Installation at the jobsite

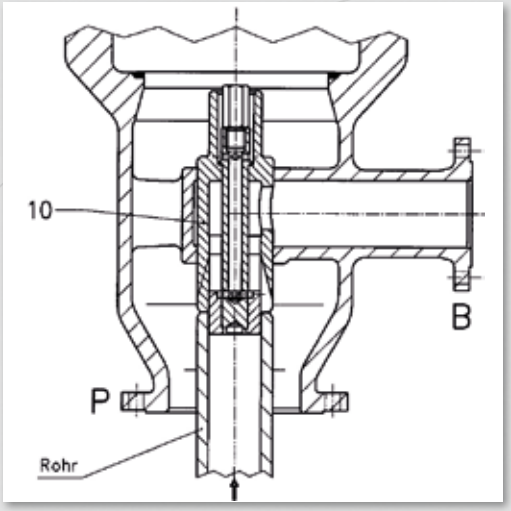
In order to prevent damage to the flange finish and/or the bolts the complete valve should be installed in the piping free of tension/ stress. Before tightening the bolts with a torque wrench (torques as recommended by the factory!), please ensure that the machined flange surfaces and packing rings are clean.

4.2. Disassembly of the SUL

- Unscrew the hexagon nuts (Pos. 26)
- Take of the upper body (Pos. 02)
- Remove the spring (Pos. 06)
- Remove the disc (Pos. 07) by lifting it out of the body (Pos. 01)
- The bypass internals (Pos.10 - 13) can be removed with a copper pipe which should be hit against the vortex bushing (Pos. 10) from the valve inletside (see fig. 1). Check smooth functioning of the bypass internals (Pos.10 - 13) by moving them upwards and downwards. When movement is stiff, clean the parts. If necessary put fine grind-paste between the vortex bushing (Pos. 10) and the control bushing (Pos. 11) and lap-in both parts
- Clean the bypass internals once again. When the internals are damaged they have to be exchanged (as a complete set)

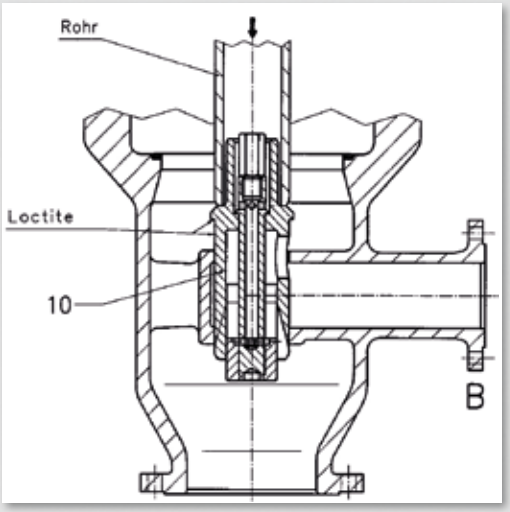
4.3 Fig. 1

Dissembly



4.4 Fig. 2

Assembly



4.5 Assembly of the SUL

- Assemble the valve in reverse order
- Before the bypass internals are installed, the vortex bushing (Pos. 10) has to be coated with LOCTITE as shown in fig. 2
- Assemble the bypass internals by hitting the vortex bushing (Pos. 10) back into its place with the help of a good fitting piece of pipe (as shown in fig. 2)
- Please make sure that the outlet holes in the vortex bushing (Pos. 10) are pointed in the direction of the bypass outlet
- **Important notes**: The movement of the unit (Pos. 11, 12, 13) in the vortex bushing (Pos. 10) must be very smooth
- With every disassembly the seals (Pos. 30 - 32) **have to be** renewed

5. Commissioning of the SUL

The valve is commissioned together with the pump. When the main shut-off valve in the pump discharge piping (to the boiler or process) is closed the specified bypass flow is maintained through the bypass section (and to the piping of the bypass system). By closing or opening the main shut-off valve, the opening and closing of the bypass can be checked. The correct functioning of the valve can be further checked by measuring the flow in the main piping.

6. Maintenance instructions

The SUL has been designed in a special way so that no special maintenance is required. Maintenance is restricted to cleaning the trim together with the pump at regular intervals. After disassembly of the valve, all seals should be replaced (by new seals) before reassembly of the valve.

7. Warranty conditions

If no special conditions have been agreed upon the order, the warranty is limited to 24 months after shipment or 8000 hours of operation. The warranty does not include damage caused by improper handling, dirt in the system or normal wear.

8. Instructions in case of damages

In order to judge the damages (and the cause), the following information is required:

1) The production number of the valve
   i.e. K..-.... (Year of manufacturing / production no.)
2) Valve model type and size e.g. SUL DN..., PN...
3) A description of the system in which the valve is installed

9. Customer services

In case information is required or in case of breakdown, the following organisation can be addressed:

SCHROEDAHL-Arapp
Spezialarmaturen GmbH & Co. KG
Sales international dept.
Schoenenbacher Str. 4
51580 Reichshof-Mittelagger

Phone: +49 2265 9927-0
Fax: +49 2265 9927-927

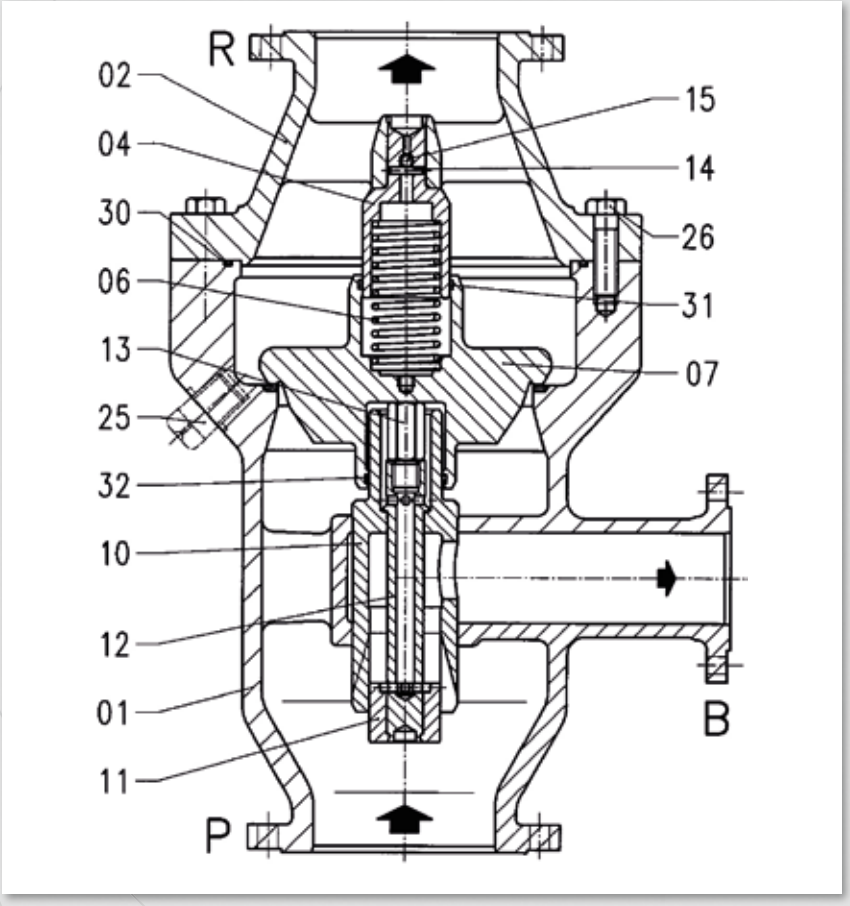
SCHROEDAHL International Corp.
2400 Augusta Dr., Suite 280
Housten, Texas 77057
USA

Phone: +1-713-975-8351
Fax: +1-713-780-0421

10. Attachments

10.1 Sectional drawing

P = pump end
R = pipeline end
B = by-pass end
Installation P- R vertical



10.2 Parts list

Pos.	Description	Standard materials CS	SS	Recommended Spare parts
01	Body	1.0619	1.4308	
02	Bonnet	1.0619	1.4308	
04	Guide bushing	1.4301	1.4301	
06	Spring	1.4310	1.4310	X
07	Disc	1.4404	1.4404	
10	Vortexbushing	1.4542	1.4542	X
11	Control bushing	1.4122	1.4122	X
12	Stam	1.4122	1.4122	X
13	Adjustment bold	1.4301	1.4301	X
14	Pin	1.4301	1.4301	
15	Ball	1.4301	1.4301	
25	Drain plug	1.4571	1.4571	
26	Hex. screw	1.7709	1.4571	
30	O- Ring	1)	1)	X
31	Turcite B-Ring	PTFE	PTFE	X
32	Turcite B-Ring	PTFE	PTFE	X

1) EPDM, BUNA, VITON, PTFE

SCHROEDAHL offers advise, delivery, installation, commissioning, maintenance, repair and modification. Our customers are offered an extensive customer service, which is worldwide available 24 hours a day.

Quality assurance of SCHROEDAHL valves is made according to the high quality requirements of German and international quality authorities.

We fulfill all requirements acc. DIN, UVV, VdTÜV, ADStandards, TRD and all international standards as ASME as well as DIN ISO 9001/EN29001.

Besides the automatic recirculation valves we also have the following products in our programme:

- Control valves for powerplants and industrial applications
- Desuperheaters
- Strainers
- Adjustable pressure regulating valves for pressure reduction
- Flow actuated control valves for various applications

10.3 Datenblatt

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Automatic Recirculation Valve Technical Data

Customer:		Datasheet:	
Enquiry no.:			
Prior reference:		Quantity:	
Order no.:			
Project:			

Automatic Recirculation Valve type:

Valve inlet [in.]	DN		PN		Acc.:
Valve outlet [in.]	DN		PN		Installation: ☐ vertical ☐ horizontal
Bypass outlet [in.]	DN		PN		Paint:
Start-up [in.]	DN		PN		Start-up ☐ above ☐ below checkvalve

Mat.-/test certificates:

Materials

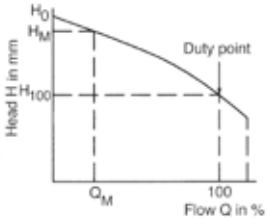
Housing: | Internals: | Seals:

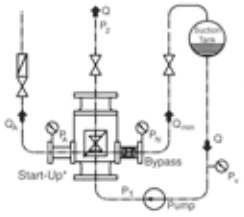
Medium		Operating temp. [°C]:	
S.G. [kg/m³]:		Design temp. [°C]:	

			H_0 =		m		
Q_M =		m³/h	H_M =		m	Suction pr. pv	bar
Q_{100} =		m³/h	H_{100} =		m	Differential pr. (p_1-p_v)	bar
Q_{max} =		m³/h	H_{Qmax} =		m	Backpress p_N	bar
Q_A =		m³/h	H_A =		m	Backpress p_A	bar

Notes:

Revision	Date	Description	Name	Signature





Notes

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