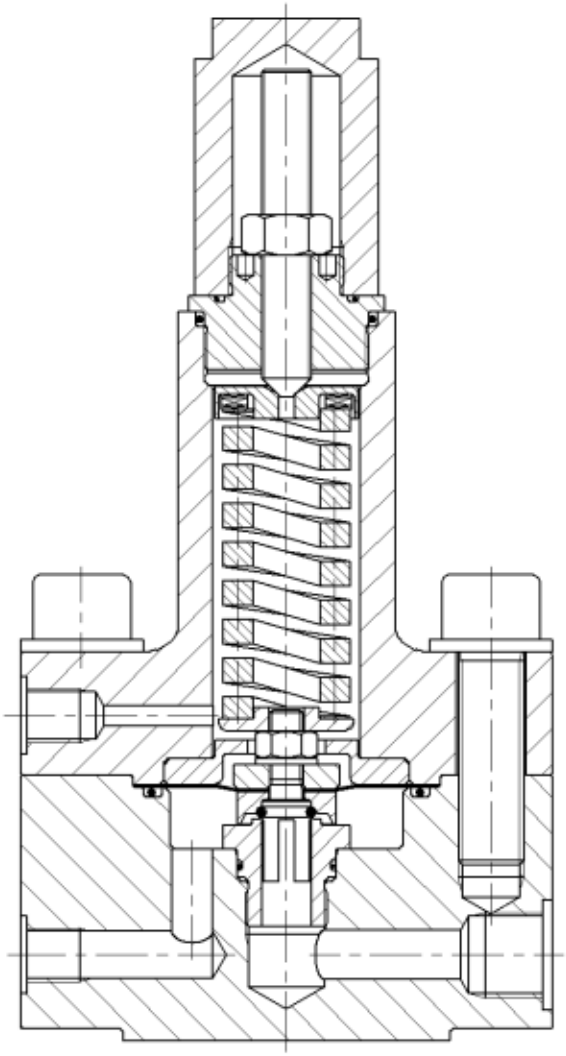
GORTER CONTROLS SCHOONHOVEN THE NETHERLANDS

CONTROLS SUPPLY CHAIN
VALVES ACTUATORS INSTRUMENTATIONS

RELIEF VALVE AV095-MP/HP

OPERATING/MAINTENANCE MANUAL



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Contents

1 Technical data

Technical data relief valve type AV095 MP/HP:

Medium	:	all gases with the exception of sulphurous gases (H_2S). *Relief valves suitable for sulphurous gases can be supplied on request.*
Temperature	:	-20°C to +60°C
System pressure (p_1)	:	maximum 100 bar/ 250 bar
Maximum outlet pressure	:	depends on spring type
Weight	:	approx. 10 kg
Height	:	250 mm
Largest diameter	:	ø 130 mm
Spring type	:	see section 4.1
Pipe connections	:	¼" BSP (2x; inlet and breathing) ½" BSP (outlet)
Position type plate	:	side of relief valve
Data on type plate	:	name of manufacturer, type indication, spring type, serial number number, setting values, year of construction and maximum inletpressure allowed

2 Assembly

2.1 General

In this part of the manual you assemble the relief valve AV095 MP/HP step by step.

WARNING:	Not observing the instructions in this manual could cause the following problems: - improper working of the relief valve; - damage to components; - physical injury.

Disassembly

Chapter 2 describes the assembly of the relief valve. Disassembly of the relief valve is carried out in reversed order. Observe the following guide-lines when disassembling:

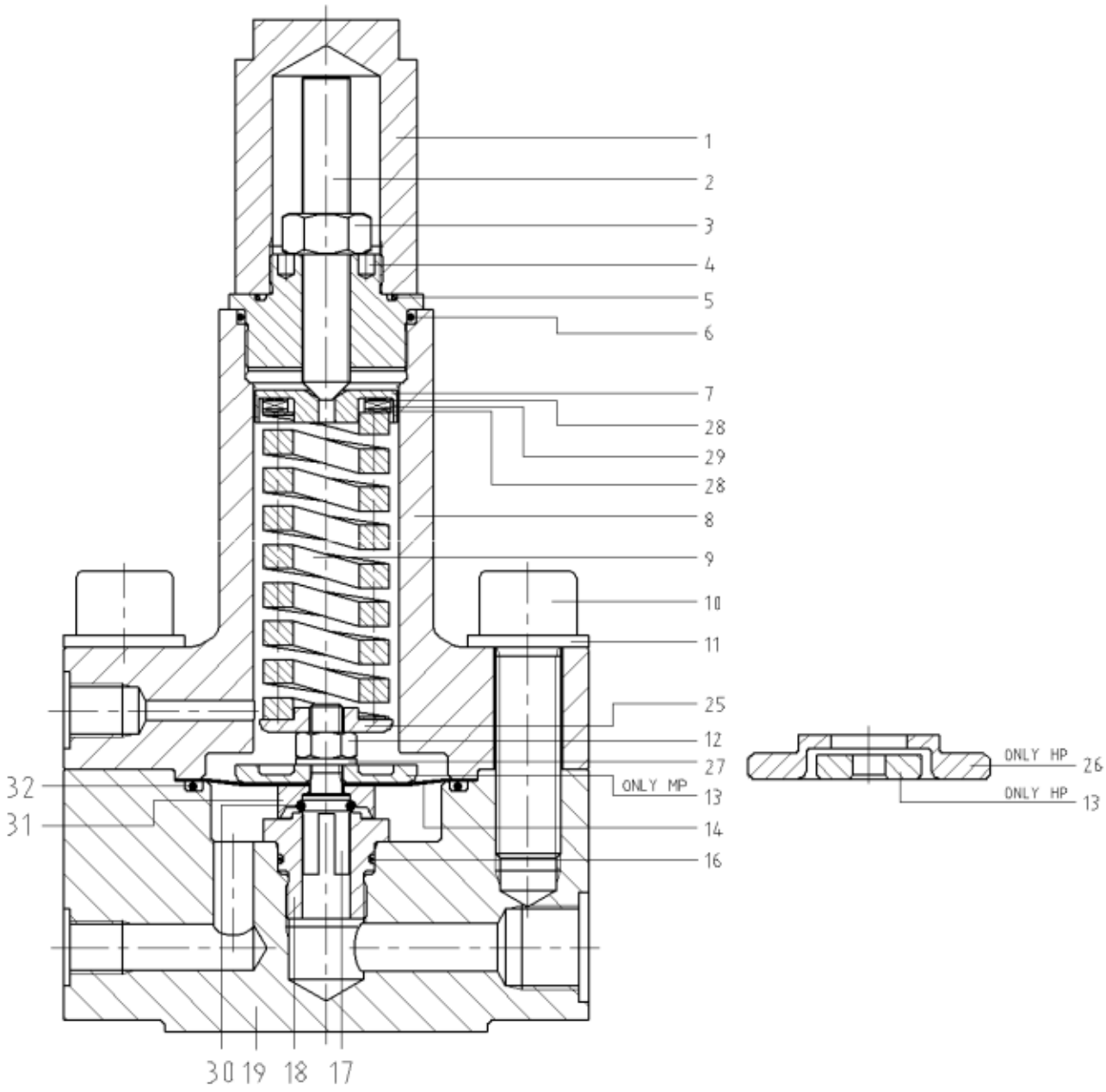
- Wear safety goggles during (dis)assembly.
- Use the correct tools for (dis)assembly of components.
- Keep parts mentioned in one section together and separate from parts mentioned in other sections. This way you will have sorted all parts when assembling a unit described in a certain section.
- Disassemble the components of the relief valve with care. Make sure that parts such as compression springs don't 'shoot off'.
- Replace damaged or worn parts by new ones.

Pos and drawing numbers

(3) = Pos. . 3
(*02.08*) = Drawing 02.08
(*02.08* Pos. 3) = Pos. 3 of Drawing 02.08

Part numbers

Beside every drawing there is a list of pos numbers used in the drawing, followed by the quantity, description and part number of the part concerned. These part numbers are needed when reordering parts.



drawing: 08.01

2.2 Diaphragm assembly

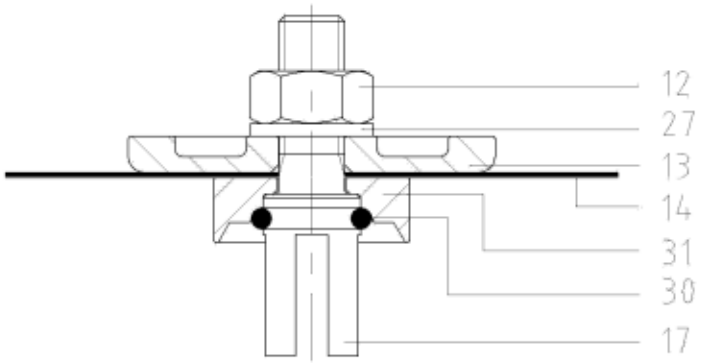
The pressure difference between the top- and under-side of the diaphragm (14) determines the position of the relief valve diaphragm disc (pos 13) in the body (08.03 pos 19).

Assembly

- Take hold of valve (17) so that the part with screw thread points upwards.
- Lubricate O-ring (30) with a natural gas resistant lubricant.
- Place O-ring (30) in the groove of the valve (17).
- Place seat (31) over the valve and o-ring.
- Slide diaphragm (14), than diaphragm disc (13) with the smallest diameter downwards over the
- valve (17).
- Secure diaphragm disc with the washer (27) and nut (12) so that the diaphragm does not get deformed.

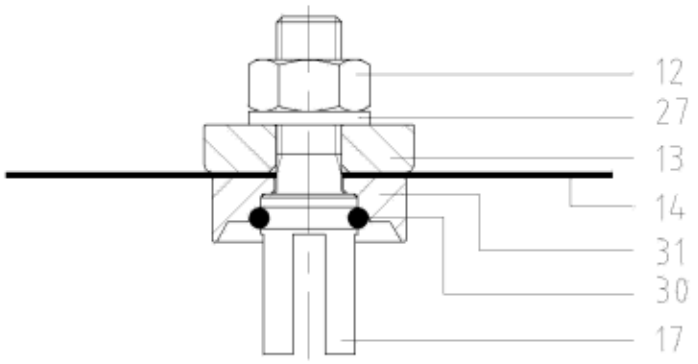
Drawing: 08.02	Qty	(Belonging to drawing 08.02)		
12	(1)	Nut	*	8201300080001
13	(1)	Diaphragm disc AV095-MP	*	8103004116530
		Diaphragm disc AV095-HP	*	8103004141480
14	(1)	Diaphragm	*	9303004112450
17	(1)	Valve	*	8108004146120
27	(1)	Washer	*	8238130080001
30	(1)	O-Ring	*	8403009202110
31	(1)	Seat	*	8108004146130

We recommand the * marked parts as spare parts (Only to obtain as kit)



AV095-MP

drawing: 08.02A



AV095-HP

drawing: 08.02B

2.3 Assembly guiding in body

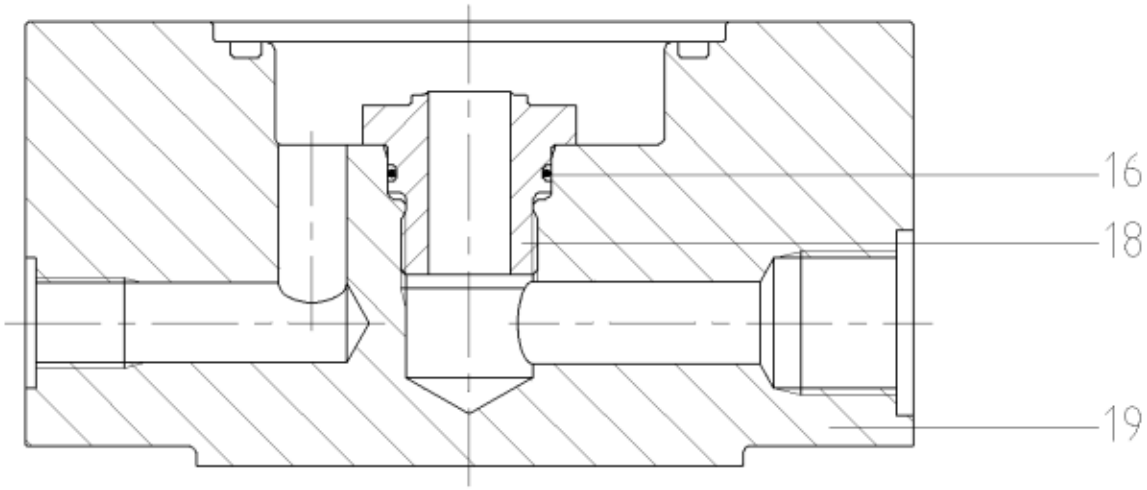
This section describes the assembly of the valveguiding into the body of the relief valve.

Assembly

- Put down body (08.03 pos 19*)* on the underside.
- Lubricate O-ring (16) with a natural gas resistant lubricant.
- Fit o-ring (16) to valveguiding (18).
- Srew valveguiding assembley in body

Drawing: 08.03	Qty	(Belonging to drawing 08.03)		
16	(1)	O-ring	*	8401020401019
18	(1)	Valveguiding		8108004146160
19	(1)	Body		8103003116560

We recommand the * marked parts as spare parts



drawing: 08.03

2.4 Final assembly top of relief valve

Assembly

- Put the body assembly *(08.03)* of the relief valve down in front of you.
- Lubricate O-ring (32) with a natural gas resistant lubricant.
- Put o-ring (32) into the groove in the body *(08.03 pos 19)*.

AV095-MP:
Press diaphragm *(08.02A pos 14)* between the raised edge of the body so that the diaphragm does not get deformed.

- Secure spring housing (8) to the body (08.03) with six socket screws (10) and washers (11)
- Secure the socket screws crosswise - a half-turn at a time.

AV095-HP:
Press diaphragm *(08.02B pos 14)* between the raised edge of the body so that the diaphragm does not get deformed.

- Secure spring housing (8) to the body (08.03) with six socket screws (10) and washers (11) after putting reducing ring (26) into the spring housing.
- Secure the socket screws crosswise - a half-turn at a time.

- Put springseat (25) over the topdiagram assembly *(08.03A+B)* and fit spring (9) in the springhousing and over the edge of the spring seat (25).

NOTE:	Be careful when disassembling the spring. This spring may be under compression stress.

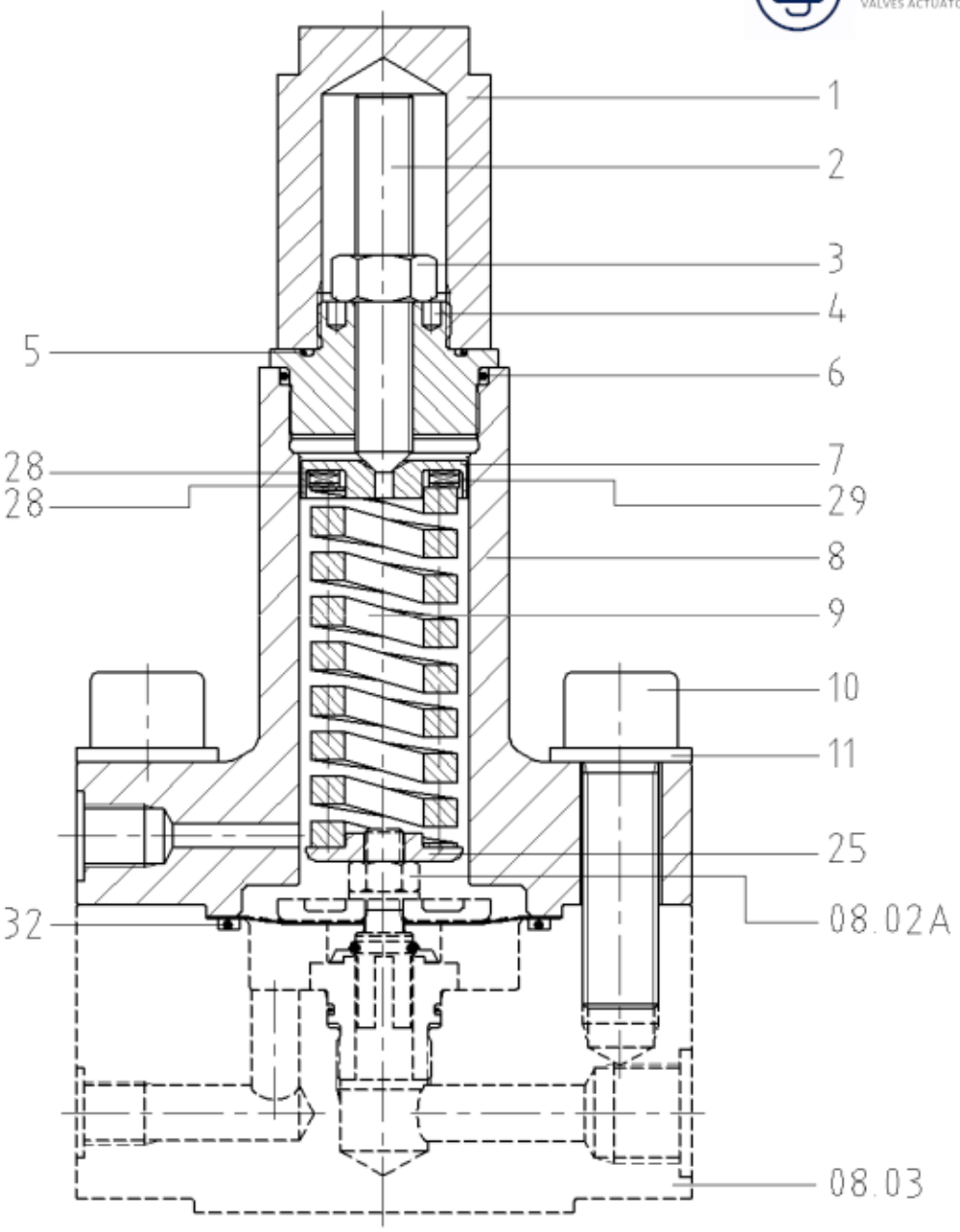
- Take the spring seat (7) and put in: a thrust washer (28), the thrust bearing (29) and again a thrust washer (28).
- Place this "unit" on the top of the inserted spring (9) with the thrust washer on the spring.

- Lubricate O-rings (5) and (6) with a natural gas resistant lubricant.
- Take locknut (4) and put o-ring (6) on the large diameter.
- Screw locknut (3) on the spring housing.

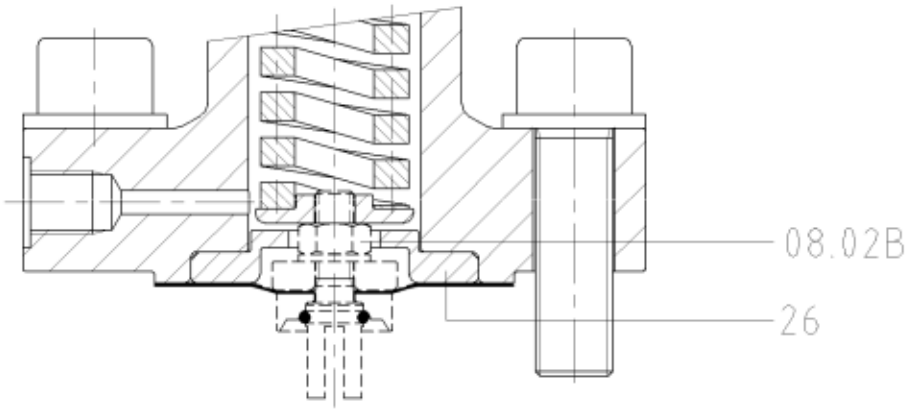
- Put o-ring (5) into the groove on the upperside of the locknut.
- Turn nut (3) over two-thirds of the shank of socket head adjusting screw (2).
- Screw the socket head adjusting screw into the lock nut until the spring is about to be pressed down.
- Screw the closurenut (1) over the locknut.

Drawing: 08.04	Qty	(Belonging to drawing 08.04)		
1	(1)	Closure nut		8103204114700
2	(1)	Socket-head adjusting screw		8303010000031
3	(1)	Nut		8201340120125
4	(1)	Lock nut		8103204116520
5	(1)	O-ring	*	8401031501026
6	(1)	O-ring	*	8401039402129
7	(1)	Spring seat		8103004135980
8	(1)	Spring housing		8103203116330
9	(1)	Spring		see section 4.1
10	(6)	Socket screw		8207160160055
11	(6)	Washer		8238160160001
25	(1)	Spring seat		8103004114670
26	(1)	Reducing ring (AV095-HP only)		8103004114660
28	(2)	Thrust washer		8302010000006
29	(1)	Thrust bearing		8302010000004
32	(1)	O-ring	*	8401059903229

We recommand the * marked parts as spare parts



drawing: 08.04A AV095-MP



drawing: 08.04B AV095-HP

3 Operation

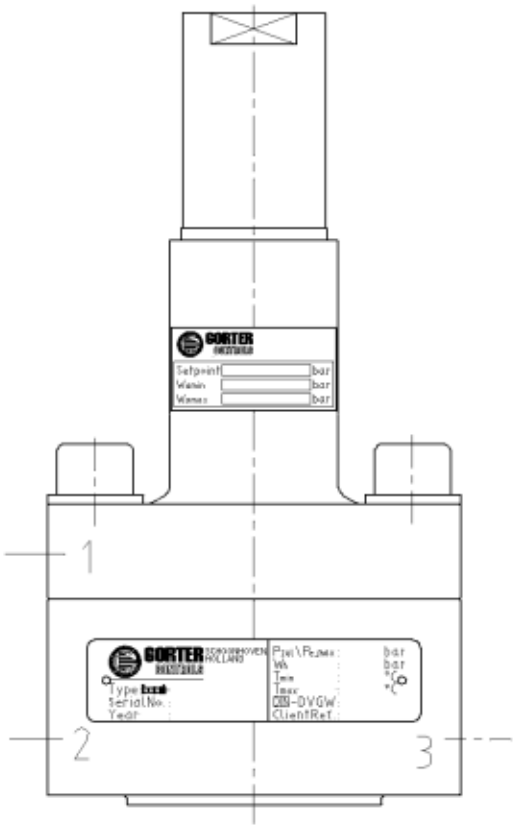
On the relief valve are tree connections :

Connection ¼" BSP : Breathing connection (1)
Connection ¼" BSP : System pressure connection (2)
Connection ½" BSP : Outlet pressure connection (blow off) (3)

There is one situation in which the relief valve will do his work:

-Too high system pressure;

Too high system pressure
The system pressure (connection 2) - under the diaphragm - becomes higher than the spring pressure on the other side of the diaphragm. When this happens the diaphragm disc lifts and opens by means of a seat the blow-off connection.



drawing: 08.05

4 Setting

4.1 Spring types

The type of spring you fit in the relief valve determines the pressure limits you can set.
Six different spring types are available in the following setting ranges:

Art.number	**Range (MP) barg**	**Colour**
8501114123240	0.5 - 2.5	blue
850523ST12660	1.5 - 4.0	green ST
850523ST12670	2.5 - 6.0	blue ST
850523ST12680	4.0 - 8.0	red ST
850523ST12690	5.0 - 10	yellow ST
Art.number	**Range (HP) barg**	**Colour**
850523ST12660	8.0 - 14	Green ST
850523ST12670	10 - 20	Blue ST
850523ST12680	18 - 28	Red ST
850523ST12690	25 - 35	Yellow ST

4.2 Replacing spring

This section describes how to replace the spring in the relief valve. In the list in section 4.1 you find all the types of springs available for the relief valve AV095.
Use drawing 08.04 in section 2.4 when replacing the spring.

NOTE:	Remove the relief valve from the system before you replace the spring.

- Unscrew close nut (1).
- Unscrew nut (3) from socket-head adjusting screw (2).
- Unscrew the socket-head adjusting screw from lock nut(4).
- Unscrew the lock nut from the spring housing (8) with a hook spanner.
- Remove spring seat (7) from spring housing.
- Remove spring (9) from spring housing.

NOTE:	Be careful when disassembling the spring. This spring may be under compression stress.

- Fit a new spring in the spring housing.
- Read the last four assembly instructions in section 2.4.

4.3 Setting of relief valve

This section describes the setting of relief valve AV095. Use drawing 08.04 in section 2.4 when setting the valve.

- If not present, fit a pressure gauge - with which you can measure the inlet pressure - immediately in front of the relief valve. Make sure you can clearly read the pressure gauge during setting.

Set the relief valve as follows:

- Unscrew retaining nut (3) on relief valve.
- Using a socket-head wrench, turn socket-head adjusting screw (2) on the relief valve to the right until you can't go any further. The relief valve is than set to its maximum pressure range.
- Open the gas supply to the relief valve.

Turning the socket-head adjusting screw to the left results in a lower outlet pressure.

- Turn the socket-head adjusting screw on the relief valve so far to the left until the pressure gauge indicates the required outlet pressure.
  The relief valve will blow-off
- Tighten the retaining nut on the socket-head adjusting screw of the relief valve without turning the socket-head adjusting screw.

5 Cleaning of relief valve

After having completely disassembled the relief valve, clean the parts of the valve with a clean, soft cloth and an environmentally-friendly, non-aggressive detergent. Treat 'bare parts' with an anticorrosive agent which does not corrode the material of the component.
Check every part for damages and replace these parts by new ones.