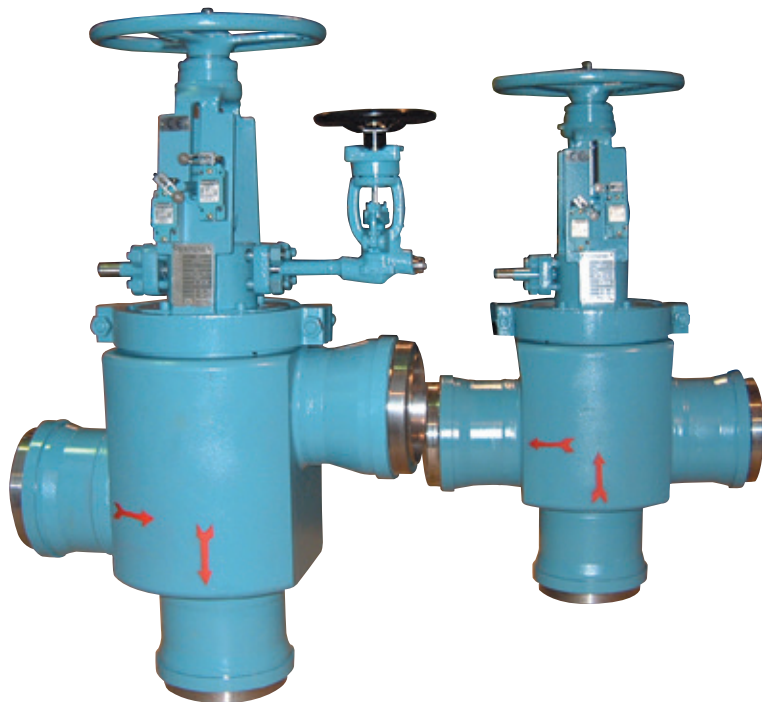


**SEMPELL TYPE AVS 4/5 HP PREHEATER PROTECTION VALVES**

Typical feed water heater isolation system



**FEATURES**

- Body of forged steel.
- Body in form piece to reduce a number of welds and fittings.
- Body also available as a single block type - thereby eliminating the nozzle welding seams.
- Fast switch over, in order to avoid damaging further HP feedwater pipes.
- Alternatives with a moderation of the closing speed by means of various solutions. This is then required if it is possible for the water to hit and damage the separation wall of the preheater or if the customer specifies the operating times.
- Simultaneous operation of two main valves with one pilot valve.
- Open the preheater only after equalization of the pressure - increases safety because work is done behind the valve.
- System medium operated - no heavy actuator.
- Alternatives available for selection of the pilot valves.

**GENERAL APPLICATION**

In the event of a defective tube system these valves are designed to stop the feed of high pressure feedwater and to bypass it around a heater or a group of heaters in shortest time. Protection is achieved in the system by installing a quick closing changeover valve in front of and a quick closing check valve behind the heaters in the pipework. The motive power is the feedwater pressure, so that the system is failsafe if either electric or pneumatic supplies fail.

**TECHNICAL DATA**

Sizes:	DN 80 - 500
Temperature:	100 - 360°C
Body material:	1.0460
	1.7335
	1.5415
	1.6368
	A105
	A182F12
Pressure class:	PN 160 - PN 500

# SEPELL TYPE AVS 4/5 HP PREHEATER PROTECTION VALVES

## OPERATION

In case of damage happening to the preheater pipes, the feedwater supply upstream of the pump and the feed-water backflow from the boiler to the preheater must be shut off in the shortest possible time. Quick shut off and deviation of the flow will both prevent the preheater steam jacket designed for low pressures from being endangered, and also maintain the feed-water supply to the boiler. Moreover, the turbine is protected against water breaking in by flow backs through the bleeder pipe.

Due to the automatic shut off of the preheater and the simultaneous opening of the by-pass line, the feed-water keeps on flowing steadily. Even excessive pipe lengths between the pump and the AV5 valve will not create any additional dynamic forces. Due to the deviation of flow, the water column contained in the by-pass pipes will have to be accelerated. Short by-pass pipes will keep such acceleration forces on a low level.

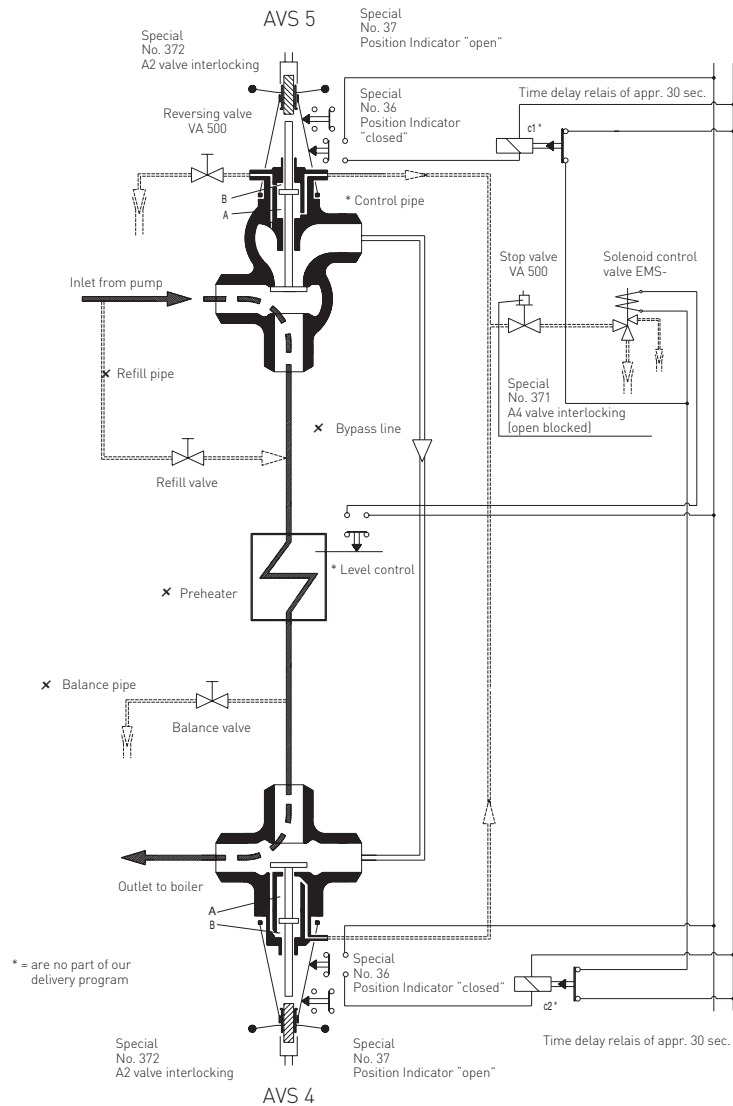
The AV quick closing valves are controlled by their own medium and will respond within a second's time, without varying operating forces and almost free of friction, because the valve seating faces close axially and do not slide on each other, as e.g. with gate valves.

If the feed-water pressure within the preheater pipes rises due to faulty control or during trial runs, the AV valves will act as safety valves and open slightly.

In normal operation pump pressure will prevail in the inlet of the AV5 changeover valve. Due to pressure losses, the pressure in the by-pass line is somewhat lower. This pressure differential as well as the balanced stem that is passed to the outside, will safely hold the disc of the AV valve in open position, providing a shut off towards the by-pass. Minor pressure fluctuations within the range of 5% of the inlet pressure will not affect the operation of the AV valves. Higher pressure variations will have to be checked and may require a change in design.

In case of damage in the preheater, the level control emits an electric impulse to the solenoid control valve, in addition to possible optical and audible warnings. The valve opens and relieves the cylinders "A" of the AV valves. Cylinders "B" receive the full pressure of the feed-water line via a small passage, which causes the discs to move into their closing positions. The preheater is no longer in operation and the feed-water flow passes through the by-pass line.

## QUICK CLOSING CHANGE OVER VALVE



## QUICK CLOSING CHECK VALVE

\* = are no part of our delivery program

# SEMPELL TYPE AVS 4/5 HP PREHEATER PROTECTION VALVES

## OPERATION (CONTINUED)

When the solenoid control valve closes, the AV5 changeover valve will only remain in its closed position, if the feed-water pressure in the preheater has lowered by at least 10% as compared with the pump pressure and does not rise again. Therefore, with power test runs, the AV valves will open automatically, and the preheater is put into operation again, as soon as the solenoid control valve is closed. This automatic opening is effected by the valve stems being balanced and passed through to the outside. The pistons of the AV valves have been so dimensioned, that any opening towards the preheater is prevented, if the latter is pressureless or under low pressure. This design prevents any sudden and harmful admission of pressure to the preheater piping. For the start-up or after repairs the preheater is filled via the refill pipe by the pump line. Only then the AV valves can be opened, or will open automatically after the pressure has been balanced within the system. With low operating pressures, the open hand-operated control valve relieves the cylinder "B" sufficiently for allowing the disc to move into its open position.

Closing the solenoid control valve after changeover is necessary, because a permanent relief via the control pipe may cause erosion. As shown in the drawing, a corresponding closing impulse is emitted by the electric indicator (SN 36) in "closed" position. Contactors C1 and C2 are lagging at approx. 30 seconds.

## DESIGN

Quick - closing valves										
Check valves	AVS 4									
Three way valves	AVS 5									
Size of seat	1	2	3	4	5	6	7	8	9	10
Maximum flow quantity t/h	85	120	200	300	400	550	850	1200	1600	2000
Forged steel	DIN - PN 160 - 500									
Control pipes	DIN - DN 15									

### Quick - closing valves

For easy mounting of the AV valves, they should preferably be installed in vertical position. Their pressure losses are equivalent to 90° bends and are substantially more advantageous as compared with T-fittings. In case of preheater groups, the valve bodies being designed as fittings, may serve for the feed-water line to be distributed to the individual preheaters.

Control valves		
For AV valves	Close	EMS3 or EMS4 solenoid control valves Other control valves on request
	Open	Automatically
	Min.(bar)	40 - 160 depending on seat size
		With reversing valve
		15

### Control valves

The feed-water pressure being used as the source of energy for operating the AV valves necessitates minimum overpressures in the preheater system as shown in the table.

Equipment	
Type ST.KG	Spur gear and bevel gear
Type FA	Remote driving parts
E-actuators	Size and connect. acc. to ISO 5210
Pneumatic actuators	

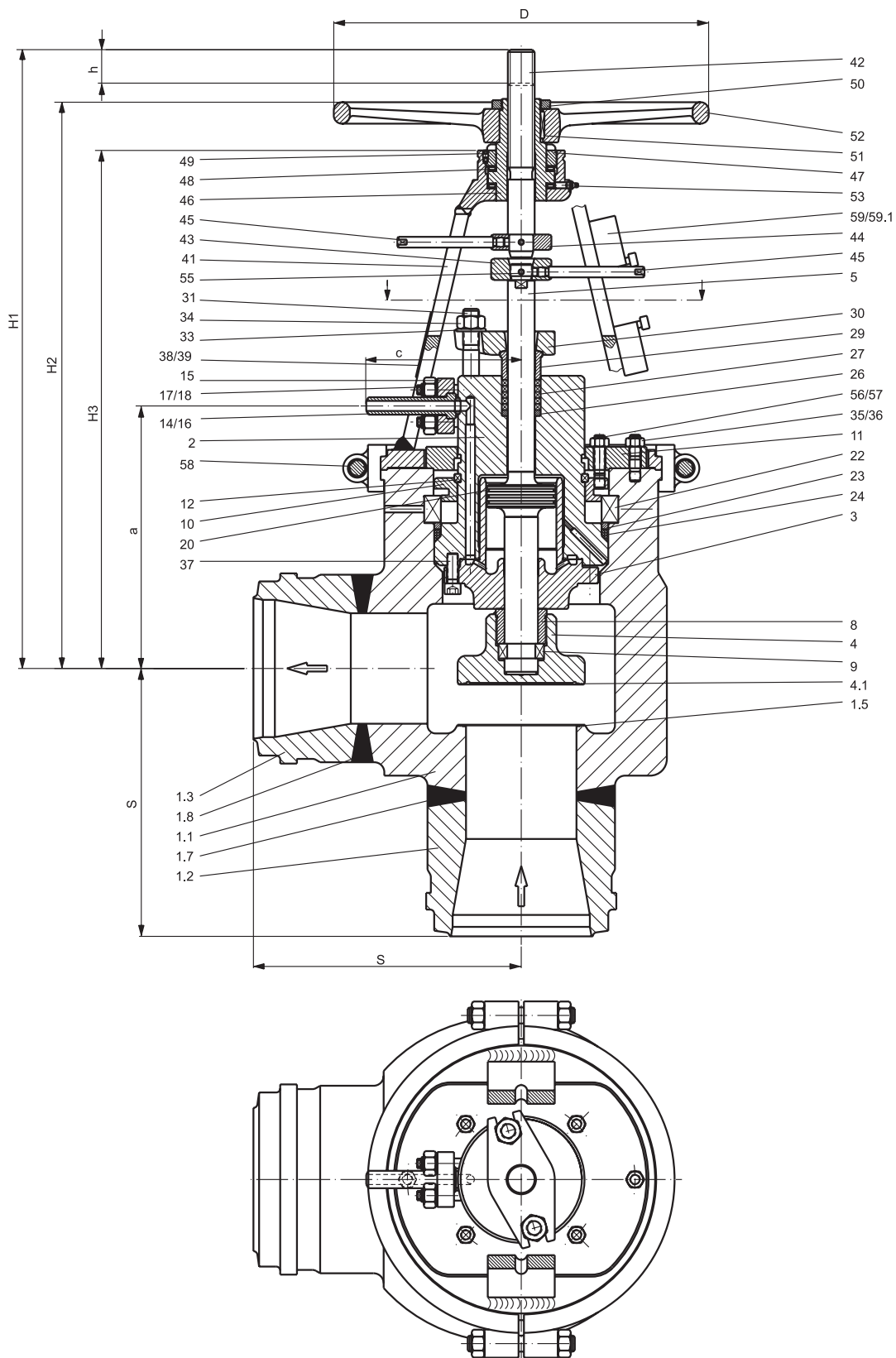
### Equipment

The blocking stem enables the AV valves to be closed independently from the solenoid control. The blocking stems must not be used for closing the disc against the full operating pressure. The AV4 non return valve must not be closed before the AV5 changeover valve has been blocked. The blocking stem can be operated by handwheel or by remote drives with corresponding equipment, see table.

For the maintenance of the solenoid control valve during operation, the stop valve can be closed after the preheater protection has been changed over to bypass operation and the blocking stems have been actuated. This procedure is guaranteed by the valve interlocking SN 372 and SN 371 provided.

# SEMPELL TYPE AVS 4/5 HP PREHEATER PROTECTION VALVES

QUICK CLOSING CHECK VALVE - TYPE AVS 4



# SEPELL TYPE AVS 4/5 HP PREHEATER PROTECTION VALVES

## PARTS LIST AVS 4

Part	Part name	Material code					
		01	51	10	60	11	19
1	Body	1.0460	A105	1.7335	A182F12	1.5415	1.6368
1.1	Middle part of the body	1.0460	A105	1.7335	A182F12	1.5415	1.6368
1.2	Inlet connecting pipe	1.0460	A105	1.7335	A182F12	1.5415	1.6368
1.3	Outlet connecting pipe	1.0460	A105	1.7335	A182F12	1.5415	1.6368
1.5	Hardfacing	Chromium steel	Chromium steel	Chromium steel	Chromium steel	Chromium steel	Chromium steel
1.7	Welding seam						
1.8	Welding seam						
2	Cover	1.0460	A105	1.7335	A182F12	1.5415	1.6368
3	Cylinder	1.4008 / part. Cr-plated	1.4008 / part. Cr-plated	1.4008 / part. Cr-plated	1.4008 / part. Cr-plated	1.4008 / part. Cr-plated	1.4008 / part. Cr-plated
4	Disc	1.0460	A105	1.7335	A182F12	1.5415	1.6368
4.1	Hardfacing	Chromium steel	Chromium steel	Chromium steel	Chromium steel	Chromium steel	Chromium steel
5	Rod with piston	1.4021 / par. Cr-plated	1.4021 / par. Cr-plated	1.4021 / par. Cr-plated	1.4021 / par. Cr-plated	1.4021 / par. Cr-plated	1.4021 / par. Cr-plated
8	Disc stem connection	1.7335	1.7335	1.7335	1.7335	1.7335	1.7335
9	Split ring	1.7335	1.7335	1.7335	1.7335	1.7335	1.7335
10	Ring	1.0425	1.0425	1.0425	1.0425	1.0425	1.0425
11	Tightening plate	1.0425	1.0425	1.0425	1.0425	1.0425	1.0425
12	Split ring	1.0460	1.0460	1.0460	1.0460	1.0460	1.0460
14	Convex seal	1.4541	1.4541	1.4541	1.4541	1.4541	1.4541
15	Flange	1.7335	1.7335	1.7335	1.7335	1.7335	1.7335
16	Control stud	1.7335	1.7335	1.7335	1.7335	1.7335	1.7335
17	Bolt	1.7709	1.7709	1.7709	1.7709	1.7709	1.7709
18	Hexagonal nut	1.7258	1.7258	1.7258	1.7258	1.7258	1.7258
20	Piston ring	1.4086	1.4086	1.4086	1.4086	1.4086	1.4086
22	Segment ring	1.7380	A182F22	1.7380	A182F22	1.7380	1.6368
23	Ring	1.0460	A105	1.7335	A182F22	1.5415	1.6368
24	Cover seal	Graphite / 1.4541	Graphite / 1.4541	Graphite / 1.4541	Graphite / 1.4541	Graphite / 1.4541	Graphite / 1.4541
26	Base ring	1.4021	1.4021	1.4021	1.4021	1.4021	1.4021
27	Packing	Graphite	Graphite	Graphite	Graphite	Graphite	Graphite
29	Gland shaft	1.4021	1.4021	1.4021	1.4021	1.4021	1.4021
30	Gland flange	1.0460	1.0460	1.7335	1.7335	1.7335	1.7335
31	Stud	1.1181	1.1181	1.1181	1.1181	1.1181	1.1181
33	Washer	Ferrite	Ferrite	Ferrite	Ferrite	Ferrite	Ferrite
34	Hexagonal nut	1.0501	1.0501	1.0501	1.0501	1.0501	1.0501
35	Stud	1.1181	1.1181	1.1181	1.1181	1.1181	1.1181
36	Hexagonal nut	1.0501	1.0501	1.0501	1.0501	1.0501	1.0501
37	Allan bolt	A4	A4	A4	A4	A4	A4
38	Name plate	1.4541	1.4541	1.4541	1.4541	1.4541	1.4541
39	Roundheaded notched nail	Austenite	Austenite	Austenite	Austenite	Austenite	Austenite
41	Bonnet	Divers	Divers	Divers	Divers	Divers	Divers
42	Spindle	1.4021	1.4021	1.4021	1.4021	1.4021	1.4021
43	Indicator ring	1.0460	1.0460	1.0460	1.0460	1.0460	1.0460
44	Indicator ring	1.0460	1.0460	1.0460	1.0460	1.0460	1.0460
45	Guide bolt	1.4122	1.4122	1.4122	1.4122	1.4122	1.4122
46	Threaded bush	CW713R	CW713R	CW713R	CW713R	CW713R	CW713R
47	Ring bearing	1.0060	1.0060	1.0060	1.0060	1.0060	1.0060
48	Axial-needle bearing	Ball bearing steel	Ball bearing steel	Ball bearing steel	Ball bearing steel	Ball bearing steel	Ball bearing steel
49	Threaded pin	Ferrite	Ferrite	Ferrite	Ferrite	Ferrite	Ferrite
50	Pipe nut	Ferrite	Ferrite	Ferrite	Ferrite	Ferrite	Ferrite
51	Fitting key	1.0503	1.0503	1.0503	1.0503	1.0503	1.0503
52	Hand wheel	0.6025	0.6025	0.6025	0.6025	0.6025	0.6025
53	Lubrication nipple	Ferrite	Ferrite	Ferrite	Ferrite	Ferrite	Ferrite
55	Tightening pin	Springsteel	Springsteel	Springsteel	Springsteel	Springsteel	Springsteel
56	Stud	1.1181	1.1181	1.1181	1.1181	1.1181	1.1181
57	Hexagonal nut	1.0501	1.0501	1.0501	1.0501	1.0501	1.0501
58	Bonnet holder	Divers	Divers	Divers	Divers	Divers	Divers
59	Limit switch	Divers	Divers	Divers	Divers	Divers	Divers
59.1	Allan bolt	8.8	8.8	8.8	8.8	8.8	8.8

# SEPELL TYPE AVS 4/5 HP PREHEATER PROTECTION VALVES

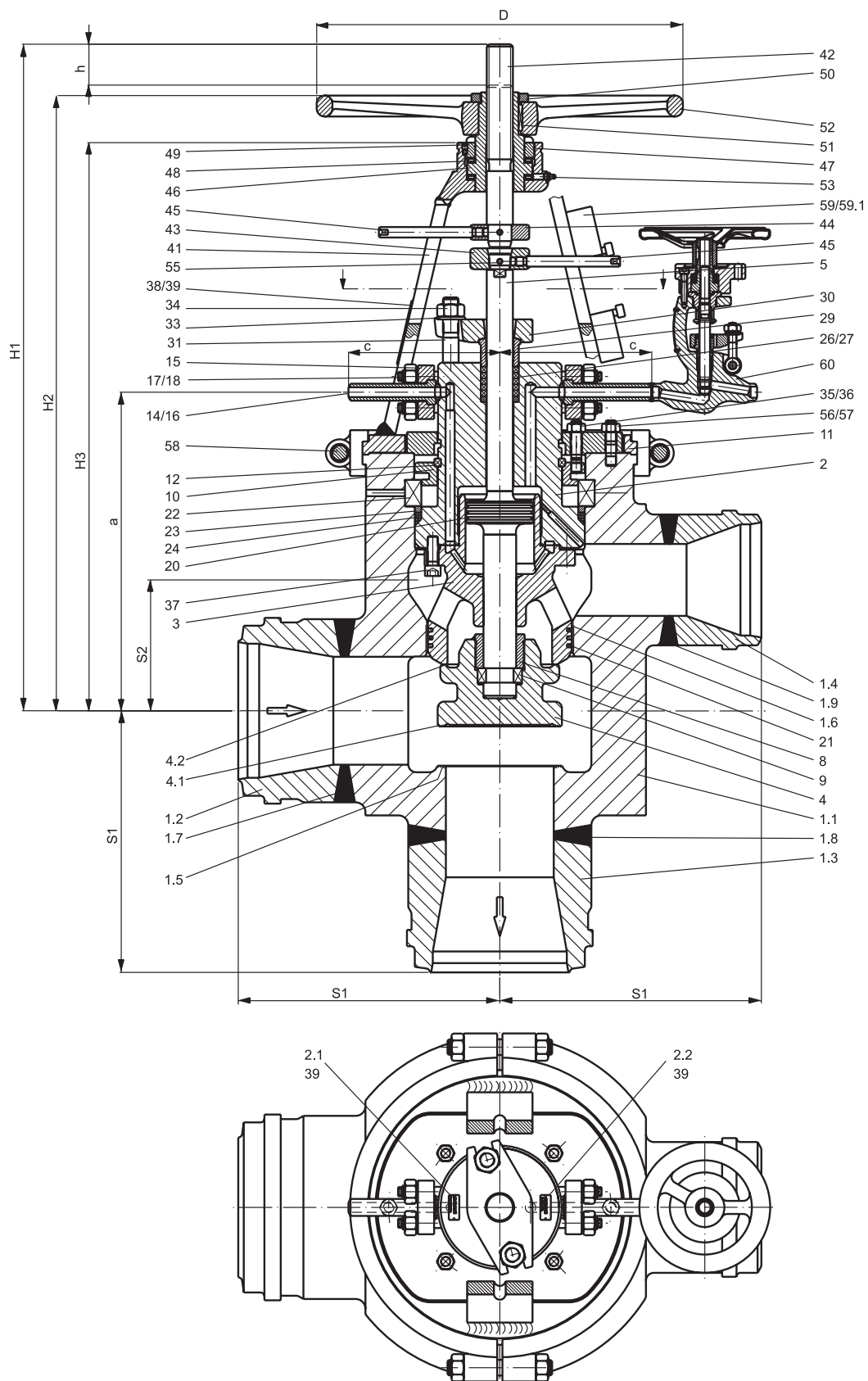
## WELDING ENDS AVS 4

PN	Size of seat	Seat diameter mm	DN Inlet mm	DN Outlet mm	DN Bypass mm	Dimensions in mm								Weight kg	
						S	H1	H2	H3	h	D	a	c		
160/500	01	75	80-125	80	50-80	230	665	615	555	35	400	140	235	100	
			100-125	100	50-100	250									110
			125	125	50-125	250									
02	90	100-150	100	65-100	250	665	615	555	35	400	140	235	140		
			125-150	125	65-125	275									155
			150	150	65-150	275									170
160/400	03	115	125-175	125	80-125	300	825	735	675	50	400	330	200	200	
			150-175	150	80-150	325									230
			175	175	80-175	325									260
04	140	150-200	150	100-150	325	825	735	675	50	400	330	200	300		
			175-200	175	100-175	350									340
			200	200	100-200	350									390
05	165	175-250	175	125-175	350	895	825	755	60	560	390	220	420		
			200	200	125-200	375									490
			250	200	125-200	375									560
06	190	200-300	200	125-200	375	895	825	755	60	560	390	220	600		
			250	250	125-250	400									700
			300	250	125-250	400									800
07	240	250-350	250	150-250	425	1120	1020	940	80	560	490	235	900		
			300	300	150-300	475									1000
			350	300	150-300	475									1100
075	260	250-350	250	150-250	425	1120	1020	940	80	560	490	235	900		
			300	300	150-300	475									1000
			350	300	150-300	475									1100
08	290	300-350	300	150-300	525	1140	1030	940	90	560	490	245	1300		
			400	300	150-300	550									1400
			350-400	350	150-350	550									1500
085	310	300-350	300	150-300	525	1140	1030	940	90	560	490	245	1300		
			400	300	150-300	550									1400
			350-400	350	150-350	550									1500
09	335	350-400	350	200-350	575	1295	1160	1080	105	800	530	270	2000		
			450	350	200-300	625									2200
			400-450	400	200-400	625									2400
095	360	350-400	350	200-350	575	1295	1160	1080	105	800	530	270	2000		
			450	350	200-300	625									2200
			400-450	400	200-400	625									2400
10	375	400-450	400	250-400	625	1300	1160	1180	115	800	565	285	3000		
			500	400	250-400	625									3400
			450-500	450	250-450	625									3800
105	390	400-450	400	250-400	625	1300	1160	1180	115	800	565	285	3000		
			500	400	250-400	625									3400
			450-500	450	250-450	625									3800

Welding ends as specified by customer

# SEMPELL TYPE AVS 4/5 HP PREHEATER PROTECTION VALVES

## QUICK CLOSING THREE-WAY VALVE - TYPE AVS 5



# SEPELL TYPE AVS 4/5 HP PREHEATER PROTECTION VALVES

## PARTS LIST AVS 5

Part	Part name	Material code					
		01	51	10	60	11	19
1	Body	1.0460	A105	1.7335	A182F12	1.5415	1.6368
1.1	Middle part of the body	1.0460	A105	1.7335	A182F12	1.5415	1.6368
1.2	Inlet connecting pipe	1.0460	A105	1.7335	A182F12	1.5415	1.6368
1.3	Outlet connecting pipe	1.0460	A105	1.7335	A182F12	1.5415	1.6368
1.4	Bypass connecting pipe	1.0460	A105	1.7335	A182F12	1.5415	1.6368
1.5	Hardfacing	Chromium steel	Chromium steel	Chromium steel	Chromium steel	Chromium steel	Chromium steel
1.6	Hardfacing	Chromium steel	Chromium steel	Chromium steel	Chromium steel	Chromium steel	Chromium steel
1.7	Welding seam						
1.8	Welding seam						
1.9	Welding seam						
2	Cover	1.0460	A105	1.7335	A182F12	1.5415	1.6368
2.1	Indication plate	1.4541	1.4541	1.4541	1.4541	1.4541	1.4541
2.2	Indication plate	1.4541	1.4541	1.4541	1.4541	1.4541	1.4541
3	Cylinder	1.4008 / part. Cr-plated	1.4008 / part. Cr-plated	1.4008 / part. Cr-plated	1.4008 / part. Cr-plated	1.4008 / part. Cr-plated	1.4008 / part. Cr-plated
4	Disc	1.0460	A105	1.7335	A182F12	1.5415	1.6368
4.1	Hardfacing	Chromium steel	Chromium steel	Chromium steel	Chromium steel	Chromium steel	Chromium steel
4.2	Hardfacing	Chromium steel	Chromium steel	Chromium steel	Chromium steel	Chromium steel	Chromium steel
5	Rod with piston	1.4021 / par. Cr-plated	1.4021 / par. Cr-plated	1.4021 / par. Cr-plated	1.4021 / par. Cr-plated	1.4021 / par. Cr-plated	1.4021 / par. Cr-plated
8	Disc stem connection	1.7335	1.7335	1.7335	1.7335	1.7335	1.7335
9	Split ring	1.7335	1.7335	1.7335	1.7335	1.7335	1.7335
10	Ring	1.0425	1.0425	1.0425	1.0425	1.0425	1.0425
11	Tightening plate	1.0425	1.0425	1.0425	1.0425	1.0425	1.0425
12	Split ring	1.0460	1.0460	1.0460	1.0460	1.0460	1.0460
14	Convex seal	1.4541	1.4541	1.4541	1.4541	1.4541	1.4541
15	Flange	1.7335	1.7335	1.7335	1.7335	1.7335	1.7335
16	Control stud	1.7335	1.7335	1.7335	1.7335	1.7335	1.7335
17	Bolt	1.7709	1.7709	1.7709	1.7709	1.7709	1.7709
18	Hexagonal nut	1.7258	1.7258	1.7258	1.7258	1.7258	1.7258
20	Piston ring	1.4086	1.4086	1.4086	1.4086	1.4086	1.4086
21	Piston ring	1.4086	1.4086	1.4086	1.4086	1.4086	1.4086
22	Segment ring	1.7380	A182F22	1.7380	A182F22	1.7380	1.6368
23	Ring	1.0460	A 105	1.7335	A182F12	1.5415	1.6368
24	Cover seal	Graphite / 1.4541	Graphite / 1.4541	Graphite / 1.4541	Graphite / 1.4541	Graphite / 1.4541	Graphite / 1.4541
26	Base ring	1.4021	1.4021	1.4021	1.4021	1.4021	1.4021
27	Packing	Graphite	Graphite	Graphite	Graphite	Graphite	Graphite
29	Gland shaft	1.4021	1.4021	1.4021	1.4021	1.4021	1.4021
30	Gland flange	1.0460	1.0460	1.7335	1.7335	1.7335	1.7335
31	Stud	1.1181	1.1181	1.1181	1.1181	1.1181	1.1181
33	Washer	Ferrite	Ferrite	Ferrite	Ferrite	Ferrite	Ferrite
34	Hexagonal nut	1.0501	1.0501	1.0501	1.0501	1.0501	1.0501
35	Stud	1.1181	1.1181	1.1181	1.1181	1.1181	1.1181
36	Hexagonal nut	1.0501	1.0501	1.0501	1.0501	1.0501	1.0501
37	Allan bolt	A4	A4	A4	A4	A4	A4
38	Name plate	1.4541	1.4541	1.4541	1.4541	1.4541	1.4541
39	Roundheaded notched nail	Austenite	Austenite	Austenite	Austenite	Austenite	Austenite
41	Bonnet	Divers	Divers	Divers	Divers	Divers	Divers
42	Spindle	1.4021	1.4021	1.4021	1.4021	1.4021	1.4021
43	Indicator ring	1.0460	1.0460	1.0460	1.0460	1.0460	1.0460
44	Indicator ring	1.0460	1.0460	1.0460	1.0460	1.0460	1.0460
45	Guide bolt	1.4122	1.4122	1.4122	1.4122	1.4122	1.4122
46	Threaded bush	CW713R	CW713R	CW713R	CW713R	CW713R	CW713R
47	Ring bearing	1.0060	1.0060	1.0060	1.0060	1.0060	1.0060
48	Axial-needle bearing	Ball bearing steel	Ball bearing steel	Ball bearing steel	Ball bearing steel	Ball bearing steel	Ball bearing steel
49	Threaded pin	Ferrite	Ferrite	Ferrite	Ferrite	Ferrite	Ferrite



# SEPELL TYPE AVS 4/5 HP PREHEATER PROTECTION VALVES

## PARTS LIST AVS 5 (CONTINUED)

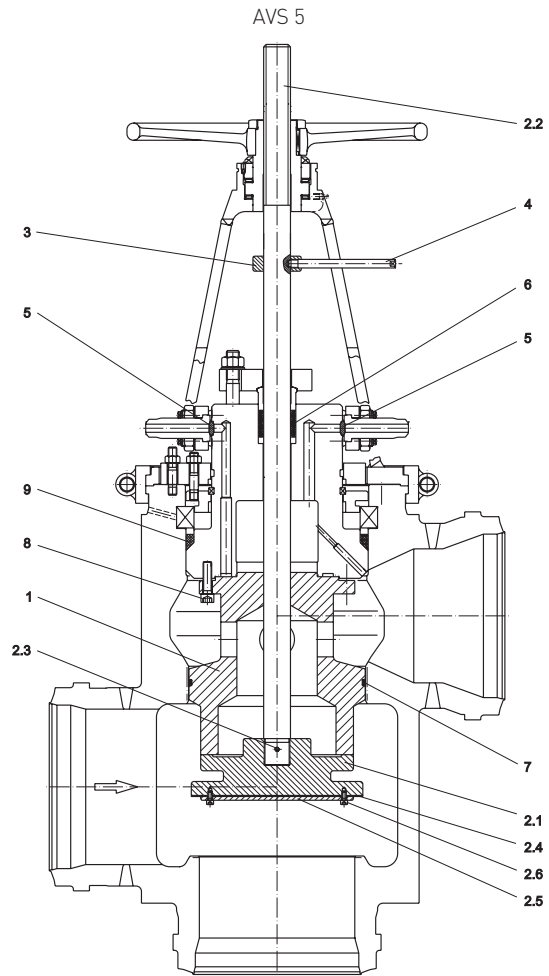
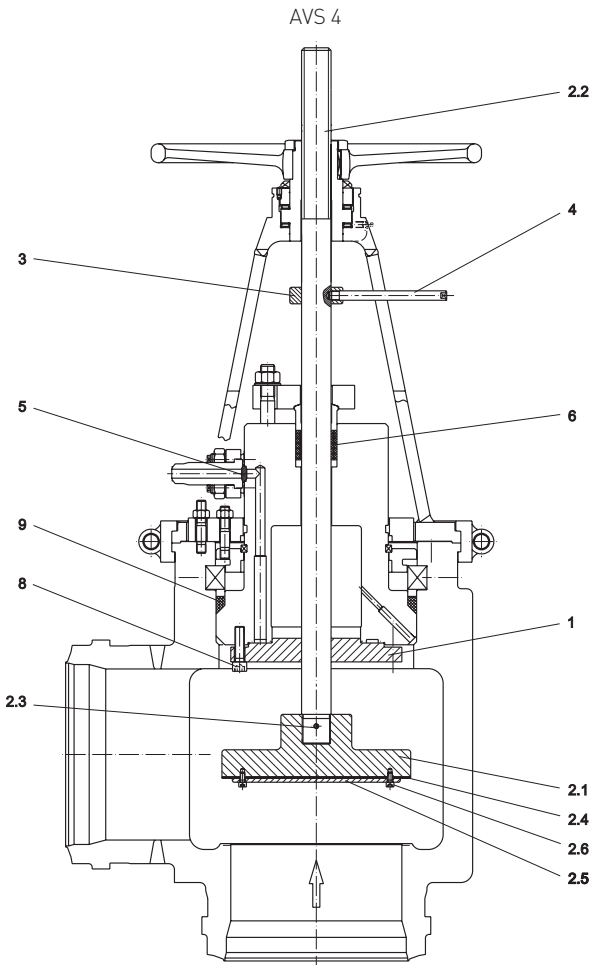
Part	Part name	Material code					
		01	51	10	60	11	19
50	Pipe nut	Ferrite	Ferrite	Ferrite	Ferrite	Ferrite	Ferrite
51	Fitting key	1.0503	1.0503	1.0503	1.0503	1.0503	1.0503
52	Hand wheel	0.6025	0.6025	0.6025	0.6025	0.6025	0.6025
53	Lubrication nipple	Ferrite	Ferrite	Ferrite	Ferrite	Ferrite	Ferrite
55	Tightening pin	Springsteel	Springsteel	Springsteel	Springsteel	Springsteel	Springsteel
56	Stud	1.1181	1.1181	1.1181	1.1181	1.1181	1.1181
57	Hexagonal nut	1.0501	1.0501	1.0501	1.0501	1.0501	1.0501
58	Bonnet holder	Divers	Divers	Divers	Divers	Divers	Divers
59	Limit switch	Divers	Divers	Divers	Divers	Divers	Divers
59.1	Allan bolt	8.8	8.8	8.8	8.8	8.8	8.8
60	Manual control valve	Divers	Divers	Divers	Divers	Divers	Divers

## WELDING ENDS AVS 5

PN	Size of seat mm	Seat diameter mm	DN Inlet mm	DN Outlet mm	DN Bypass mm	Dimensions in mm								Weight kg			
						S1	S2	H1	H2	H3	h	D	a		c		
160/500	01	75	80-125	80	50-80	230	140	665	615	555	35	400	80	235	130		
			100-125	100	50-100	250										140	
			125	125	50-125	250											150
	02	90	100-150	100	65-100	250	140	665	615	555	35	400	80	235	180		
			125-150	125	65-125	275										195	
			150	150	65-150	275											210
160/400	03	115	125-175	125	80-125	300	160	885	795	735	50	400	385	200	260		
			150-175	150	80-150	325										290	
			175	175	80-175	325											320
	04	140	150-200	150	100-150	325	160	885	795	725	50	400	385	200	390		
			175-200	175	100-175	350											430
			200	200	100-200	350											480
	05	165	175-250	175	125-175	350	200	990	920	850	60	560	470	220	520		
			200	200	125-200	375											590
			250	200	125-200	375											660
	06	190	200-300	200	125-200	375	210	1000	930	860	60	560	470	220	730		
			250	250	125-250	400											830
			300	250	125-250	400											930
	07	240	250-350	250	150-250	425	280	1285	1185	1110	80	560	595	245	1100		
			300	300	150-300	475											1200
			350	300	150-300	475											1300
	075	260	250-350	250	150-250	425	280	1285	1185	1110	80	560	595	245	1100		
			300	300	150-300	475											1200
			350	300	150-300	475											1300
	08	290	300-350	300	150-300	525	320	1325	1225	1150	90	560	690	245	1600		
			400	300	150-300	550											1700
			350-400	350	150-350	550											1800
	085	310	300-350	300	150-300	525	320	1325	1225	1150	90	560	690	245	1600		
			400	300	150-300	550											1700
			350-400	350	150-350	550											1800
	09	335	350-400	350	200-350	575	365	1565	1425	1345	105	800	785	270	2600		
			450	350	200-300	625											2800
			400-450	400	200-400	625											3000
	095	360	350-400	350	200-350	575	365	1565	1425	1345	105	800	785	270	2600		
			450	350	200-300	625											2800
			400-450	400	200-400	625											3000
	10	375	400-450	400	250-400	625	400	1650	1510	1430	115	800	875	285	3700		
			500	400	250-400	650											4100
			450-500	450	250-450	650											4500
	105	390	400-450	400	250-400	625	400	1650	1510	1430	115	800	875	285	3700		
			500	400	250-400	650											4100
			450-500	450	250-450	650											4500

Welding ends as specified by customer

# SEPELL TYPE AVS 4/5 HP PREHEATER PROTECTION VALVES



### EXHAUST-, RINSING- AND PICKLING INSERT

To avoid damages of the hard-faced sliding surfaces, seats and control valves, it is necessary to disassemble the valve components above mentioned and replaced by accessory parts before exhausting, rinsing and pickling is carried out.

### LOCATIONS OF CONNECTIONS FOR SEAT SIZE 03-10 FOR AVS 4/5

The maximum number of connections of the outlet plane is 4 of limited size. There must be at least 90° between adjacent connections. Their number, sizes and angular positions must be stated upon ordering or inquiring.

The angular positions of the control connection (16) is independent of the connections of the valve body. It can be fixed in any desired position after loosening the hexagonal nuts (36, 57, 58.2). Where an extra manual control valve SN 66 is employed, it should be fitted exactly opposite (180°) to the control connection (16).

### PARTS LIST AVS 4

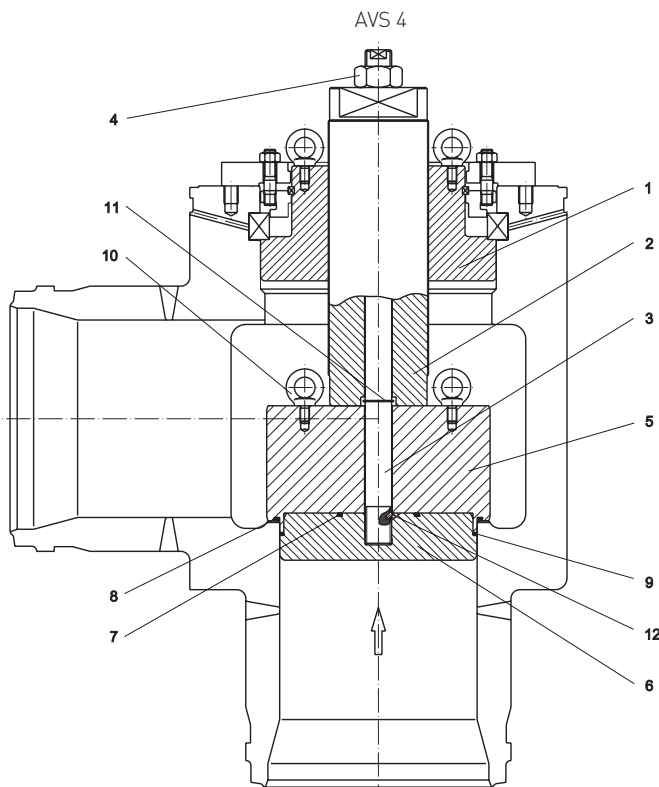
Part	Part name	Part	Part name
1	Pickling cylinder	3	Guide ring
2.1	Pickling disc	4	Guide bolt
2.2	Pickling stem	5	Dummy convex seal
2.3	Tightening pin	6	Packing
2.4	Sealing plate	8	Allan bolt
2.5	Holding plate	9	Gasket
2.6	Allan bolt		

### PARTS LIST AVS 5

Part	Part name	Part	Part name
1	Pickling cylinder	3	Guide ring
2.1	Pickling disc	4	Guide bolt
2.2	Pickling stem	5	Dummy convex seal
2.3	Tightening pin	6	Packing
2.4	Sealing plate	7	O-ring
2.5	Holding plate	8	Allan bolt
2.6	Allan bolt	9	Gasket

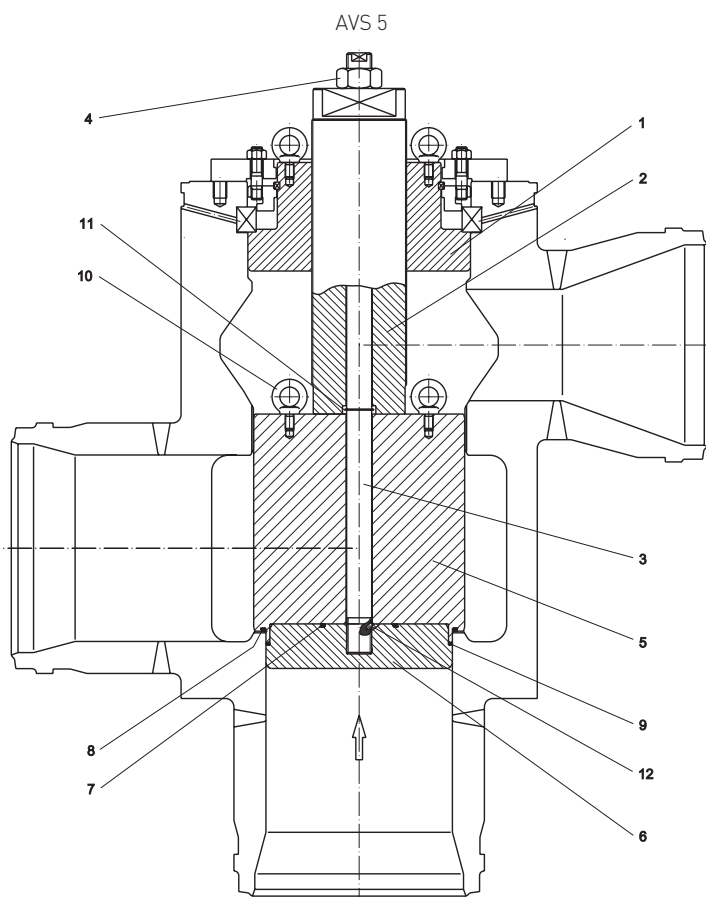
# SEMPELL TYPE AVS 4/5 HP PREHEATER PROTECTION VALVES

## INSERT FOR PRESSURE TEST



### PARTS LIST AVS 4

Part	Part name
1	Lid
2	Tightening screw
3	Threaded stem
4	Hexagonal nut
5	Tightening plate
6	Shutt off plate
7	O-ring
8	O-ring
9	O-ring
10	Ring screw
11	Safety ring
12	Cylinder slotted pin



### PARTS LIST AVS 5

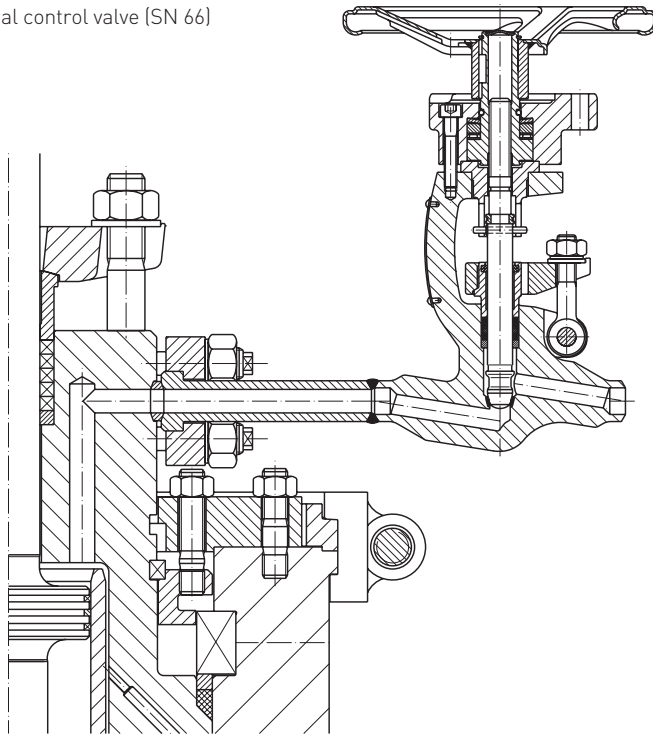
Part	Part name
1	Lid
2	Tightening screw
3	Threaded stem
4	Hexagonal nut
5	Tightening plate
6	Shutt off plate
7	O-ring
8	O-ring
9	O-ring
10	Ring screw
11	Safety ring
12	Cylinder slotted pin

The driving heads with blocking stems (42) must not be used for shutting off against the full operating- of test pressure. For pressure within the installation special pressure test inserts will have to be employed.

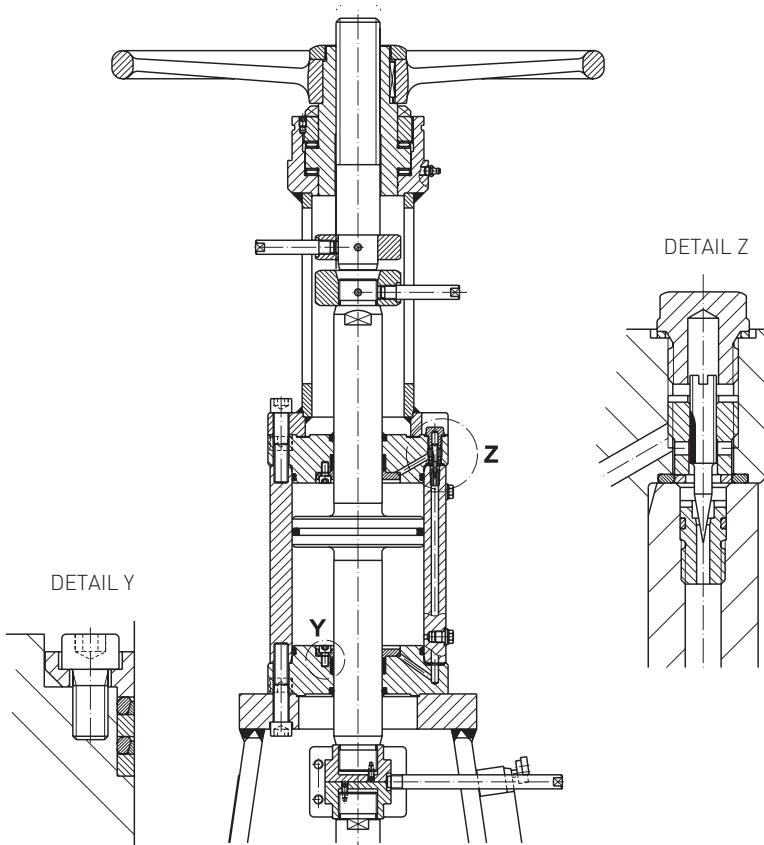
# SEPELL TYPE AVS 4/5 HP PREHEATER PROTECTION VALVES

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STANDARD ACCESSORIES AVS 4  
Manual control valve (SN 66)



STANDARD ACCESSORIES  
Hydraulic brake to increase opening and closing times by several seconds (SN 74)



# SEPELL TYPE AVS 4/5 HP PREHEATER PROTECTION VALVES

## SELECTION GUIDE FOR CODING SYSTEM

Example	AVS 4	02	160	300	300	200	10	(000)
<b>Valve type</b>								
AVS 4	Outlet valve							
AVS 5	Inlet valve							
<b>Seat size</b>								
01	75 mm	075	260 mm					
02	90 mm	08	290 mm					
03	115 mm	085	310 mm					
04	140 mm	09	335 mm					
05	165 mm	095	360 mm					
06	190 mm	10	375 mm					
07	240 mm	105	390 mm					
<b>Nominal pressure</b>								
PN 160 - 500								
<b>Inlet nominal size</b>								
DN 80		DN 250						
DN 100		DN 300						
DN 125		DN 350						
DN 150		DN 400						
DN 175		DN 450						
DN 200		DN 500						
<b>Outlet nominal size</b>								
DN 80		DN 250						
DN 100		DN 300						
DN 125		DN 350						
DN 150		DN 400						
DN 175		DN 450						
DN 200		DN 500						
<b>Size of bypass</b>								
DN 80		DN 250						
DN 100		DN 300						
DN 125		DN 350						
DN 150		DN 400						
DN 175		DN 450						
DN 200		DN 500						
<b>Material code</b>								
01	1.0460							
10	1.7335							
11	1.5415							
19	1.6368							
51	A105							
60	A182F12							
<b>Accessories</b>								

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