

Fig. 440 Packing ring

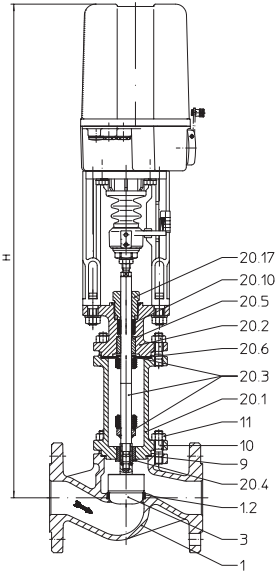


Fig. 441 Bellows seal

Applications:

Fig. 440

- Cooling water
- Cooling brine
- Warm water
- Hot water
- Steam
- Gas

Fig. 441

- Refrigerant
- Cooling water
- Warm water
- Hot water
- Thermal oil
- Steam

Features:

- Compact design
- Precision guided stem
- Burnished stem
- Tapered seat joint
- Positioning ratio 50:1
- Spring-loaded PTFE-V-ring packing unit
- Two-ply bellows seal
- Travel indicator



Dimensions			15	20	25	32	40	50	65	80	100
...440	H	(mm)	556	556	564	564	571	577	590	605	624
	2.2 kN	PN16 / PN25-40 (kg)	9 / 9.8	9.7 / 10.6	10.6 / 11.9	12.2 / 13.7	14.1 / 16.2	17 / 18.9	22.1 / 26.1	27.8 / 32.3	38 / 45
	5 kN		10.1 / 10.9	10.8 / 11.7	11.7 / 13	13.3 / 14.8	15.2 / 17.3	18.1 / 20	23.2 / 27.2	28.9 / 33.4	39 / 46
	12 kN	PN16 / PN25-40 (kg)	-	-	-	-	19.2 / 21.3	22.1 / 24	27.2 / 31.2	32.9 / 37.4	43 / 50
	15 kN		-	-	-	-	19.2 / 21.3	22.1 / 24	27.2 / 31.2	32.9 / 37.4	43 / 50
...441	H	(mm)	741	741	749	749	740	742	826	838	854
	2.2 kN	PN16 / PN25-40 (kg)	13.4 / 15.4	13.4 / 16.9	14.4 / 19.4	16.9 / 22.4	19.4 / 28.4	21.9 / 30.9	24.9 / 37.9	35.9 / 47.9	51 / 64
	5 kN		14.5 / 16.5	14.5 / 18	15.5 / 20.5	18 / 23.5	20.5 / 29.5	23 / 32	26 / 39	37 / 49	53 / 66
	12 kN	PN16 / PN25-40 (kg)	-	-	-	-	24.5 / 33.5	27 / 36	30 / 43	41 / 53	57 / 70
	15 kN		-	-	-	-	24.5 / 33.5	27 / 36	30 / 43	41 / 53	57 / 70

KVS Value and Closing Pressure													
DN			15	20	25	32	40	50	65	80	100	125	150
Seat - Ø	(mm)		21	21	27	31	41	51	66	81	101	126	151
Standard Kvs-Values			4	6.3	10	16	25	40	63	100	160	250	400
Reduced Kvs Values			2.5	4; 2.5	6.3	10	16	25	40	63	100	160	250
Travel	(mm)		20			30			50				
Actuator		I	40	40	30.8	23.1	12.8	8	4.3	2.7	1.5	-	-
ARI-PREMIO	Closing pressure (bar)	II	40	40	28.8	21.6	11.9	7.4	3.9	2.3	1.3	-	-
		III	30.7	30.7	27.1	20.4	10.6	6.5	3.6	2.2	1.2	-	-
Operating time ²⁾ Operating speed 0.38 mm/s (s)			53			79							
Actuator		I	-	-	40	40	33.2	21.3	12.3	8	4.9	3	2
ARI-PREMIO	Closing pressure (bar)	II	-	-	40	40	32.3	20.7	11.9	7.6	4.7	2.9	1.9
		III	40	40	40	40	31	19.8	11.6	7.5	4.6	-	-
Operating time ²⁾ Operating speed 0.38 mm/s (s)			53			79			132				
Actuator		I	-	-	-	-	40	40	32.3	21.2	13.5	8.5	5.9
ARI-PREMIO	Closing pressure (bar)	II	-	-	-	-	40	40	31.8	20.9	13.3	8.4	5.8
		III	-	-	-	-	40	40	31.6	20.7	13.2	-	-
Operating time ²⁾ Operating speed 0.79 mm/s (s)			25			38			63				
Actuator		I	-	-	-	-	-	-	40	26.9	17.2	10.9	7.5
ARI-PREMIO	Closing pressure (bar)	II	-	-	-	-	-	-	40	26.6	17	10.8	7.4
		III	-	-	-	-	-	-	40	26.4	16.9	-	-
Operating time ²⁾ Operating speed 0.38 mm/s (s)						79			132				

I. Fig. 440 : PTFE-V-ring unit II. Fig. 440 : PTFE-/ pure graphite-packing III. Fig. 441 : Bellows seal

*last updated 10/16

Technical Data	
Type	Control Valve Fig. 440-441
Nominal diameter	DN 15-100
Nominal pressure	PN 16, PN 25, PN 40
Steam sealing	Fig. 440 PTFE-V-ring unit -10 °C up to 220 °C PTFE-packing -10 °C up to 250 °C Pure graphite-packing -10 °C up to 450 °C Fig. 441 Stainless steel bellows seal with safety stuffing box -60 °C up to +450 °C
	Plug design Standard : parabolic plug, metal seat Special design : Parabolic plug with PTFE soft seat (max 200 °C) V-port plug, metal seat Parabolic pressure balanced plug, metal seat Material of piston seal : PTFE with stainless steel spring (max 200 °C)
Guiding	Rangability 50 : 1 on parabolic plug 30 : 1 on V-port plug
	Shut off class Metal seat-Leakage class IV acc. to DIN EN 1349 or IEC 60534-4 Soft seat-Leakage class VI acc. to DIN EN 1349 or IEC 60534-4
Flow characteristic	Equal percentage or linear

Material		PN16 - 12.440 / 12.441	PN16 - 22.440 / 22.441 PN25 - 23.440 / 23.441	PN25 - 34.440 / 34.441 PN40 - 35.440 / 35.441	PN40 - 55.440 / 55.441
Part	Description	Material No.			
1	Body	EN-JL1040	EN-JS1049	1.0619+N	1.4408
1.2	Seat ring	1.4021+QT		1.4021+QT ⁵⁾	-
3	Plug*	1.4021+QT			1.4571
7	Mounting bonnet	EN-JL1040	EN-JS1049	1.0619+N	1.4408
8	Guiding bush	1.4021+QT (hardened)			1.4571
9	Gasket*	CrNi laminated both sides with pure graphite			
12	V-ring unit*	PTFE			
16	Bushing*	Reinforced PTFE			
20.1	Bellows housing	EN-JS1049		1.0619+N	1.4408
20.2	Mounting bonnet	EN-JS1049		1.0619+N	1.4408
20.3	Stem / Bellows unit*	1.4021+QT / 1.4541			1.4571
20.4	Guide bushing	1.4021+QT (hardened)			1.4571
20.5	Guide bushing	1.4021+QT (hardened)			1.4571
20.6	Gasket*	CrNi laminated both sides with pure graphite			
20.10	Packing ring*	Pure graphite			
20.17	Screw joint*	1.4305			
23	Packing ring*	PTFE or pure graphite			
25	Screw joint*	1.4305			

* Spare parts ⁵⁾from DN 65 1.4551

Pressure Temperature Ratings		Temperature (°C)									
acc. to DIN 1092-2	PN	-60 up to <-10	-10 up to 120	150	200	250	300	350	400	450	
Material											
EN-JL1040	16	-	16 bar	14.4 bar	12.8 bar	11.2 bar	9.6 bar	-	-	-	
EN-JS1049	16	on request	16 bar	15.5 bar	14.7 bar	13.9 bar	12.8 bar	11.2 bar	-	-	
	25	on request	25 bar	24.3 bar	23 bar	21.8 bar	20 bar	17.5 bar	-	-	
acc. to DIN 1092-1	PN	Temperature (°C)									
Material		-60 up to <-10*	-10 up to 50	100	150	200	250	300	350	400	450
1.0619+N	25	18.7 bar	25 bar	23.3 bar	21.7 bar	19.4 bar	17.8 bar	16.1 bar	15 bar	14.4 bar	13.9 bar
	40	30 bar	40 bar	37.3 bar	34.7 bar	30.2 bar	28.4 bar	25.8 bar	24 bar	23.1 bar	22.2 bar
1.4408	40	40 bar	40 bar	37.3 bar	33.81 bar	31.1 bar	29.3 bar	27.6 bar	26.7 bar	25.6 bar	-

Intermediate values for max. permissible operational pressures can be determined by linear interpolation of the given temperature / pressure chart only.

* Valve with extended bonnet, studs and nuts made of A4-70 (at temperature below -10 °C)

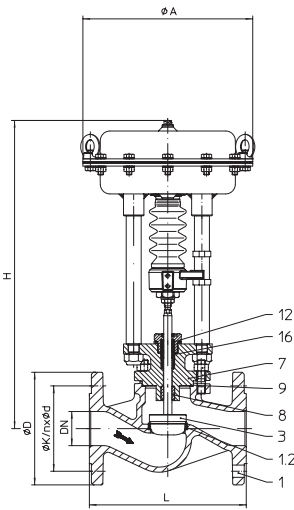


Fig. 440 Packing ring

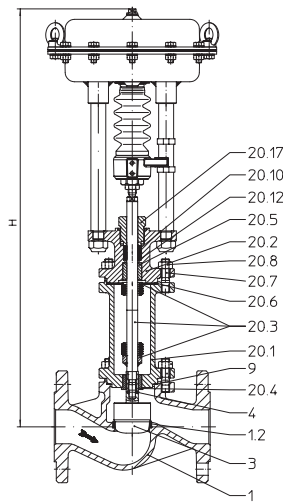


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Features:

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DN		15	20	25	32	40	50	65	80	100
DP 32	ØA (mm)	250								
	...440 H (mm)	442	442	450	450	457	463	476	491	510
	PN16/PN25-40 (kg)	12.6 / 13.4	13.3 / 14.2	14.2 / 15.5	15.8 / 17.3	17.7 / 19.8	20.6 / 22.5	25.7 / 29.7	31.4 / 35.9	42 / 49
	...441 H (mm)	627	627	635	635	626	628	712	724	740
PN16/PN25-40 (kg)	17 / 19	17 / 20.5	18 / 23	20.5 / 26	23 / 32	25.5 / 34.5	28.5 / 41.5	39.5 / 51.5	55 / 68	
DP 33	ØA (mm)	300								
	...440 H (mm)	497	497	505	505	512	518	531	546	565
	PN16/PN25-40 (kg)	18.6 / 19.4	19.3 / 20.2	20.2 / 21.5	21.8 / 23.3	23.7 / 25.8	26.6 / 28.5	31.7 / 35.7	37.4 / 41.9	48 / 55
	...441 H (mm)	682	682	690	690	681	683	767	779	795
PN16/PN25-40 (kg)	23 / 25	23 / 26.5	24 / 29	26.5 / 32	29 / 38	31.5 / 40.5	34.5 / 47.5	45.5 / 57.5	61 / 74	
DP 34	ØA (mm)	405								
	...440 H (mm)	-	-	-	-	-	-	666	681	680
	PN16/PN25-40 (kg)	-	-	-	-	-	-	61.7 / 65.7	67.4 / 71.9	78 / 85
	...441 H (mm)	-	-	-	-	-	-	902	914	930
PN16/PN25-40 (kg)	-	-	-	-	-	-	64.5 / 77.5	75.5 / 87.5	91 / 104	

Please indicate when ordering

- Figure - No.
- Nominal diameter (DN)
- Nominal pressure (PN)
- Body material
- Plug design
- Kvs - value
- Flow characteristic
- Stem sealing
- Actuator
- Special design / accessories

Example

Figure 35.440; Nominal diameter DN 100; Pressure PN 40; body material 1.0619+N; Parabolic plug; Kvs 160; Equal percentage; Stem sealing PTFE-V-ring unit; Pneumatic actuator DP 34 Spring range 0.4-1.2 bar

Dimensions in mm.; Weight in kg.; Pressure in barg (gauge)

1 bar $\hat{=}$ 105; Pa = 0.1 Mpa; Kvs in 03/h

1 Kvs $\hat{=}$ 0.85 Cv

Closing Pressure with DP

Max. permissible closing pressure on flow-to-open $P_2 = 0$

Spring closes on air failure													
DN		15	20	25	32	40	50	65	80	100			
Seat - Ø (mm)		21	21	27	31	41	51	66	81	101			
Standard Kvs-Values		4	6.3	10	16	25	40	63	100	160			
Reduced Kvs Values		2.5	4; 2.5	6.3	10	16	25	40	63	100			
Travel (mm)		20						30					
Actuator DP 32	control signal (bar)	0.2 - 1.0	1.2	I	5.5	5.5	2.6	1.6	-	-	-	-	-
				II	2.3	2.3	-	-	-	-	-	-	-
				III	-	-	-	-	-	-	-	-	-
		0.4 - 1.2	1.4	I	18.6	18.6	10.7	7.8	3.9	2.2	-	-	-
				II	15.4	15.4	8.7	6.2	3	1.6	-	-	-
				III	8.6	8.6	7.1	5	1.7	-	-	-	
		0.8 - 2.4	2.7	I	40	40	26.8	20.1	11	6.8	3.7	2.2	1.2
				II	40	40	24.8	18.6	10.2	6.3	3.2	1.9	1
				III	26.4	26.4	23.2	17.3	8.9	5.4	2.9	1.7	-
		1.5 - 2.5	2.8	I	-	-	40	40	23.5	15	-	-	-
				II	-	-	40	40	22.7	14.4	-	-	-
				III	40	40	40	38.9	21.4	13.6	-	-	-
		2.0 - 3.3	3.6	I	-	-	-	-	32.5	20.8	-	-	-
				II	-	-	-	-	31.6	20.2	-	-	-
				III	-	-	-	40	30.3	19.4	-	-	-
Actuator DP 33	control signal (bar)	0.2 - 1.0	1.2	I	13.3 c)	13.3 c)	7.4 c)	5.2 c)	2.4 c)	1.2 c)	-	-	-
				II	10.1 c)	10.1 c)	5.4 c)	3.7 c)	1.5 c)	-	-	-	
				III	5 a)	5 a)	3.8 a)	2.5 c)	-	-	-	-	
		0.4 - 1.2	1.4	I	34.2 c)	34.2 c)	20.2 c)	15.1 c)	8.1 c)	4.9 c)	2.5	1.4	-
				II	31 a)	31 a)	18.3 c)	13.6 c)	7.3 c)	4.4 c)	2.1	1.1	-
				III	19.1 a)	19.1 a)	16.6 a)	12.3 a)	5.9 a)	3.5 a)	1.8	-	-
		0.8 - 2.4	2.7	I	40 a)	40 a)	40 a)	34.7 a)	19.5 a)	12.3 a)	7	4.4	2.6
				II	40 a)	40 a)	40 a)	33.2 a)	18.6 a)	11.8 a)	6.5	4.1	2.4
				III	40	40	40	31.9	17.3	10.9	6.2	3.9	2.3
		1.5 - 3.0	3.3	I	-	-	-	-	-	-	14.8	9.6	6
				II	-	-	-	-	-	-	14.3	9.3	5.8
				III	-	-	-	-	-	-	14	9.1	5.7
		1.7 - 2.7	3.1	I	-	-	-	40 a)	40 a)	29 a)	-	-	-
				II	-	-	-	40 a)	40 a)	28.4 a)	-	-	-
				III	-	-	-	40	40	27.6	-	-	-
		2.0 - 4.0	4.5	I	-	-	-	-	-	-	20.3	13.3	8.4
				II	-	-	-	-	-	-	19.9	12.9	8.2
				III	-	-	-	-	-	-	19.6	12.8	8.1
2.3 - 3.7	4.5	I	-	-	-	-	-	40	-	-	-		
		II	-	-	-	-	-	39.5	-	-	-		
		III	-	-	-	-	-	38.6	-	-	-		
Actuator DP 34	control signal (bar)	0.2 - 1.0	1.2	I	-	-	-	-	-	-	2.5 b)	1.5 b)	-
				II	-	-	-	-	-	-	2.1 b)	1.2 b)	-
				III	-	-	-	-	-	-	1.8 e)	1 e)	-
		0.4 - 1.2	1.4	I	-	-	-	-	-	-	7 b)	4.4 b)	2.7 b)
				II	-	-	-	-	-	-	6.6 b)	4.1 b)	2.5 b)
				III	-	-	-	-	-	-	6.3 d)	3.9 d)	2.3 d)
		0.8 - 2.4	2.7	I	-	-	-	-	-	-	16	10.4	6.5
				II	-	-	-	-	-	-	15.5	10.1	6.3
				III	-	-	-	-	-	-	15.2 b)	9.9 b)	6.2 b)
		2.1 - 3.0	3.3	I	-	-	-	-	-	-	40	29.7	19
				II	-	-	-	-	-	-	40	29.4	18.8
				III	-	-	-	-	-	-	40 a)	29.2 a)	18.7 a)
2.4 - 3.6	4.5	I	-	-	-	-	-	-	-	34.2	21.9		
		II	-	-	-	-	-	-	-	33.9	21.7		
		III	-	-	-	-	-	-	-	-	-		

I. Fig. 440 : PTFE-V-ring unit II. Fig. 440 : PTFE-/ pure graphite-packing III. Fig. 441 : Bellows seal

Air supply pressure max. limit of control valve : a) 5 bar / b) 4.5 bar / c) 4 bar / d) 3.5 bar / e) 3 bar / Air supply pressure max. of pneumatic actuators DP : 6 bar

Air supply pressure max. of pneumatic actuators DP: 6 bar

1) Other Kvs-value-reductions are possible with series 445/446 (stainless body with screwed seating) / Max. permissible operating pressure refers to separate data sheet

*last updated 10/16

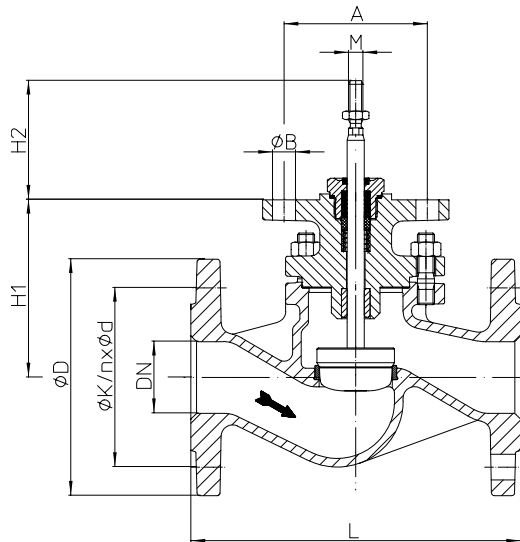


Fig. 440
DN15-150

(e.g. DP32-34, PREMIO 2-25kN, AUMA SAR 07.2-10.2)

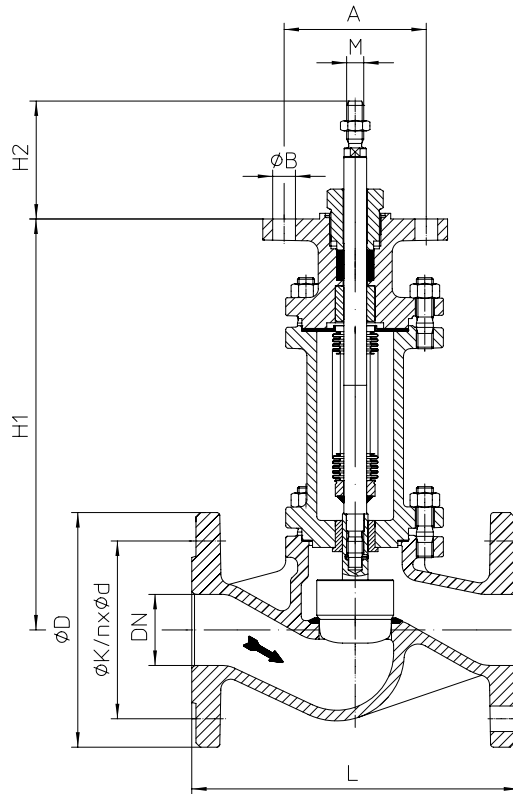


Fig. 441
DN15-150

(e.g. DP32-34, PREMIO 2-25kN, AUMA SAR 07.2-10.2)

DN	15	20	25	32	40	50	65	80	100	125	150
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Dimensions												
M	Fig. 440	(mm)	M10					M14 x 1.5			M16 x 1.5	
	Fig. 441	(mm)	M12								M16	
H1	Fig. 440	(mm)	103	111	118	124	137	152	171	210	270	
	Fig. 441	(mm)	288	296	287	289	373	385	401	565	596	
H2	Fig. 440 / Fig. 441	(mm)	83									
A	Fig. 440 / Fig. 441	(mm)	100									
n x ØB	Fig. 440 / Fig. 441	(mm)	2 x 16									

Face-to-face dimension FTF series 1 according to DIN EN 558												
L	(mm)	130	150	160	180	200	230	290	310	350	400	480

Flanges acc. to DIN EN 1092-1/2			Flange holes / -thickness tolerances acc. to DIN 2533/2544/2545											
ØD	PN16	(mm)	95	105	115	140	150	165	185	200	220	250	285	
	PN25	(mm)									235	270	300	
	PN40	(mm)									235	270	300	
ØK	PN16	(mm)	65	75	85	100	110	125	145	160	180	210	240	
	PN25	(mm)									190	220	250	
	PN40	(mm)									190	220	250	
n x Ød	PN16	(mm)	4 x 14	4 x 14	4 x 18	4 x 18	4 x 18	4 x 18	8 x 18	8 x 18	8 x 18		8 x 22	
	PN25	(mm)									8 x 22		8 x 26	8 x 26
	PN40	(mm)									8 x 22		8 x 26	8 x 26

Weights													
Fig. 440	PN16 (JL1040)	(kg)	3.6	4.3	5.2	6.8	8.7	11.6	16.7	22.4	32.5	49.7	72.9
	PN40 (1.0619+N)	(kg)	4.3	5.2	6.1	7.5	10	13	20	26	38.7	55.9	77.2
Fig. 441	PN16 (JL1040)	(kg)	8	8	9	11.5	14	16.5	19.5	30.5	46	65.8	87.2
	PN40 (1.0619+N)	(kg)	10	11.5	14	17	23	25.5	32.5	42.5	59	76.3	92.7

max. permissible thrust												
Fig. 440	(kN)	12.7					29.6			40.6		
Fig. 441	(kN)	18.2								37		

*last updated 10/23