

Fig. 450 Packing ring

Fig. 451 Bellows seal

Diverting plug DN40 upwards

Applications:

- Fig. 450
- Cooling water
- Cooling brine
- Warm water
- Hot water
- Steam
- Gas

Features:

- Compact design
- Precision guided stem
- Burnished stem
- Tapered seat ring
- Seat option available
- Reducible Kvs-values
- Rangability 30:1
- Guided plug
- Spring-loaded PTFE-V-ring packing unit
- Two-ply bellows seal
- Travel indicator

Fig. 451

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



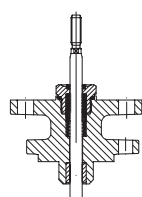
Heights and Weights

DN		15	20	25	32	40	50	65	80	100	125	150
DP 32	ØA (mm)	250										
	...450 H (mm)	450	450	454	480	486	484	520	536	555	602	-
	PN16/PN25-40 (kg)	14.1/14.6	15.1/15.7	16.1/16.7	18.7/19.6	22/23.2	25.8/27.3	32.5/34.6	39/41.6	56/60	76/104	-
	...451 H (mm)	635	635	639	665	655	649	755	768	784	-	-
DP 33	ØA (mm)	300										
	...450 H (mm)	505	505	509	535	541	539	575	591	610	657	719
	PN16/PN25-40 (kg)	20.1/20.6	21.1/21.7	22.1/22.7	24.7/25.6	28/29.2	31.8/33.3	38.5/40.6	45/47.6	62/66	82/110	110/153
	...451 H (mm)	690	690	694	720	710	704	810	823	839	1012	1045
DP 34	ØA (mm)	405										
	...450 H (mm)	-	-	-	-	-	-	710	726	745	772	834
	PN16/PN25-40 (kg)	-	-	-	-	-	-	68.5/70.6	75/77.6	92/96	112/140	140/183
	...451 H (mm)	-	-	-	-	-	-	945	958	974	1127	1160
PN16/PN25-40 (kg)	-	-	-	-	-	-	74.8/77.5	84.7/88.3	102/108	122/150	150/193	

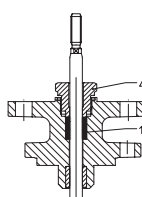
Technical Data

Type	Control Valve Fig. 450-451		Body Material	EN-JL1040 (to DN 100)	PN16 Fig. 12.450/12.451
Nominal diameter	DN 15-150			EN-JS1049	PN16 Fig. 22.450/22.451
Nominal pressure	PN 16, PN 25, PN 40			EN-JS1049	PN25 Fig. 23.450/23.451
Steam sealing	Fig. 450			1.0619+N	PN25 Fig. 34.450/34.451
	PTFE-V-ring unit	-10 °C up to +220 °C	1.0619+N	PN40 Fig. 35.450/35.451	
	PTFE-packing	-10 °C up to +250 °C	1.4408	PN40 Fig. 55.450/55.451	
	Pure graphite-packing	-10 °C up to +450 °C		(55.451 to DN100)	
Guiding	Fig. 451		Stem and port guiding		
	Stainless steel bellows seal with safety stuffing box		Flow characteristic		
	-60 °C up to +450 °C		linear		
Shut off classes	Metal seat-Leakage class IV		Rangability		
	acc. to DIN EN 1349 or IEC 60534-4		30 : 1		
Plug design	Parabolic plug/V-port plug		Failure position dependent on valve duty.		
			Retracted stem on air failure: - with a mixing valve port A -> AB is closed - with a diverting valve port B -> AB is closed		
		Extended stem on air failure: - with a mixing valve port B -> AB is closed - with a diverting valve port A -> AB is closed			

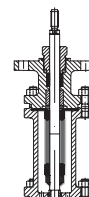
Stem Sealings



Spring loaded PTFE-V-ring unit



PTFE-/pure graphite-packing



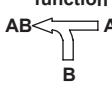
Bellows seal with safety stuffing box

*last updated 10/16

Closing Pressure with DP

Max. permissible closing pressure for both seat position on flow-to-open $P_2 = 0$

Spring closes port A -> AB or Spring closes port B -> AB

Spring closes on air failure														
Mixing function 	DN	15	20	25	32	40	50	65	80	100	125	150		
	Seat - ØA/B (mm)	21/20	21/25	27/27	31/32	41/40	51/50	66/60	81/75	101/95	120/120	140/140		
	Standard Kvs-Values	4	6.3	10	16	25	40	63	100	160	250	320		
	Reduced Kvs Values	2.5	4	6.3	10	16	25	40	63	100	160	250		
Travel (mm)	20						30			50				
Actuator DP 32	control signal (bar)	0.2 - 1.0	1.2	I	5.5	3.3	2.6	1.4	-	-	-	-	-	
			II	2.3	1	-	-	-	-	-	-	-	-	
			III	-	-	-	-	-	-	-	-	-	-	
		0.4 - 1.2	1.6	I	18.6	12.6	10.7	7.2	3.9	2.2	-	-	-	-
			II	15.4	10.3	8.7	5.8	3	1.6	-	-	-	-	
			III	8.6	8	7.1	4.6	1.7	-	-	-	-	-	
	0.8 - 2.4	3.2	I	40	31.4	26.8	18.8	11	6.8	3.7	2.2	1.2	-	-
		II	40	29.1	24.8	17.4	10.2	6.3	3.2	1.9	1	-	-	
		III	26.4	25.7	23.2	16.2	8.9	5.4	2.9	1.7	-	-	-	
	1.5 - 2.5	4.0	I	-	40	40	39.1	23.5	15	-	-	-	-	-
			II	-	40	40	37.7	22.7	14.4	-	-	-	-	-
			III	40	40	40	36.5	21.4	13.6	-	-	-	-	-
	2.0 - 3.3	5.3	I	-	-	-	40	32.5	20.8	-	-	-	-	-
			II	-	-	-	40	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 ^{c4)}	8.8 ^{c4)}	7.4 ^{c4)}	4.9 ^{c4)}	2.4 ^{c4)}	1.2 ^{c4)}	-	-	-
				II	10.1 ^{c4)}	6.5 ^{c4)}	5.4 ^{c4)}	3.4 ^{c4)}	1.6 ^{c4)}	-	-	-	-	
				III	5 ^{a4)}	4.3 ^{a4)}	3.8 ^{a4)}	2.2 ^{a4)}	-	-	-	-	-	
0.4 - 1.2			1.6	I	34.2 ^{c4)}	23.7 ^{c4)}	20.2 ^{c4)}	14.1 ^{c4)}	8.1 ^{c4)}	4.9 ^{c4)}	2.5 ⁴⁾	1.4 ⁴⁾	-	-
			II	31 ^{c4)}	21.4 ^{c4)}	18.3 ^{c4)}	12.7 ^{c4)}	7.3 ^{c4)}	4.4 ^{c4)}	2.1 ⁴⁾	1.1 ⁴⁾	-	-	
			III	19.1 ^{a4)}	18.5 ^{a4)}	16.6 ^{a4)}	11.5 ^{a4)}	5.9 ^{a4)}	3.5 ^{a4)}	1.8 ^{a4)}	-	-	-	
0.8 - 2.4		3.2	I	40 ^{a4)}	40 ^{a4)}	40 ^{a4)}	32.5 ^{a4)}	19.5 ^{a4)}	12.3 ^{a4)}	7 ⁴⁾	4.4 ⁴⁾	2.6 ⁴⁾	-	-
		II	40 ^{a4)}	40 ^{a4)}	40 ^{a4)}	31.1 ^{a4)}	18.6 ^{a4)}	11.8 ^{a4)}	6.5 ⁴⁾	4.1 ⁴⁾	2.4 ⁴⁾	-	-	
		III	40 ⁴⁾	40 ⁴⁾	40 ⁴⁾	29.9 ⁴⁾	17.3 ⁴⁾	10.9 ⁴⁾	6.2 ⁴⁾	3.9 ⁴⁾	2.3 ⁴⁾	-	-	
1.5 - 3.0		4.5	I	-	-	-	-	-	-	14.8	9.6	6	-	-
			II	-	-	-	-	-	-	14.3	9.3	5.8	-	-
			III	-	-	-	-	-	-	14	9.1	5.7	-	-
1.7 - 2.7		4.4	I	-	-	-	40 ^{a)}	40 ^{a)}	29 ^{a)}	-	-	-	-	-
			II	-	-	-	40 ^{a)}	40 ^{a)}	28.4 ^{a)}	-	-	-	-	
			III	-	-	-	40	40	27.6	-	-	-	-	
2.0 - 4.0 (2.3 - 3.7)		6.0 (6.0)	I	-	-	-	-	-	(40)	20.3	13.3	8.4	-	-
			II	-	-	-	-	-	(39.5)	19.9	12.9	8.2	-	-
			III	-	-	-	-	-	(38.7)	19.6	12.8	8.1	-	-
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	1.6	I	-	-	-	-	-	-	7 ^{b)}	4.4 ^{b)}	2.7 ^{b)}	1.8
			II	-	-	-	-	-	-	-	6.6 ^{b)}	4.1 ^{b)}	2.5 ^{b)}	1.6
			III	-	-	-	-	-	-	-	6.3 ^{d)}	3.9 ^{d)}	2.3 ^{d)}	1.4 ^{a)}
	0.8 - 2.4	3.2	I	-	-	-	-	-	-	16	10.4	6.5	4.5	
			II	-	-	-	-	-	-	15.5	10.1	6.3	4.3	
			III	-	-	-	-	-	-	15.2 ^{b)}	9.9 ^{b)}	6.2 ^{b)}	4.1	
	1.5 - 3.0 (2.1 - 3.0)	4.5 (5.1)	I	-	-	-	-	-	-	(40)	(29.7)	(19)	9.3	
			II	-	-	-	-	-	-	(40)	(29.4)	(18.8)	9.1	
			III	-	-	-	-	-	-	-	-	-	8.9	
	2.4 - 3.6 (2.4 - 3.6)	6.0 (6.0)	I	-	-	-	-	-	-	-	(34.2)	(21.9)	12.7	
			II	-	-	-	-	-	-	-	(33.9)	(21.7)	12.5	
			III	-	-	-	-	-	-	-	-	-	12.3	

I. Fig. 450 : PTFE-V-ring unit II. Fig. 450 : PTFE-/ pure graphite-packing III. Fig. 451 : Bellows seal

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

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

3) Kvs-value reducible on request (2 screwed seat rings required) 4) At mixing function and spring closes direction A->AB, the max. permissible air supply pressure is 3,5 bar

*last updated 10/16