STEVI® WITH ELECTRIC ACTUATOR ARI-PREMIO

3-Way Control Valve in Mixing and Diverting Construction DN 15-150 — Fig. 450/451

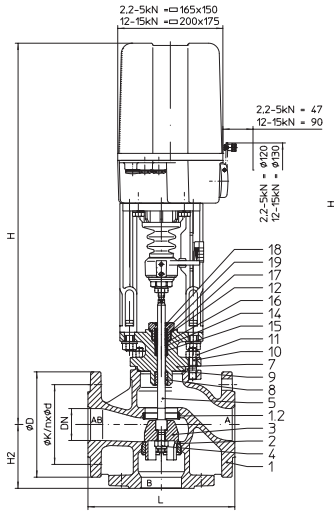


Fig. 450 Packing ring

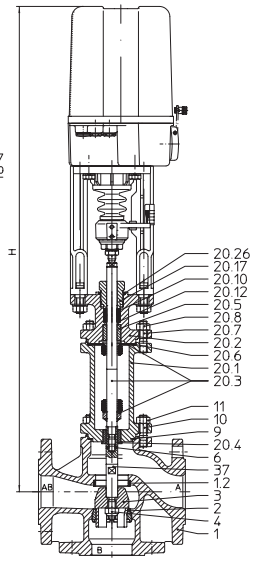
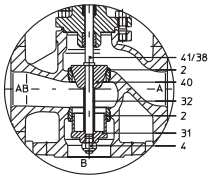


Fig. 451 Bellows seal



Diverting plug
DN40 upwards

Applications:

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

Fig. 451
- Refrigerant
- Cooling water
- Warm water
- Hot water
- Thermal oil
- Steam

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

Heights and Weights

DN			15	20	25	32	40	50	65	80	100	125	150
...450	H	(mm)	564	564	568	594	600	598	634	650	669	738	800
	2.2 kN	PN16 / PN25-40 (kg)	10.5/11	11.5/121.1	12.5/13.4	15.1/16	18.4/19.6	22.2/23.7	28.9/31	35.4/38	52/56	73/100	-
	5 kN		11.6/12.1	12.6/13.2	13.6/14.2	16.2/17.1	19.5/20.7	23.3/24.8	30/32.1	36.5/39.1	53/57	74/101	101/144
	H		-	-	718	744	750	748	784	800	819	886	948
	12 kN	PN16 / PN25-40 (kg)	-	-	17.6/18.2	20.2/21.1	23.5/24.7	27.3/28.8	34/36.1	40.5/43.1	57/61	78/105	105/148
	15 kN		-	-	17.6/18.2	20.2/21.1	23.5/24.7	27.3/28.8	34/36.1	40.5/43.1	57/61	78/105	105/148
...451	H	(mm)	749	749	753	779	769	763	869	882	898	1093	1126
	2.2 kN	PN16 / PN25-40 (kg)	13.5/14.2	14.5/15.3	15.7/16.6	18.1/19.2	22.9/24.5	26.1/28	35.2/37.9	45.1/48.7	63/68	-	-
	5 kN		14.6/15.3	15.6/16.4	16.8/17.7	19.2/20.3	24/25.6	27.2/29.1	36.3/39	46.2/49.8	64/69	84/112	111/155
	H	(mm)	-	-	903	929	919	913	1019	1032	1048	1241	1274
	12 kN	PN16 / PN25-40 (kg)	-	-	20.8/21.7	23.2/24.3	28/29.6	31.2/33.1	40.3/43	50.2/53.8	68/73	88/116	115/159
	15 kN		-	-	20.8/21.7	23.2/24.3	28/29.6	31.2/33.1	40.3/43	50.2/53.8	68/73	88/116	115/159

Material

Figure		PN16 - 12.450[6]/ 12.451[6]	PN16 - 22.450 / 22.451 PN25 - 23.450 / 23.451	PN25 - 34.450 / 34.451 PN40 - 35.450 / 35.451	PN40 - 55.450 / 55.451[6]
Part	**Description**	**Material No.**			
1	Body	EN-JL1040	EN-JS1049EN	1.0619+N	1.4408
1.2	Seat ring	1.4021+QT			-
2	Seat ring*	1.4021+QT			1.4571
3	Plug*	1.4021+QT			1.4571
5	Stem*	1.4021+QT			1.4571
6	Straight pin*	1.4310			A2
7	Mounting bonnet	EN-JS1049		1.0619+N	1.4408
9	Gasket*	CrNi laminated both sides with pure graphite			
12	V-ring unit*	PTFE			
13	Packing ring*	PTFE or pure graphite			
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
20.6	Gasket*	CrNi laminated both sides with pure graphite			
20.10	Packing ring*	Pure graphite			
31	Plug*	1.4021+QT			1.4571
37	Stem adapter*	1.4021+QT			1.4571
40	Plug*	1.4021+QT			1.4571
41	Stem adapter*	1.4021+QT			1.4571

* Spare parts [6] up to DN100

*last updated 10/16

Closing Pressure with ARI-PREMIO

Mixing function AB ⇐ A, B	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[3])		2.5	4	6.3	10	16	25	40	63	100	160	250
	Travel	(mm)	20						30			50	
Actuator[1]) ARI-PREMIO 2.2 kN	Closing pressure (bar)	I	40	35.9	30.8	21.7	12.8	8	4.3	2.7	1.5	-	-
		II	40	33.7	28.8	20.2	11.9	7.4	3.9	2.3	1.3	-	-
		III	30.7	30.1	27.1	19.1	10.6	6.5	3.6	2.2	1.2	-	-
	Operating time[2])	(s)	53						79				
Actuator[1]) ARI-PREMIO 5 kN	Closing pressure (bar)	I	-	40	40	40	33.2	21.3	12.3	8	4.9	3.4	2.4
		II	-	40	40	40	32.3	20.7	11.9	7.6	4.7	3.2	2.3
		III	40	40	40	40	31	19.8	11.6	7.5	4.6	3	2.1
	Operating time[2])	(s)	53						79			132	
Actuator[1]) ARI-PREMIO 12 kN	Closing pressure (bar)	I	-	-	-	-	40	40	32.3	21.2	13.5	9.5	6.9
		II	-	-	-	-	40	40	31.8	20.9	13.3	9.3	6.8
		III	-	-	-	-	40	40	31.6	20.7	13.2	9.1	6.6
	Operating time[2])	(s)	25						38			63	
Actuator[1]) ARI-PREMIO 15 kN	Closing pressure (bar)	I	-	-	-	-	-	-	40	26.9	17.2	12.1	8.8
		II	-	-	-	-	-	-	40	26.6	17	11.9	8.7
		III	-	-	-	-	-	-	40	26.4	16.9	11.7	8.5
	Operating time[2])	(s)	79									132	

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

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

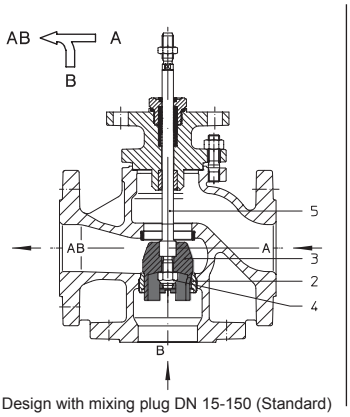
Closing Pressure with ARI-PREMIO

Diverting function AB ⇒ A, B	DN		15	20	25	32	40	50	65	80	100	125	150
	Seat - ØA/B	(mm)	21/20	21/25	27/27	31/32	40/40	50/50	60/60	75/75	90/90	105/105	125/125
	Standard Kvs-Values		4	6.3	10	16	14	25	45	60	95	170	200
	Reduced Kvs Values[3])		2.5	4	6.3	10	-	-	-	-	-	-	-
	Travel	(mm)	20						30				
Actuator[1]) ARI-PREMIO 2.2 kN	Closing pressure (bar)	I	25.7	18	15.4	10.8	13.4	8.2	5.4	3.2	2	1.3	-
		II	24.1	16.8	14.4	10.1	12.5	7.6	4.8	2.8	1.8	1.1	-
		III	15.4	15	13.6	9.5	11.1	6.8	4.5	2.6	1.6	-	-
	Operating time[2])	(s)	53						79				
Actuator[1]) ARI-PREMIO 5 kN	Closing pressure (bar)	I	40	40	38.5	27.4	34.6	21.9	15	9.4	6.4	4.5	3.1
		II	40	40	37.5	26.7	33.7	21.3	14.4	9	6.1	4.3	2.9
		III	40	40	36.6	26.1	32.3	20.4	14.1	8.8	6	4	2.7
	Operating time[2])	(s)	53						79				
Actuator[1]) ARI-PREMIO 12 kN	Closing pressure (bar)	I	-	-	40	40	40	40	38.9	24.8	17.1	12.3	8.6
		II	-	-	40	404	40	40	38.4	24.4	16.9	12.1	8.5
		III	-	-	40	40	40	40	38	24.2	16.7	11.9	8.3
	Operating time[2])	(s)	25						38				
Actuator[1]) ARI-PREMIO 15 kN	Closing pressure (bar)	I	-	-	-	-	-	-	40	31.4	21.7	15.7	11
		II	-	-	-	-	-	-	40	31.1	21.5	15.5	10.9
		III	-	-	-	-	-	-	40	30.8	21.3	15.3	10.7
	Operating time[2])	(s)	79										

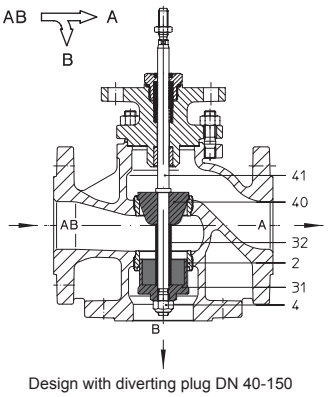
I. Fig. 450 : PTFE-V-ring unit **II. Fig. 450 : Pure graphite-packing** **III. Fig. 451 : Bellows seal**

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

Control valve working mode



Design with mixing plug DN 15-150 (Standard)



Design with diverting plug DN 40-150

ARI-Control valves are suitable for use with pneumatic or electric actuators.

According to the application two different variations are possible (see drawings on the left). Design with mixing plug as standard. Select when the valve is used for mixing service (2 inlets, 1 outlet).

DN 15-32 with mixing plug can also be used for diverting service (1 inlet, 2 outlets). In exceptions the design with mixing plug can also be used in diverting service for DN ≥ 40. Only small closing pressure are possible.

Design with diverting plug will be used exclusively for diverting service.

*last updated 10/16

STEVI® WITH PNEUMATIC ACTUATOR DP32-34

3-Way Control Valve in Mixing and Diverting Construction DN 15-150 Fig. 450/451

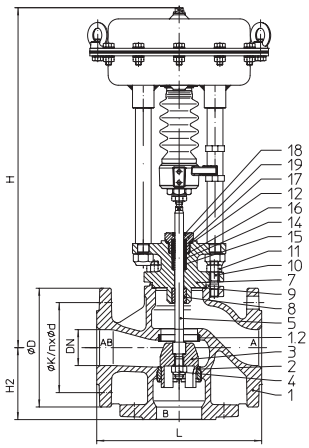


Fig. 450 Packing ring

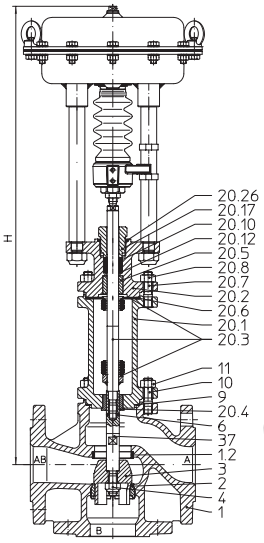
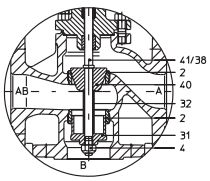


Fig. 451 Bellows seal



Diverting plug
DN40 upwards

Applications:

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

Fig. 451
- Refrigerant
- Cooling water
- Warm water
- Hot water
- Thermal oil
- Steam

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

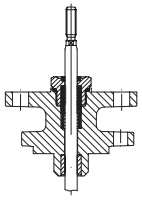
Heights and Weights

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	-	-
		PN16/PN25-40	(kg)	17.1/17.8	18.1/18.9	19.3/20.2	21.7/22.8	26.5/28.1	29.7/31.6	38.8/41.5	48.7/52.3	66/72	-	-
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
		PN16/PN25-40	(kg)	23.1/23.8	24.1/24.9	25.3/26.2	27.7/28.8	32.5/34.1	35.7/37.6	44.8/47.5	54.7/58.3	72/78	92/120	120/163
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

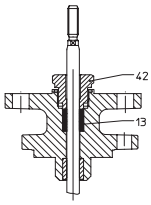
Technical Data

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)
	Fig. 451		**Guiding**	Stem and port guiding	
	Stainless steel bellows seal with safety stuffing box		**Flow characteristic**	linear	
	-60 °C up to +450 °C		**Rangability**	30 : 1	
Shut off classes	Metal seat-Leakage class IV		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
	acc. to DIN EN 1349 or IEC 60534-4				
Plug design	Parabolic plug/V-port plug				

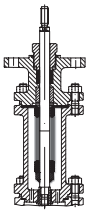
Stem Sealings



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 AB A B	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	Air supply pressure min. (bar)	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	Air supply pressure min. (bar)	1.2	I	13.3 c)4)	8.8 c)4)	7.4 c)4)	4.9 c)4)	2.4 c)4)	1.2 c)4)	-	-	-	-	-
					II	10.1 c)4)	6.5 c)4)	5.4 c)4)	3.4 c)4)	1.6 c)4)	-	-	-	-	-	-
					III	5 a)4)	4.3 a)4)	3.8 a)4)	2.2 a)4)	-	-	-	-	-	-	-
		0.4 - 1.2		1.6	I	34.2 c)4)	23.7 c)4)	20.2 c)4)	14.1 c)4)	8.1 c)4)	4.9 c)4)	2.5 4)	1.4 4)	-	-	-
					II	31 c)4)	21.4 c)4)	18.3 c)4)	12.7 c)4)	7.3 c)4)	4.4 c)4)	2.1 4)	1.1 4)	-	-	-
					III	19.1 a)4)	18.5 a)4)	16.6 a)4)	11.5 a)4)	5.9 a)4)	3.5 a)4)	1.8 a)4)	-	-	-	-
		0.8 - 2.4		3.2	I	40 a)4)	40 a)4)	40 a)4)	32.5 a)4)	19.5 a)4)	12.3 a)4)	7 4)	4.4 4)	2.6 4)	-	-
					II	40 a)4)	40 a)4)	40 a)4)	31.1 a)4)	18.6 a)4)	11.8 a)4)	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	Air supply pressure min. (bar)	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	1.2
					II	-	-	-	-	-	-	6.6 b)	4.1 b)	2.5 b)	1.6	1.1
					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	3.2
					II	-	-	-	-	-	-	15.5	10.1	6.3	4.3	3.1
					III	-	-	-	-	-	-	15.2 b)	9.9 b)	6.2 b)	4.1	3
		1.5 - 3.0 (2.1 - 3.0)		4.5 (5.1)	I	-	-	-	-	-	-	(40)	(29.7)	(19)	9.3	6.7
					II	-	-	-	-	-	-	(40)	(29.4)	(18.8)	9.1	6.6
					III	-	-	-	-	-	-	-	-	-	8.9	6.5
		2.4 - 3.6 (2.4 - 3.6)		6.0 (6.0)	I	-	-	-	-	-	-	-	(34.2)	(21.9)	12.7	9.2
					II	-	-	-	-	-	-	-	(33.9)	(21.7)	12.5	9.1
					III	-	-	-	-	-	-	-	-	-	12.3	9

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