

Series 1003/1013

Three-way control valve

SPECIFICATION



Three-way valve for mixing (1003) and diverting (1013) application. The adjustment valves of this series are characterised by their quality and versatility.

These control valves are designed for use in heating, ventilation and air conditioning (HVAC) systems. The control valves are actuated by pneumatic actuators Series 2000 or electric actuators Series E2000. The combination with Honeywell linear actuators ML642/ML742 ist also possible.

Features

- Rugged and proven design
- Rebuilding between mixing and diverting version without additional parts possible
- Compact design
- Full accessory range
- Sizes DN 15 up to DN 80 (1/2" – 3")
- PN16 –PN25 and ANSI300 (ANSI150 on request)
- -10°C – 220°C (- 20°C – 350°C with extension)
- Leakage rate < 0,1% of Kvs-value
- Burnished stem
- Spring loaded, self adjusting PTFE-carbon packing
- All parts as spares available
- Serial production

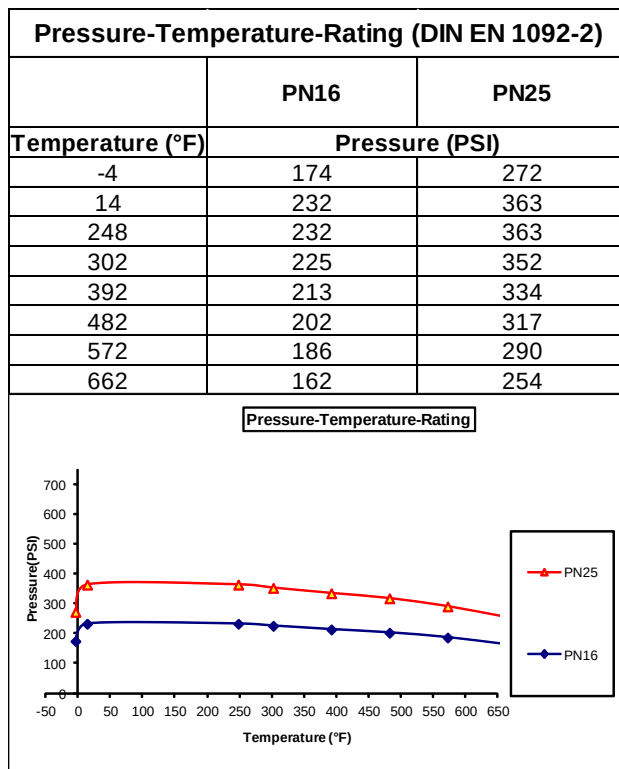
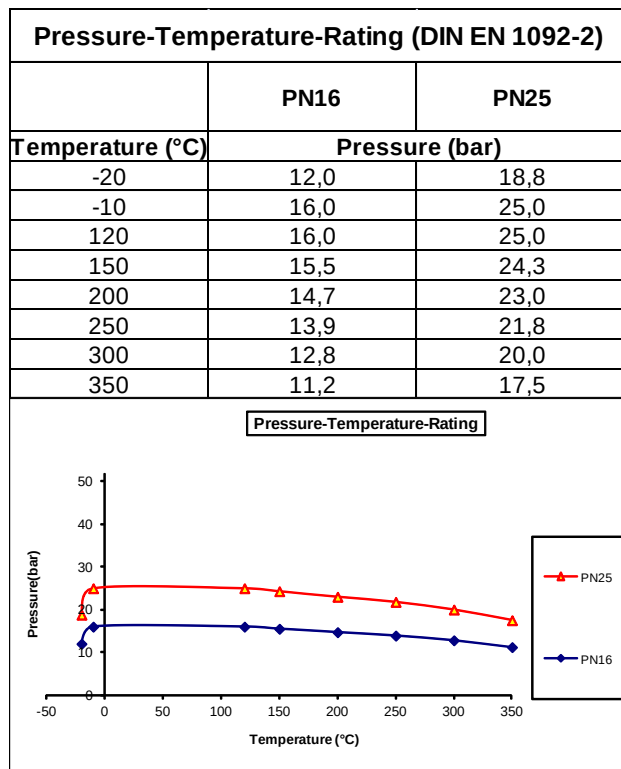
Specifications

General details

Type	Three-way mixing or diverting service											
Sizes	DIN-DN mm ANSI inch	15 ½	20 ¾	25 1	32	40 1 ½	50 2	65 2 ½	80 3			
Pressure ratings	PN16 – PN25 , ANSI 300 (ANSI150 on request)											
Endconnection and Face-to face dimension	DIN: ANSI:	Flanged acc. DIN EN 1092-2 / Face to face acc. DIN EN 558 row 1 Flanged acc. ANSI 16.5 / Face to face acc. ISA 75.08 (75.03)										
Stem sealing	Spring loadad, self adjusting PTFE-carbon packing											
Characteristic	A → AB: linear, B → AB: linear (equal percentage on request)											
Flow coefficients	Valve Size	DIN-DN ANSI	mm inch	15 ½	20 ¾	25 1	32	40 1 ½	50 2	65 2 ½	80 3	
	Seat diameter		mm inch	25 0.98	25 0.98	25 0.98	32 1.26	40 1.57	53 2.09	65 2.56	90 3.54	
	Kvs-values	Full capacity		4	6.3	10	16	25	40	63	100	
		1. Reduction		2.5	4	6.3						
		2. Reduction			2,5	4						
Cv-values	Full capacity		4.7	7.4	12	19	29	47	74	120		
	1. Reduction		2.9	4.7	7.4							
	2. Reduction			2,9	4							
Trim	Trimstyle	Flow direction		FL				XT				
Valve factors FL und XT	V-port (all sizes)	Flow to open		Full Kv 0,90				reduced Kv 0,92				0,72
Valve stroke	20mm / 0.79 inch für all sizes											
Rangeability	30 : 1											
Leakage rate	Sealing seat / trim			Leakage class acc. DIN EN 1349 ((ANSI B 16.104)						% of Kvs-value		
	Metallic sealing			Leakage class III (Leakage class IVa on request						0,1 % 0,05 %)		
Pneumatic Actuators	Series 2000											
Electric Actuators	Series E2000H and E2000P Honeywell Linear Actuators ML642 und ML742											

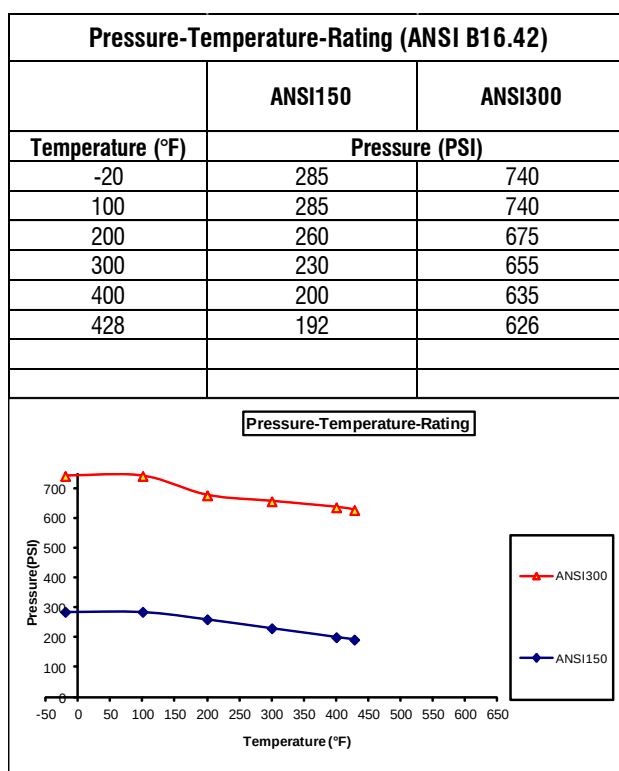
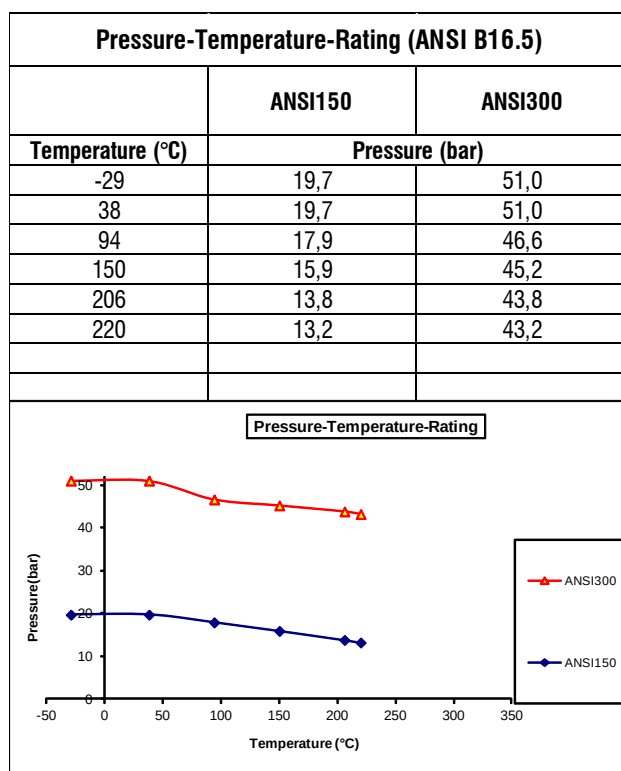


Pressure-temperature-rating PN16 / PN 25:



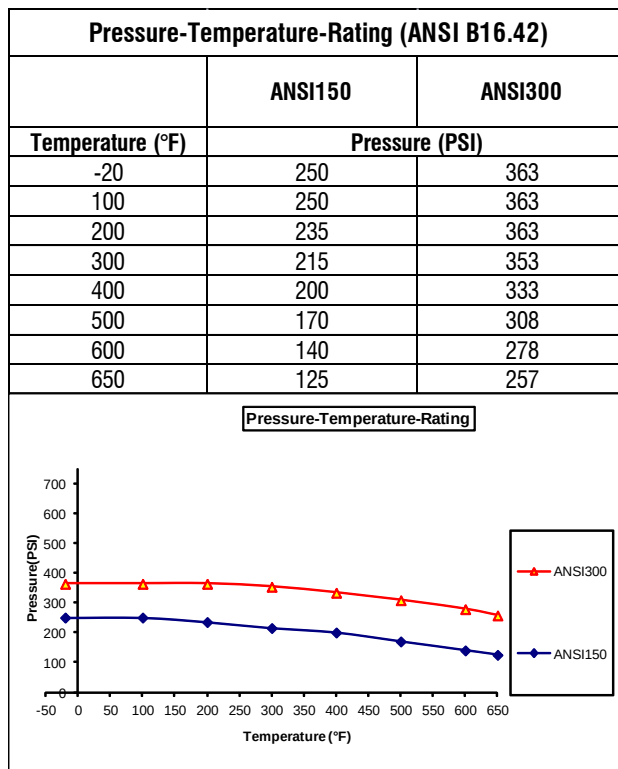
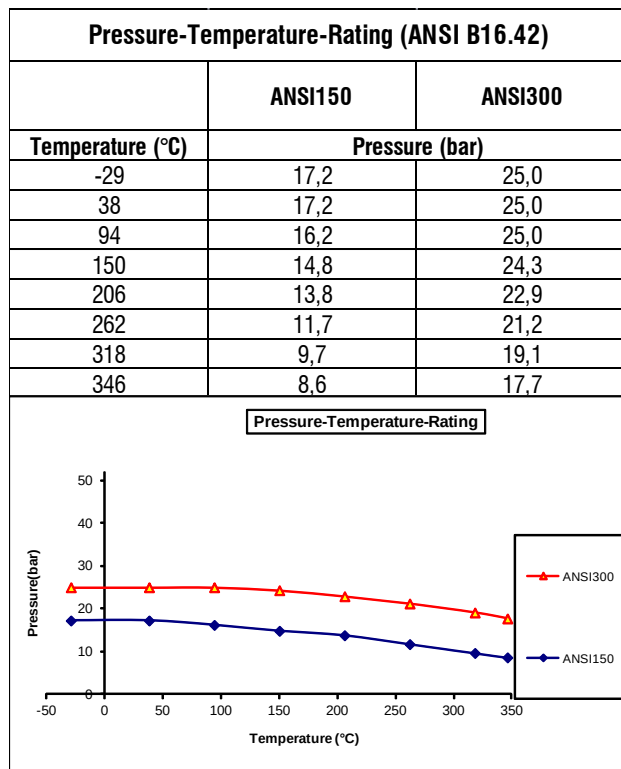
Pressure-temperature-rating ANSI150 / ANSI 300:

Standard version: housing and bonnet carbon steel



Pressure-temperature-rating ANSI150 / ANSI300:

High temperature version: housing carbon steel, cooling bonnet ductile iron



Cooling bonnet ductile iron EN-GJS-400-18LT PN25. Therefore pressure-temperature-rating for ANSI150 acc. ANSI B16.42 (Ductile Iron Flanges) and for ANSI300 acc. DIN EN 1092-2 PN25.



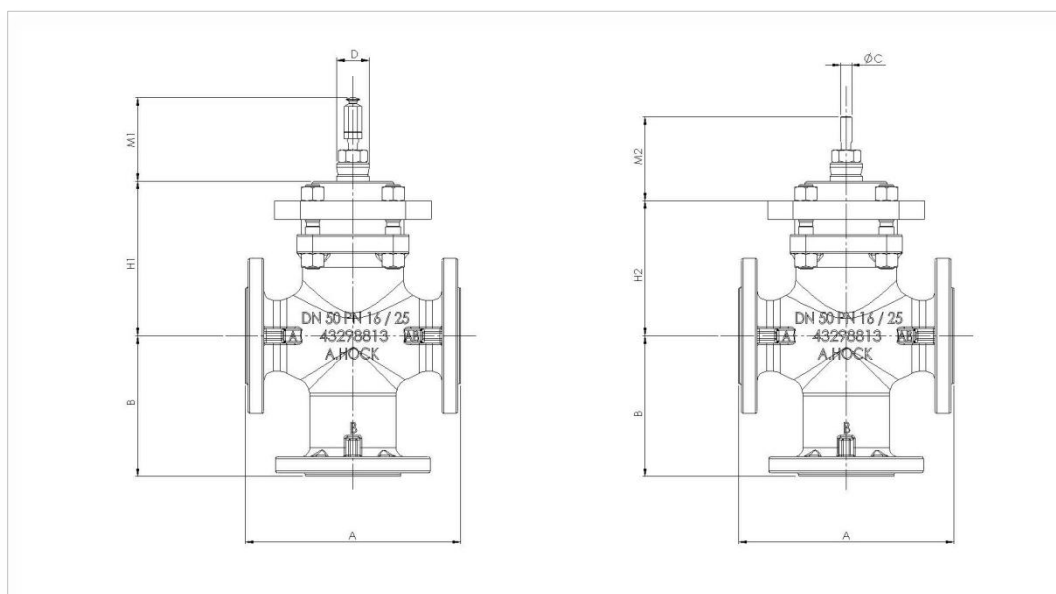
Standard version

Dimensions in mm

Size mm	A	B	C	DØ	H1	H2	M1	M2
15	130	120	M10x1	34,8	125	96	89	93
20	150	120	M10x1	34,8	125	96	89	93
25	160	120	M10x1	34,8	125	96	89	93
32	180	135	M10x1	34,8	125	96	89	93
40	200	140	M10x1	34,8	165	138	89	93
50	230	150	M10x1	34,8	165	138	89	93
65	290	165	M10x1	34,8	165	138	89	93
80	only high temperature version							

Dimensions in inch

Size inch	A	B	C	DØ	H1	H2	M1	M2
1/2	5.12	4.72	M10x1	1.37	4,92	3,78	3.5	3.66
3/4	5.90	4.72	M10x1	1.37	4,92	3,78	3.5	3.66
1	6.33	4.72	M10x1	1.37	4,92	3,78	3.5	3.66
1 1/4	7.08	5.31	M10x1	1.37	4,92	3,78	3.5	3.66
1 1/2	7.87	5.51	M10x1	1.37	6,49	5,43	3.5	3.66
2	9.05	5.90	M10x1	1.37	6,49	5,43	3.5	3.66
2 1/2	11.41	6.49	M10x1	1.37	6,49	5,43	3.5	3.66
3	only high temperature version							



Three way valve with connection for ML actuator and Serial 2000 actuator, standard version

High temperature version

Dimensions in mm

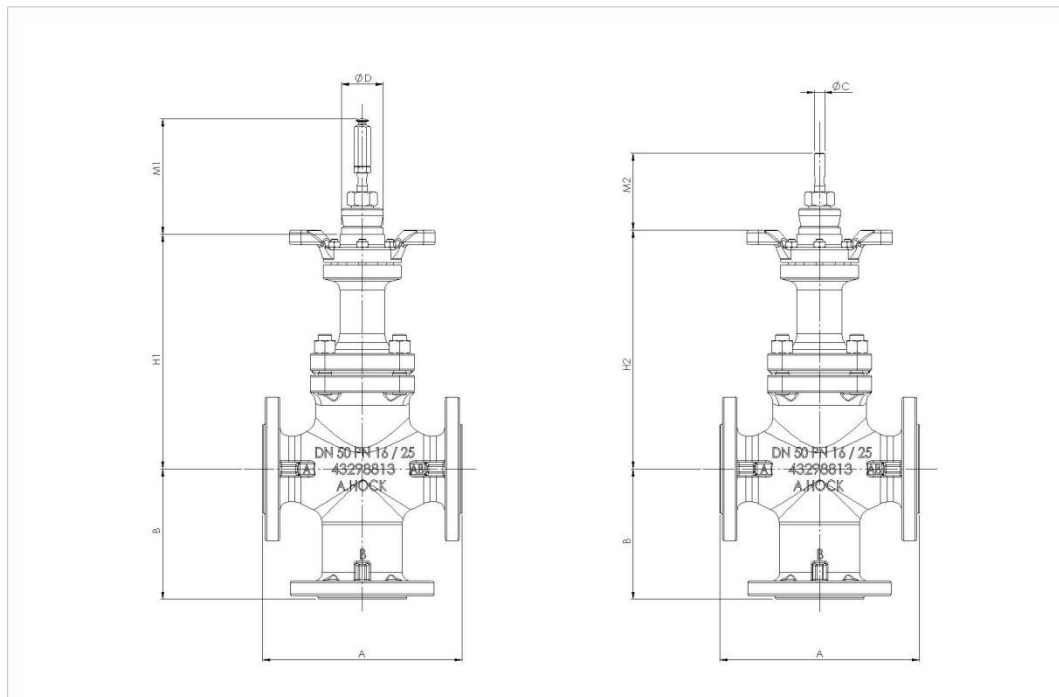
Size mm	A	B	C	DØ	H1	H2	M1	M2
15	130	120	M10x1	34,8	260	227	89	93
20	150	120	M10x1	34,8	260	227	89	93
25	160	120	M10x1	34,8	260	227	89	93
32	180	135	M10x1	34,8	260	227	89	93
40	200	140	M12x1	47,6	264	272	133	93
40	200	140	M12x1	34,8	317	-	89	-
50	230	150	M12x1	47,6	264	272	133	93
50	230	150	M12x1	34,8	317	-	89	-
65	290	165	M12x1	47,6	264	272	133	93
65	290	165	M12x1	34,8	317	-	89	-
80	310	220	M12x1	47,6	284	286	133	93
80	310	220	M12x1	34,8	331	-	89	-

Dimensions in inch

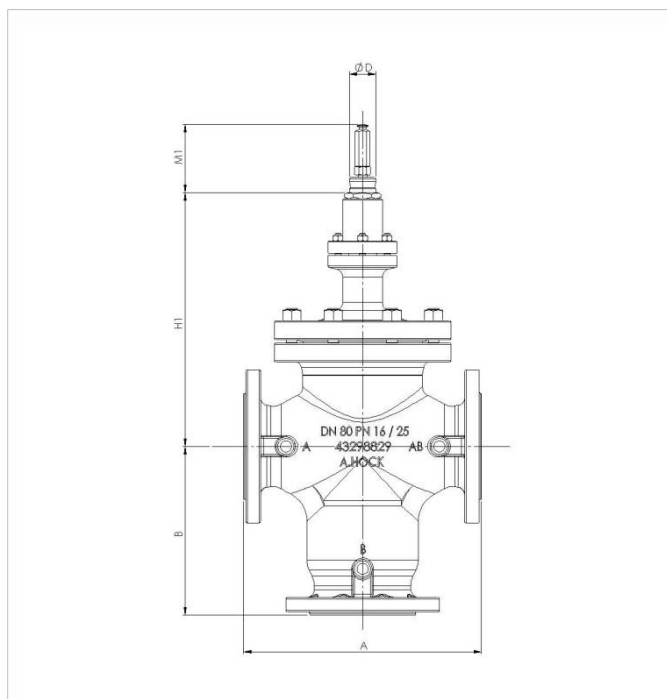
Size inch	A	B	C	DØ	H1	H2	M1	M2
1/2	5.12	4.72	M10x1	1.37	10.23	8.93	3.5	3.66
3/4	5.90	4.72	M10x1	1.37	10.23	8.93	3.5	3.66
1	6.33	4.72	M10x1	1.37	10.23	8.93	3.5	3.66
1 1/4	7.08	5.31	M10x1	1.37	10.23	8.93	3.5	3.66
1 1/2	7.87	5.51	M12x1	1.87	10.39	10.70	5.23	3.66
1 1/2	7.87	5.51	M12x1	1.37	12.48	-	3.5	-
2	9.05	5.90	M12x1	1.87	10.39	10.70	5.23	3.66
2	9.05	5.90	M12x1	1.37	12.48	-	3.5	-
2 1/2	11.41	6.49	M12x1	1.87	10.39	10.70	5.23	3.66
2 1/2	11.41	6.49	M12x1	1.37	12.48	-	3.5	-
3	12.20	8.66	M12x1	1.87	11.14	11.25	5.23	3.66
3	12.20	8.66	M12x1	1.37	13.03	-	5.23	-

Version for DN40 – DN80 with connection diameter 34,8mm für Honeywell ML actuator with 20mm stroke are without connection for columnes of Serial 2000 actuator.

The dimensions A and B (installation dimension into piping) are the same like the Series 2003/13, 603/13 and Honeywell V5050.



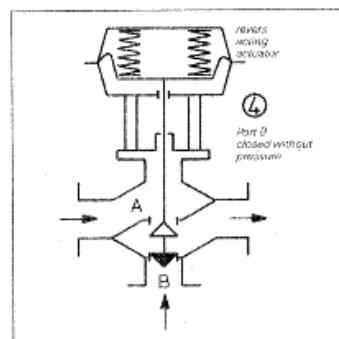
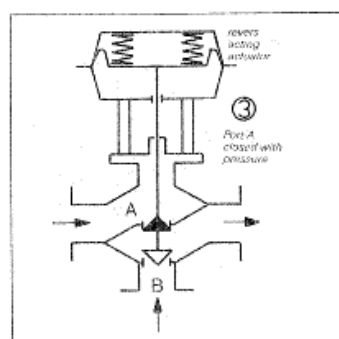
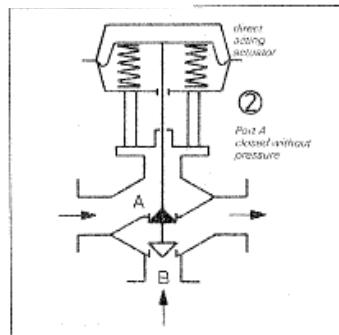
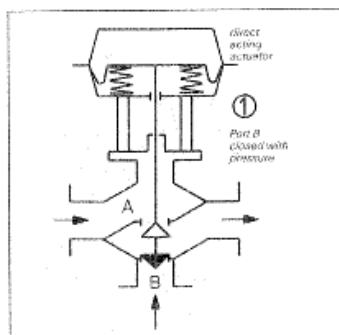
Three way valve with connection for ML actuator und Serial 2000 actuator, high temperature version



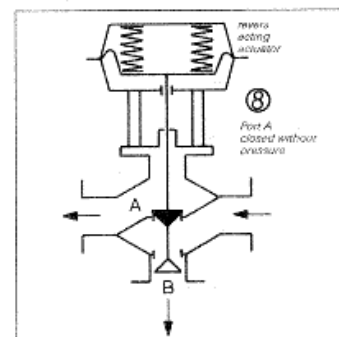
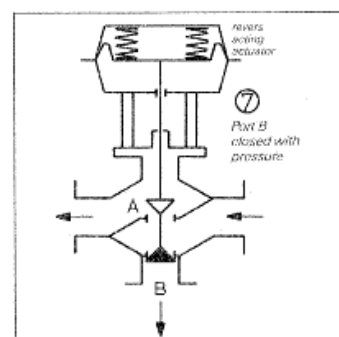
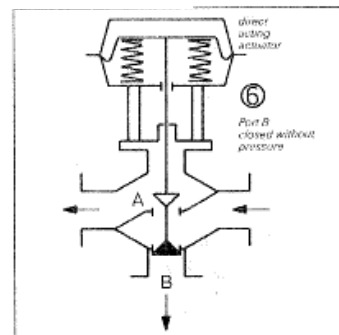
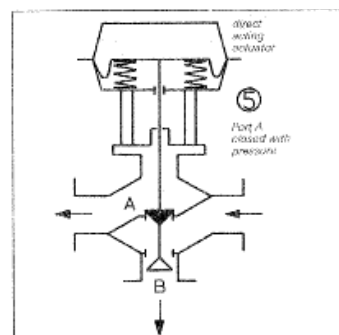
Three way valve DN40-80 with connection for ML actuator, high temperature version

Mode of action of the pneumatic actuator:

Mixing application 1003



Diverting application 1013



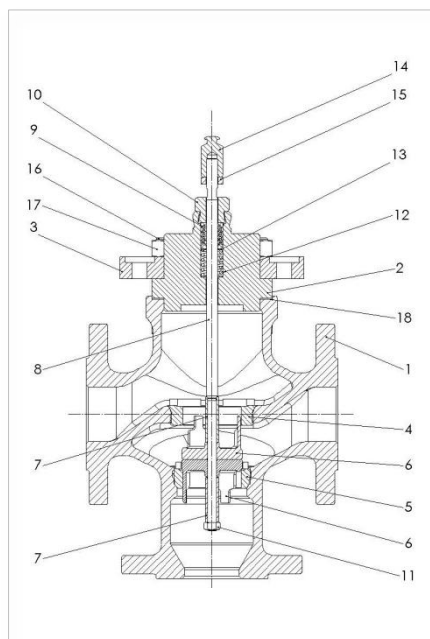
Standard version

Shipping weights (only valve without actuator)

Size mm	Size inch	kg	Lbs
15	1/2	9	20.5
20	3/4	10	22
25	1	11	25
32	1 1/4	13	29
40	1 1/2	19	42
50	2	23	51
65	2 1/2	28	64
80	3	-	-



Part description	Pos. Nr.	Material
Valve housing (DIN DN15-80)	1	EN-GJS-400-18LT
Valve housing (ANSI 1/2"-3")		1.0619 (A-216 WCB)
Bonnet Q455	2	C45N / 1.0460
Traverse	3	S355J2+N
Uper seating	4	1.4305
Lower seating	5	1.4305
Plug lin.	6	1.4305
Spacer	7	1.4305
Valvestem	8	1.4571
Packing	9	PTFE+Carbon
Packung gland	10	1.4104
Safety nut	11	1.4305
Spring	12	1.4401
Disk	13	1.4571
Connection nut (bei Honeywell Actuators)	14	1.0711
Hex. Nut (for Honeywell Actuators)	15	1.0711
Stud screw	16	1.7258
Hex. Nut	17	1.7258
Sealing	18	1.4401+Graphit
Flow direction indicator	19	1.4301



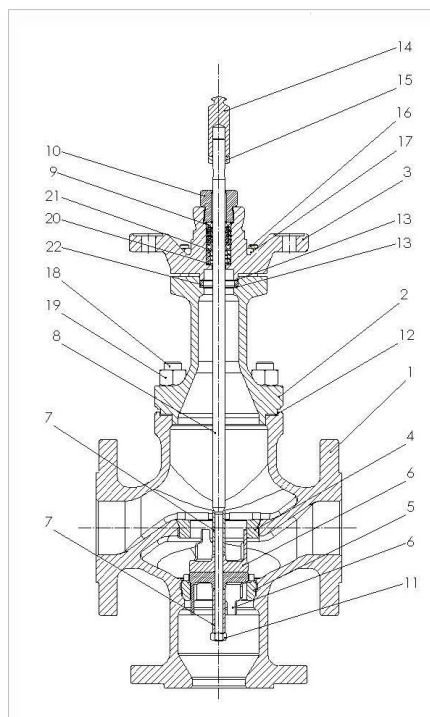
High temperature version

Shipping weights (only valve without actuator)

Size mm	Size inch	kg	Lbs
15	1/2	9	20.5
20	3/4	10	22
25	1	11	25
32	1 1/4	13	29
40	1 1/2	19	42
50	2	23	51
65	2 1/2	30	67
80	3	47	105



Part description	Pos. Nr.	Material
Valve housing (DIN DN15-80)	1	EN-GJS-400-18LT
Valve housing (ANSI 1/2"-3")		1.0619 (A-216 WCB)
Cooling bonnet	2	EN-GJS-400-18LT
Bonnet	3	EN-GJS-400-18LT
Upper seating	4	1.4305
Lower seating	5	1.4305
Plug lin.	6	1.4305
Spacer	7	1.4305
Valvestem	8	1.4571
Packing	9	PTFE-Carbon
Packinggland	10	1.4104
Safety nut	11	1.4305
Sealing	12	1.4401+Graphit
Sealing	13	1.4401+Graphit
Connection nut (for Honeywell Actuators)	14	1.0711
Hex.Nut (for Honeywell Actuators)	15	1.0711
Stud screw	16	1.7258
Hex. Nut	17	1.7258
Stud screw	18	1.7258
Hex. Nut	19	1.7258
Spring	20	1.4401
Disk	21	1.4571
Spacerdisk	22	S355J2+N
Flow direction indicator	23	1.4301



Actuators:

Pneumatic Actuators:

Max. possible differential pressure (closing pressure) by back pressure $p_2=0$ bar

Pneumatic Actuators Series 2000			direct action							
	mixing service		port B closed with pressure				port A closed without pressure			
	diverting service		port A closed with pressure				port B closed without pressure			
Valve Size	spring range	bar	0.2 - 1.0				0.2 - 1.0	0.8 - 2.2	1.2 - 3.0	1.5 - 3.8
		psi	3 - 15				3 - 15	11 - 31	11 - 31	11 - 31
mm (inch)	supply pressure	bar	1,2	2,4	3,5	6.0	-	-	-	-
		psi	17	34	50	86	-	-	-	-
Actuator size										
15 (1/2")	2009		4,7	25	25	25	4,9	25	25	25
20 (3/4")	2009		4,7	25	25	25	4,9	25	25	25
25 (1")	2009		4,7	25	25	25	4,9	25	25	25
32 (1 1/4")	2009		2,3	25	25	25	2,5	25	25	25
40 (1 1/2")	2009		1,1	25	25	25	1,2	16	25	25
50 (2")	2009		0,3	16	25	25	0,3	9,2	15,4	19,8
65 (2 1/2")	2009		0,24	10,6	20,4	25	-	5,9	10	12,9
80 (3")	2009		-	5,3	10,4	22	-	2,8	5	6,5

Max. possible differential pressure (closing pressure) by back pressure $p_2=0$ bar

Pneumatic Actuators Series 2000			reverse action							
	mixing service		port A closed with pressure				port B closed without pressure			
	diverting service		port B closed with pressure				port A closed without pressure			
Valve Size	spring range	bar	0.2 - 1.0				0.2 - 1.0	0.8 - 2.2	1.2 - 3.0	1.5 - 3.8
		psi	3 - 15				3 - 15	11 - 31	11 - 31	11 - 31
mm (inch)	supply pressure	bar	1,2	2,4	3,5	6.0	-	-	-	-
		psi	17	34	50	86	-	-	-	-
Actuator size										
15 (1/2")	2009		10,1	25	25	25	10,5	25	25	25
20 (3/4")	2009		10,1	25	25	25	10,5	25	25	25
25 (1")	2009		10,1	25	25	25	10,5	25	25	25
32 (1 1/4")	2009		3,5	25	25	25	3,7	25	25	25
40 (1 1/2")	2009		1,4	25	25	25	1,5	21,2	25	25
50 (2")	2009		0,3	18,5	25	25	0,3	10,4	17,4	22,4
65 (2 1/2")	2009		-	11,5	22,1	25		6,4	10,8	14
80 (3")	2009		-	5,5	10,8	22,9		2,9	5,2	6,8

Electric Linear Actuators:

Max. possible differential pressure (closing pressure) by back pressure $p_2=0$ bar

Electric Linear Actuators E2000H, E2000P, ML642, ML742									
(Mixing service B closed / Diverting service A closed)									
Valve Size	mm	15	20	25	32	40	50	65	80
	inch	1/2"	3/4"	1"	1/4"	1 1/2"	2"	2 1/2"	3"
Actuator-Typ	Force (N)								
ML6420/ML6425 ML7420/ML7425	600	4,9	4,9	4,9	2,5	1,2	0,3	-	-
E2000P-PSL-201	1000	13,1	13,1	13,1	7,4	4,4	2,1	1,2	0,4
ML6421A/ML7421A	1800	25	25	25	17,4	-	-	-	-
ML6421B/ML7421B	1800	-	-	-	-	10	5,4	3,4	1,5
E2000H-SBA20	2000	25	25	25	19,9	12,3	6,6	4,2	1,9
E2000P-PSL-202	2000	25	25	25	19,9	12,3	6,6	4,2	1,9
E2000H-SBA45-2	3500	-	-	-	25	24,3	13,4	8,7	4,3
E2000H-SBA45-3	4500	-	-	-	25	25	18	11,7	5,9
E2000P-PSL-204	4500	-	-	-	25	25	18	11,7	5,9
E2000H-SBA45-4	6000	-	-	-	-	-	24,8	16,2	8,2
E2000P-PSL-208	8000	-	-	-	-	-	25	22,3	11,4

Max. possible differential pressure (closing pressure) by back pressure $p_2=0$ bar

Electric Linear Actuators E2000H, E2000P, ML6421, ML7421 (further ML-actuators on request)									
(Mixing service A closed / Diverting service B closed)									
Valve Size	mm	15	20	25	32	40	50	65	80
	inch	1/2"	3/4"	1"	1/4"	1 1/2"	2"	2 1/2"	3"
Actuator-Typ	Force (N)								
ML6420/ML6425 ML7420/ML7425	600	10,5	10,5	10,5	3,7	1,5	0,3	-	-
E2000P-PSL-201	1000	25	25	25	11	5,5	2,4	1,3	0,4
ML6421A/ML7421A	1800	25	25	25	25	-	-	-	-
ML6421B/ML7421B	1800	-	-	-	-	13	6,4	3,8	1,7
E2000H-SBA20	2000	25	25	25	25	15,5	7,5	4,6	2
E2000P-PSL-202	2000	25	25	25	25	15,5	7,5	4,6	2
E2000H-SBA45-2	3500	-	-	-	-	25	15,2	9,5	4,5
E2000H-SBA45-3	4500	-	-	-	-	25	20,4	12,7	6,1
E2000P-PSL-204	4500	-	-	-	-	25	20,4	12,7	6,1
E2000H-SBA45-4	6000	-	-	-	-	-	25	17,6	8,6
E2000P-PSL-208	8000	-	-	-	-	-	25	24,2	11,9

(Versions with Leakage class IVa (0,05% of Kvs-value) and IV (0,01% of Kvs-value) on request)

Ordering Checklist

Parameter	Items to check
Pipe size	Valve-Size, pressure rating
Service	Mixing- or diverting service
Housing-DN	Nominal pipe size, unless others then requested
Ports	DIN or ANSI
Nominal pressure	Working pressure and -temperature
Leakage rate	Leakage class
Ambiente temperature	Deviations from standardvalues
Actuator	Pneumatic – or electrical linear actuator
Positioner	Pneumatic, electro-pneumatic, digital, EX-version
Accessories	Details by means of actuator choise

Valvetyp (Series 1003/1013)	Valve service + action (direct(reverse))	Housing + Size	Pressure rating	Kvs - value	Actuator typ / spring range	Actuator size		Pneumatic Positioner	Electropneumatic Positioner	Digital Positioner	Pressure regulator / booster	Stroke transmitter / limit switches	Solenoidvalve
☐	☐	☐	☐	☐	☐	☐	0	☐	☐	☐	☐	☐	☐

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