

Control valve with single seat



SP

DIN PN 16 - 40 — ND 15 to 200 mm
ANSI 125 - 300 — 1/2" to 8"

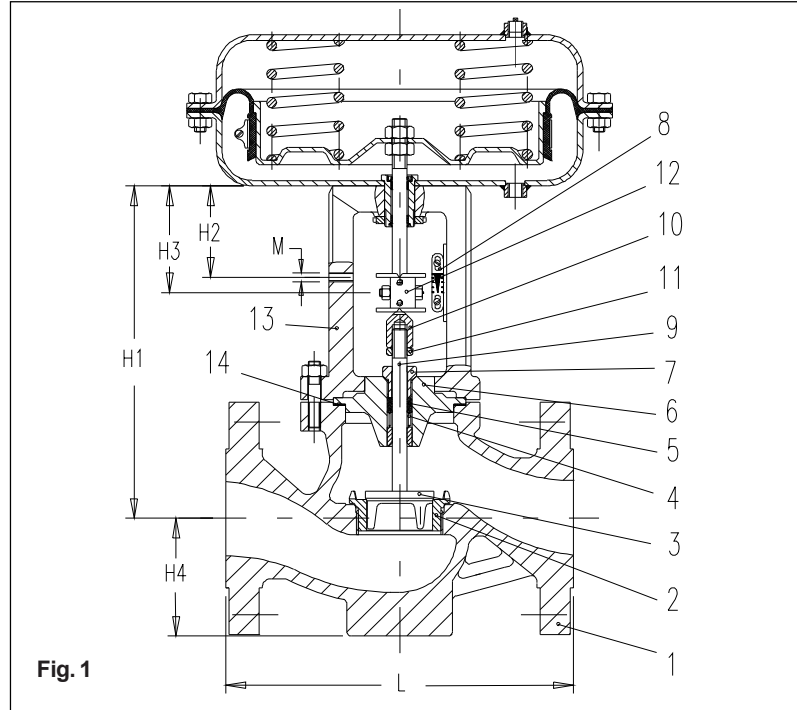
15A, 25A, 26A

Application

These versatile control valves may be used for various industrial processes and practically all the industrial facilities pretending to control variables such as pressure, temperature, flow, level, etc. Appropriate for operation in piping for liquids, steam and other gases.

Main Characteristics-

Modern and compact project-
 Single seat allow sealing up to 0.00001% of the nominal capacity-
 For \varnothing 2" to 6", optionally, balanced shutter to compensate high pressure differentials.-
 Assembly of positioners and various accessories, according to the standard NAMUR system and DIN IEC 534-6 standard.-
 Shutters with low noise level; optional flow diffusers for noise reduction.-
 Excellent characteristics for critical flow (F1 factor ISA of 0.95). Actuators with multiple springs and reversible operation for the command pressure range and/or drive direction



Construction

Consisting basically of straight pass body, cover, single seat, shutter with metal or elastic sealing, shutter stem with coupling for the actuator stem. Operate generally together with pneumatic actuator ASCA SA type P, or axial electric actuator ASCA SA type E or manual actuator ASCA SA type M.

Technical Competence

Models	SP 15 A				SP 25 A				SP 26 A				
Nominal pressure	ANSI 125 - DIN PN 16				ANSI 300 - DIN PN 40								
ND	mm	15	20	40	25	50	65	80	100	150	200		
	inch	1/2"	3/4"	1 1/2"	1"	2"	2 1/2"	3"	4"	6"	8"		
Temperature ranges													
Body	See Pressure x temperature diagram												
Insulator part	See Pressure x temperature diagram												
Metal bellow	See Pressure x temperature diagram												
Normal shutter (non balanced)	Metal seal: - 250 °C / - 418 °F to + 450 °C / + 842 °F												
	Elastic seal: - 200 °C / - 328 °F to + 220 °C / + 428 °F												
Balanced shutter	Teflon ring: - 200 °C / - 328 °F to + 220 °C / + 428 °F												
	Graphite ring: - 220 °C / - 428 °F to + 450 °C / + 842 °F												
Characteristic	Equal linear percentage												
	"on-off" (with max. Cv or Kvs of the DN)												
Leakage index in %Cv or Kvs													
Shutter type	Normal (non balanced)				balanced								
Sealing ring	-				Teflon				Grafite				
Metal seal	≤ 0,01				≤ 0,01				≤ 0,1				
Elastic seal	≤ 0,0001				≤ 0,001				-				
Range	1/2" to 2" = 50 : 1 (DN 15 to 50 mm)												
	2 1/2" to 8" = 30 : 1 (DN 65 to 200 mm)												

Components

N°	Description	Quant.
1	Body	1
2	Seat	1
3	Shutter	1
4	Packing (PTFE V rings)	1
5	Glandpacking PTFE)	1
6*	Cover	1
7	Packing gland	1
8	Stroke tag	1
9	Shutter stem	1
10	Coupling sleeve	1
11	Counter nut	1
12	Actuator/shutter coupling	1
13	Actuator support	1
14*	Sealing	1

* Recommended spare parts

Optional

- ½" to 8" balanced shutter, to compensate large pressure differentials and operate at temperatures up to 450 °C (fig. 2)
- DF I or DF II flow diffuser to reduce the noise level for severe service conditions (fig. 2)
- For temperature from – 250 °C to + 450 °C (see fig. 4)
- Corrosion proof metal bellow (fig. 5) for additional stem sealing. Applicable particularly for vacuum under 1.5 mbar, aggressive liquids and fluids noxious to the environment, flammable, noble or other fluids, whose leakage to the atmosphere is not allowable. When equipped with this part, the upper flange of the valve is provided with a connection for inspection of the bellow.

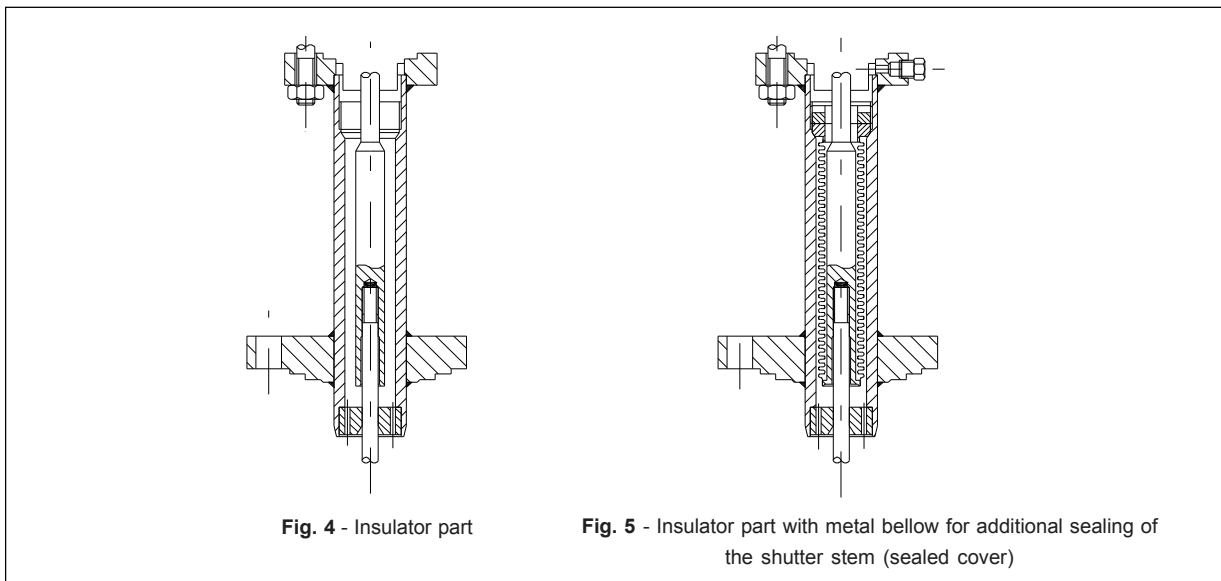
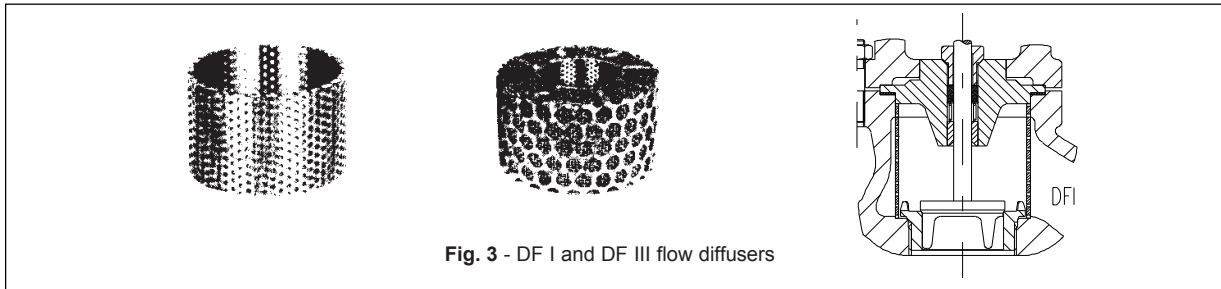
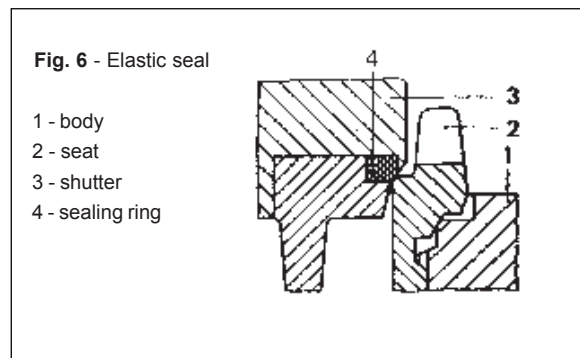
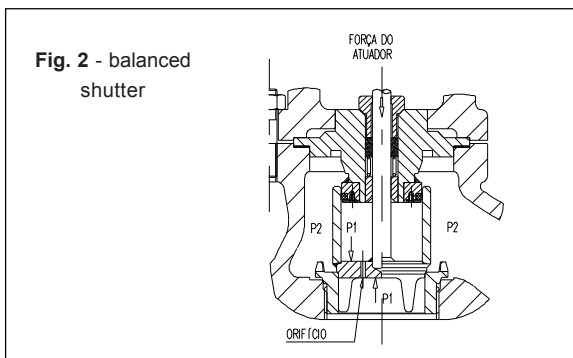
Elastic seal: may be used to improve sealing (PTFE sealing ring in the shutter), obtaining flows under 0.00001% of the Cv (or Kvs) (fig. 6)

Accessories

According to the function expected from the SP 15 A, 25 A, 26 A valve, it is necessary to use positioners, end switches, solenoid valves, regulating filters, and others, which, under request, may be provided already coupled to the valve. Please ask for Program 6 of ASCA.

Operation

The fluid crosses the valve in the arrow direction. The shutter position determines the flow through the free area between the shutter and the seat. The stem with the shutter is connected to the actuator stem and sealed with a Teflon V ring packing, loaded by the spring for automatic tightening.



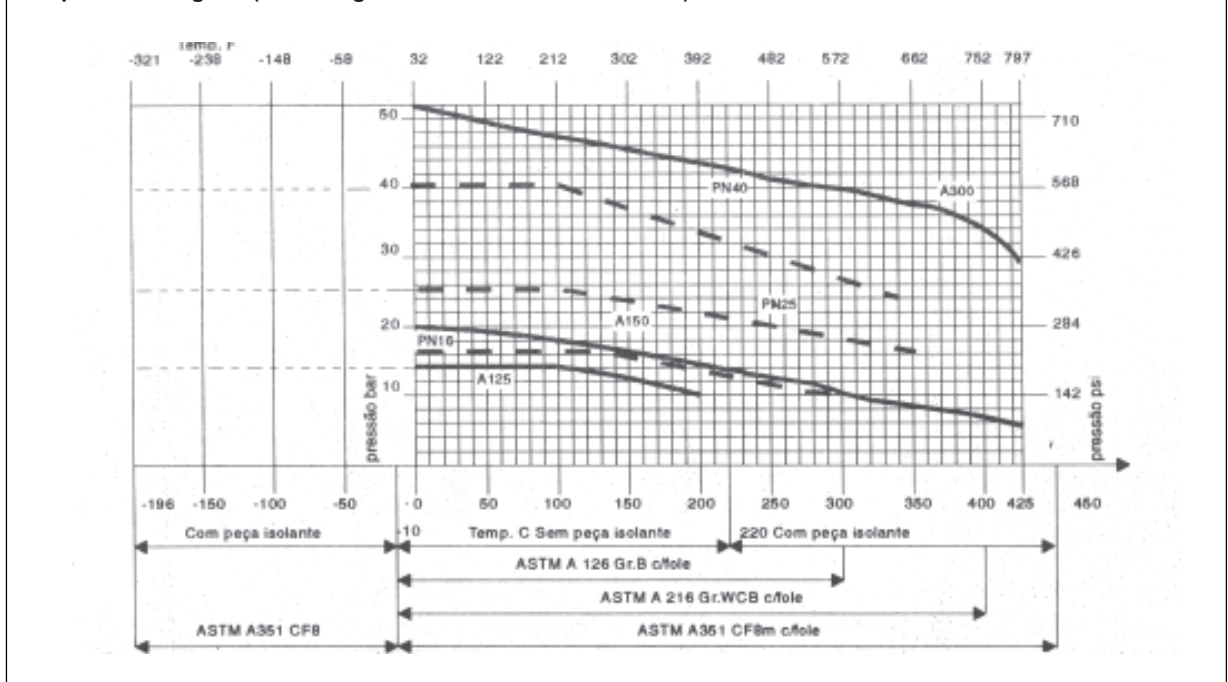
Dimensions and Weights

ND	mm	15	20	25	40	50	65	80	100	150	200
	inch	1/2"	3/4"	1"	1 1/2"	2"	2 1/2"	3"	4"	6"	8"
Dimensions mm											
L	DIN 3202, PN 16 e 40	130	150	160	200	230	290	310	350	480	480
	ISA 75.03, ANSI 150 Lb	184	184	184	222	254	276	298	352	451	451
	ISA 75.03, ANSI 300 Lb	190	194	197	235	267	292	318	368	473	473
H ₁		220				260			350	390	390
H ₂		61						75			
H ₃	With closed valve	75						90			
H ₄	Approximately	40			72		98		118	175	175
H ₁	With insulation part With or without bellow)	405			395		435		635	665	665
Approximate weight kg											
Valve without actuator		5,8	6,9	8,1	13,8	17,3	27,6	34,5	48,3	138	138
Valve with insulation part without actuator	Short	8,8	9,9	11,1	19,8	23,3	35,6	42,5	66,3	168	168
	Medium	10,8	11,9	13,1	21,8	25,3	37,6	44,5	74,3	176	176
	Long	12,8	13,9	15,1	23,8	27,3	39,6	46,5	74,3	176	176
Valve with metal bellow		8,8	9,9	11,1	19,8	23,3	35,6	42,5	66,3	168	168

Material and Connections

Models	SP 15 A		SP 25 A		SP 26 A		
ND	mm	15 to 80	100 to 200	15 to 80	100 to 200	15 to 80	100 to 200
	inch	1/2" to 3"	4" to 8"	1/2" to 3"	4" to 8"	1/2" to 3"	4" to 8"
Body	ASTM A 126 Gr. B		ASTM A 216 Gr. WCB		ASTM A 351 CF8M		
Cover	ASTM A 105	ASTM A 216 Gr. WCB	ASTM A 105	ASTM A 216 Gr. WCB	ASTM A 182 F 316	ASTM A 351 CF8M	
Actuator support	ASTM A 395						
Seat and shutter	AISI 316 (optional: PTFE or STELLITE sealing)						
Packing	Graphite PTFE (automatic spring tightening)						
Sealing	Carbon fiber						
Insulation part	ASTM A 106 / ST - 52 / ASTM A 285 Gr. G				AISI 316		
Metal bellow	AISI 316 Ti						
Flanges	DIN PN 10 / 16 - ANSI 125			DIN PN 25 / 40 - ANSI 150 / 300			

Temperature Diagram (according to ANSI B 16.34 and DIN 2401)



Cv value table

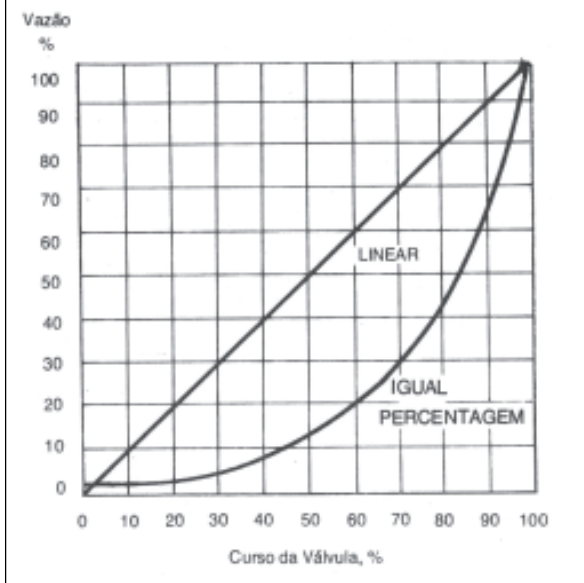
Basic data for flow calculation, according to ISA S 75.01. Pressure recovery factor of the valve without intermediate connections $F_1 = 0.95$. Pressure relation in the valve without intermediate connections and supercritical flow determined by test $X_1 = 0.75$.

ND inch/ mm	φ seat nominal inch - mm	Maximum Cv						Construction with flow diffuser		Nominal I stroke mm	Stem ND mm
		Non balanced			Balanced			Cv I	Cvs III		
		Equal percentage		Linear / On-off	Equal percentage						
1/2" / 15	1/8" - 3	0,13	0,21	-	0,13	0,21	-	-	-	15	10
		0,33			0,33						
	1/4" - 6	0,53	0,82		0,53	0,82					
		1,30		1,30							
	1/2" - 12	2,10		2,10							
		3,30	5,30	3,30	5,30						
3/4" / 20	1/8" - 3	0,13	0,21	-	0,13	0,21	-	-	-	15	10
		0,33			0,33						
	1/4" - 6	0,53	0,82		0,53	0,82					
		1,30		1,30							
	1/2" - 12	2,10		2,10							
		3,30	5,30	3,30	5,30						
	1" - 24	8,20		8,20							
1" / 25	1/8" - 3	0,13	0,21	-	0,13	0,21	-	-	-	15	10
		0,33			0,33						
	1/4" - 6	0,53	0,82		0,53	0,82					
		1,30			1,30						
	1/2" - 12	2,10			2,10						
		3,30	5,30	3,30	5,30						
	1" - 24	8,20		8,20							
		13		13							
1 1/2" / 40	1" - 24	13	8,2**	13	8,2**	-	-	-	-		
	1 1/2" - 38	33	21**	33	21**	33	-	30	-		
2" / 50	1 1/4" - 31	21	8,2**	21	13**	-	-	-	-		
	2" - 48	46	13** 33	46	33**	46	-	40	-		
2 1/2" / 65	1 1/2" - 38	33		-	-	-	46**	70	-		
	2 1/2" - 63	77	46**	77	-	77	-	70	-		
3" / 80	2" - 48	46	33**	-	-	46	-	46	33		
	3" - 80	103	77**	103	77**	103	-	94	-		
4" / 100	2 1/2" - 63	82		-	-	82	-	81	60		
	4" - 100	180	129**	180	-	180	-	162	-	30	16
6" / 150	4" - 100	180		-	-	180	-	180	136		
	5 1/4" - 130	335		335	-	335	-	301	-		
8" / 200	4" - 100	180		-	-	180	-	180	136		
	5 1/4" - 130	335		335	-	335	-	301	-	60	25

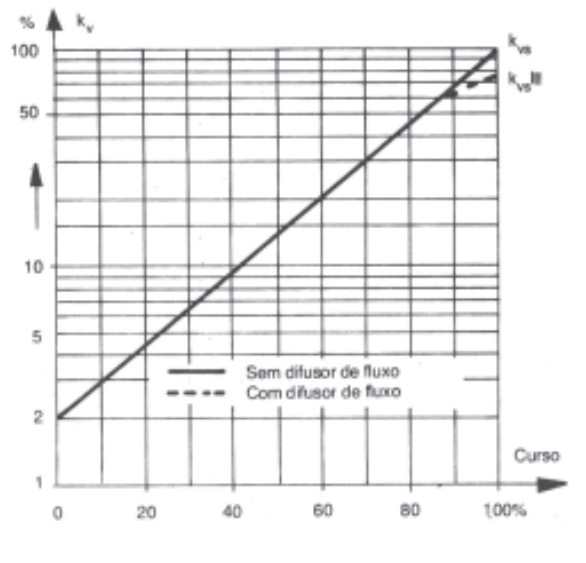
* characteristic data of the SP 15 A, 25 A, 26 A valves, to calculate the noise levels and incipient cavitation, according to the standard VDMA 24 442.

** Kvs values relative to special construction. For these, the following constant values are not valid: factor "z", seat diameter. z = acoustic coefficient of the valve; Kvs I, Kvs III = Kvs values of the valves equipped with flow diffusers DF I and DF III, respectively. Correspondence between Cv (ISA S 75.01) and Kvs (DIN / IEC 534): Cv (in Us gallons/minute) = 1.17 Kvs (in m³/hour); or Kvs (in m³/hour) = 0.86 Cv (in Us gallons/minute). Thus Kvs of 1 / 100 / 1000, in terms of capacity equivalent to Cv of 1.17 / 117 / 1170, respectively.

Characteristic curves of the SP control valves



Difference between the flow curves of valves with and without flow diffuser DF III



Kvs and z value table

Basic data for flow calculation, according to DIN / IEC 534. Pressure recovery factor of the valve without intermediate connections $F_1 = 0.95$.

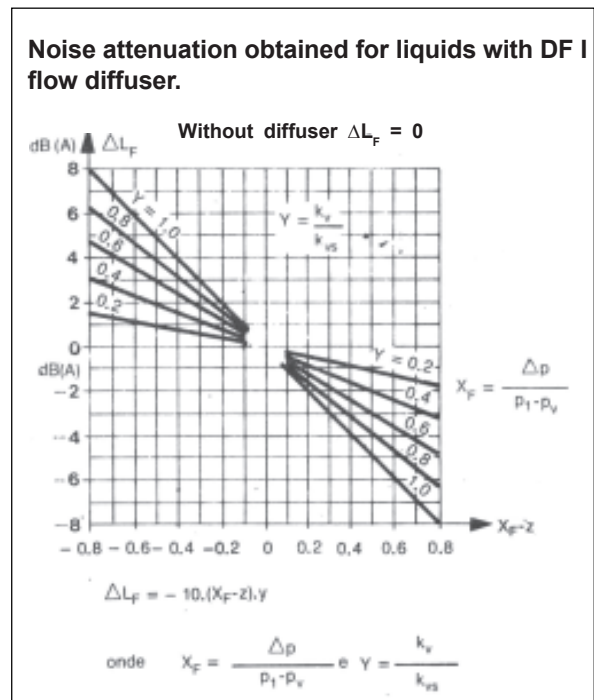
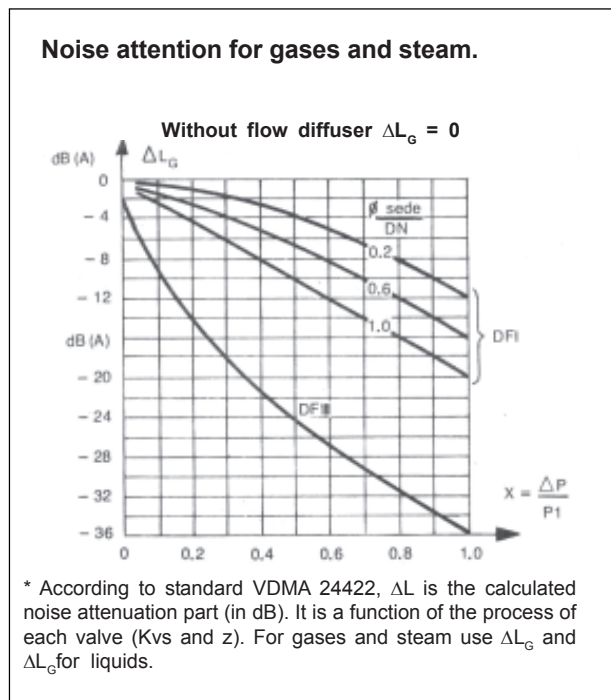
Pressure relation in the valve without intermediate connections and supercritical flow determined by test $X_1 = 0.75$.

ND inch / mm	φ seat nominal inch - mm	Maximum Kvs				Construction with flow diffuser		Acoustic coefficient t z	Nominal stroke mm	Stem ND mm
		Non balanced		Balanced		Kvs I *	Kvs III *			
		Equal percentage	Linear / On-off	Equal percentage						
1/2" / 15	1/8" - 3	0,11 0,18		0,11 0,18				0,80	15	10
		0,28		0,28						
	0,45		0,45							
	0,70	-	0,70	-	-					
	1,10		1,10							
1/4" - 6	1,80		1,80							
	2,80 4,50		2,80 4,50							
3/4" / 20	1/8" - 3	0,11 0,18		0,11 0,18			0,80	15	10	
		0,28		0,28						
	0,45		0,45							
	0,70	-	0,70	-	-					
	1,10		1,10							
1/4" - 6	1,80		1,80							
	2,80 4,50		2,80 4,50							
1/2" - 12	7,00		7,00							
1" / 25	1/8" - 3	0,11 0,18		0,11 0,18			0,80	15	10	
		0,28		0,28						
	0,45		0,45							
	0,70	-	0,70	-	-					
	1,10		1,10							
1/4" - 6	1,80		1,80							
	2,80 4,50		2,80 4,50							
1/2" - 12	7,00		7,00							
1" - 24										
1 1/2" / 40	1" - 24	11	7,0**	11	7,0**	-	-	0,50	30	16
	1 1/2" - 38	28	18**	28	18**	25	-	0,35		
2" / 50	1 1/4" - 31	18	7,0**	18	11**	-	-	0,50	30	16
	2" - 48	39	11 28**	39	28**	34	-	0,35		
2 1/2" / 65	1 1/2" - 38	28		-	-	-	-	0,35	30	16
	2 1/2" - 63	66	39**	66	-	39**	60	0,25		
3" / 80	2" - 48	39	28**	-	-	39	29	0,50	30	16
	3" - 80	88	66**	88	66**	80	-	0,25		
4" / 100	2 1/2" - 63	70		-	-	70	52	0,25	30	16
	4" - 100	154	110**	154	-	139	-	0,20		
6" / 150	4" - 100	154		-	-	154	116	0,20	60	25
	5 1/4" - 130	286		286	-	257	-	0,20		
8" / 200	4" - 100	154		-	-	154	116	0,20	60	25
	5 1/4" - 130	286		286	-	257	-	0,20		

* characteristic data of the SP 15 A, 25 A, 26 A valves, to calculate the noise levels and incipient cavitation, according to the standard VDMA 24 442.

** Kvs values relative to special construction. For these, the following constant values are not valid: factor "z", seat diameter.

z = acoustic coefficient of the valve; Kvs I, Kvs III = Kvs values of the valves equipped with flow diffusers DF I and DF III, respectively. Correspondence between Cv (ISA S 75.01) and Kvs (DIN / IEC 534): Cv (in Us gallons/minute) = 1.17 Kvs (in m³/hour); or Kvs (in m³/hour) = 0.86 Cv (in Us gallons/minute). Thus Kvs of 1 / 100 / 1000, in terms of capacity equivalent to Cv of 1.17 / 117 / 1170, respectively.



Allowable differential pressures Δp for SP 15 A, 25 A, 26 A control valves with pneumatic actuators SA type P.

Notes to Tables 1a to 2d

All the pressure values correspond to the relative pressure in bar. The allowable Δp differential pressures are restricted by the "pressure-temperature diagram" and the respective pressure class.

When the valve is closed and submitted to these differentials, the leakage limits of the "Technical Competence" are maintained. It is possible to operate with larger differentials, when a leakage index 10 times greater is allowable. The control valves for quick opening application (valves with "on-off" characteristics) and the constructions for command pressure in the ranges of 0.2 ... 1.0 bar and 0.4 ... 1.2 bar and maximum necessary feeding pressure of 1.4 bar, are in principle, applicable without positioners. For the other cases, these are indispensable. For sizing and operation of control valves equipped with "open spring" actuator, the feeding pressure shall not be over the following limits: 4 bar for valves ND 15 to 80, 1/2" to 3" with actuator of 700 cm² / 3.5 bar for valves with double actuator of 2 x 700 cm².

For valves with shutters with elastic sealing, the maximum allowable opening value of the lower command pressure P_{sta} established by the following formula, shall not be over passed:

$$P_{sta} = (D / A), 1.57 \quad (1)$$

Where,

D = internal seat diameter in mm

A = effective area of the actuator in cm²

Tables 1a and 1 b

For non balanced shutters

The shown allowable differential pressures are valid for P₂ = 0. If the conditions are P₁, e" P₂ and P₂ > 0, the allowable Δp differential pressure, for the existing operation system, shall be calculated with the formula:

$$\Delta P = A pN - k \cdot (P_2 / D_2) \quad (2)$$

Were,

A Pn= diferencial pressure according to table 1 a or 1b

$$\Delta P_b = \Delta P_n - K \cdot (P_2 / D_2) \quad (2)$$

A Pn= differential pressure according to table 1 a or 1 b

D= internal diameter of the seat in mm

K= factor according to following table

Table of K Values

For Valves	K	
	Without bellow	With bellow
DN 15 to 80 *) (1/2" to 3")	100	435
DN 100 to 200 (4" to 8")	256	1325

$$P_{2max} = (\Delta P_n - P_1) \cdot D_2 / (K - D_2) \quad (3)$$

If ΔP results in an exceedingly low or negative value, it is recommended to select a higher command range or use a balanced shutter

Table 1a

Command pressure(bar)						0,2 ... 1,0	0,3 ... 1,1 °	0,4 ... 2,0	0,6 ... 2,2 °	0,6 ... 3,0	0,9 ... 3,3 °	0,7 ... 3,5	1,05 ... 3,85 °	1,9 ... 3,3	2,4 ... 3,8	0,2 ... 1,0				
Maximum feed (bar)						1,2	1,3 ° / 1,4 °	2,2	2,4 ° / 2,6 °	3,2	3,5 ° / 3,8 °	3,7	4,0 ° / 4,4 °	3,5	4,0	1,2	2,4	4	6	
DN inch/mm	Cv	Kvs	φSeat mm	Actuador cm ²		ΔP com P ₂ = 0														
1 1/2" - 1"	0,13 - 0,33	0,11 - 0,28	3	240	120	120	120	120	-	-	-	-	-	-	-	120	-	-	-	
						120	120	120	120	-	-	-	-	-	-	120	120	-	-	
	2,1	1,8	12	240	31	52,5	73,8	116	-	120	-	-	-	-	-	31	120	-	-	
					3,3	2,8	112	120	120	-	-	-	-	-	-	50,8	120	-	-	
15 - 25	5,3	4,5	360	50,8	112	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
				240	6,2	12	17	27	27	43,3	33	51	-	-	-	6,2	70	120	-	
	8,2	7,0	24	360	11	27	26,5	57,4	42	80	49,7	104	-	-	-	11	104	120	-	
					13	11	120	-	-	-	-	-	-	-	-	27	120	-	-	
2"	21	18	31	240	3,1	6,6	9,5	15	15,8	26	18	32	-	-	-	3,1	41,3	92	120	
					360	5,8	16	15	35	24	52	28	62	-	-	5,8	62	120	-	
	/	50	700	15	-	(108)	-	(120)	-	-	-	-	-	-	-	15	120	-	-	
				240	1,7	3,9	5,9	10	10	18	12	21	-	-	-	1,7	27	61	103	
1 1/2" - 2"	33	28	38	360	3,6	10	9,8	24	16	37	19	40,7	-	-	59**	3,6	40,7	90	-	
					700	9,8	-	(71)	-	(108)	-	(120)	-	-	-	-	9,8	84	-	-
	/	50 - 80	46	39	48	240	0,7	2,1	3,4	6	10	7,3	12	-	-	0,7	17	39	64	
						360	1,9	6	5,8	14	9,7	22	12	26	-	-	36,7**	1,9	25	56
2 1/2"	77	66	63	700	5,8	-	(44,5)	-	(68)	-	(79)	-	(99)	-	-	5,8	52	-	-	
					240	-	0,9	1,7	3,2	3,2	5,6	4	7	-	-	-	-	4	9,4	22
	/	65	103	88	80	360	0,8	3,1	3,1	8	5,3	13	6,4	15	-	21**	0,8	14	32	55
						700	3,1	-	(25,5)	-	(39)	-	(45,7)	-	(45,7)	-	-	3,3	30	66
3"	103	88	80	700	240	-	0,3	0,8	1,8	1,8	3,2	2,2	4,6	-	-	-	5,6	13	23	
					360	0,3	1,6	1,7	4,6	3,1	7,4	3,8	9	-	12,8**	0,3	8,7	20	34	
	/	80	180	154	100	700	1,8	-	(15,6)	-	(24)	-	(28,1)	-	(35,1)	-	1,8	18,4	40,7	-
						240	3,0	7,5	7,5	17	11,9	26	14	31	41	52	3	30	66	111
4"	82	70	63	700	180	0,9	2,7	2,7	6,4	4,4	10	5,2	11	16	20,5	0,9	12	26	43,7	
					100	7,5	17	17	35	26	52	31	32,5	84	105	7,5	61	110*	-	
	/	180	154	100	2x700	2,7	6,4	6,4	13,5	10	20,5	11	23,5	33	42	2,7	24,5	43,8*	-	
						0,9	2,7	2,7	6,4	4,4	10	5,2	11	16	20,5	0,8	12	26	43,7	
6"	180	154	100	700	0,9	2,7	2,7	6,4	4,4	10	5,2	11	16	20,5	0,8	12	26	43,7		
					335	2,86	130	100	0,4	1,4	1,4	3,5	2,5	5,8	3	7	9,3	12,0	0,4	6,7
	/	180	154	100	2x700	2,7	6,4	6,4	13,5	10	20,5	11	23,5	33	42	2,7	24,5	43,8*	-	
						1,4	3,5	3,5	7,7	5,8	12	7	14,4	19,3	24,7	1,4	14,2	25,5*	-	
8"	180	154	100	700	0,9	2,7	2,7	6,4	4,4	10	5,2	11	16	20,5	0,8	12	26	43,7		
					335	2,86	130	100	0,4	1,4	1,4	3,5	2,5	5,8	3	7	9,3	12,0	0,4	6,7
	/	180	154	100	2x700	2,7	6,4	6,4	13,5	10	20,5	11	23,5	33	42	2,7	24,5	43,8*	-	
						1,4	3,5	3,5	7,7	5,8	12	7	14,4	19,3	24,7	1,4	14,2	25,5*	-	

Table 1b

Actuator (diaphragm):

O 240 cm²

¡% 350 – 700 cm²

* needed actuator of 2 x 700 cm² with maximum allowable feeding pressure = 3.5 bar

** actuator of 350 cm² with special springs (command pressure range = 2.0 ... 3.3 bar and maximum feeding pressure = 3.5 bar).

Tables 2a to 2d – for balanced shutters

The allowable differential pressures presented in these tables are applicable for $P_1 \leq P_2$. The operation of the valves with balanced shutter is independent of P_2 .

Tables 1a and 1b – allowable “p differential pressures for non balanced shutters

Table 1a – for valves with “closed spring” actuator

The valve is closed with command pressure at 0 bar. In this condition, the leakage is below the index included in the “Technical Competence” table.

Table 2a to 2d – Allowable “p differential pressures for balanced shutters

Table 2a – for valves with “closed spring” actuator

The valve is closed with command pressure at 0 bar. The gray columns of this table correspond to the standard type springs. The “p differential pressures included in the white columns are applicable to actuator with pre-stressed springs

Table 2b – For valves with “open spring” actuator

The valve is closed with the necessary maximum command pressure. In this condition, the leakage is below the index shown in the “Technical Competence” table.

Table 2a

Table 2b

Command pressure (bar)				0,2 ... 1,0	0,3 ... 1,1	0,4 ... 1,2	0,4 ... 2,0	0,2 ... 1,0		
Maximum feeding (bar)				1,2	1,3	1,4	2,2	1,2	2,4	
ND inch / mm	Cv	Kvs	φSeat mm	Actuator cm ²	ΔP					
1 1/2" - 2 1/2" / 40 - 65	33	28	38	240	19,5	50	-	80	19,5	120
				350	47,5	-	120	120	47,5	-
2" - 3" / 50 - 80	46	39	48	240	10,3	40,8	-	71,3	10,3	120
				350	38,2	-	120	120	38,2	120
2 1/2" / 65	77	66	63	240	-	26,8	-	57,4	-	120
				350	24,3	-	113	113	24,3	120
3" / 80	103	88	80	240	-	11,1	-	41,6	-	120
				350	8,5	-	98	98	8,5	120
4" / 100	82	70	63	700	42,8	-	112	112	42,8	120
					29,4	-	99	99	29,4	120
	180	154	100	2 x 700	112	-	-	-	-	-
					99	-	-	-	-	-
6" - 8" / 150 - 200	180	154	100	700	29,4	-	99	99	29,4	120
					18,6	-	88	88	18,6	120
	335	286	130	2 x 700	99	-	120	120	106	120
					88	-	120	120	95	120

* The differential pressure (“Pw) for balanced shutters and elastic sealing can be calculated with the formula:

$$\Delta P_w = \Delta P_m + (D \cdot K) \quad (4)$$

Were,

P_m = allowable differential pressure according to tables 2a and 2b

D = seat diameter in mm

K = 0.68 for (1 1/2" to 3" / DN 40 to 80 mm)

K = 0.26 for ND 4" - 8" (100 - 200 mm)

Table 2c – for Valves with “closed spring” actuator

The valve is closed with the command pressure at 0 bar. The gray columns of this table correspond to the standard type springs. The constant “P differential pressures shown in the white columns are applicable to the actuators with pre-stressed springs.

Table 2d – for valves with “open spring” actuator

The valve is closed with the maximum necessary command pressure. In this condition, the leakage is below the index included in the “Technical Competence” table.

Table 2c

Command pressure (bar)					0,2 ... 1,0	0,3 ... 1,1 O 0,4 ... 1,2 •	0,4 ... 2,0	0,6 ... 2,2 O 0,8 ... 2,4 •	0,7 ... 3,5	1,05 ... 3,85 O 1,4 ... 4,2 •	0,2 ... 1,0	
Maximum feeding (bar)					1,2	1,3 / 1,4	2,2	2,4 / 2,6	3,7	4,0 / 4,4	1,2	2,4
DN inch/ mm	Cv	Kvs	φSeat mm	Actuator cm ²	ΔP							
1 1/2" - 2 1/2" / 40 - 65	33	28	38	240	4,5	11,6	18,6	32,6	39,8	65	4,5	91
				350	11	31,6	31,6	74	63	91	-	-
2" - 3" / 50 - 80	46	39	48	240	2,4	9,4	16,5	30,5	37,6	63	2,4	88
				350	8,8	29,5	29,5	72	61	88	-	-
2 1/2" / 65	77	66	63	240	-	6,2	13,3	27,4	34,5	60	-	85
				350	5,6	26,2	26,2	68	58	120	-	-
3" / 80	103	88	80	240	-	2,6	9,6	23,6	30,8	56	-	81
				350	2,0	22,6	22,6	65	54	120	-	-
4" / 100	82	70	63	700	8,3	21,8	21,8	48,8	42	89	8,3	89
					180	154	100	5,7	19,2	19,2	46	39,9
	180	154	100	2 x 700	21,8	48,8	48,8	-	89	120	21,8	120
					19,2	46	46	-	86	120	19,2	120
6" - 8" / 150 - 200	180	154	100	700	5,7	19,2	19,2	46	39,4	86	5,7	86
					335	286	130	3,6	17,1	17,1	44	37,3
	180	154	100	2 x 700	19,2	46	46	-	86	120	19,2	120
					335	286	130	17,1	44	44	-	84

Table 2d

Command pressure (bar)					0,2 ... 1,0	0,3 ... 1,1 O 0,4 ... 1,2 •	0,4 ... 2,0	0,6 ... 2,2 O 0,8 ... 2,4 •	0,7 ... 3,5	1,05 ... 3,85 O 1,4 ... 4,2 •	0,2 ... 1,0	
Maximum feeding (bar)					1,2	1,3 / 1,4	2,2	2,4 / 2,6	3,7	4,0 / 4,4	1,2	2,4
DN inch/ mm	Cv	Kvs	φSeat mm	Actuator cm ²	ΔP							
1 1/2" - 2 1/2" / 40 - 65	33	28	38	240	4,5	11,6	18,6	32,6	39,8	65	4,5	91
				350	11	31,6	31,6	74	63	91	-	-
2" - 3" / 50 - 80	46	39	48	240	2,4	9,4	16,5	30,5	37,6	63	2,4	88
				350	8,8	29,5	29,5	72	61	88	-	-
2 1/2" / 65	77	66	63	240	-	6,2	13,3	27,4	34,5	60	-	85
				350	5,6	26,2	26,2	68	58	120	-	-
3" / 80	103	88	80	240	-	2,6	9,6	23,6	30,8	56	-	81
				350	2,0	22,6	22,6	65	54	120	-	-
4" / 100	82	70	63	700	8,3	21,8	21,8	48,8	42	89	8,3	89
					180	154	100	5,7	19,2	19,2	46	39,9
	180	154	100	2 x 700	21,8	48,8	48,8	-	89	120	21,8	120
					19,2	46	46	-	86	120	19,2	120
6" - 8" / 150 - 200	180	154	100	700	5,7	19,2	19,2	46	39,4	86	5,7	86
					335	286	130	3,6	17,1	17,1	44	37,3
	180	154	100	2 x 700	19,2	46	46	-	86	120	19,2	120
					335	286	130	17,1	44	44	-	84

Actuator (diaphragm):

O 240 cm²

i% 350 – 700 cm²

* the allowable differential pressure ("Pw) for valves equipped with metal bellow, balanced shutter and elastic sealing can be calculated with the formula:

$$\Delta P_w = \Delta P + (D \cdot K)$$

where,

ΔPm = allowable differential pressure according to tables 2c and 2d

D =seat diameter in mm

K = 0.16 for DN 1 1/2" - 3" (40 - 80 mm)

K = 0.26 for DN 4" - 8" (100 - 200 mm)

Standard Specification

- Straight pass control valve
- Model SPA of ASCA
- According to catalog: PR-05.70.10-P
- Sealing (metal or elastic)
- Characteristic (equal percentage, linear, or on-off)
- Flanged connection
- According to standard
- Pressure class
- Nominal Diameter
- Optional
- Coupled to a pneumatic actuator
- Model SA ... (P, A or M) of ASCA

Selection and Sizing

- To select and size the appropriate SP type A control valve, proceed as follows:
- calculate the value of Cv or Kvs required for the application, according to ISA 75.01 (Cv) or DIN / IEC 534, or technical information 0506 of ASCA (Kvs);
- select the Nominal Diameter and CV or Kvs value, from the "Cv Values Table" or "Table of Kvs and z values";
- for valves with SA type P pneumatic actuator, determine the allowable "P differential pressure from tables 1a, respectively 1b, or 2a to 2d;
- consider material, pressure, and temperature according to "Material and; connections" and "Technical Competence" tables, observing also the "Pressure – Temperature Diagram";
- define optional according to "Technical Competence" and "Material and connections" tables.

Sizing Data

- ASCA will gladly provide the sizing calculation. For this, please provide:
- Process fluid
- Specific gravity (kg/m³)
- Maximum flow (kg/h or m³/h) corresponding to the normal design or service conditions
- Absolute pressure (Pabs) upstream from the valve (P₁)
- Absolute pressure (Pabs) downstream from the valve (P₂)
- Service temperature



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We reserve the right to introduce slight modifications of a technical nature.