

Reliability and long service life

Anti-waterhammer design Backpressure resistant

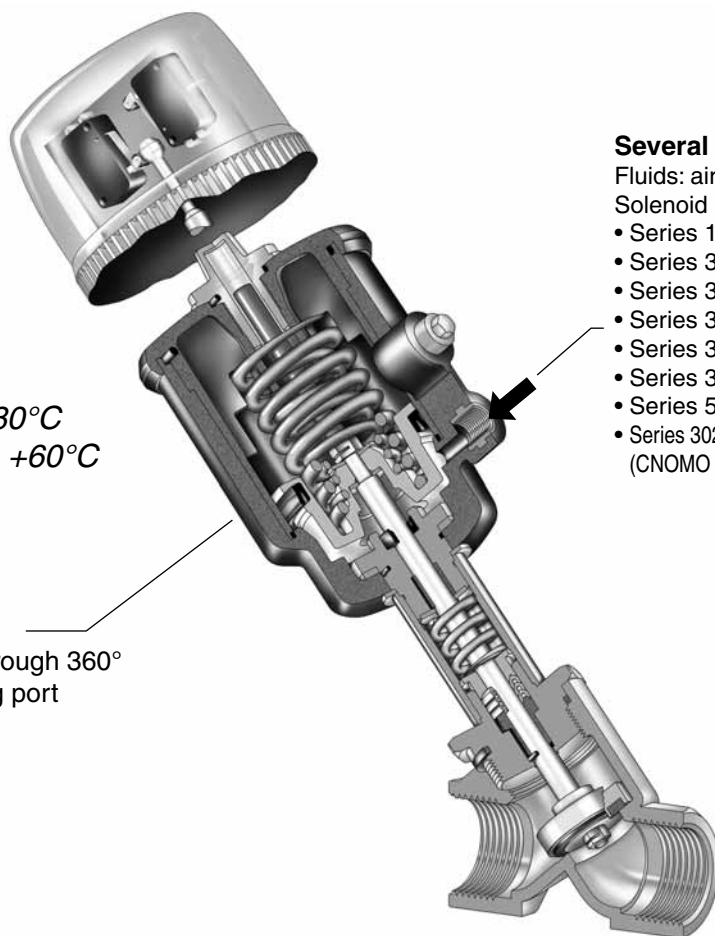
Angle-seat valves

series 290-390

- *Excellent flow rate*
- *PN16*
- *Max. fluid temperature +180°C*
- *Max. ambient temperature +60°C*

Easy assembly

Operator rotatable through 360° to position the piloting port



Several piloting choices:

Fluids: air or water from 1,5 to 10 bar

Solenoid pilot valves:

- Series 189 Banjo Ø 1,2 mm
- Series 356 Ø 1,6 mm G1/8-1/4
- Series 374 Ø 2,7 mm
- Series 325 Ø 1,2 mm
- Series 314 Ø 1,2 - 2,4 et 3,2 mm
- Series 320 Ø 3,2 mm
- Series 551 NAMUR with interface
- Series 302 with mounting pad to ISO 15218 (CNOMO E06.36.120N, size 15)

D

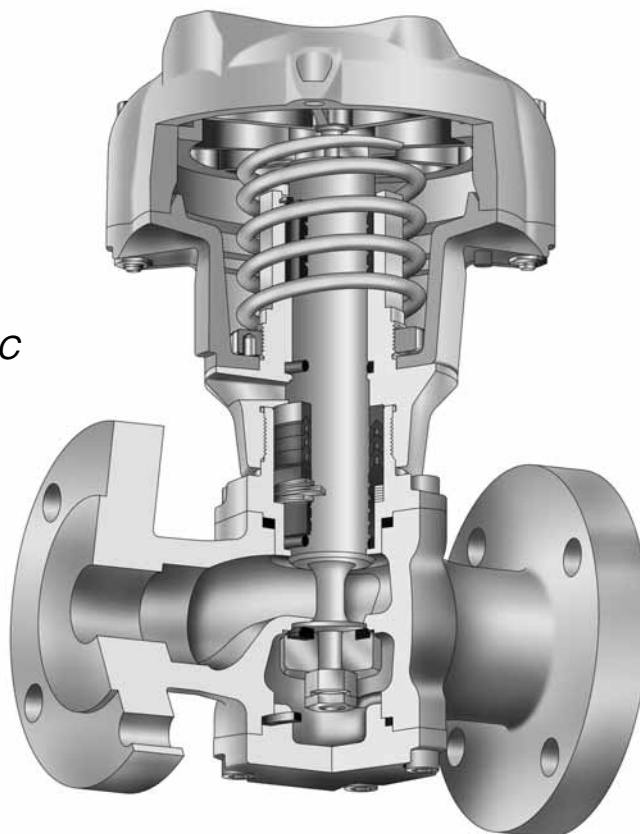
Globe valves

series 298-398

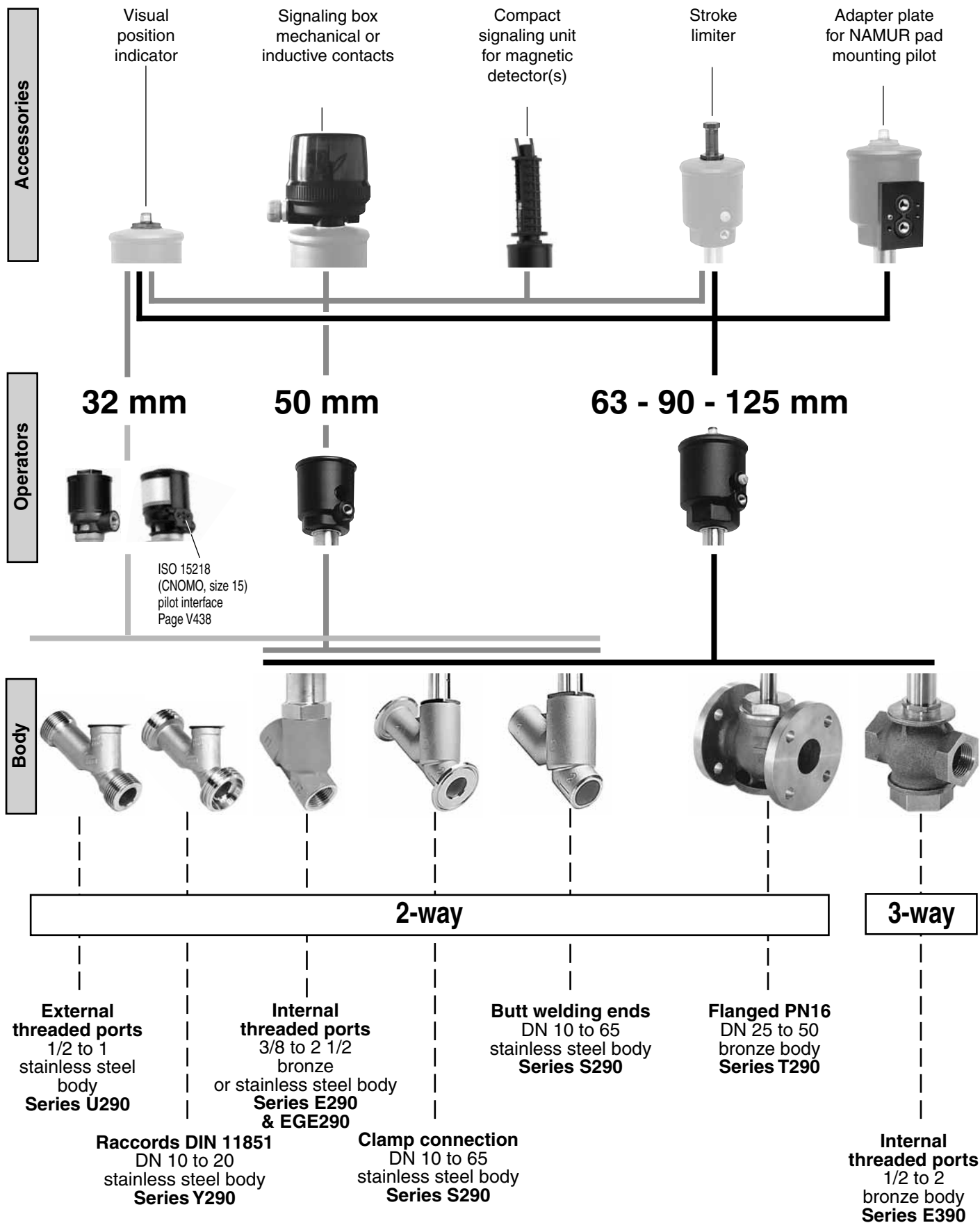
- *Thermal shock resistant*
- *PN40*
- *Max. fluid temperature +250°C*
- *Max. ambient temperature +180°C*
- *3/2 Universal*
- *Simple and easy maintenance, fully disassemblable valve*

Bi-directional fluid flow

Pressure can be applied to any orifice as required by the process

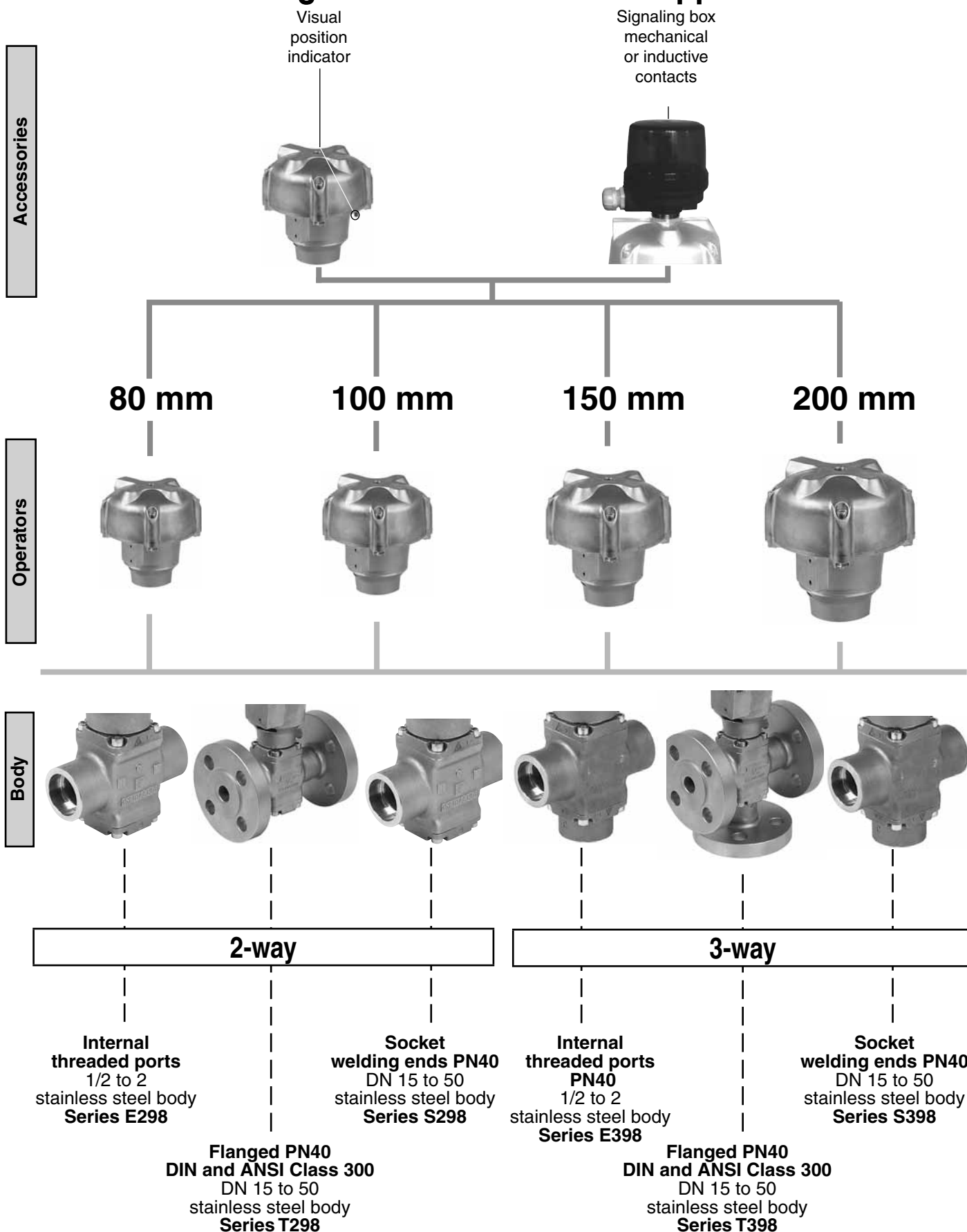


A wide range of valves for all fluid applications



For exact material selection and combinations, refer to the appropriate catalogue pages.

A wide range of valves for all fluid applications



GENERAL SPECIFICATIONS

2/2 VALVES (Functions NC - NO)							
series		E290	E290	U290	Y290	S290	
connection		internal thread	internal thread	ext. thread	DIN 11851	Clamp / butt welding ends	
body		1/2 to 2 1/2	3/8 to 2 1/2	1/2 to 1	DN 10 to 20	DN 10 to 65	
		bronze	stainless steel ⁽¹⁾	st. steel ⁽¹⁾	all AISI 316L	stainless steel ⁽¹⁾	
FLUIDS:	neutral	●	●	●	●	●	
	aggressive		●		●	●	
	steam (10 bar max.)	●	●		●	●	
FLUID TEMPERATURE		-10°C to +184°C					
DIFFERENTIAL PRESSURE		0 - 16 bar					
MAXIMUM ALLOWABLE PRESSURE		16 bar					
AMBIENT TEMPERATURE		-10°C to +60°C					
PILOT FLUID		filtered air or water					
PILOT FLUID TEMPERATURE		-10°C to +60°C					
OPERATOR		32, 50, 63, 90, 125 mm					
PILOT PRESSURE							
	NC (fluid entry under disc)	2,5 / 4 to 10 bar ⁽²⁾					
	NO (fluid entry under disc)	see page 7 ⁽²⁾					
	NC (fluid entry above disc)	see page 7 ⁽²⁾					
CATALOGUE PAGE		V410 / V438		V412 / V414 / V438		V420 / V438	

2/2 - 3/2 VALVES (Functions NC - NO)				
series		T290	E390	EGE290
connection		2/2, flanged	3/2, internal thread	gas service
body		DN 25 to 50	1/2 to 2	1/2 to 2
		bronze	bronze	bronze / stainless steel
FLUIDS:	neutral	●	●	
	steam (10 bar max.)	●	●	
	combustible gas (EN 161)			●
FLUID TEMPERATURE		-10°C to +184°C	-10°C to +184°C	-10°C to +60°C
DIFFERENTIAL PRESSURE		0 - 16 bar	0 - 16 bar	0 - 10 bar
MAXIMUM ALLOWABLE PRESSURE		16 bar	16 bar	-
AMBIENT TEMPERATURE		-10°C to +60°C	-10°C to +60°C	-
PILOT FLUID		filtered air or water	filtered air or water	air
PILOT FLUID TEMPERATURE		-10°C to +60°C	-10°C to +60°C	-10°C to +60°C
OPERATOR		63, 90, 125 mm	63, 90, 125 mm	63 mm
PILOT PRESSURE				
NC (fluid entry under disc)		2,5 / 4 to 10 bar ⁽²⁾	3 / 5 to 10 bar ⁽²⁾	-
NO (fluid entry under disc)		see page 7 ⁽²⁾	see page 7 ⁽²⁾	-
NC (fluid entry above disc)		see page 7 ⁽²⁾	-	5 to 9 bar
CATALOGUE PAGE		V431	V703	⁽³⁾

⁽¹⁾ All stainless steel AISI 316L versions on request.

⁽²⁾ Pilot pressure lower than indicated minimum, contact us.

⁽³⁾ See "www.asconumatics.eu"

GENERAL SPECIFICATIONS

2/2 VALVES (Functions NC - NO)				
series		E298	T298	S298
connection		internal thread	flanged	socket welding ends
body		PN40	PN40, DIN and ANSI Class 300	PN40
		1/2 to 2	DN 15 to 50	DN 15 to 50
		stainless steel	stainless steel	stainless steel
FLUIDS:	neutral	●	●	●
	aggressive	●	●	●
	superheated water	●	●	●
	steam (10 bar max.)	●	●	●
FLUID TEMPERATURE		-10°C to +250°C		
DIFFERENTIAL PRESSURE		0 - 40 bar		
MAXIMUM ALLOWABLE PRESSURE		40 bar		
ALLOWABLE BACKPRESSURE		up to 40 bar		
AMBIENT TEMPERATURE		-25°C to +180°C		
		(autoclavable valve)		
PILOT FLUID		filtered air		
PILOT FLUID TEMPERATURE		-10°C to +60°C		
OPERATOR		80, 100, 150, 200 mm		
PILOT PRESSURE				
NC - NO		max. 10 bar ⁽¹⁾		
CATALOGUE PAGE		V451	V453	V455

3/2 VALVES (U, mixer / distributor functions)				
series		E398	T398	S398
connection		internal thread	flanged	socket welding ends
body		PN40	PN40, DIN and ANSI Class 300	PN40
		1/2 to 2	DN 15 to 50	DN 15 to 50
		stainless steel	stainless steel	stainless steel
FLUIDS:	neutral	●	●	●
	aggressive	●	●	●
	superheated water	●	●	●
	steam (10 bar max.)	●	●	●
FLUID TEMPERATURE		-10°C to +250°C		
DIFFERENTIAL PRESSURE		0 - 40 bar		
MAXIMUM ALLOWABLE PRESSURE		40 bar		
AMBIENT TEMPERATURE		-25°C to +180°C		
PILOT FLUID		filtered air		
PILOT FLUID TEMPERATURE		-10°C to +60°C		
OPERATOR		80, 100, 150, 200 mm		
PILOT PRESSURE				
U		max. 10 bar ⁽¹⁾		
CATALOGUE PAGE		V751	V753	V755

⁽¹⁾ min. pilot pressure: See pilot pressure graphs on the respective catalogue page.

Selection and operation of a valve depend on two parameters:

- The maximum differential pressure (ΔP) across the valve in closed position
- The minimum pilot pressure necessary to control the valve

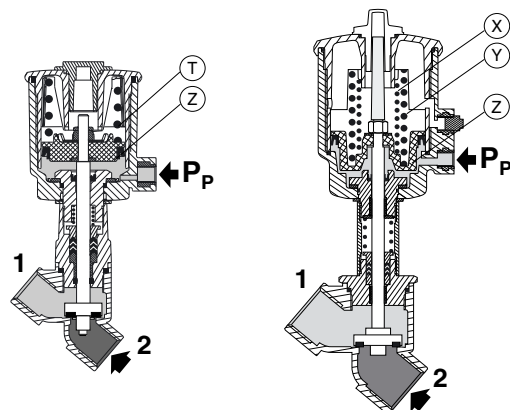
Series 290 - 390 valves can be equipped with diameter 32, 50, 63, 90 or 125 mm operators.

NC function

fluid entry under disc

32, 50 mm

63, 90, 125 mm



The valve is kept in the closed position by spring (T) (X) and/or (Y). It is opened by pilot pressure (Pp) under the piston (Z).

The operators are standard available as follows:

operators	return spring	pilot pressure (bar)		range of applications
		min.	max.	
32 - 50	T	4	10	high ΔP typical applications
63 - 90 - 125	X + Y	4	10	

To meet the requirements of different applications, 63-90-125 mm operators are available in two other versions:

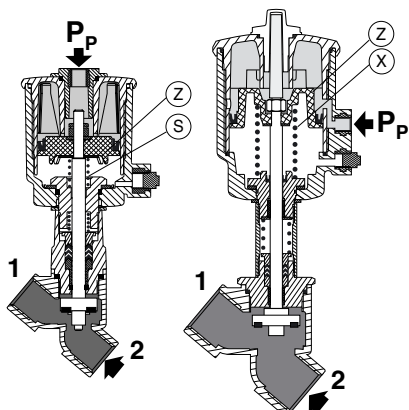
63 - 90 - 125	Y	2,5	10	average ΔP low pilot pressure
	X	1,5	10	low ΔP very low pilot pressure

NO function

fluid entry under disc

32, 50 mm

63, 90, 125 mm



The valves are kept in the open position by return spring (S) or (X).

The valve is closed by pilot pressure (Pp) on piston (Z).

In the closed position, the pilot pressure must overcome the force of the return spring and that created by the ΔP under the disc.

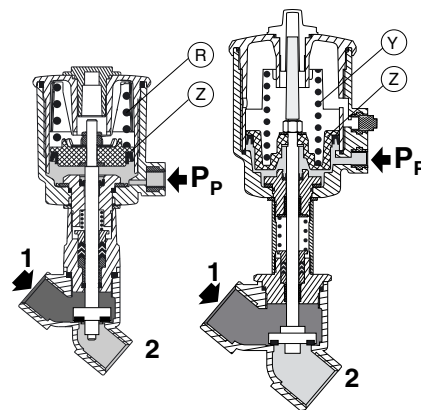
The minimum pilot pressure varies as a function of the ΔP to which the valve is subjected.

NC function

fluid entry above disc

32, 50 mm

63, 90, 125 mm



This function is recommended for steam systems (184°C max.) with high cycling rates.

Not to be used with liquids as waterhammer may occur.

Valves are maintained in the closed position by spring (R) or (Y).

The valve is opened by pilot pressure (Pp) under piston (Z).

The pilot pressure must overcome the force of the return spring and that generated by the ΔP on the disc.

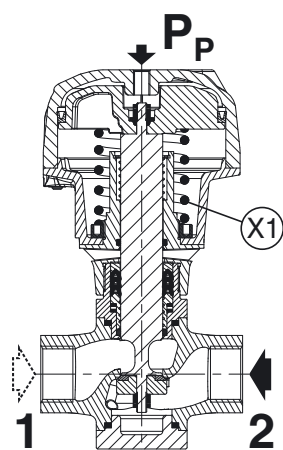
The minimum pilot pressure varies as a function of the ΔP to which the valve is subjected.

Series 298 - 398 valves can be equipped with diameter 80, 100, 150 or 200 mm operators.

The minimum pilot pressure varies as a function of the ΔP to which the valve is subjected. Low pilot pressure operation is standard on all 298 - 398 valves.

NC function

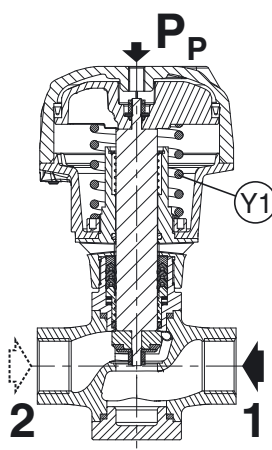
fluid entry under/above disc



The valve is kept in the closed position by spring (X1). It is opened by pilot pressure (Pp).

NO function

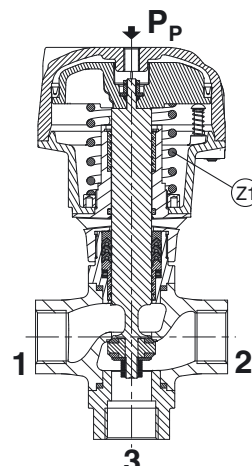
fluid entry under/above disc



The valves are kept in the open position by return spring (Y1).

It is closed by pilot pressure (Pp).

U function (3/2)

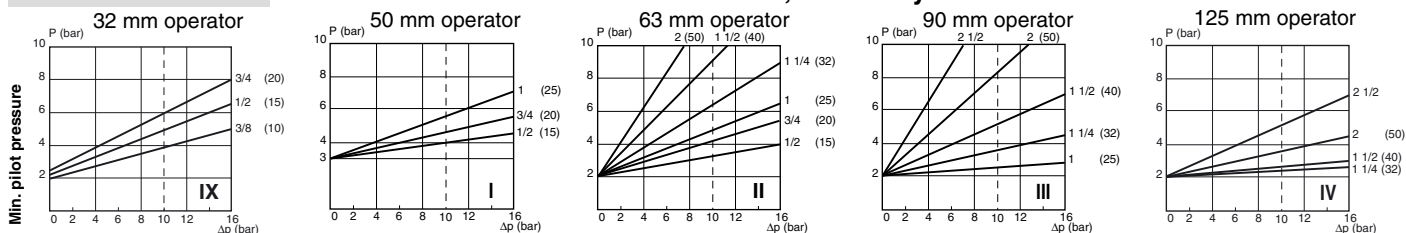


The valves are held in position by return spring (Z1). Pilot pressure (Pp).

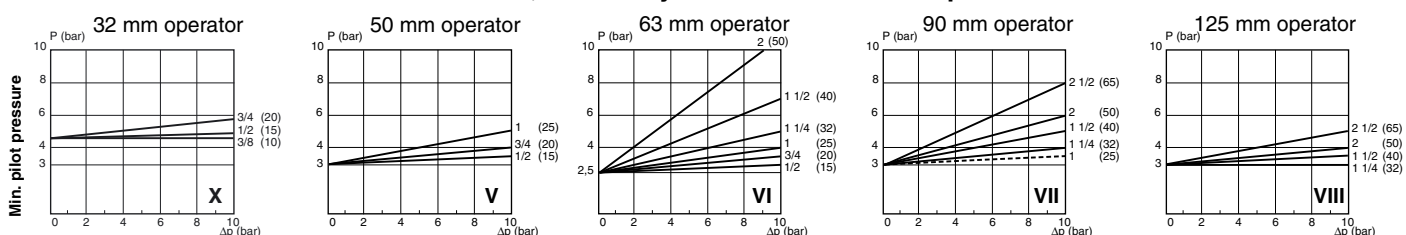
SELECTION OF THE MINIMUM PILOT PRESSURE

series 290 / 390

For NO valves, fluid entry under disc



For NC valves, fluid entry above disc with backpressure



series 298 / 398

See graphs on pages: 2/2: V451, V453, V455 - 3/2: V751, V753, V755

SELECTION OF PILOT VALVE TYPE FOR REQUIRED RESPONSE TIMES

Response times of valves depend on the Kv of the pilot valve or positioner used and the size of the valve, as shown in the following tables.

series 290 / 390	Response time (in seconds) for NC valve series 290/390 (6 bar pilot air)															
	32 mm operator				50 mm operator						63 mm operator					
	O ⁽¹⁾		C ⁽¹⁾		O ⁽¹⁾			C ⁽¹⁾			O ⁽¹⁾		C ⁽¹⁾			
	pilots				pilots			pilots			pilots		pilots			
Ø (DN)	A	B	A	B	A	C1	F1	A	C1	F1	A	C1	F1	A	C1	F1
3/8 (10)	0,05	0,11	0,01	0,1	-	-	-	-	-	-	-	-	-	-	-	-
1/2 (15)	0,05	0,11	0,01	0,1	0,14	0,09	0,9	0,23	0,22	0,9	0,19	0,16	-	0,47	0,44	-
3/4 (20)	0,05	0,11	0,01	0,1	0,14	0,09	0,9	0,23	0,22	0,9	0,24	0,20	1	0,36	0,34	1
1 (25)	-	-	-	-	0,17	0,10	-	0,23	0,22	-	0,37	0,32	2	0,52	0,48	2
1 1/4 (32)	-	-	-	-	-	-	-	-	-	-	0,37	0,32	2	0,52	0,48	2
1 1/2 (40)	-	-	-	-	-	-	-	-	-	-	0,37	0,32	2	0,52	0,48	2
2 (50)	-	-	-	-	-	-	-	-	-	-	0,37	0,32	2	0,52	0,48	2

Ø (DN)	90 mm operator						125 mm operator					
	O ⁽¹⁾			C ⁽¹⁾			O ⁽¹⁾			C ⁽¹⁾		
	pilots			pilots			pilots			pilots		
	D	E	F1	D	E	F1	D	E	F1	D	E	F1
1 (25)	0,2	0,73	2	0,29	1,1	2,5	-	-	-	-	-	-
1 1/4 (32)	0,2	0,73	2	0,29	1,1	2,5	0,67	1,35	4,6	0,78	2,51	4,9
1 1/2 (40)	0,2	0,73	2	0,29	1,1	2,5	0,67	1,35	5	0,78	2,51	6
2 (50)	0,2	0,73	2	0,29	1,1	2,5	0,67	1,35	5	0,78	2,51	6
2 1/2 (65)	0,2	0,73	2	0,29	1,1	2,5	0,67	1,35	5	0,78	2,51	6

The times indicated for opening (O) and closing (C) of the valve corresponds to:

- 1/8, 32-50-63 mm operators, 3/2 pilots (see V439):

A: series 189 banjo - orifice size 1,2 mm, max. pilot pressure 10 bar

C1: series 356 1/8 - Ø1,6 mm, max. pilot pressure 10 bar

- F1, Positioner^D: max. pilot pressure 8 bar (see V162)

- 1/4, 90-125 mm operators, 3/2 pilots (see V444):

D: series 374 1/4 - Ø2,8 mm, max. pilot pressure 10 bar

E: series 356 1/4 - Ø1,6 mm, max. pilot pressure 10 bar

- Pad mounting to ISO 15218 (CNOMO E06.36.120N, size 15):

B: series 302, Ø1,1 mm, max. pilot pressure 10 bar (see V438)

Response time (in seconds) for NC valve series 298/398 (6 bar pilot air)

series 298 / 398	80 mm operator				100 mm operator				150 mm operator						200 mm operator					
	O		C		O		C		O			C			O			C		
	pilots		pilots		pilots		pilots		pilots			pilots			pilots			pilots		
Ø (DN)	C1	C1	C1	C1	C1	C1	C1	C1	D	E	F1	D	E	F1	D	E	F1	D	E	F1
1/2 (15)	0,05	0,07	0,74	0,69	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3/4 (20)	-	-	-	-	0,12	0,13	0,77	0,98	-	-	-	-	-	-	-	-	-	-	-	-
1 (25)	-	-	-	-	0,08	0,11	0,92	1,59	-	-	-	-	-	-	-	-	-	-	-	-
1 1/4 (32)	-	-	-	-	-	-	-	-	0,08	0,09	0,76	0,77	0,48	0,77	2,21	2,5	-	-	-	-
1 1/2 (40)	-	-	-	-	-	-	-	-	0,08	0,09	0,76	0,77	1,02	1,15	2,75	2,88	-	-	-	-
2 (50)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0,13	0,23	1,15	1,25	1,43	2,05

The times indicated for opening (O) and closing (C) of the valve corresponds to:

- 1/8, 80-100 mm operators, 3/2 pilots (see V467):

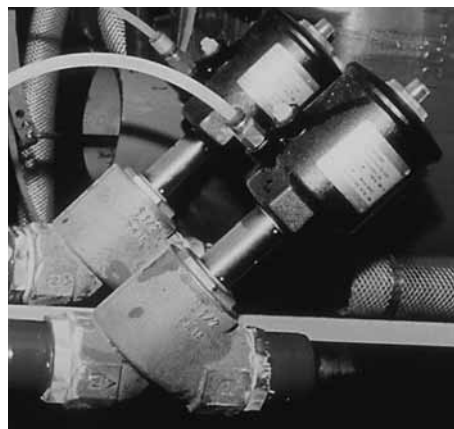
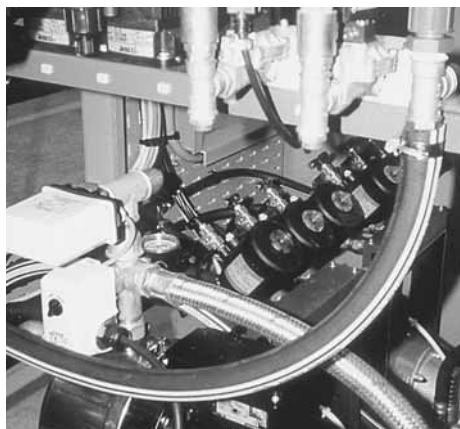
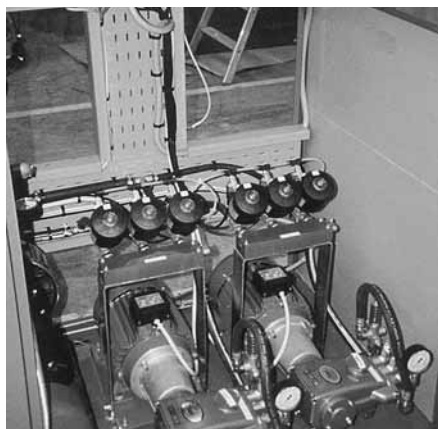
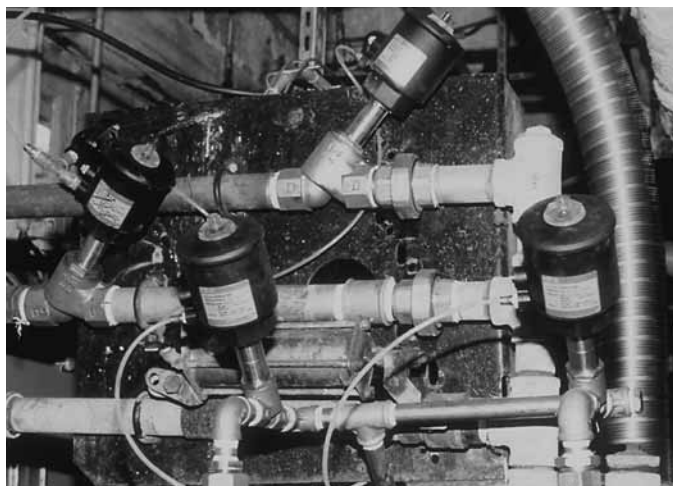
C1: series 356 1/8 - Ø1,6 mm, max. pilot pressure 10 bar

- 1/4, 150-200 mm, operators 3/2 pilots (see V469):

D: series 374 1/4 - Ø2,8 mm, max. pilot pressure 10 bar

E: series 356 1/4 - Ø1,6 mm, max. pilot pressure 10 bar

⁽¹⁾ Values for NC valves. For NO valves, interchange O and C values.



1	2	
3	4	5
6	7	8

Series 290 - 390

- 1 Industrial laundry (steam circuit)
- 2 Special machinery
- 3 Special machinery with steam circuit
- 4 Food processing
- 5 Chemical product processing

Series 298 - 398

- 6 Autoclaves and industrial boilers
- 7 Tyre press or rubber parts applications (vulcanisation)
- 8 Iron and steel industry



**THORNE &
DERRICK
INTERNATIONAL**

Thorne & Derrick
+44 (0) 191 490 1547 -
www.heatingandprocess.com