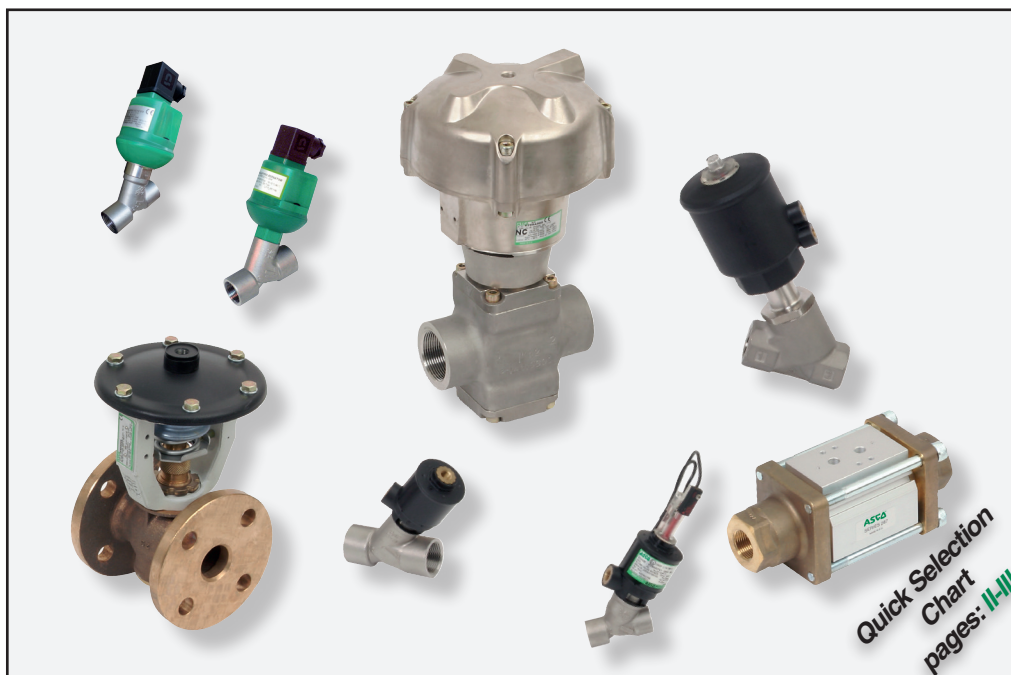


# 2/2 VALVES PRESSURE OPERATED MOTORISED OPERATED

## Product Index



Function	$\Delta P$		Temperature		Pipe connections	Series	Page
	min. (bar)	max. (bar)	min. (°C)	max. (°C)			
<b>MOTORISED OPERATED</b>							
<b>STAINLESS STEEL BODY</b>							
-	0	6	-10	+90/+145	Motorised valves	E290	9
<b>PRESSURE OPERATED</b>							
Ranges/Technical information/Applications						290/390/298/398	1
<b>BRONZE BODY</b>							
NC-NO	0	16	-10	+184	Threaded ports (IEC 61508)	E290	15
NC-NO	0	16	-10	+184	Flanged (IEC 61508)	T290	35
NC-NO	0	16	-10	+184	Threaded ports	165 (AD/TBT)	77
NC	0	16	-10	+184	Flanged	165 (AD/BBT)	79
<b>STAINLESS STEEL BODY</b>							
NC-NO	0	16	-10	+184	Threaded ports	1/2..2 1/2	E290 15
NC-NO	0	16	-10	+184	External thread (IEC 61508)	1/2..1	U290 23
NC-NO	0	16	-10	+184	External thread, food connections DIN 11851 (IEC 61508)	RD 28x1/8 .. 44x1/6	Y290 25
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NC-NO	0	40	-25	+250	Threaded ports (IEC 61508)	1/2 .. 2	E298 53
NC-NO	0	40	-25	+250	Flanged (DIN and ANSI Class 300) (IEC 61508)	DN 15..50	T298 57
NC-NO	0	40	-25	+250	Socket welding ends (IEC 61508)	DN 15..50	S298 61
NC-NO	0	40	-20	+100	Coaxial	3/8 .. 1	287 75
<b>STAINLESS STEEL BODY, IN CONFORMITY WITH REGULATION (EC) no. 1935-2004</b>							
NC-NO	0	16	-10	+184	Threaded ports	1/2..2 1/2	E290 19
NC-NO	0	16	-10	+184	Clamp / butt welding (IEC 61508)	DN 10..65	S290 31
<b>BRASS BODY</b>							
NC-NO	0	40	-20	+100	Coaxial	3/8 .. 1	287 75
<b>ACCESSORIES AND OPTIONS</b>							
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<b>SOLENOID PILOT VALVES</b>							
Valve piloting solutions						290/390	47
290/390: 189/banjo and 356 solenoid valves - 32, 50 and 63 mm operators / 356 and 314 solenoid valves - 90 and 125 mm operators						<a href="http://www.asco.com">www.asco.com</a> / <a href="http://www.asco.com">www.asco.com</a>	49/51
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(Potentially explosive atmospheres, see page: IV)

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Pressure Operated Valves (2/2) / Motorised Operated Valves (2/2) - I

pipe connections										body material				DN	min. operating pressure differential (bar)	max. operating pressure differential (bar)						max. allowable pressure (bar)		fluid temperature range (°C)		power consumption (W)		series	I&M Sheet	page			
<ul style="list-style-type: none"> <li>- internal thread</li> <li>- external thread</li> <li>- butt welding</li> <li>- external thread DIN 11851</li> <li>- flanged</li> <li>- clamp</li> <li>- socket welding ends</li> </ul>										bronze	cast iron	carbon steel	stainless steel	st. steel, AISI 316L	DN	min. operating pressure differential (bar)	air, inert gases	water, oil	liquids	vacuum (mbar)	hot water	steam	superheated water	max. allowable pressure (bar)		min.	max.	mean	hold	series	I&M Sheet	page	
3/8 (RD28x1/8)	- 10	1/2 (RD34x1/8)	- 15	3/4 (RD44x1/6)	- 20	1	- 25	1 1/4	- 32	1 1/2	- 40	2	- 50	2 1/2	- 65	3	- 80	- 100	- 125	- 150													
<b>MOTORIZED VALVES (HOLDING POSITION)</b>																								E290	9								
<b>NORMALLY CLOSED (NC)</b>																								E290	15								
		E290	19	U290	23																												
		Y290	25	S290	27																												
		S290	31	T290	35																												
		E298	53	T298	57																												
		S298	61		77 (AD/TBT)																												
			79 (AD/BBT)		75 (coaxial)																												

pipe connections						body material				max. operating pressure differential (bar)						max. allowable pressure (bar)			fluid temperature range		power consumption		series	I&M Sheet	page								
(---) - internal thread (---) - external thread (---) - butt welding (---) - external thread DIN 11851 (---) - flanged (---) - clamp (---) - socket welding ends	3/8 (RD28x1/8) 1/2 (RD34x1/8) 3/4 (RD44x1/6) 1 1 1/4 1 1/2 2 2 1/2 3	-10	-15	-20	-25	-32	-40	-50	-65	-80	-100	-125	-150	bronze	cast iron	carbon steel	stainless steel	st. steel, AISI 316L	DN	min. operating pressure differential (bar)	air, inert gases	water, oil liquids				vacuum (mbar)	hot water	steam	superheated water	max. allowable pressure (bar)	min. (°C)	max. (°C)	mean (W)
<b>NORMALLY OPEN (NO)</b>																																	
(---)																			10 ↓ 65	0	16 ↓ 7	10 <sup>2</sup>	16 ↓ 7	10 ↓ 7		16	-10	+184	-	-	E290	15	
(---)																			10 ↓ 65	0	16 ↓ 7	10 <sup>2</sup>	16 ↓ 7	10 ↓ 7		16	-10	+184	-	-	E290	19	
(---)																			10 ↓ 20	0	16	10 <sup>2</sup>	16	10		16	-10	+184	-	-	Y290	25	
(---)																			10 ↓ 65	0	16 ↓ 7	10 <sup>2</sup>	16 ↓ 7	10 ↓ 7		16	-10	+184	-	-	S290	27	
(---)																			10 ↓ 65	0	16 ↓ 7	10 <sup>2</sup>	16 ↓ 7	10 ↓ 7		16	-10	+184	-	-	S290	31	
(---)																			25 ↓ 50	0	16 ↓ 7	16 ↓ 7	-	16 ↓ 7	10 ↓ 7		16	-10	+184	-	-	T290	35
(---)																																E298	53
(---)																			15 ↓ 50	0	40	40	10 <sup>2</sup>	40	-	40	-25	+250	-	-	T298	57	
(---)																										40	-25	+223	-	-	S298	61	
(---)																			15 ↓ 50	0	16	16		16	10		16	-10	+184	-	-	165	77 (AD/TBT)
(---)																			10 ↓ 25	0	40 12	40 12		40 12	-	-	-20	+100	-	-	287	75 (coaxial)	

**PRESSURE OPERATED VALVES**

		I&M Sheet	DN	group II								
				dusts zone 22	gas zone 2			dusts zone 21	gas zone 1			dusts zones 0-20
page	series			IIA	IIB	IIC	IIA	IIB	IIC			
<b>SERIES 290 VALVES ATEX 2014/34/EU</b> (see page: <b>43</b> )												
15	E290		10 → 65	☒	☒	☒	☒	☒	☒			-
19	E290		10 → 65	☒	☒	☒	☒	☒	☒			-
23	U290		10 → 20	☒	☒	☒	☒	☒	☒			-
25	Y290		10 → 20	☒	☒	☒	☒	☒	☒			-
27	S290		10 → 65	☒	☒	☒	☒	☒	☒			-
31	S290		10 → 65	☒	☒	☒	☒	☒	☒			-
35	T290		25 → 50	☒	☒	☒	☒	☒	☒			-
<b>SERIES 298 VALVES ATEX 2014/34/EU</b> (see page: <b>67</b> )												
53	E298		15 → 50	☒	☒	☒	☒	☒	☒			-
57	T298		15 → 50	☒	☒	☒	☒	☒	☒			-
61	S298		15 → 50	☒	☒	☒	☒	☒	☒			-
<b>SERIES 287 VALVES ATEX 2014/34/EU</b> (see page: <b>75</b> )												
75	287		10 → 25	☒	☒	☒	☒	☒	☒			-
<b>TYPE AD VALVES ATEX 2014/34/EU</b> (see pages: <b>77/79</b> )												
77	165 - AD/TBT		15 → 50	☒	☒	☒	☒	☒	☒			-
79	165 - AD/BBT		15 → 80	☒	☒	☒	☒	☒	☒			-

**SOLENOID PILOT VALVES**

 		operators (See Explosionproof Solenoids section)		group II						
				dusts zone 22	gas / dusts					
page	series	power coil (W)		3 D Ex tc	zones 2 - 22	zones 1 - 21				
		AC (~)	DC (=)			2 G Ex db 2 D Ex tb	2 G Ex eb mb 2 D Ex tb		2 G Ex mb 2 D Ex mb	
				IIC T115°C Dc IP65X		IIC T6..T4 Gb /IIC Db IP66/67	IIC T6..T3 Gb /Ex tb IIC Db IP66/67		V1035 (IIC T5..T3 Gb /IIC Db IP67)	
				SG (XM5)	SG (C25)	SG (MXX-I)	(WS)NF (MXX)	(WS)EM (MXX)	PV (EM5)	PV (EMXX)
49	189 banjo	2,5	3	☒						4/3
	356	4	6,9	☒						4/6,9
51	356	5	6,9	☒						4/6,9
	314	10,1	11,6	☒			10,5 11,2	10,5 11,2		10,5 11,2
71	356	4	6,9	☒						4/6,9
73	314	10,1	11,6	☒			10,5 11,2	10,5 11,2		10,5 11,2
83	314	10,1		☒			10,5 11,2	10,5 11,2		10,5 11,2
			11,6	☒						



## Reliability and long service life

Anti-waterhammer design

Backpressure resistant

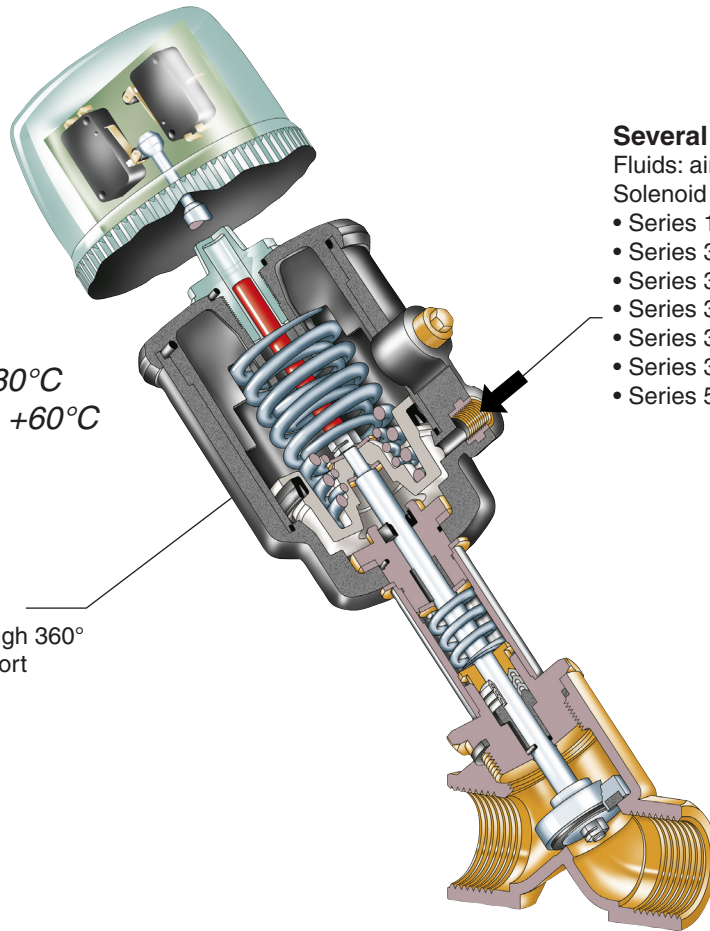
### Angle-seat valves

#### 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 314 Ø 3,2 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

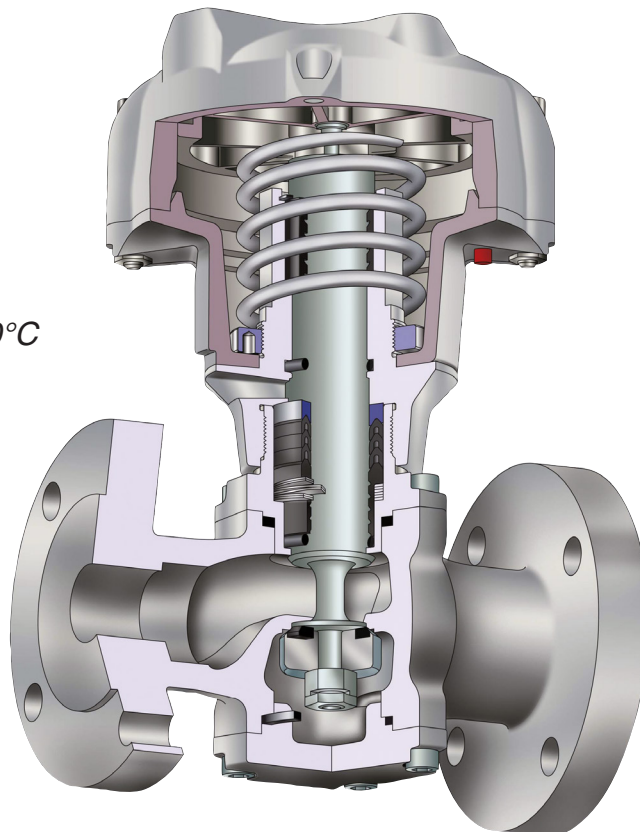
### Globe valves

#### series 298-398

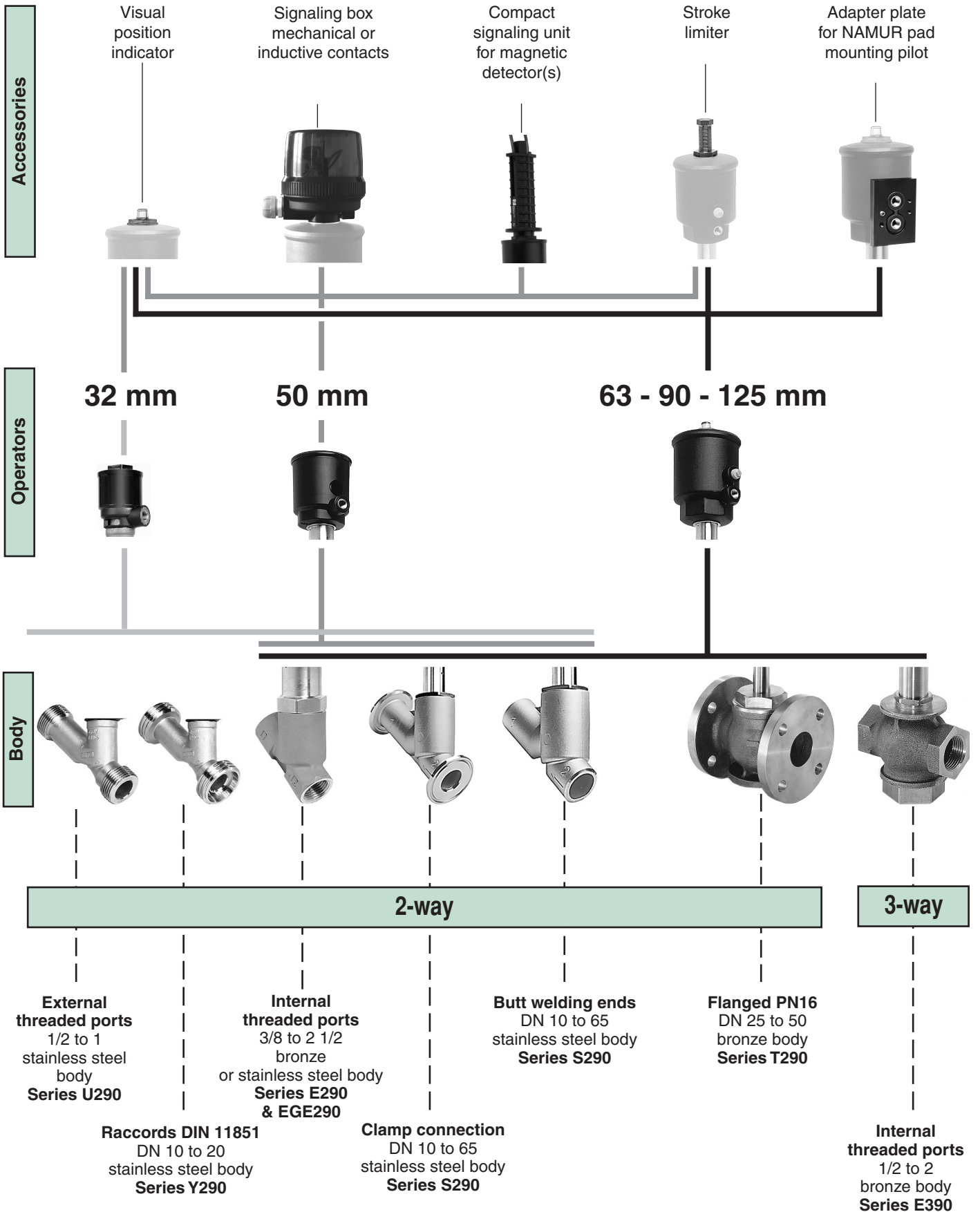
- Thermal shock resistant
- PN40
- Max. fluid temperature +250°C
- Max. ambient temperature +180°C
- 3/2 Universal
- Simple and easy maintenance, fully disassemblable valve

#### Bi-directional fluid flow

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

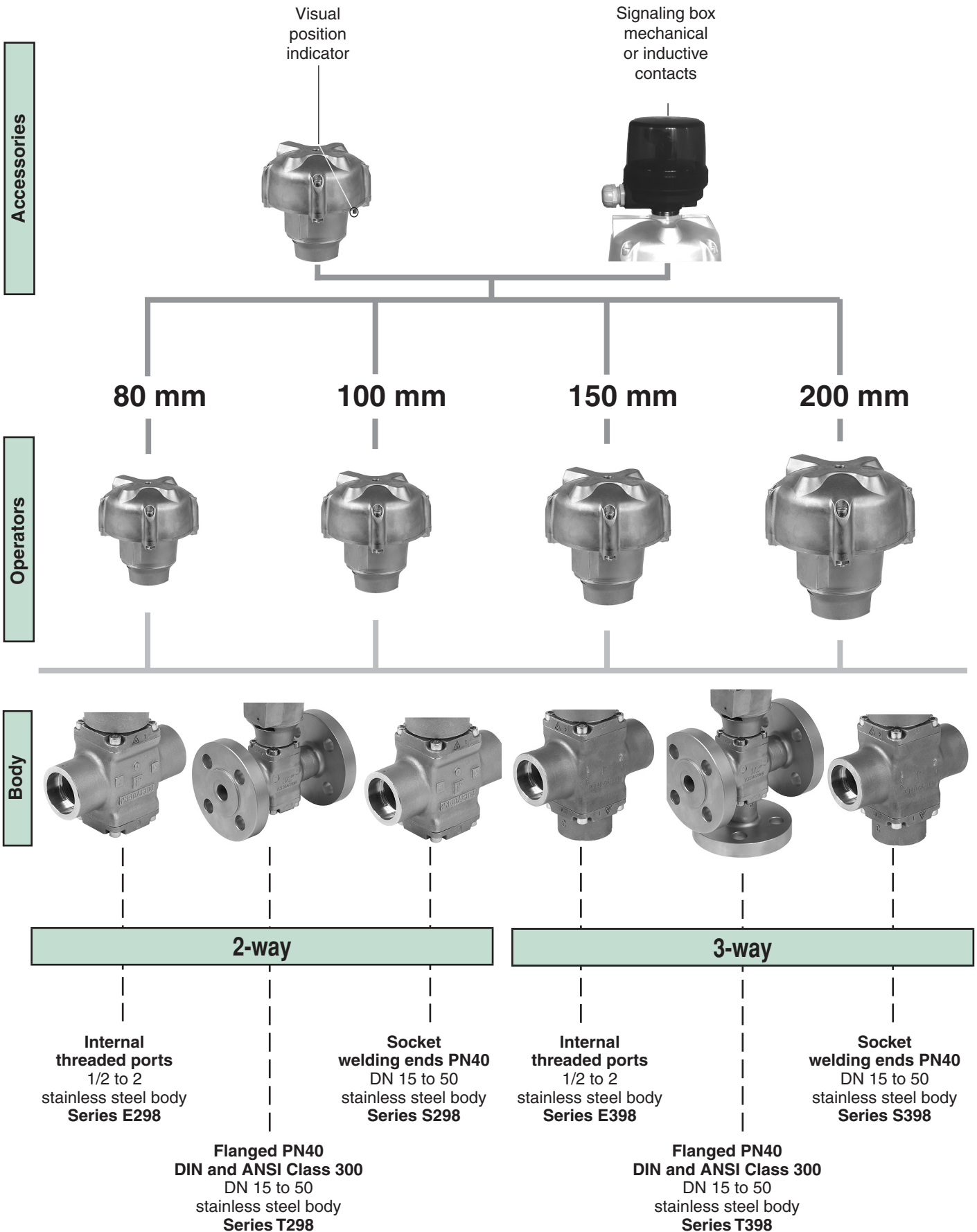


## A wide range of valves for all fluid applications



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

# A wide range of valves for all fluid applications












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

All leaflets are available on: [www.asco.com](http://www.asco.com)

**GENERAL SPECIFICATIONS**





<b>2/2 VALVES</b> (Functions NC - NO)						
series		<b>E290</b>	<b>E290</b>	<b>U290</b>	<b>Y290</b>	<b>S290</b>
connection		<b>internal thread</b>	<b>internal thread</b>	<b>ext. thread</b>	<b>DIN 11851</b>	<b>Clamp / butt welding ends</b>
body		1/2 to 2 1/2 <b>bronze</b>	3/8 to 2 1/2 <b>stainless steel <sup>(1)</sup></b>	1/2 to 1 <b>st. steel <sup>(1)</sup></b>	DN 10 to 20 <b>all AISI 316L</b>	DN 10 to 65 <b>stainless steel <sup>(1)</sup></b>
FLUIDS:	neutral aggressive steam ( <b>10 bar max.</b> )	• • •	• • •	• • •	• • •	• • •
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		2,5 / 4 to 10 bar <sup>(2)</sup>				
	NC (fluid entry under disc)	see page: 7 <sup>(2)</sup>				
	NO (fluid entry under disc)	see page: 7 <sup>(2)</sup>				
	NC (fluid entry above disc)	see page: 7 <sup>(2)</sup>				
CATALOGUE PAGE		<b>15</b> ( <a href="http://www.asco.com">www.asco.com</a> )	<b>15</b> ( <a href="http://www.asco.com">www.asco.com</a> ) <b>19</b> ( <a href="http://www.asco.com">www.asco.com</a> )	<b>23</b> ( <a href="http://www.asco.com">www.asco.com</a> ) <b>25</b> ( <a href="http://www.asco.com">www.asco.com</a> )	<b>27</b> ( <a href="http://www.asco.com">www.asco.com</a> ) <b>31</b> ( <a href="http://www.asco.com">www.asco.com</a> )	<b>27</b> ( <a href="http://www.asco.com">www.asco.com</a> ) <b>31</b> ( <a href="http://www.asco.com">www.asco.com</a> )





<b>2/2 - 3/2 VALVES</b> (Functions NC - NO)						
series		<b>T290</b>	<b>E390</b>	<b>EGE290</b>		
connection		<b>2/2, flanged</b>	<b>3/2, internal thread</b>	<b>gas service</b>	<b>proportional</b>	
body		DN 25 to 50 <b>bronze</b>	1/2 to 2 <b>bronze</b>	1/2 to 2 <b>bronze / stainless steel</b>	3/8 to 2 <b>acier inox</b>	
					1/2 to 1 1/2 <b>acier inox</b>	
FLUIDS:	neutral steam ( <b>10 bar max.</b> ) combustible gas (EN 161)	• • •	• • •	• • •	• • •	
FLUID TEMPERATURE		-10°C to +184°C	-10°C to +184°C	-10°C to +60°C	-10°C to +60°C	0°C to +50°C
DIFFERENTIAL PRESSURE		0 - 16 bar	0 - 16 bar	0 - 10 bar	0 - 1 bar	1 bar
MAXIMUM ALLOWABLE PRESSURE		16 bar	16 bar	-	-	16 bar
AMBIENT TEMPERATURE		-10°C to +60°C	-10°C to +60°C	-	-	0°C to +50°C
PILOT FLUID		filtered air or water	filtered air or water	air	air/inert gas	air/inert gas
PILOT FLUID TEMPERATURE		-10°C to +60°C	-10°C to +60°C	-10°C to +60°C	-	0°C to +50°C
OPERATOR		63, 90, 125 mm	63, 90, 125 mm	63 mm	32, 63 mm	63 mm
PILOT PRESSURE		2,5 / 4 to 10 bar <sup>(2)</sup>	3 / 5 to 10 bar <sup>(2)</sup>	-	5,5/3,5..9 bar	5 to 8 bar
	NC (fluid entry under disc)	see page: 7 <sup>(2)</sup>	see page: 7 <sup>(2)</sup>	-	-	-
	NO (fluid entry under disc)	see page: 7 <sup>(2)</sup>	-	5 à 9 bar	-	-
	NC (fluid entry above disc)	see page: 7 <sup>(2)</sup>	-	-	-	-
		<b>Pressure Operated Valves (2/2)</b> ▼	<b>Pressure Operated Valves (3/2)</b> ▼	<b>Combustible Gas &amp; Oil (3/2)</b> ▼		
CATALOGUE PAGE		<b>35</b> ( <a href="http://www.asco.com">www.asco.com</a> )	<a href="http://www.asco.com">www.asco.com</a>	<b>entry above the disc</b> <a href="http://www.asco.com">www.asco.com</a>	<b>entry under the disc</b> <a href="http://www.asco.com">www.asco.com</a>	<a href="http://www.asco.com">www.asco.com</a>

<sup>(1)</sup> All stainless steel AISI 316L versions on request.

<sup>(2)</sup> Pilot pressure lower than indicated minimum, contact us.

**GENERAL SPECIFICATIONS**

<b>2/2 VALVES</b> (Functions NC - NO)					
series		<b>E298</b>	<b>T298</b>	<b>S298</b>	<b>proportional</b>
connection		<b>internal thread</b>	<b>flanged</b>	<b>socket welding ends</b>	<b>all</b>
body		<b>PN40</b>	<b>PN40, DIN and ANSI Class 300</b>	<b>PN40</b>	<b>PN40</b>
		1/2 to 2	DN 15 to 50	DN 15 to 50	DN 15 to 50
		<b>stainless steel</b>	<b>stainless steel</b>	<b>stainless steel</b>	<b>stainless steel</b>
FLUIDS:	neutral	•	•	•	•
	aggressive	•	•	•	•
	superheated water	•	•	•	•
	steam ( <b>10 bar max.</b> )	•	•	•	•
FLUID TEMPERATURE			-10°C to +250°C		-10°C to +233°C
DIFFERENTIAL PRESSURE			0 - 40 bar		0 - 40 bar
MAXIMUM ALLOWABLE PRESSURE			40 bar		40 bar
ALLOWABLE BACKPRESSURE			up to 40 bar		-
AMBIENT TEMPERATURE			-25°C to +180°C (autoclavable valve)		0°C to +50°C
PILOT FLUID			filtered air		filtered air
PILOT FLUID TEMPERATURE			-10°C to +60°C		0°C to 20°C
OPERATOR			80, 100, 150, 200 mm		80, 100, 150, 200 mm
PILOT PRESSURE			max. 10 bar <sup>(1)</sup>		4 to 8 bar
					<b>Proportional Valves</b> ▼ <a href="http://www.asco.com">www.asco.com</a>
CATALOGUE PAGE		<b>53</b> ( <a href="http://www.asco.com">www.asco.com</a> )	<b>57</b> ( <a href="http://www.asco.com">www.asco.com</a> )	<b>61</b> ( <a href="http://www.asco.com">www.asco.com</a> )	<a href="http://www.asco.com">www.asco.com</a>

<b>3/2 VALVES</b> (U, mixer / distributor functions)					
series		<b>E398</b>	<b>T398</b>	<b>S398</b>	<b>proportional</b>
connection		<b>internal thread</b>	<b>flanged</b>	<b>socket welding ends</b>	<b>all</b>
body		<b>PN40</b>	<b>PN40, DIN and ANSI Class 300</b>	<b>PN40</b>	<b>PN40</b>
		1/2 to 2	DN 15 to 50	DN 15 to 50	DN 15 to 50
		<b>stainless steel</b>	<b>stainless steel</b>	<b>stainless steel</b>	<b>stainless steel</b>
FLUIDS:	neutral	•	•	•	•
	aggressive	•	•	•	•
	superheated water	•	•	•	•
	steam ( <b>10 bar max.</b> )	•	•	•	•
FLUID TEMPERATURE			-10°C to +250°C		-10°C to +233°C
DIFFERENTIAL PRESSURE			0 - 40 bar		0 - 40 bar
MAXIMUM ALLOWABLE PRESSURE			40 bar		40 bar
AMBIENT TEMPERATURE			-25°C to +180°C		0°C to +50°C
PILOT FLUID			filtered air		filtered air
PILOT FLUID TEMPERATURE			-10°C to +60°C		0°C à 20°C
OPERATOR			80, 100, 150, 200 mm		80, 100, 150, 200 mm
PILOT PRESSURE			max. 10 bar <sup>(1)</sup>		4 to 8 bar
			<b>Pressure Operated Valves</b> <b>(3/2)</b> ▼ <a href="http://www.asco.com">www.asco.com</a>		<b>Proportional Valves</b> ▼ <a href="http://www.asco.com">www.asco.com</a>
CATALOGUE PAGE		<a href="http://www.asco.com">www.asco.com</a>	<a href="http://www.asco.com">www.asco.com</a>	<a href="http://www.asco.com">www.asco.com</a>	<a href="http://www.asco.com">www.asco.com</a>

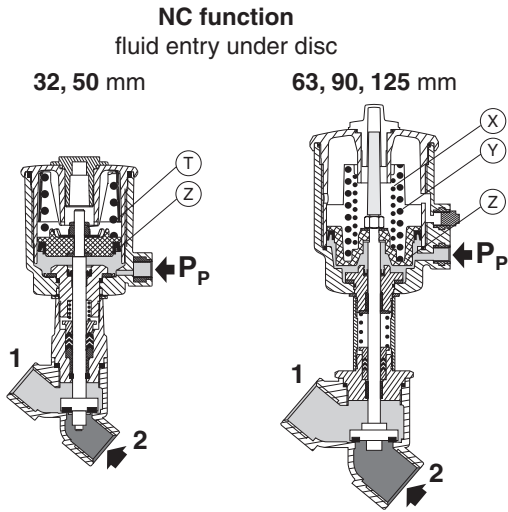
<sup>(1)</sup> min. pilot pressure: See pilot pressure graphs on the respective catalogue page.



Selection and operation of a valve depend on two parameters:

- The maximum differential pressure ( $\Delta P$ ) 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.



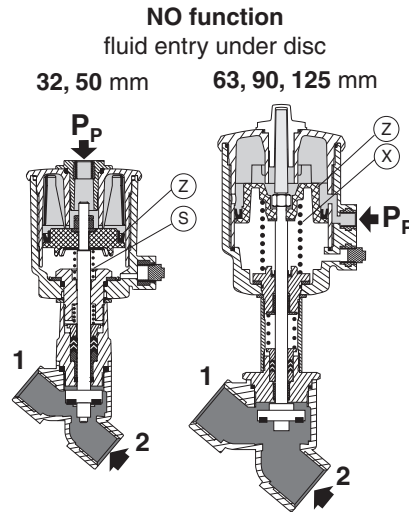
The valve is kept in the closed position by spring (T) (X) and/or (Y). It is opened by pilot pressure (Pp) under the piston (Z).

The operators are standard available as follows:

operators	return spring	pilot pressure (bar)		range of applications
		min.	max.	
32 - 50	T	4	10	high $\Delta P$ 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 $\Delta P$ low pilot pressure
	X	1,5	10	low $\Delta P$ very low pilot pressure

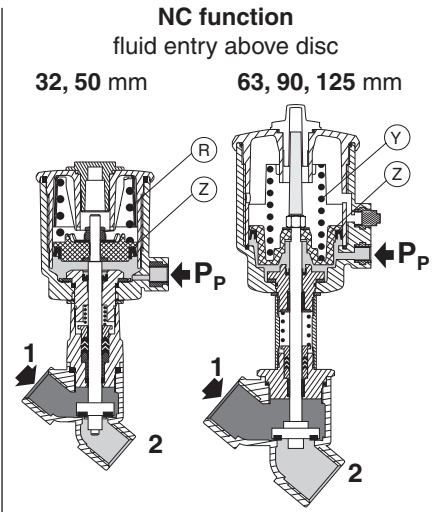


The valves are kept in the open position by return spring (S) or (X).

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  $\Delta P$  under the disc.

The minimum pilot pressure varies as a function of the  $\Delta P$  to which the valve is subjected.



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

**Not to be used with liquids as waterhammer may occur.**

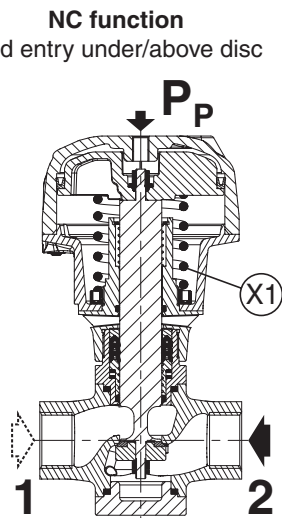
Valves are maintained in the closed position by spring (R) or (Y).

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  $\Delta P$  on the disc.

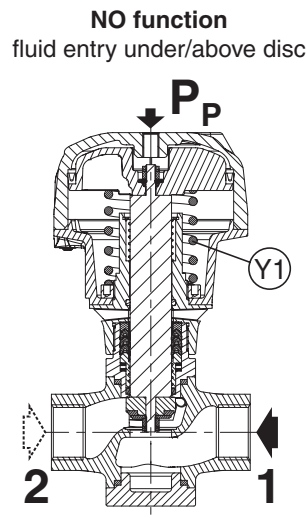
The minimum pilot pressure varies as a function of the  $\Delta P$  to which the valve is subjected.

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

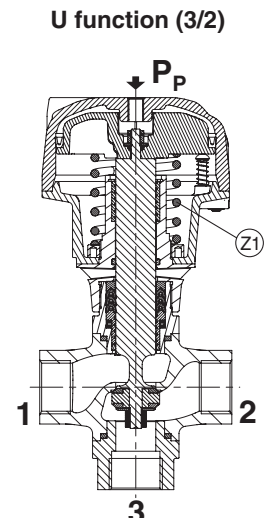
The minimum pilot pressure varies as a function of the  $\Delta P$  to which the valve is subjected. Low pilot pressure operation is standard on all 298 - 398 valves.



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



The valves are kept in the open position by return spring (Y1). It is closed by pilot pressure (Pp).

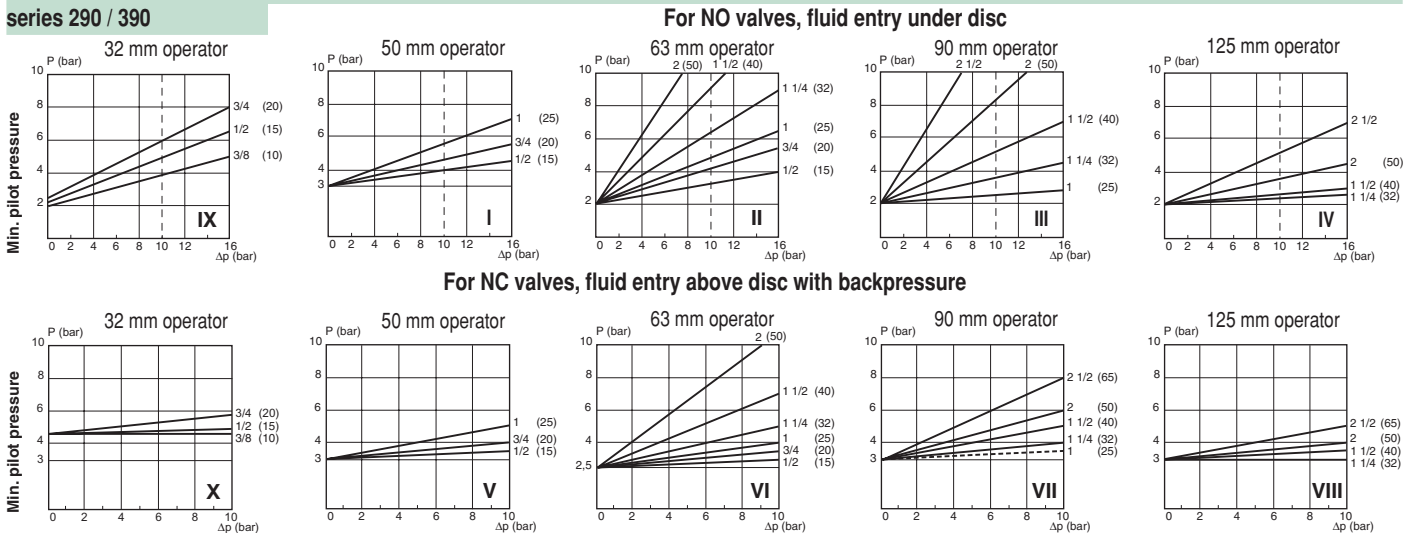


The valves are held in position by return spring (Z1). Pilot pressure (Pp).



### SELECTION OF THE MINIMUM PILOT PRESSURE

series 290 / 390



series 298 / 398

See graphs on pages: **2/2: 53** ([www.asco.com](http://www.asco.com)), **57** ([www.asco.com](http://www.asco.com)), **61** ([www.asco.com](http://www.asco.com))  
**3/2: 3** ([www.asco.com](http://www.asco.com)), **7** ([www.asco.com](http://www.asco.com)), **11** ([www.asco.com](http://www.asco.com))

### 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			90 mm operator			125 mm operator		
	Ø (DN)	pilots		pilots		pilots		pilots		pilots		pilots		pilots		pilots		
	O <sup>(1)</sup>	C <sup>(1)</sup>	A	C1	F1	A	C1	F1	A	C1	F1	A	C1	F1	D	E	F1	
3/8 (10)	0,05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
1/2 (15)	0,05	-	0,01	-	0,14	0,09	0,9	0,9	0,17	0,14	0,14	0,19	0,16	-	-	-	-	
3/4 (20)	0,05	-	0,01	-	0,14	0,09	0,9	0,9	0,17	0,14	0,14	0,19	0,16	1	-	-	-	
1 (25)	-	-	-	-	0,17	0,14	0,9	0,9	0,23	0,23	0,23	0,37	0,32	2	2	2	2	
1 1/4 (32)	-	-	-	-	0,17	0,14	0,9	0,9	0,23	0,23	0,23	0,37	0,32	2	2	2	2	
1 1/2 (40)	-	-	-	-	0,17	0,14	0,9	0,9	0,23	0,23	0,23	0,37	0,32	2	2	2	2	
2 (50)	-	-	-	-	0,17	0,14	0,9	0,9	0,23	0,23	0,23	0,37	0,32	2	2	2	2	
2 1/2 (65)	-	-	-	-	0,17	0,14	0,9	0,9	0,23	0,23	0,23	0,37	0,32	2	2	2	2	

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 page 49 \(www.asco.com\)](http://www.asco.com)
- 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<sup>2</sup>: max. pilot pressure 8 bar <sup>(2)</sup> ([www.asco.com](http://www.asco.com))

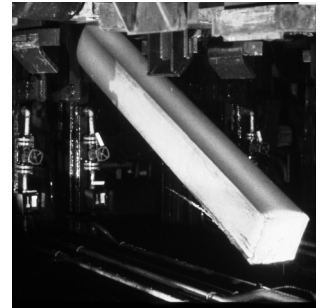
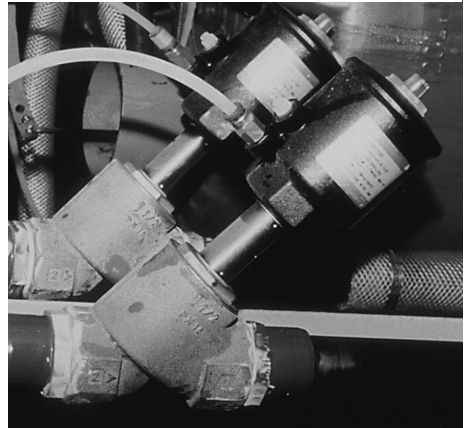
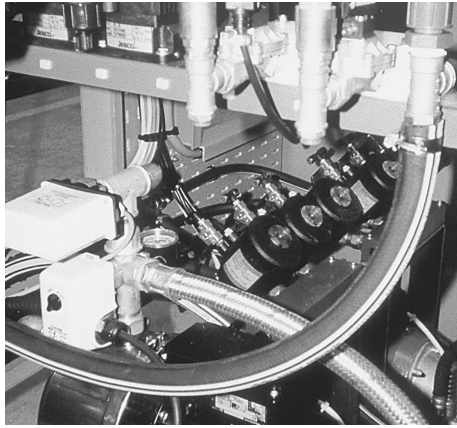
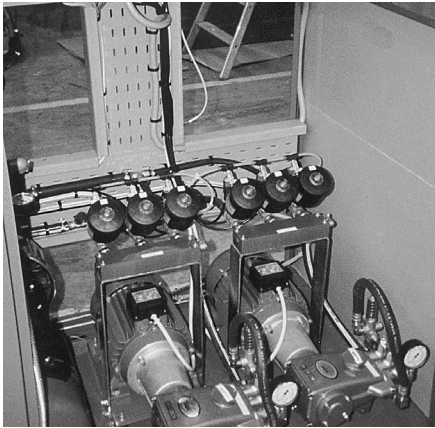
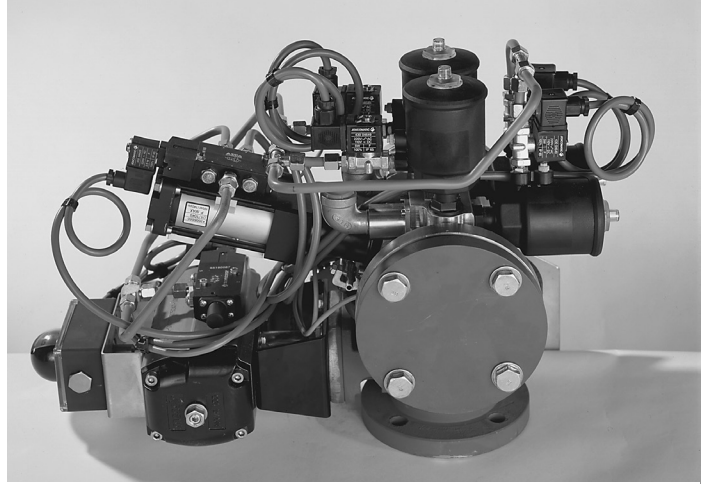
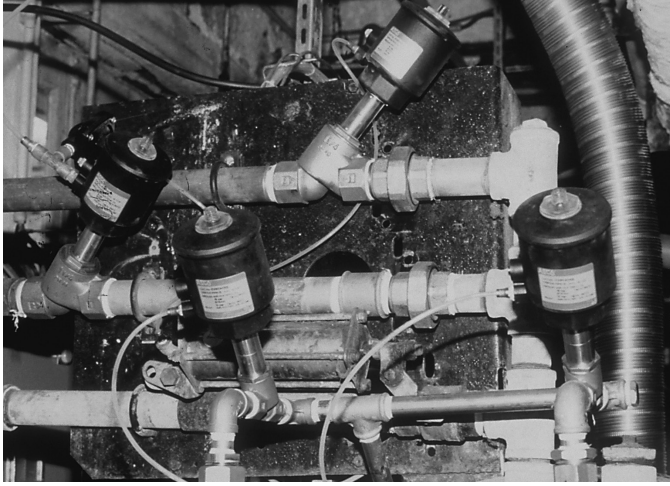
- 1/4, 90-125 mm operators, 3/2 pilots: [see page 51 \(www.asco.com\)](http://www.asco.com)
- D: series 314 1/4 - Ø3,2 mm, max. pilot pressure 10 bar
- E: series 356 1/4 - Ø1,6 mm, max. pilot pressure 10 bar

series 298 / 398	Response time (in seconds) for NC valve series 298/398 (6 bar pilot air)																	
	80 mm operator				100 mm operator				150 mm operator				200 mm operator					
	Ø (DN)	pilots		pilots		pilots		pilots		pilots		pilots		pilots		pilots		
	C1	F1	C1	F1	C1	F1	C1	F1	D	E	F1	D	E	F1	D	E	F1	
2/2 VALVES NC/NO and 3/2 U	2/2 NC <sup>(1)</sup>	3/2 U	2/2-3/2	2/2 NC <sup>(1)</sup>	3/2 U	2/2-3/2	2/2 NC <sup>(1)</sup>	3/2 U	2/2-3/2	2/2 NC <sup>(1)</sup>	3/2 U	2/2-3/2	2/2 NC <sup>(1)</sup>	3/2 U	2/2-3/2	2/2 NC <sup>(1)</sup>	3/2 U	2/2-3/2
1/2 (15)	0,05	0,07	0,35	0,74	0,69	0,65	-	-	-	-	-	-	-	-	-	-	-	
3/4 (20)	-	-	-	-	-	-	0,08	0,12	0,13	0,13	0,48	0,48	0,77	0,98	1,02	1,02	1,02	
1 (25)	-	-	-	-	-	-	0,08	0,12	0,13	0,13	0,48	0,48	0,77	0,98	1,02	1,02	1,02	
1 1/4 (32)	-	-	-	-	-	-	0,08	0,12	0,13	0,13	0,48	0,48	0,77	0,98	1,02	1,02	1,02	
1 1/2 (40)	-	-	-	-	-	-	0,08	0,12	0,13	0,13	0,48	0,48	0,77	0,98	1,02	1,02	1,02	
2 (50)	-	-	-	-	-	-	0,08	0,12	0,13	0,13	0,48	0,48	0,77	0,98	1,02	1,02	1,02	

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

- 1/8, 80-100 mm operators, 3/2 pilots: [see page 71 \(www.asco.com\)](http://www.asco.com) - 1/4, 150-200 mm, operators 3/2 pilots: [see page 73 \(www.asco.com\)](http://www.asco.com)
- C1: series 356 1/8 - Ø1,6 mm, max. pilot pressure 10 bar
- (<sup>1</sup>) Values for NC valves. For NO valves, interchange O and C values.
- F1, Positioner<sup>2</sup>: max. pilot pressure 8 bar <sup>(2)</sup> ([www.asco.com](http://www.asco.com))
- D: series 314 1/4 - Ø3,2 mm, max. pilot pressure 10 bar
- E: series 356 1/4 - Ø1,6 mm, max. pilot pressure 10 bar

<sup>(2)</sup> See section: "Proportional Valves"



1	2
3	4 5
6	7 8

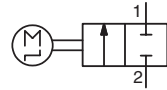
**Series 290 - 390**

- 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





## FEATURES

- High flow due to angled seat design
- Anti-waterhammer design (fluid entry under the disc)
- Actuator rotatable through 360°
- In option closing of the valve in case of power failure
- Fluid isolation between electrical actuator and valve body
- LED valves status display
- The valves satisfy Pressure Equipment Directive 2014/68/EU, article 3.3
- The motorised valves comply with the essential requirements of EMC Directive 2014/30/EU (EN-IEC 61000-6-2 and EN-IEC 61000-6-4) and Low Voltage Directive 2014/35/EU (EN-IEC 60730)
- Vacuum operation up to 10<sup>-2</sup> mbar
- The valves satisfy all relevant EC Directives and with the provisions of the Directive RoHS 2

## GENERAL

**Differential pressure** See «SPECIFICATIONS» [1 bar =100 kPa]  
**Maximum allowable pressure** 10 bar  
**Ambient temperature range** -10°C to +50°C

**Maximum viscosity** -10°C to +40°C (for steam at 145°C)  
**Actuating time** 600 cSt (mm<sup>2</sup>/s)  
 < 1,3 s (opening) / < 1,3 s (closing)

fluids (*)	temperature range (TS)	seal materials (*)
air and gas groups 1 & 2	-10°C to +90°C	NBR (nitrile)
water, oil, liquids groups 1 & 2		
steam	up to +145°C	FPM (fluoroelastomer)

## CONSTRUCTION

MATERIALS IN CONTACT WITH FLUID		
(*) Ensure that the compatibility of the fluids in contact with the materials is verified		
	NBR / PBT «K»	FPM / 316L «X»
<b>Valve body</b>	AISI 316L	AISI 316L
<b>Stuffing box housing</b>	PBT, GF reinforced	AISI 316L
<b>Stem valve</b>	AISI 316L	AISI 316L
<b>Stuffing box packing</b>	NBR	FPM
<b>Wiper seal</b>	NBR	FPM
<b>Disc seal</b>	NBR	FPM

## OTHER MATERIALS

<b>Top cover operator</b>	Translucent polyamide (PA)
<b>AC to DC housing (AC)</b>	PA66, GF reinforced

## ELECTRICAL CHARACTERISTICS

<b>Connector</b>	Spade plug (cable Ø 6-10 mm)
<b>Connector specification</b>	ISO 4400 / EN 175301-803, form A
<b>Motor consumption</b>	12 W in operation, 0 W hold Max. peak current: 0,7 A
<b>Visualisation valve (switching)</b>	LED
<b>Electrical safety (adapter AC to DC)</b>	IEC 335 (EN-IEC 60730), class 2
<b>Electrical enclosure protection</b>	IP65 (EN 60529)
<b>Standard voltages</b>	DC (=) : 24V ±10 %, max. ripple 5%
(EN-IEC 61131-2)	AC (~) : 110V to 250V / 50-60 Hz 24V to 48V ±10 % / 50-60 Hz

## RECOMMENDATION FOR MAXIMUM DUTY CYCLE

### FOR NBR / PBT «K» VERSION

<b>Ambient temperature: +20°C</b>	9 cycles/min <sup>(1)</sup>
<b>+50°C (max.)</b>	4 cycles/min <sup>(1)</sup>

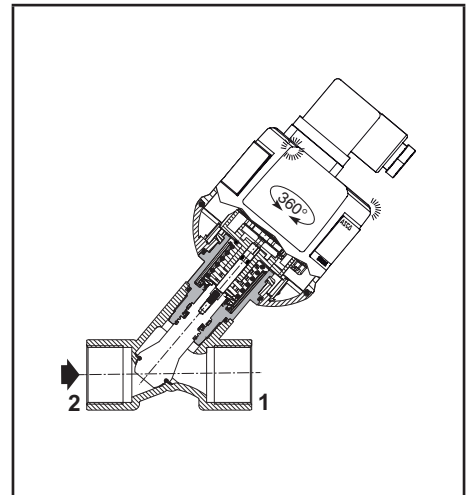
## RECOMMENDATION FOR MAXIMUM DUTY CYCLE

### FOR FPM / 316L «X» VERSION

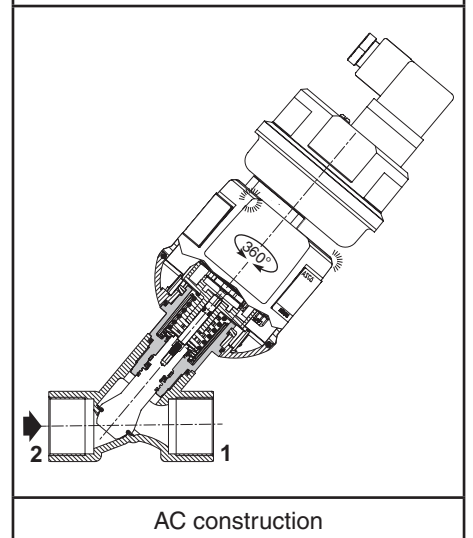
Ambient temperature:		fluid temp.:	
+20°C	9 cycles/min <sup>(1)</sup>	+20°C	
+50°C (max.)	4 cycles/min <sup>(1)</sup>	+50°C	
+50°C (max.)	2 cycles/min <sup>(1)</sup>	+120°C	
+40°C (max.)	2 cycles/min <sup>(1)</sup>	+145°C	

(\*) Ensure that the compatibility of the fluids in contact with the materials is verified.

<sup>(1)</sup> For other cycles, contact us.



DC construction



AC construction

**ACCESSORIES**

<b>AC to DC adapter:</b> 110V to 250V/50-60 Hz code: <b>P290CA430078001</b> 24V to 48V ±10 % / 50-60 Hz code: <b>P290CA438907001</b>
---

**OPTIONS**

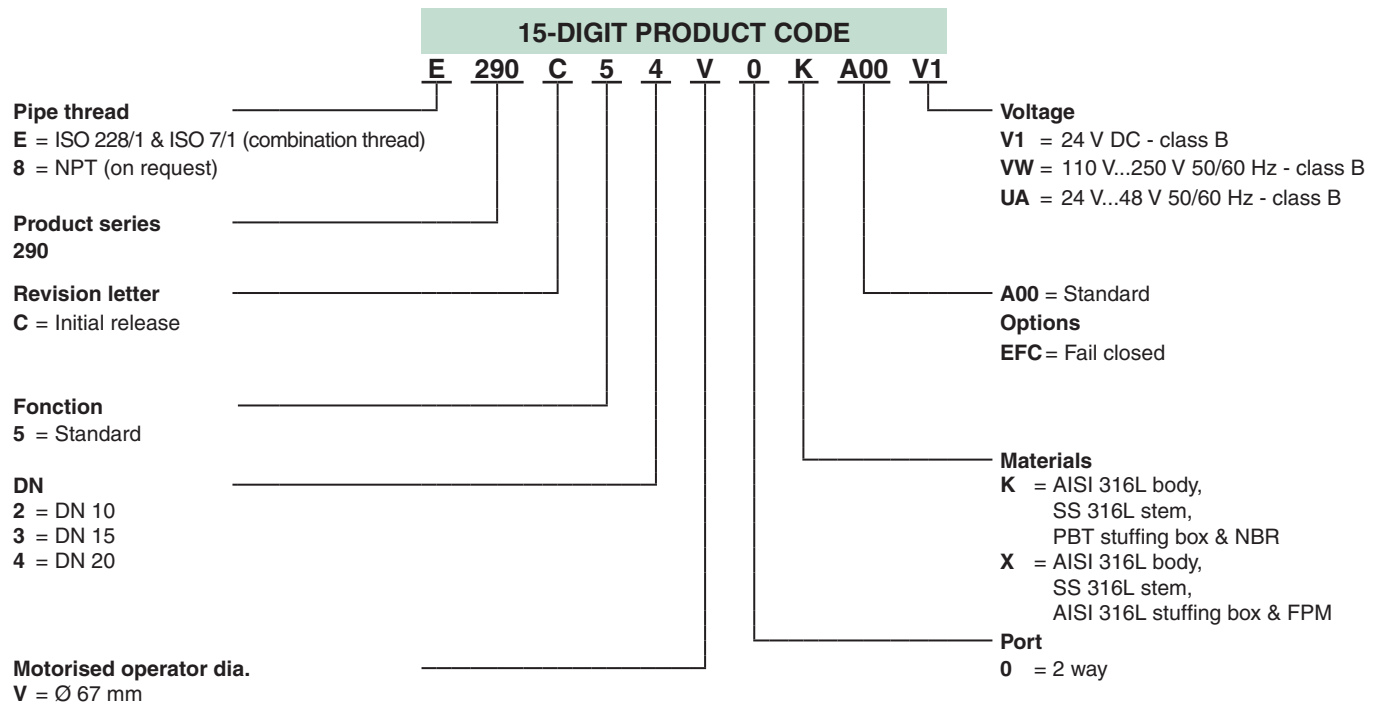
<b>Fail closed (closing of the valve in case of power failure)</b>
--

**SPECIFICATIONS**

piping (ISO 6708)		flow coefficient Kv		operating pressure differential (bar)			operator diameter (mm)	thread type	dimensions / type (1)	15-DIGIT PRODUCT CODE			
pipe size	DN	(m³/h)	(l/min)	min.	max.					basic code	voltage code		
					air, water, oil (*)	steam					24 V...48 V / 50-60 Hz	110 V...250 V / 50-60 Hz	24 V/DC
<b>Motorised valve, entry under the disc - NBR / PBT «K» version</b>													
3/8	10	2,7	45	0	6	-	67	G*	1	<b>E290C52V0KA00</b>			
1/2	15	3,8	63	0	5	-	67	G*	1	<b>UA</b>	<b>VW</b>	<b>V1</b>	
3/4	20	6	100	0	4	-	67	G*	1	<b>E290C54V0KA00</b>			
<b>Motorised valve, entry under the disc - FPM / 316L «X» version</b>													
3/8	10	2,7	45	0	6	4	67	G*	1	<b>E290C52V0XA00</b>			
1/2	15	3,8	63	0	5	4	67	G*	1	<b>UA</b>	<b>VW</b>	<b>V1</b>	
3/4	20	6	100	0	4	4	67	G*	1	<b>E290C54V0XA00</b>			

(1) For dimensions, see drawing(s) for each construction type on the following page(s).

(\*) Ensure that the compatibility of the fluids in contact with the materials is verified.



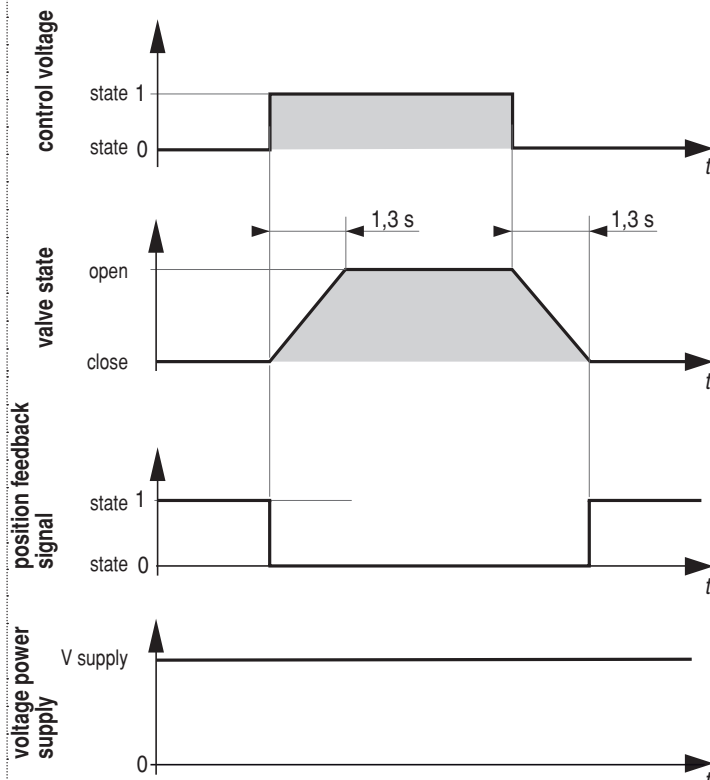
**INSTALLATION**

<ul style="list-style-type: none"> <li>The valves can be mounted in any position without affecting operation</li> <li>Pipe connections (G*) have standard combination thread according to ISO 228/1 and ISO 7/1</li> <li>Other pipe connections are available on request</li> <li>Installation/maintenance instructions are included with each valve</li> <li>2D/3D CAD models</li> <li>LED indicators for operating status display</li> </ul>
--

status	valve OPEN	green
	valve CLOSED	orange
	valve moves to open	green flashing
	valve moves to close	orange flashing

### OPERATING DIAGRAM

standard



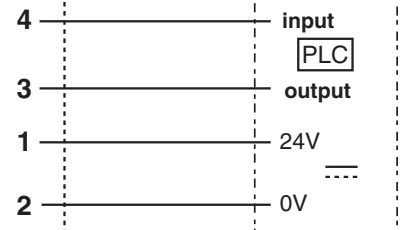
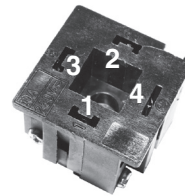
### WIRING DC

24 V ±10 % / DC

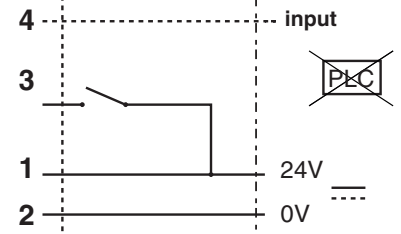
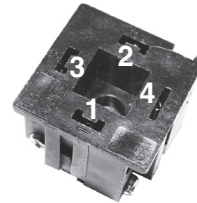


1	24 V / DC
2	0 V
3	control
4	feedback signal

With PLC

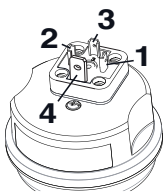


Without PLC



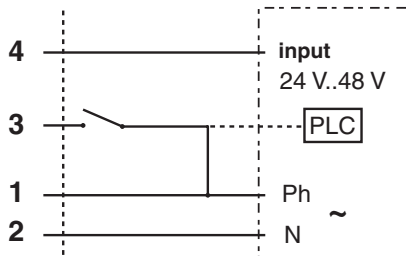
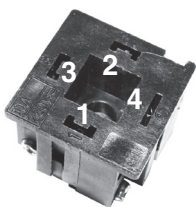
### WIRING AC

24 V...48 V ±10 % / AC 50/60 Hz

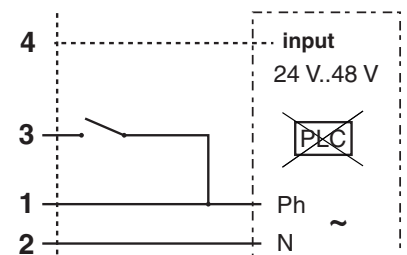
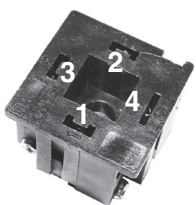


1	phase (Ph)
2	neutral (N)
3	control
4	feedback signal

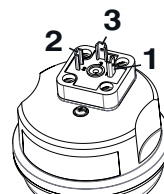
With PLC



Without PLC

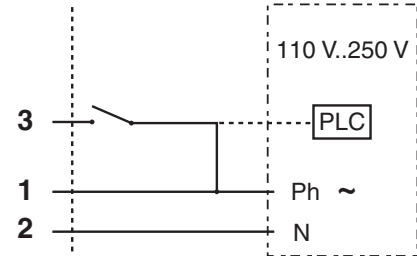
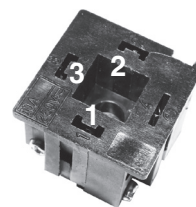


110 V...250 V / AC 50/60 Hz

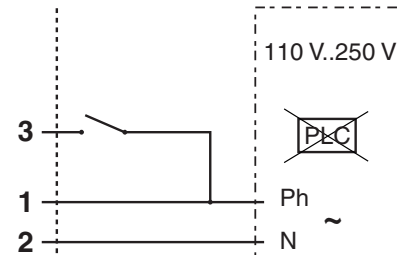
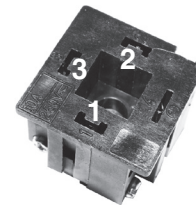


1	phase (Ph)
2	neutral (N)
3	control
-	-

With PLC

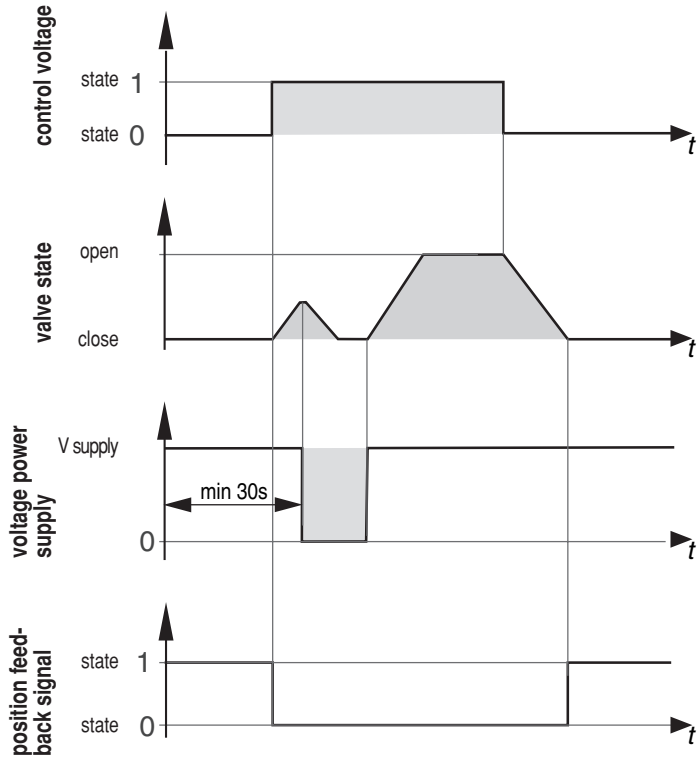


Without PLC



### OPERATING DIAGRAM

fail closed



(\*) Initialisation

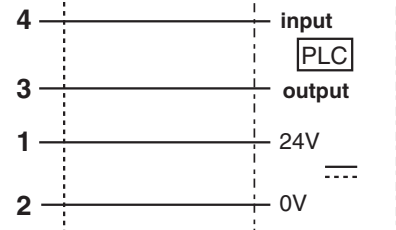
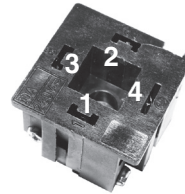
### WIRING DC

24 V ±10 % / DC

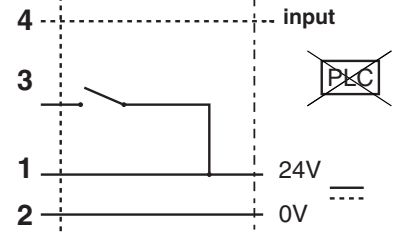
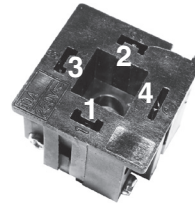


1	24 V / DC
2	0 V
3	control
4	feedback signal

With PLC

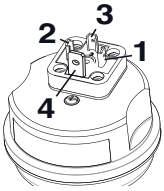


Without PLC



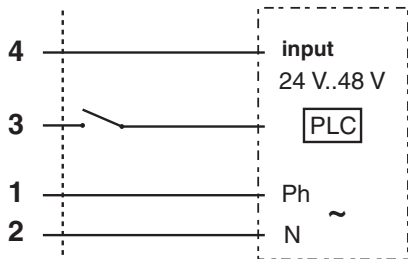
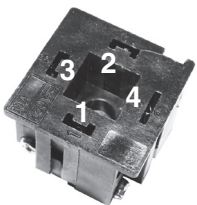
### WIRING AC

24 V...48 V ±10 % / AC 50/60 Hz

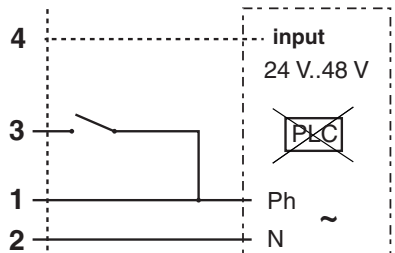
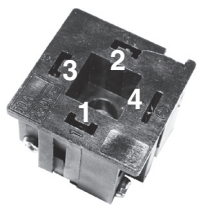


1	phase (Ph)
2	neutral (N)
3	control
4	feedback signal

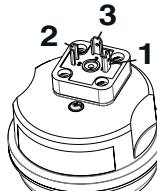
With PLC



Without PLC

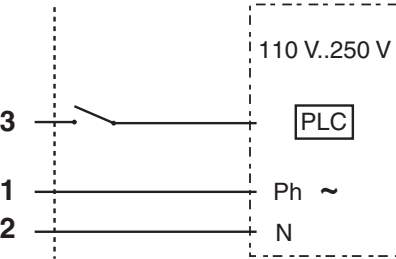
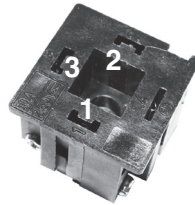


110 V...250 V / AC 50/60 Hz

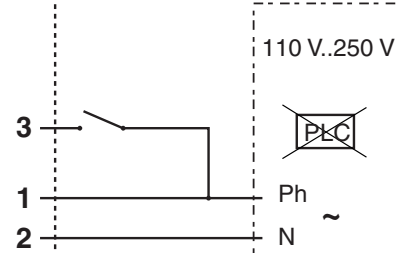
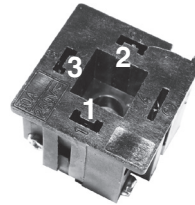


1	phase (Ph)
2	neutral (N)
3	control
-	-

With PLC



Without PLC



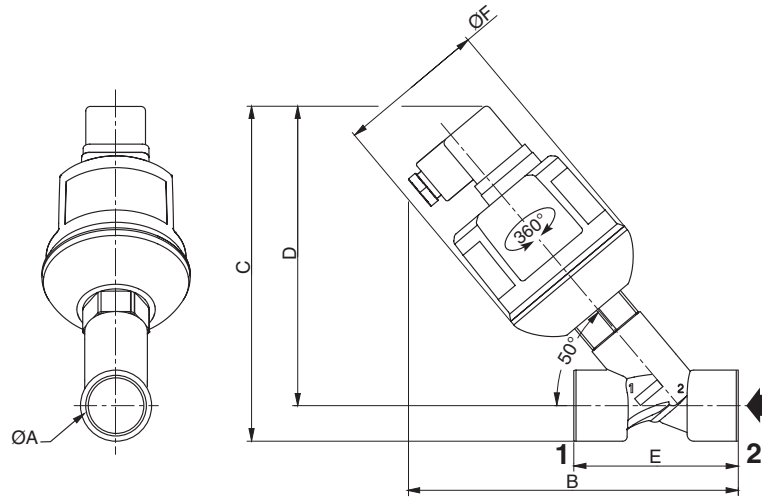


### DIMENSIONS (mm), WEIGHT (kg)



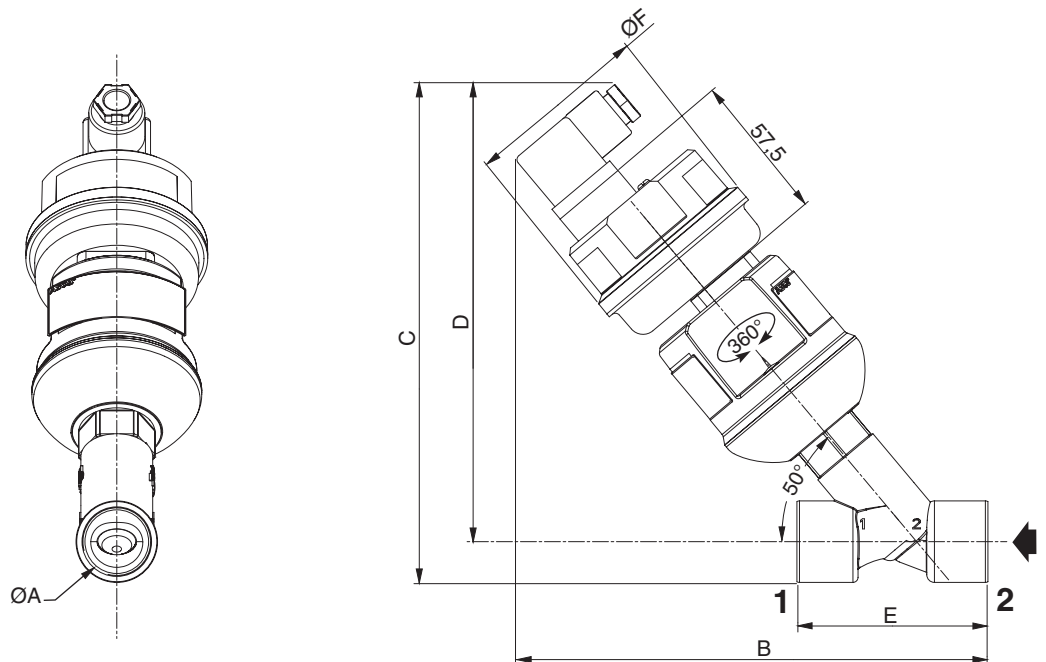
#### TYPE 01

DC version  
67 mm motorised operator  
Fluid entry: under the disc at 2  
ISO 4400 connector



#### TYPE 02

AC version (accessories)  
67 mm motorised operator with AC adapter  
Fluid entry: under the disc at 2  
ISO 4400 connector



type	Ø A	B	C	D	E	Ø F	weight <sup>(1)</sup>	
							NBR / PBT «K»	FPM / 316L «X»
<b>DC version</b>								
01	3/8	135	141	129	55	67	0,40	0,45
	1/2	142	145	131	65	67	0,45	0,55
	3/4	150	152	136	75	67	0,55	0,65
<b>AC version</b>								
02	3/8	171	189	175	55	71	0,50	0,60
	1/2	178	191	177	65	71	0,55	0,65
	3/4	186	196	180	75	71	0,65	0,75

<sup>(1)</sup> Incl. connector.

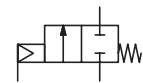




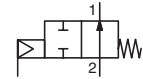
# VALVES

pressure operated  
bronze or stainless steel body  
threaded ports, 3/8 to 2 1/2

NC



NO



2/2  
Series  
E290

## FEATURES

- High flow due to angled seat design
- Anti-waterhammer design (fluid entry under the disc)
- Vacuum operation up to 10<sup>2</sup> mbar
- Wide range of piston-type operators (32 - 50- 63 - 90 - 125 mm dia.) rotatable through 360°, for maximum performance at different minimum pilot pressures
- High performance, maintenance-free stuffing box
- The valves satisfy Pressure Equipment Directive 2014/68/EU, category 1 (DN > 25) or article 4.3 (DN ≤ 25)
- The valves in conformity with IEC 61508 Standard (2010 route 2<sub>H</sub> version) certified with integrity levels: SIL 2 for HFT = 0

## GENERAL

Differential pressure	See «SPECIFICATIONS» [1 bar =100 kPa]
Maximum allowable pressure	16 bar
Ambient temperature range	-10°C to +60°C
Maximum viscosity	600 cSt (mm <sup>2</sup> /s)
Pilot fluid	Filtered air or water <sup>(1)</sup>
Max. pilot pressure	10 bar
Min. pilot pressure	See below and following page
Pilot fluid temperature	-10°C to +60°C
Response time	See page 7 ( <a href="http://www.asco.com">www.asco.com</a> )



fluids (*)	temperature range	disc seal (*)
DN ≤ 50: air and gas groups 1 & 2 DN 65: air and gas group 2 all DN: water, oil, liquids groups 1 & 2 and steam	- 10°C to + 184°C	PTFE

## MATERIALS IN CONTACT WITH FLUID

(\*) Ensure that the compatibility of the fluids in contact with the materials is verified

	Bronze body	Stainless steel body
Valve body	Bronze	AISI 316L
Stuffing box housing	Brass	AISI 316L
Stem	Stainless steel	Stainless steel
Disc	Brass	Stainless steel
Stuffing box packing	PTFE chevrons	PTFE chevrons
Wiper seal	FPM	FPM
Disc seal	PTFE	PTFE
Valve body seal	PTFE	PTFE

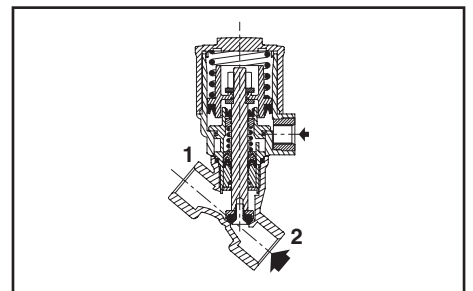
## OTHER MATERIALS

Operator	Glass fibre filled PA
Optical position indicator	PA 12, supplied standard on valves with 63, 90 and 125 mm operators

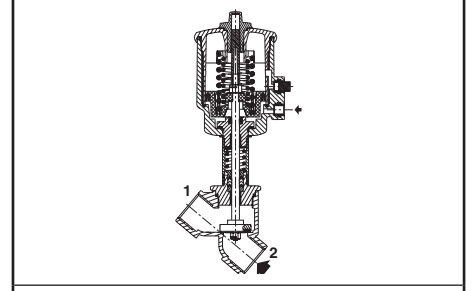
<sup>(1)</sup> For dia. 32, 50, 63, 90 and 125 mm operators: At service fluid temperatures inside the valve body above 100°C, it is prohibited to pilot the valve with water.

## SPECIFICATIONS

piping (ISO 6708)		flow coefficient Kv		pilot pressure (bar)		operating pressure differential (bar)				operator diameter (mm)	catalogue number	
pipe size (G*)	DN	(m <sup>3</sup> /h)	(l/min)	min.	max.	min.	max.				bronze	stainless steel
							air, inert gas, aggressive fluids (*)	water, oil, liquids, aggressive liquids (*)	steam (*) (≤184°C)			
<b>NC - Normally closed, entry under the disc <sup>(1)</sup></b>												
3/8	10	2,8	47	4	10	0	16	16	10	32	-	E290A791
		4,1	68	4	10	0	12	12	10	32	-	E290A792
1/2	15	4,9	82	4	10	0	16	16	10	50	E290A384	E290A393
				2,5	10	0	16	16	10	63	E290B002	E290B045
3/4	20	6,5	108	4	10	0	6	6	6	32	-	E290A793
				10	10	0	10	10	10	50	E290A385	E290A394
				16	16	0	16	16	10	63	E290B005	E290B048
				2,5	10	0	12	12	10	63	E290B004	E290B047
1	25	12,8	213	4	10	0	6	6	6	50	E290A386	E290A395
				10	10	0	10	10	10	63	E290B010	E290B053
				16	16	0	16	16	10	90	E290B011	E290B054
				2,5	10	0	6	6	6	63	E290B008	E290B051
1 1/4	32	27	450	4	10	0	12	12	10	90	E290A016	E290A059
				12	12	0	12	12	10	90	E290A017	E290A060
				3	3	0	3	3	3	63	E290A014	E290A057
				7	7	0	7	7	7	90	E290A015	E290A058
				4	10	0	16	16	10	125	E290A642	E290A646
				2,5	10	0	16	16	10	125	E290A641	E290A645



NC function, entry under the disc, 32 and 50 mm operators



NC function, entry under the disc, 63, 90 and 125 mm operators

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## SPECIFICATIONS

piping (ISO 6708)		flow coefficient Kv		pilot pressure (bar)		operating pressure differential (bar)			operator diameter (mm)	catalogue number		
pipe size (G*)	DN	(m³/h)	(l/min)	min.		max.				bronze	stainless steel	
				min.	max.	air, inert gas, aggressive fluids (*)	water, oil, liquids, aggressive liquids (*)	steam (*) (≤184°C)				
<b>NC - Normally closed, entry under the disc <sup>(1)</sup></b>												
1 1/2	40	45	750	4	10	0	4	4	4	63	E290A020	E290A063
				2,5	10	0	8	8	8	90	E290A021	E290A064
		48	800	4	10	0	4	4	4	90	E290A019	E290A062
				2,5	10	0	16	16	10	125	E290A482	E290A495
2	50	59	983	4	10	0	2,5	2,5	2,5	63	E290A024	E290A067
				2,5	10	0	6	6	6	90	E290A025	E290A068
		66	1100	4	10	0	2,5	2,5	2,5	90	E290A023	E290A066
				2,5	10	0	10	10	10	125	E290A485	E290A498
		94	1567	4	10	0	5	5	5	125	E290A484	-
				2,5	10	0	2	2	2	90	E290A487	E290A500
111	1850	4	10	0	6	6	6	125	E290A488	E290A501		
		2,5	10	0	6	6	6	125	E290A488	E290A501		
<b>NO - Normally open, entry under the disc</b>												
3/8	10	2,8	47	IX (*)	10	0	16	16	10	32	-	E290A794
1/2	15	4,1	68	IX (*)	10	0	16	16	10	32	-	E290A795
		4,9	82	I (*)	10	0	16	16	10	50	E290A387	E290A396
II (*)	10			0	16	16	10	63	E290B026	E290B069		
3/4	20	6,5	108	IX (*)	10	0	16	16	10	32	-	E290A796
		9,4	157	I (*)	10	0	16	16	10	50	E290A388	E290A397
II (*)	10			0	16	16	10	63	E290B027	E290B070		
1	25	12,8	213	I (*)	10	0	16	16	10	50	E290A389	-
		16,5	275	II (*)	10	0	16	16	10	63	E290B028	E290B071
III (*)	10			0	16	16	10	90	E290B029	E290B072		
1 1/4	32	27	450	II (*)	10	0	16	16	10	63	E290A030	E290A073
		29	483	III (*)	10	0	16	16	10	90	E290A031	E290A074
IV (*)	10			0	16	16	10	125	E290A643	E290A647		
1 1/2	40	45	750	II (*)	10	0	11	11	10	63	E290A032	E290A075
		48	800	III (*)	10	0	16	16	10	90	E290A033	E290A076
IV (*)	10			0	16	16	10	125	E290A489	E290A502		
2	50	59	983	II (*)	10	0	7	7	7	63	E290A034	E290A077
		66	1100	III (*)	10	0	13	13	10	90	E290A035	E290A078
IV (*)	10			0	16	16	10	125	E290A490	E290A503		
2 1/2	65	94	1567	III (*)	10	0	7	7	7	90	E290A491	E290A504
		111	1850	IV (*)	10	0	16	16	10	125	E290A492	E290A505
<b>NC - Normally closed, entry above the disc (version recommended for rapid-cycling steam applications)</b>												
3/8	10	2,8	47	X (*)	10	0	10	-	10	32	-	E290A797
1/2	15	4,1	68	X (*)	10	0	10	-	10	32	-	E290A798
		4,9	82	V (*)	10	0	10	-	10	50	E290A390	E290A399
VI (*)	10			0	10	-	10	63	E290B036	E290B079		
3/4	20	6,5	108	X (*)	10	0	10	-	10	32	-	E290A799
		9,4	157	V (*)	10	0	10	-	10	50	E290A391	E290A400
VI (*)	10			0	10	-	10	63	E290B037	E290B080		
1	25	12,8	213	V (*)	10	0	10	-	10	50	E290A392	E290A401
		16,5	275	VI (*)	10	0	10	-	10	63	E290B038	E290B081
VI (*)	10			0	10	-	10	63	E290A039	E290A082		
1 1/4	32	27	450	VII (*)	10	0	10	-	10	90	E290A136	E290A137
1 1/2	40	45	750	VI (*)	10	0	10	-	10	63	E290A040	E290A083
				VII (*)	10	0	10	-	10	90	E290A041	E290A084
2	50	59	983	VI (*)	10	0	9	-	9	63	E290A042	E290A085
				VII (*)	10	0	10	-	10	90	E290A043	E290A086
2 1/2	65	94	1567	VII (*)	10	0	10	-	10	90	E290A623	E290A625
		111	1850	VIII (*)	10	0	10	-	10	125	E290A624	-

 (\*) Minimum pilot pressure varies with differential pressure, see page: 7 ([www.asco.com](http://www.asco.com))

(1) Calculation of the minimum pilot pressure at a ΔP of max. 10 bar with allowable backpressure (backpressure not recommended with liquids as waterhammer may occur).

 - 32 and 50 mm operators, 4 bar minimum pilot pressure version: add 2 bar to the minimum pilot pressure of chart V or X [see page: 7 ([www.asco.com](http://www.asco.com))]

 - 63, 90 and 125 mm operators, 4 bar minimum pilot pressure version: add 1,5 bar to the minimum pilot pressure of chart VI, VII or VIII [see page: 7 ([www.asco.com](http://www.asco.com))]

### OPTIONS AND ACCESSORIES [see pages: 37 ([www.asco.com](http://www.asco.com)) / 43 ([www.asco.com](http://www.asco.com))]

- Signaling box or compact signaling unit
- Stroke limiter for opening
- Manual safety device
- Optical position indicator on 32-50 mm operators, NC function
- Adapter plate for NAMUR pad mounting pilot (63-90-125 mm operators only)
- Oxygen service (except DN 65), pressure limited to 15 bar, temperature limited to + 60°C
- Vacuum applications up to 1,33 10<sup>-3</sup> mbar
- NET-INOX passivation treatment on stainless steel body valve
- ATEX 2014/34/EU versions for potentially explosive atmospheres ([www.asco.com](http://www.asco.com))
- Other pipe connections are available on request

### INSTALLATION

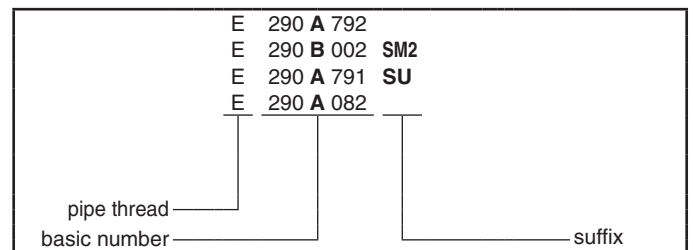
- The valves can be mounted in any position without affecting operation
- Compatible with ASTM 1, 2 and 3 oils
- Check temperature range of valve body and solenoid pilot valves for suitability. For probability of failure, contact us
- Pipe connections (G\*) have standard combination thread according to ISO 228/1 and ISO 7/1
- Installation/maintenance instructions are included with each valve

### SPARE PARTS KITS

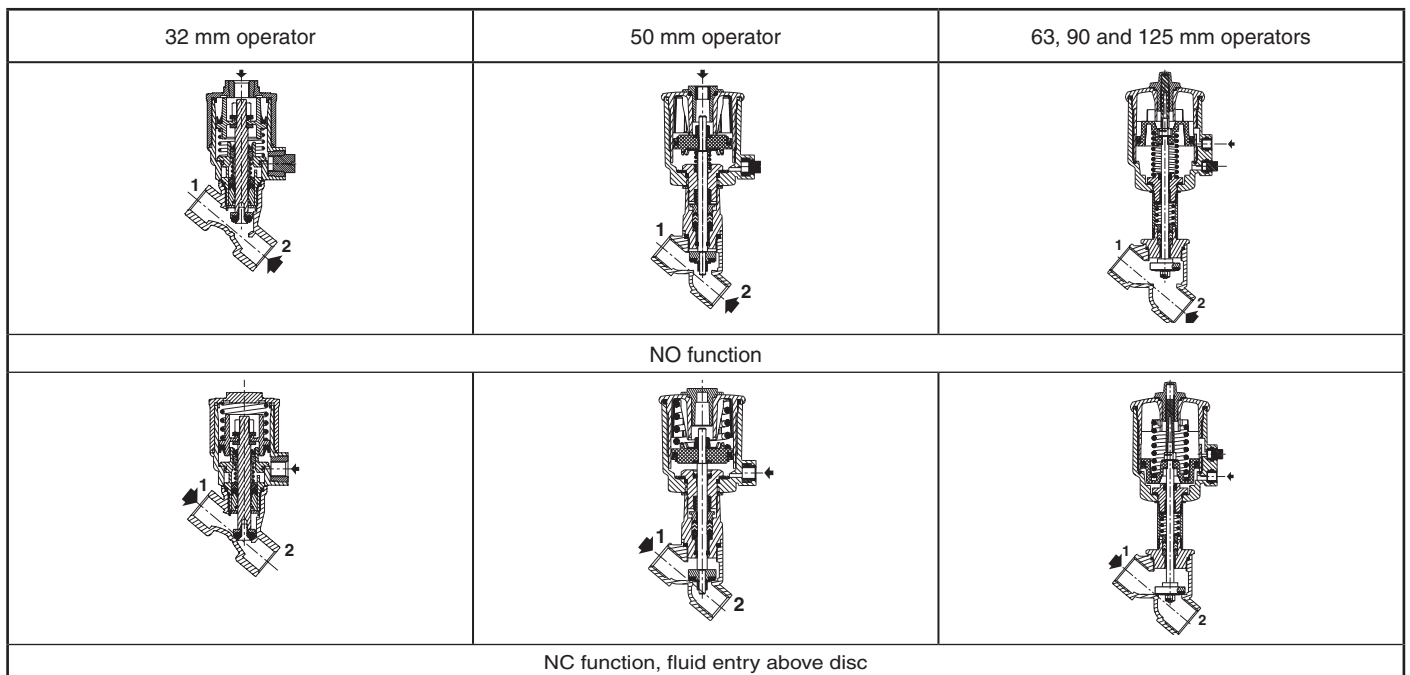
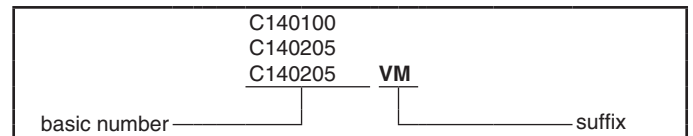
DN	spare parts kit no.	
	Ø 32 mm	Ø 50-63-90-125 mm
10	<b>C140100</b>	-
15	<b>C140101</b>	<b>C131204</b> <sup>(1)</sup>
20	<b>C140102</b>	<b>C131205</b> <sup>(1)</sup>
25	-	<b>C131206</b> <sup>(1)</sup>
32	-	<b>C131207</b> <sup>(1)</sup>
40	-	<b>C131208</b> <sup>(1)</sup>
50	-	<b>C131209</b> <sup>(1)</sup>
65	-	<b>C131622</b> <sup>(1)</sup>

<sup>(1)</sup> Standard suffix VM also applies to kits. [see page: 37 ([www.asco.com](http://www.asco.com))].  
 - Not available

### ORDERING EXAMPLES:



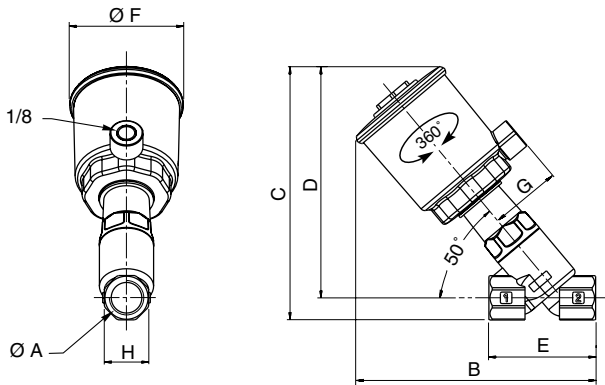
### ORDERING EXAMPLES KITS:



### DIMENSIONS (mm), WEIGHT (kg)

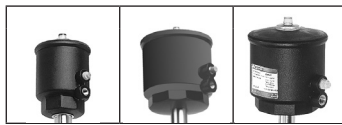


**TYPE 01-02**  
32 and 50 mm operators  
Fluid entry:  
under the disc at 2  
above the disc at 1

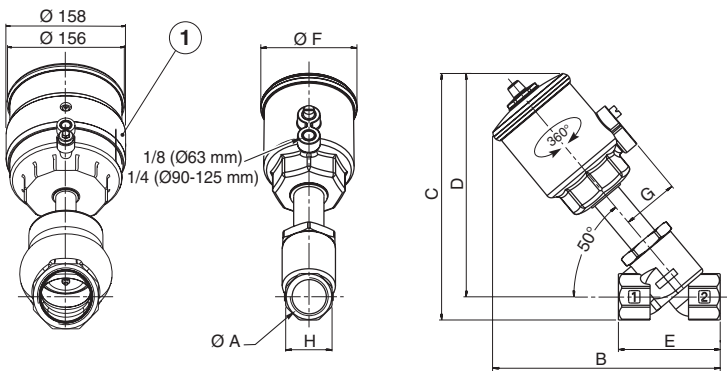


type	operator diameter	ØA	B	C	D	E	ØF	G	ØH	weight <sup>(1)</sup>
01	32 mm	3/8	92	93	81,5	55	43,5	27	23,5	0,35
		1/2	99	97	83,5	65	43,5	27	28	0,4
		3/4	107	104,5	88	75	43,5	27	30	0,45
02	50 mm	1/2	142	154,5	141	65	69	43	27	0,9
		3/4	150,5	159	143	75	69	43	32	1
		1	155	165	145	90	69	43	41	1,4

<sup>(1)</sup> Weight of valve without pilot.  
Solenoid pilot valves, see page: [49 \(www.asco.com\)](http://www.asco.com) [32 and 50 mm operators].



**TYPE 03-04-05**  
63, 90 and 125 mm operators  
Fluid entry:  
under the disc at 2  
above the disc at 1



① Operator dia. 125 mm, NO function

type	operator diameter	ØA	B	C	D	E	ØF	G	ØH	weight <sup>(1)</sup>
03	63 mm	1/2	170	182	169	65	85	50,5	27	1,2
		3/4	175	185	170	75	85	50,5	32	1,3
		1	179	192	172	90	85	50,5	41	1,7
		1 1/4	217	229	204	110	85	50,5	50	2,1
		1 1/2	224	245	215	120	85	50,5	60	2,9
		2	249	259	224	150	85	50,5	70	3,7
04	90 mm	1	197	209	189	90	118	67	41	2,3
		1 1/4	236	246	221	110	118	67	50	2,7
		1 1/2	243	262	232	120	118	67	60	3,5
		2	267	276	241	150	118	67	70	4,3
05	125 mm	2 1/2	299	300	257	190	118	67	86	6,3
		1 1/4	284	298	273	110	156	86	50	5,2
		1 1/2	291	313,5	283,5	120	156	86	60	6
		2	315	328	293	150	156	86	70	6,8
		2 1/2	347	352	308	190	156	86	86	8,9

<sup>(1)</sup> Weight of valve without pilot. Add 0,2 for dia. 125 mm operator NO.  
Solenoid pilot valves, see pages: [49 \(www.asco.com\)](http://www.asco.com) [63 mm operator] / [51 \(www.asco.com\)](http://www.asco.com) [90 and 125 mm operators]

All leaflets are available on: [www.asco.com](http://www.asco.com)

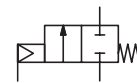




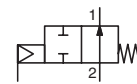
# VALVES

pressure operated  
Food contact version  
stainless steel body, threaded ports, 3/8 to 2 1/2

NC



NO



2/2  
Series  
E290

## FEATURES

- Valve in conformity with Regulation (EC) 1935-2004, the material of the wetted parts are listed in the chart of the Annex I of Regulation (EC) 1935/2004)
- All the material of the wetted parts are conform with FDA CFR21
- High flow due to angled seat design
- Anti-waterhammer design (fluid entry under the disc)
- Vacuum operation up to  $10^{-2}$  mbar
- Wide range of piston-type operators (32 - 50- 63 - 90 -125 mm dia.) rotatable through 360°, for maximum performance at different minimum pilot pressures
- High performance, maintenance-free stuffing box
- The valves satisfy Pressure Equipment Directive 2014/68/EU, category 1 (DN > 25) or article 4.3 (DN ≤ 25)
- The valves in conformity with IEC 61508 Standard (2010 route 2<sub>H</sub> version) certified with integrity levels: SIL 2 for HFT = 0
- Valve in conformity with the provisions of the directive RoHS 2 (EU 2001/65)

## GENERAL

Differential pressure	See «SPECIFICATIONS» [1 bar =100 kPa]
Maximum allowable pressure	16 bar
Ambient temperature range	-10°C to +60°C
Maximum viscosity	600 cSt (mm <sup>2</sup> /s)
Pilot fluid	Filtered air or water <sup>(1)</sup>
Max. pilot pressure	10 bar
Min. pilot pressure	See below and following page
Pilot fluid temperature	-10°C to +60°C
Response time	See page 7 ( <a href="http://www.asco.com">www.asco.com</a> )

fluids (*)	temperature range	disc seal (*)
DN ≤ 50: air and gas groups 1 & 2 DN 65: air and gas group 2 all DN: water, oil, liquids groups 1 & 2 and steam	- 10°C to + 184°C	PTFE

## MATERIALS IN CONTACT WITH FLUID

(\*) Ensure that the compatibility of the fluids in contact with the materials is verified

	Stainless steel body	All AISI 316L
Valve body	AISI 316L	AISI 316L <sup>(2)</sup>
Stuffing box housing	AISI 316L	AISI 316L <sup>(2)</sup>
Stem	Stainless steel	AISI 316L
Disc	Stainless steel	AISI 316L
Stuffing box packing	PTFE chevrons	PTFE chevrons
Wiper seal	PTFE	PTFE
Disc seal	PTFE	PTFE
Valve body seal	PTFE	PTFE

## OTHER MATERIALS

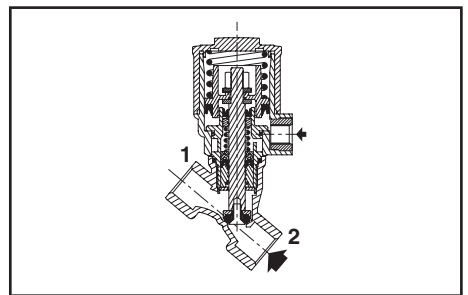
Operator	Glass fibre filled PA
Optical position indicator	PA 12, supplied standard on valves with 63, 90 and 125 mm operators

<sup>(1)</sup> For dia. 32, 50, 63, 90 and 125 mm operators: At service fluid temperatures inside the valve body above 100°C, it is prohibited to pilot the valve with water.

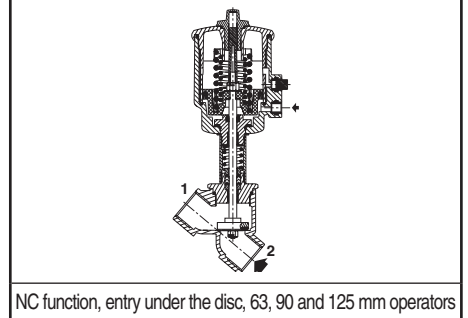
<sup>(2)</sup> NET-INOX passivation treatment included.

## SPECIFICATIONS

piping (ISO 6708)	flow coefficient Kv	pilot pressure (bar)	operating pressure differential (bar)						operator diameter	catalogue number		
			max.							stainless steel	all AISI 316L	
			min.	air, inert gas, aggressive fluids (*)	water, oil, liquids, aggressive liquids (*)	steam (*) (≤184°C)						
pipe size (G <sup>+</sup> )	DN	(m <sup>3</sup> /h) (l/min)	min.	max.	min.	max.	max.	(mm)				
<b>NC - Normally closed, entry under the disc <sup>(1)</sup></b>												
3/8	10	2,8	47	4	10	0	16	16	10	32	E290A791FB	E290A845FB
		4,1	68	4	10	0	12	12	10	32	E290A792FB	E290A846FB
1/2	15	4,9	82	4	10	0	16	16	10	50	E290A393FB	E290A402FB
				2,5	10	0	16	16	10	63	E290B045FB	E290B088FB
		6,5	108	4	10	0	6	6	6	32	E290A793FB	E290A847FB
3/4	20	9,4	157	4	10	0	10	10	10	50	E290A394FB	E290A403FB
							16	16	10	63	E290B048FB	E290B091FB
		12,8	213	4	10	0	6	6	6	50	E290A395FB	E290A404FB
1	25	16,5	275	4	10	0	10	10	10	63	E290B053FB	E290B096FB
							16	16	10	90	E290B054FB	E290B097FB
		27	450	4	10	0	6	6	6	63	E290A059FB	E290A102FB
1 1/4	32	29	483	4	10	0	12	12	10	90	E290A060FB	E290A103FB
							16	16	10	125	E290A646FB	E290A650FB
		2,5	10	0	16	16	10	125	E290A645FB	E290A649FB		



NC function, entry under the disc, 32 and 50 mm operators



NC function, entry under the disc, 63, 90 and 125 mm operators

## SPECIFICATIONS

piping (ISO 6708)		flow coefficient Kv		pilot pressure (bar)		operating pressure differential (bar)			operator diameter	catalogue number		
pipe size (G*)	DN	(m <sup>3</sup> /h) (l/min)		min.	max.	min.	max.			(mm)	stainless steel	all AISI 316L
							air, inert gas, aggressive fluids (*)	water, oil, liquids, aggressive liquids (*)	steam (*) (≤184°C)			
<b>NC - Normally closed, entry under the disc <sup>(1)</sup></b>												
1 1/2	40	45	750	4	10	0	4	4	4	63	E290A063FB	E290A106FB
		48	800	4	10	0	8	8	8	90	E290A064FB	E290A107FB
				2,5	10	0	16	16	10	125	E290A495FB	E290A508FB
2	50	59	983	4	10	0	10	10	10	125	E290A494FB	E290A507FB
		66	1100	2,5	10	0	2,5	2,5	2,5	63	E290A067FB	E290A110FB
				6	10	0	6	6	6	90	E290A068FB	E290A111FB
2 1/2	65	94	1567	4	10	0	10	10	10	125	E290A498FB	E290A511FB
		111	1850	4	10	0	2	2	2	90	E290A500FB	E290A513FB
				6	10	0	6	6	6	125	E290A501FB	E290A514FB
<b>NO - Normally open, entry under the disc</b>												
3/8	10	2,8	47	IX (*)	10	0	16	16	10	32	E290A794FB	E290A848FB
1/2	15	4,1	68	IX (*)	10	0	16	16	10	32	E290A795FB	E290A849FB
		4,9	82	I (*)	10	0	16	16	10	50	E290A396FB	E290A405FB
3/4	20	6,5	108	IX (*)	10	0	16	16	10	32	E290A796FB	E290A850FB
		9,4	157	I (*)	10	0	16	16	10	50	E290A397FB	E290A406FB
1	25			16,5	275	II (*)	10	0	16	16	10	63
		II (*)	10			0	16	16	10	63	E290B071FB	E290B114FB
		III (*)	10			0	16	16	10	90	E290B072FB	E290B115FB
1 1/4	32	27	450	II (*)	10	0	16	16	10	63	E290A073FB	E290A116FB
				III (*)	10	0	16	16	10	90	E290A074FB	E290A117FB
1 1/2	40	45	750	IV (*)	10	0	16	16	10	125	E290A647FB	E290A651FB
				II (*)	10	0	11	11	10	63	E290A075FB	E290A118FB
2	50	59	983	III (*)	10	0	16	16	10	90	E290A076FB	E290A119FB
				IV (*)	10	0	16	16	10	125	E290A502FB	E290A515FB
				II (*)	10	0	7	7	63	E290A077FB	E290A120FB	
2 1/2	65	66	1100	III (*)	10	0	13	13	90	E290A078FB	E290A121FB	
				IV (*)	10	0	16	16	125	E290A503FB	E290A516FB	
				94	1567	III (*)	10	0	7	7	90	E290A504FB
111	1850	IV (*)	10	0	16	16	10	125	E290A505FB	E290A518FB		
<b>NC - Normally closed, entry above the disc (version recommended for rapid-cycling steam applications)</b>												
3/8	10	2,8	47	X (*)	10	0	10	-	10	32	E290A797FB	-
1/2	15	4,1	68	X (*)	10	0	10	-	10	32	E290A798FB	-
		4,9	82	V (*)	10	0	10	-	10	50	E290A399FB	-
3/4	20	6,5	108	VI (*)	10	0	10	-	10	63	E290B079FB	-
		9,4	157	X (*)	10	0	10	-	10	32	E290A799FB	-
1	25			12,8	213	V (*)	10	0	10	-	10	50
		VI (*)	10			0	10	-	10	63	E290A401FB	-
		VI (*)	10			0	10	-	10	63	E290B081FB	-
1 1/4	32	27	450	VI (*)	10	0	10	-	10	63	E290A082FB	-
				VII (*)	10	0	10	-	10	90	E290A137FB	-
1 1/2	40	45	750	VI (*)	10	0	10	-	10	63	E290A083FB	-
				VII (*)	10	0	10	-	10	90	E290A084FB	-
2	50	59	983	VI (*)	10	0	9	-	9	63	E290A085FB	-
				VII (*)	10	0	10	-	10	90	E290A086FB	-
2 1/2	65	94	1567	VII (*)	10	0	10	-	10	90	E290A625FB	-

 (\*) Minimum pilot pressure varies with differential pressure, see page: 7 ([www.asco.com](http://www.asco.com))

(1) Calculation of the minimum pilot pressure at a ΔP of max. 10 bar with allowable backpressure (backpressure not recommended with liquids as waterhammer may occur).

 - 32 and 50 mm operators, 4 bar minimum pilot pressure version: add 2 bar to the minimum pilot pressure of chart V or X [see page: 7 ([www.asco.com](http://www.asco.com))]

 - 63, 90 and 125 mm operators, 4 bar minimum pilot pressure version: add 1,5 bar to the minimum pilot pressure of chart VI, VII or VIII [see page: 7 ([www.asco.com](http://www.asco.com))]

### OPTIONS AND ACCESSORIES [see pages: 37 ([www.asco.com](http://www.asco.com)) / 43 ([www.asco.com](http://www.asco.com))]

- Signaling box or compact signaling unit
- Stroke limiter for opening
- Manual safety device
- Optical position indicator on 32-50 mm operators, NC function
- Adapter plate for NAMUR pad mounting pilot (63-90-125 mm operators only)
- NET-INOX passivation treatment on stainless steel body valve
- ATEX 2014/34/EU versions for potentially explosive atmospheres ([www.asco.com](http://www.asco.com))
- Other pipe connections are available on request

### INSTALLATION

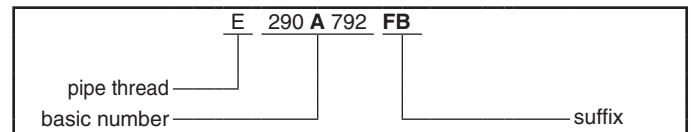
- The valves can be mounted in any position without affecting operation
- Compatible with ASTM 1, 2 and 3 oils
- Check temperature range of valve body and solenoid pilot valves for suitability. For probability of failure, contact us
- Pipe connections (G\*) have standard combination thread according to ISO 228/1 and ISO 7/1
- Installation/maintenance instructions are included with each valve

### SPARE PARTS KITS

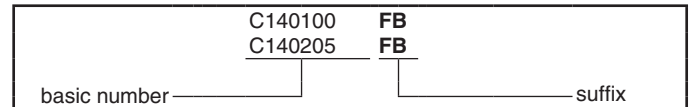
DN	spare parts kit no.	
	Ø 32 mm	Ø 50-63-90-125 mm
10	<b>C140100FB</b>	-
15	<b>C140101FB</b>	<b>C131204FB</b>
20	<b>C140102FB</b>	<b>C131205FB</b>
25	-	<b>C131206FB</b>
32	-	<b>C131207FB</b>
40	-	<b>C131208FB</b>
50	-	<b>C131209FB</b>
65	-	<b>C131622FB</b>

- Not available

### ORDERING EXAMPLES:



### ORDERING EXAMPLES KITS:

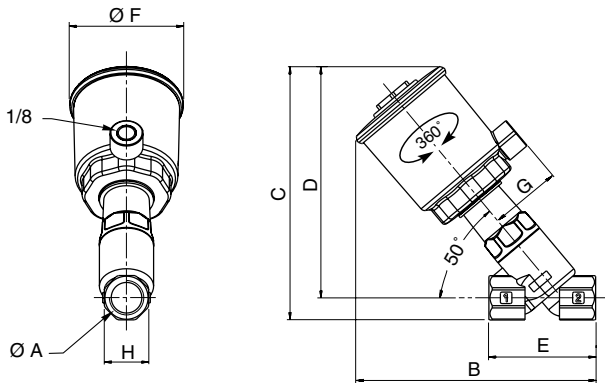


32 mm operator	50 mm operator	63, 90 and 125 mm operators
NO function		
NC function, fluid entry above disc		

### DIMENSIONS (mm), WEIGHT (kg)

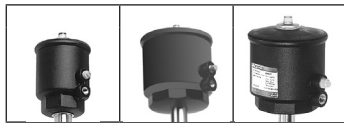


**TYPE 01-02**  
32 and 50 mm operators  
Fluid entry:  
under the disc at 2  
above the disc at 1

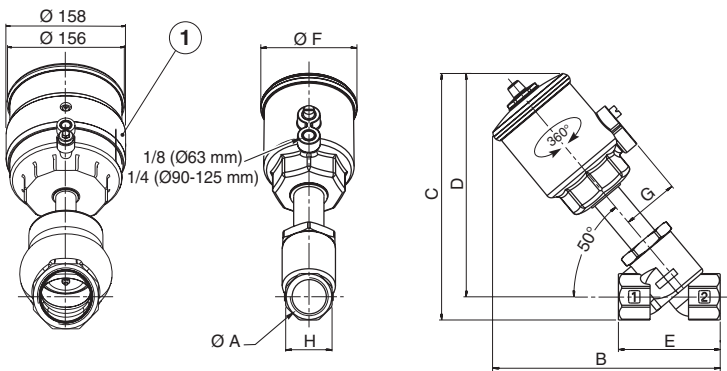


type	operator diameter	ØA	B	C	D	E	ØF	G	ØH	weight <sup>(1)</sup>
01	32 mm	3/8	92	93	81,5	55	43,5	27	23,5	0,35
		1/2	99	97	83,5	65	43,5	27	28	0,4
		3/4	107	104,5	88	75	43,5	27	30	0,45
02	50 mm	1/2	142	154,5	141	65	69	43	27	0,9
		3/4	150,5	159	143	75	69	43	32	1
		1	155	165	145	90	69	43	41	1,4

<sup>(1)</sup> Weight of valve without pilot.  
Solenoid pilot valves, see page: [49 \(www.asco.com\)](#) [32 and 50 mm operators].



**TYPE 03-04-05**  
63, 90 and 125 mm operators  
Fluid entry:  
under the disc at 2  
above the disc at 1



① Operator dia. 125 mm, NO function

type	operator diameter	ØA	B	C	D	E	ØF	G	ØH	weight <sup>(1)</sup>
03	63 mm	1/2	170	182	169	65	85	50,5	27	1,2
		3/4	175	185	170	75	85	50,5	32	1,3
		1	179	192	172	90	85	50,5	41	1,7
		1 1/4	217	229	204	110	85	50,5	50	2,1
		1 1/2	224	245	215	120	85	50,5	60	2,9
		2	249	259	224	150	85	50,5	70	3,7
04	90 mm	1	197	209	189	90	118	67	41	2,3
		1 1/4	236	246	221	110	118	67	50	2,7
		1 1/2	243	262	232	120	118	67	60	3,5
		2	267	276	241	150	118	67	70	4,3
05	125 mm	2 1/2	299	300	257	190	118	67	86	6,3
		1 1/4	284	298	273	110	156	86	50	5,2
		1 1/2	291	313,5	283,5	120	156	86	60	6
		2	315	328	293	150	156	86	70	6,8
		2 1/2	347	352	308	190	156	86	86	8,9

<sup>(1)</sup> Weight of valve without pilot. Add 0,2 for dia. 125 mm operator NO.  
Solenoid pilot valves, see pages: [49 \(www.asco.com\)](#) [63 mm operator] / [51 \(www.asco.com\)](#) [90 and 125 mm operators]

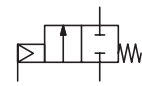
All leaflets are available on: [www.asco.com](http://www.asco.com)



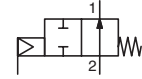
# MINI-VALVES

pressure operated  
stainless steel body  
threaded ports, G 1/2 to 1

NC



NO



2/2  
Series  
U290

## FEATURES

- High flow due to angled seat design
- Anti-waterhammer design (fluid entry under the disc)
- External threads to ISO 228/1 for industrial applications
- Vacuum operation up to  $10^{-2}$  mbar
- Piston-type operators 32 mm dia. rotatable through 360°
- High performance, maintenance-free stuffing box
- The valves satisfy Pressure Equipment Directive 2014/68/EU, article 4.3
- The valves in conformity with IEC 61508 Standard (2010 route 2<sub>H</sub> version) certified with integrity levels: SIL 2 for HFT = 0

## GENERAL

Differential pressure	See «SPECIFICATIONS» [1 bar = 100 kPa]
Maximum allowable pressure	16 bar
Ambient temperature range	-10°C to +60°C
Maximum viscosity	600 cSt (mm <sup>2</sup> /s)
Pilot fluid	Filtered air or water <sup>(1)</sup>
Max. pilot pressure	10 bar
Min. pilot pressure	See below
Pilot fluid temperature	-10°C to +60°C
Response time	See page 7 ( <a href="http://www.asco.com">www.asco.com</a> )



fluids (*)	temperature range	disc seal (*)
air and gas groups 1 & 2 water, oil, liquids groups 1 & 2 and steam	- 10°C to + 184°C	PTFE

## MATERIALS IN CONTACT WITH FLUID

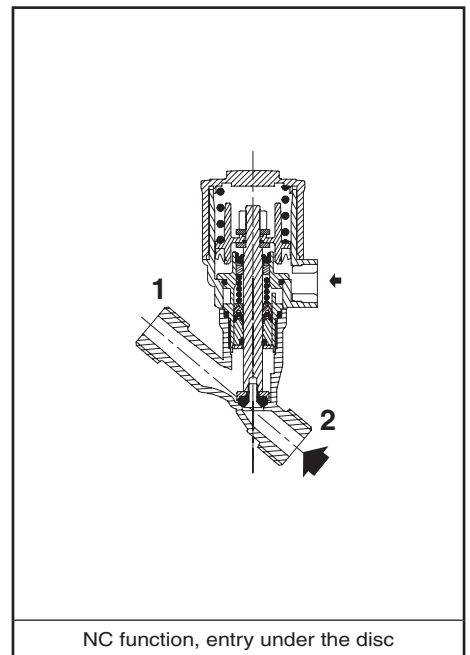
(\*) Ensure that the compatibility of the fluids in contact with the materials is verified

Valve body	AISI 316L
Stuffing box housing	AISI 316L
Stem	Stainless steel
Disc	Stainless steel
Stuffing box packing	PTFE chevrons
Wiper seal	FPM
Disc seal	PTFE
Valve body seal	PTFE

## OTHER MATERIALS

Operator	Glass fibre filled PA
Optical position indicator	Optional on NC valves

<sup>(1)</sup> For dia. 32 operators: At service fluid temperatures inside the valve body above 100°C, it is prohibited to pilot the valve with water.



## SPECIFICATIONS

piping (ISO 6708)		flow coefficient Kv		pilot pressure (bar)		operating pressure differential (bar)				operator diameter	catalogue number
pipe size	DN	Kv		bar		max.			(mm)		
		(m <sup>3</sup> /h)	(l/min)	min.	max.	air, inert gas, aggressive fluids (*)	water, oil, liquids, aggressive liquids (*)	steam (*) (≤184°C)			
<b>NC - Normally closed, entry under the disc <sup>(3)</sup></b>											
1/2	10	2,8	47	4	10	0	16	16	10	32	U290A791
3/4	15	4,1	68	4	10	0	12	12	10	32	U290A792
1	20	6,5	108	4	10	0	6	6	6	32	U290A793
<b>NO - Normally open, entry under the disc</b>											
1/2	10	2,8	47	IX (*)	10	0	16	16	10	32	U290A794
3/4	15	4,1	68	IX (*)	10	0	16	16	10	32	U290A795
1	20	6,5	108	IX (*)	10	0	16	16	10	32	U290A796
<b>NC - Normally closed, entry above the disc (version recommended for rapid-cycling steam applications)</b>											
1/2	10	2,8	47	X (*)	10	0	10	-	10	32	U290A797
3/4	15	4,1	68	X (*)	10	0	10	-	10	32	U290A798
1	20	6,5	108	X (*)	10	0	10	-	10	32	U290A799

(\*) Minimum pilot pressure varies with differential pressure, see page: 7 ([www.asco.com](http://www.asco.com))

<sup>(3)</sup> Calculation of the minimum pilot pressure at max. ΔP with allowable backpressure, contact us (backpressure not recommended with liquids as waterhammer may occur).

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### OPTIONS AND ACCESSORIES [see pages: 37 ([www.asco.com](http://www.asco.com)) / 43 ([www.asco.com](http://www.asco.com))]

- Optical position indicator, NC function
- Oxygen service, pressure limited to 15 bar, temperature limited to + 60°C
- Vacuum applications up to 1,33 10<sup>-3</sup> mbar
- NET-INOX passivation treatment
- ATEX 2014/34/EU versions for potentially explosive atmospheres ([www.asco.com](http://www.asco.com))
- Other pipe connections are available on request

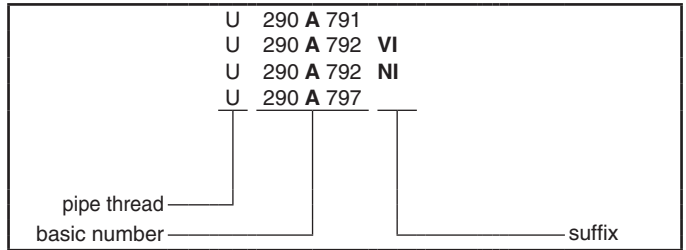
### INSTALLATION

- The valves can be mounted in any position without affecting operation
- Compatible with ASTM 1, 2 and 3 oils
- Check temperature range of valve body and solenoid pilot valves for suitability. For probability of failure, contact us
- Pipe connection identifier is G = G (ISO 228/1)
- Installation/maintenance instructions are included with each valve

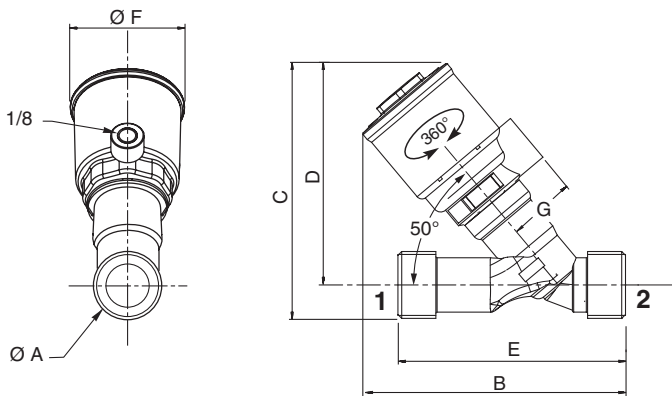
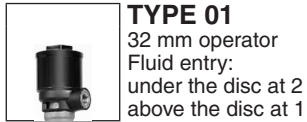
### SPARE PARTS KITS

DN	spare parts kit no.	
		Ø 32 mm
10	<b>C140100</b>	
15	<b>C140101</b>	
20	<b>C140102</b>	

### ORDERING EXAMPLES:

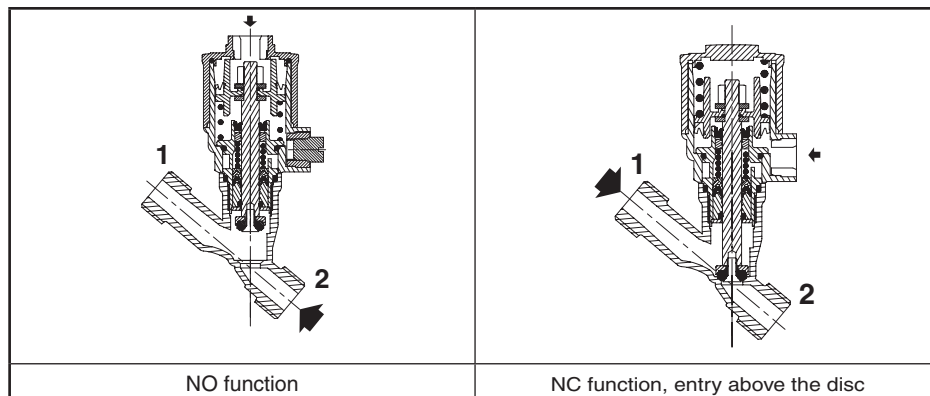


### DIMENSIONS (mm), WEIGHT (kg)



type	operator diameter	ØA	B	C	D	E	ØF	G	weight <sup>(1)</sup>
01	32 mm	1/2	102,5	98,2	87,7	80	43,5	27	0,36
		3/4	104,9	102	88,8	90	43,5	27	0,43
		1	109,5	104,9	88,4	110	43,5	27	0,54

<sup>(1)</sup> Weight of valve without pilot.  
Solenoid pilot valves, see page: 49 ([www.asco.com](http://www.asco.com)) [32 mm operator]





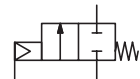


# MINI-VALVES

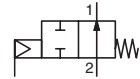
pressure operated  
stainless steel body

food connections to DIN 11851 - DN 10 to 20

NC



NO



2/2  
Series  
Y290

## FEATURES

- High flow due to angled seat design
- Anti-waterhammer design (fluid entry under the disc)
- External threads to DIN 11851
- Vacuum operation up to  $10^{-2}$  mbar
- Piston-type operators 32 mm dia. rotatable through 360°
- Valve body pickled in nitric/fluoric acid bath (NET-INOX passivation treatment)
- High performance, maintenance-free stuffing box
- The valves satisfy Pressure Equipment Directive 2014/68/EU, article 4.3
- The valves in conformity with IEC 61508 Standard (2010 route 2<sub>H</sub> version) certified with integrity levels: SIL 2 for HFT = 0

## GENERAL

Differential pressure	See «SPECIFICATIONS» [1 bar = 100 kPa]
Maximum allowable pressure	16 bar
Ambient temperature range	-10°C to +60°C
Maximum viscosity	600 cSt (mm <sup>2</sup> /s)
Pilot fluid	Filtered air or water <sup>(1)</sup>
Max. pilot pressure	10 bar
Min. pilot pressure	See below
Pilot fluid temperature	-10°C to +60°C
Response time	See page 7 ( <a href="http://www.asco.com">www.asco.com</a> )

fluids (*)	temperature range	disc seal (*)
air and gas groups 1 & 2 water, oil, liquids groups 1 & 2 and steam	- 10°C to + 184°C	PTFE

## MATERIALS IN CONTACT WITH FLUID

(\*) Ensure that the compatibility of the fluids in contact with the materials is verified

Valve body	All AISI 316L
Stuffing box housing	AISI 316L <sup>(2)</sup>
Stem	AISI 316L
Disc	AISI 316L
Stuffing box packing	PTFE chevrons
Wiper seal	FPM
Disc seal	PTFE
Valve body seal	PTFE

## OTHER MATERIALS

Operator	Glass fibre filled PA
Optical position indicator	Optional on NC valves

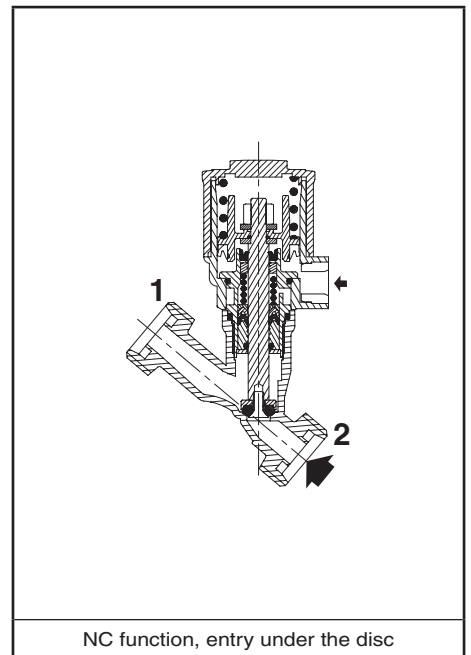
<sup>(1)</sup> For dia. 32 operators: At service fluid temperatures inside the valve body above 100°C, it is prohibited to pilot the valve with water.  
<sup>(2)</sup> NET-INOX passivation treatment included.

## SPECIFICATIONS

piping		flow coefficient Kv		pilot pressure (bar)		operating pressure differential (bar)				operator diameter (mm)	catalogue number
pipe size	DN	(m <sup>3</sup> /h)	(l/min)	min.	max.	min..	max.				
DIN 11851							air, inert gas, aggressive fluids (*)	water, oil, liquids, aggressive liquids (*)	steam (*) (≤184°C)		
<b>NC - Normally closed, entry under the disc <sup>(3)</sup></b>											
RD 28 x 1/8	10	2,8	47	4	10	0	16	16	10	32	Y290A791
RD 34 x 1/8	15	4,1	68	4	10	0	12	12	10	32	Y290A792
RD 44 x 1/6	20	6,5	108	4	10	0	6	6	6	32	Y290A793
<b>NO - Normally open, entry under the disc</b>											
RD 28 x 1/8	10	2,8	47	IX (*)	10	0	16	16	10	32	Y290A794
RD 34 x 1/8	15	4,1	68	IX (*)	10	0	16	16	10	32	Y290A795
RD 44 x 1/6	20	6,5	108	IX (*)	10	0	16	16	10	32	Y290A796
<b>NC - Normally closed, entry above the disc (version recommended for rapid-cycling steam applications)</b>											
RD 28 x 1/8	10	2,8	47	X (*)	10	0	10	-	10	32	Y290A797
RD 34 x 1/8	15	4,1	68	X (*)	10	0	10	-	10	32	Y290A798
RD 44 x 1/6	20	6,5	108	X (*)	10	0	10	-	10	32	Y290A799

(\*) Minimum pilot pressure varies with differential pressure, see page: 7 ([www.asco.com](http://www.asco.com))

<sup>(3)</sup> Calculation of the minimum pilot pressure at max. ΔP with allowable backpressure, contact us (backpressure not recommended with liquids as waterhammer may occur).



### OPTIONS AND ACCESSORIES [see pages: 37 ([www.asco.com](http://www.asco.com)) / 43 ([www.asco.com](http://www.asco.com))]

- Optical position indicator, NC function
- Oxygen service, pressure limited to 15 bar, temperature limited to + 60°C
- Vacuum applications up to 1,33 10<sup>-3</sup> mbar
- ATEX 2014/34/EU versions for potentially explosive atmospheres ([www.asco.com](http://www.asco.com))
- Other pipe connections are available on request

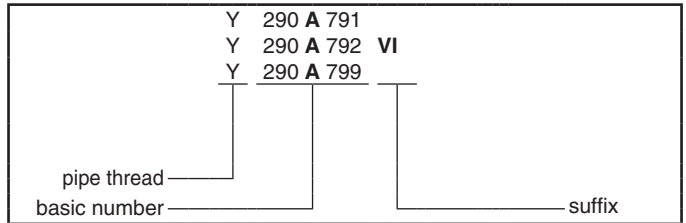
### INSTALLATION

- The valves can be mounted in any position without affecting operation
- Compatible with ASTM 1, 2 and 3 oils
- Check temperature range of valve body and solenoid pilot valves for suitability. For probability of failure, contact us
- Pipe connections have standard threads to DIN 11851
- Installation/maintenance instructions are included with each valve

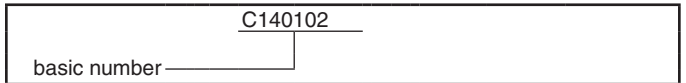
### SPARE PARTS KITS

DN	spare parts kit no.
10	<b>C140100</b>
15	<b>C140101</b>
20	<b>C140102</b>

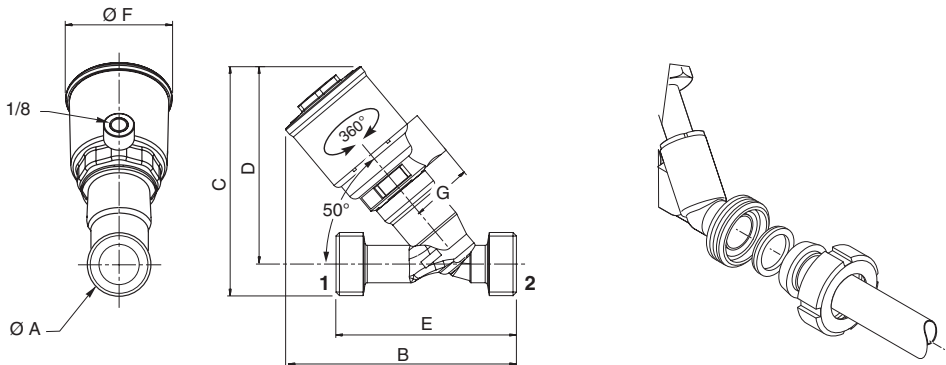
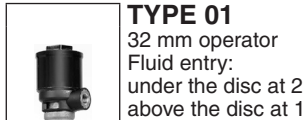
### ORDERING EXAMPLES:



### ORDERING EXAMPLES KITS:

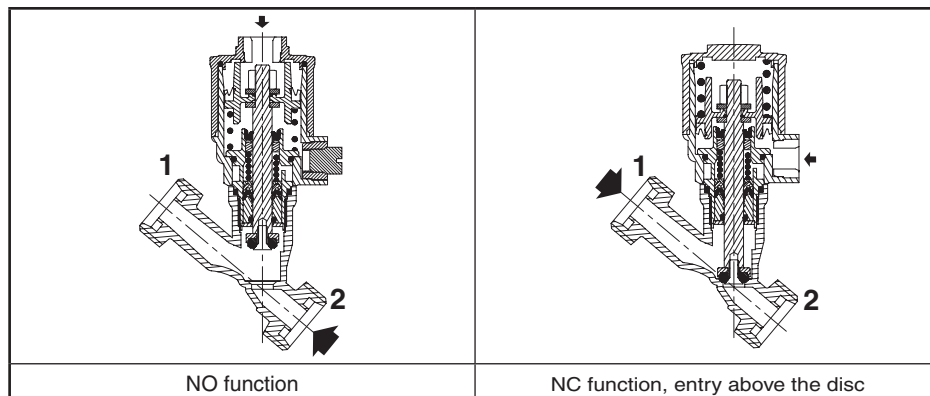


### DIMENSIONS (mm), WEIGHT (kg)



type	operator diameter	ØA	B	C	D	E	ØF	G	weight <sup>(1)</sup>
01	32 mm	RD 28 x 1/8	102,5	101,7	87,7	80	43,5	27	0,41
		RD 34 x 1/8	104,9	105,8	88,8	90	43,5	27	0,46
		RD 44 x 1/6	109,6	110,4	88,4	110	43,5	27	0,68

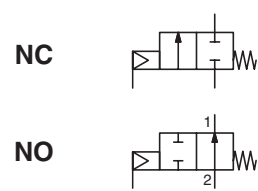
<sup>(1)</sup> Weight of valve without pilot.  
Solenoid pilot valves, see page: 49 ([www.asco.com](http://www.asco.com)) [32 mm operator]





# VALVES

pressure operated  
stainless steel body  
CLAMP or butt welding connection  
DN 10 to 65



**2/2**  
Series  
**S290**

## FEATURES

- Valve with clamp type connection to ISO 2852 for quick disconnection, a system commonly used in the food processing industry or with butt welding connection to ISO 6761 for stainless steel pipe to ISO 1127
- CLAMP valve body pickled in nitric/fluoric acid bath (NET-INOX passivation treatment)
- High flow due to angled seat design
- Anti-waterhammer design (fluid entry under the disc)
- Vacuum operation up to  $10^{-2}$  mbar
- Wide range of piston-type operators (32 - 50- 63 - 90 -125 mm dia.) rotatable through 360°, for maximum performance at different minimum pilot pressures
- High performance, maintenance-free stuffing box
- The valves satisfy Pressure Equipment Directive 2014/68/EU, category 1 (DN > 25) or article 4.3 (DN ≤ 25)
- The valves in conformity with IEC 61508 Standard (2010 route 2<sub>H</sub> version) certified with integrity levels: SIL 2 for HFT = 0



## GENERAL

Differential pressure	See «SPECIFICATIONS» [1 bar =100 kPa]
Maximum allowable pressure	16 bar
Ambient temperature range	-10°C to +60°C
Maximum viscosity	600 cSt (mm <sup>2</sup> /s)
Pilot fluid	Filtered air or water <sup>(1)</sup>
Max. pilot pressure	10 bar
Min. pilot pressure	See below and following page
Pilot fluid temperature	-10°C to +60°C
Response time	See page 7 ( <a href="http://www.asco.com">www.asco.com</a> )

fluids (*)	temperature range	disc seal (*)
DN ≤ 50 : air et gaz groupes 1 & 2 DN 65: air and gas group 2 all DN: water, oil, liquids groups 1 & 2 and steam	- 10°C to + 184°C	PTFE

## MATERIALS IN CONTACT WITH FLUID

(\*) Ensure that the compatibility of the fluids in contact with the materials is verified

<b>Valve body</b>	AISI 316L (NET-INOX treatment)
CLAMP connection	AISI 316L
Butt welding connection	AISI 316L
<b>Stuffing box housing</b>	AISI 316L
<b>Stem</b>	Stainless steel
<b>Disc</b>	Stainless steel
<b>Stuffing box packing</b>	PTFE chevrons
<b>Wiper seal</b>	FPM
<b>Disc seal</b>	PTFE
<b>Valve body seal</b>	PTFE

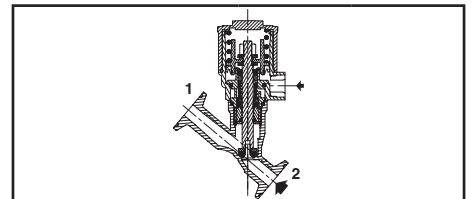
## OTHER MATERIALS

<b>Operator</b>	Glass fibre filled PA
<b>Optical position indicator</b>	PA 12, supplied standard on valves with 63, 90 and 125 mm operators

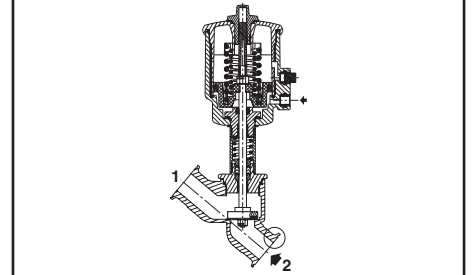
<sup>(1)</sup> For dia. 32, 50, 63, 90 and 125 mm operators: At service fluid temperatures inside the valve body above 100°C, it is prohibited to pilot the valve with water.

## SPECIFICATIONS

DN	O.D. of stub (clamp) (mm)	O.D. of stub (butt) (mm)	flow coefficient Kv		pilot pressure (bar)		operating pressure differential (bar)			operator diameter (mm)	catalogue number		
							min.	max.			clamp connection	butt welding connection	
								air, inert gas, aggressive fluids(*)	water, oil, liquids, aggressive liquids(*)				steam (*) (≤184°C)
<b>NC - Normally closed, entry under the disc <sup>(1)</sup></b>													
10	34	17,2	2,8	47	4	10	0	16	16	10	32	<b>S290A800</b>	<b>S290A802</b>
15	34	21,3	4,1	68	4	10	0	12	12	10	32	<b>S290A804</b>	<b>S290A806</b>
			4,9	82	4	10	0	16	16	10	50	<b>S290A408</b>	<b>S290A417</b>
			2,5	10	0	16	16	10	63	<b>S290B137</b>	<b>S290B205</b>		
20	50,5	26,9	6,5	108	4	10	0	6	6	6	32	<b>S290A808</b>	<b>S290A810</b>
			9,4	157	4	10	0	10	10	10	50	<b>S290A409</b>	<b>S290A418</b>
					16	16	10	63	<b>S290B140</b>	<b>S290B208</b>			
					2,5	10	0	12	12	10	63	<b>S290B139</b>	<b>S290B207</b>

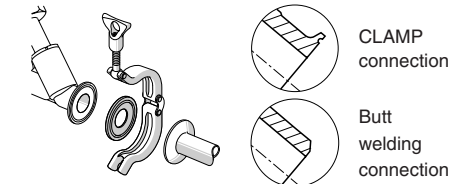


NC function, entry under the disc, 32 and 50 mm operators



NC function, entry under the disc, 63, 90 and 125 mm operators

CLAMP connection (not supplied)



**SPECIFICATIONS**

DN	O.D. of sub (clamp) (mm)	O.D. of sub (butt) (mm)	flow coefficient Kv (m <sup>3</sup> /h) (l/min)		pilot pressure (bar) min. max.		operating pressure differential (bar)			operator diameter (mm)	catalogue number		
							min.	max.			clamp connection	butt welding connection	
								air, inert gas, aggressive fluids(*)	water, oil, liquids, aggressive liquids(*)				steam (*) (≤184°C)
<b>NC - Normally closed, entry under the disc <sup>(1)</sup></b>													
25	50,5	33,7	12,8	213	4	10	0	6	6	6	50	S290A410	S290A419
					4	10	0	10	10	10	63	S290B145	S290B211
			16,5	275	2,5	10	0	6	6	6	63	S290B143	S290B210
					2,5	10	0	12	12	10	90	S290B144	-
32	64	42,4	27	450	4	10	0	6	6	6	63	S290A151	S290A215
					2,5	10	0	12	12	10	90	-	S290A216
			29	483	4	10	0	3	3	3	63	-	S290A214
					4	10	0	16	16	10	125	-	S290A670
40	64	48,3	45	750	4	10	0	4	4	4	63	S290A155	S290A217
					2,5	10	0	8	8	8	90	S290A156	S290A218
			48	800	2,5	10	0	4	4	4	90	S290A154	-
					4	10	0	16	16	10	125	S290A521	S290A573
50	77,5	60,3	59	983	4	10	0	2,5	2,5	2,5	63	S290A687	S290A719
					2,5	10	0	6	6	6	90	S290A688	S290A720
			66	1100	4	10	0	2,5	2,5	2,5	90	S290A685	-
					2,5	10	0	10	10	10	125	S290A689	S290A721
65	91	76,1	94	1567	4	10	0	5	5	5	125	S290A686	-
					4	10	0	2	2	2	90	S290A691	S290A722
			111	1850	4	10	0	6	6	6	125	S290A690	-
					2,5	10	0	1	1	1	125	S290A692	S290A723
<b>NO - Normally open, entry under the disc</b>													
10	34	17,2	2,8	47	IX (*)	10	0	16	16	10	32	S290A812	S290A814
15	34	21,3	4,1	68	IX (*)	10	0	16	16	10	32	S290A816	S290A818
			4,9	82	I (*)	10	0	16	16	10	50	S290A411	S290A420
					II (*)	10	0	16	16	10	63	S290B161	S290B221
20	50,5	26,9	6,5	108	IX (*)	10	0	16	16	10	32	S290A820	S290A822
			9,4	157	I (*)	10	0	16	16	10	50	S290A412	S290A421
					II (*)	10	0	16	16	10	63	S290B162	S290B222
25	50,5	33,7	12,8	213	I (*)	10	0	16	16	10	50	S290A413	S290A422
			16,5	275	II (*)	10	0	16	16	10	63	S290B163	S290B223
32	64	42,4	27	450	II (*)	10	0	16	16	10	63	S290A164	S290A224
40	64	48,3	45	750	II (*)	10	0	11	11	10	63	S290A165	S290A225
50	77,5	60,3	59	983	II (*)	10	0	7	7	7	63	S290A693	S290A724
					III (*)	10	0	13	13	10	90	S290A694	S290A725
			94	1567	III (*)	10	0	7	7	7	90	S290A695	S290A726
65	91	76,1	111	1850	IV (*)	10	0	16	16	10	125	S290A696	S290A727
<b>NC - Normally closed, entry above the disc (version recommended for rapid-cycling steam applications)</b>													
10	34	17,2	2,8	47	X (*)	10	0	10	-	10	32	S290A824	S290A826
15	34	21,3	4,1	68	X (*)	10	0	10	-	10	32	S290A828	S290A830
			4,9	82	V (*)	10	0	10	-	10	50	S290A414	S290A423
					VI (*)	10	0	10	-	10	63	S290B167	S290B227
20	50,5	26,9	6,5	108	X (*)	10	0	10	-	10	32	S290A832	S290A834
			9,4	157	V (*)	10	0	10	-	10	50	S290A415	S290A424
					VI (*)	10	0	10	-	10	63	S290B168	S290B228
25	50,5	33,7	12,8	213	V (*)	10	0	10	-	10	50	S290A416	S290A425
			16,5	275	VI (*)	10	0	10	-	10	63	S290B169	S290B229
32	64	42,4	27	450	VI (*)	10	0	10	-	10	63	S290A170	S290A230
40	64	48,3	45	750	VI (*)	10	0	10	-	10	63	S290A171	S290A231
					VII (*)	10	0	10	-	10	90	-	S290A259
50	77,5	60,3	59	983	VI (*)	10	0	9	-	9	63	S290A697	S290A728
					VII (*)	10	0	10	-	10	90	S290A698	S290A729
65	91	76,1	94	1567	VII (*)	10	0	10	-	10	90	S290A699	S290A730
			111	1850	VIII (*)	10	0	10	-	10	125	S290A700	S290A731

(\*) Minimum pilot pressure varies with differential pressure, see page: 7 ([www.asco.com](http://www.asco.com))

(1) Calculation of the minimum pilot pressure at a ΔP of max. 10 bar with allowable backpressure (backpressure not recommended with liquids as waterhammer may occur).

- 32 and 50 mm operators, 4 bar minimum pilot pressure version: add 2 bar to the minimum pilot pressure of chart V or X [see page: 7 ([www.asco.com](http://www.asco.com))]

- 63, 90 and 125 mm operators, 4 bar minimum pilot pressure version: add 1,5 bar to the minimum pilot pressure of chart VI, VII or VIII [see page: 7 ([www.asco.com](http://www.asco.com))]



### OPTIONS AND ACCESSORIES [see pages: 37 ([www.asco.com](http://www.asco.com)) / 43 ([www.asco.com](http://www.asco.com))]

- Signaling box or compact signaling unit
- Stroke limiter for opening
- Manual safety device
- Optical position indicator on 32-50 mm operators, NC function
- Adapter plate for NAMUR pad mounting pilot (63-90-125 mm operators only)
- Oxygen service (except DN 65), pressure limited to 15 bar, temperature limited to + 60°C
- Vacuum applications up to 1,33 10<sup>-3</sup> mbar
- NET-INOX passivation treatment on valve body with butt welding connection
- ATEX 2014/34/EU versions for potentially explosive atmospheres ([www.asco.com](http://www.asco.com))

### INSTALLATION

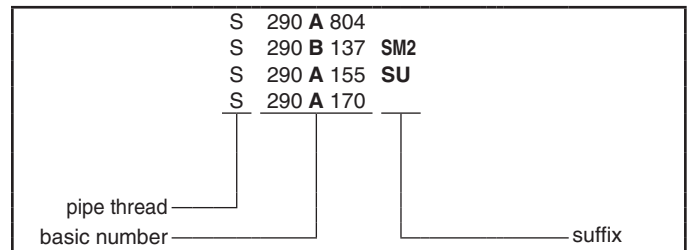
- The valves can be mounted in any position without affecting operation
- On clamp connection version: The connection stubs comply with ISO 2852.  
The strength of the quick-disconnect connection clamp must be compatible with the maximum pressure applied to the valve
- On butt welding version: Compatible with ASTM 1, 2 and 3 oils  
Butt welding connections comply with ISO 6761 and are compatible with pipe to ISO 1127
- Check temperature range of valve body and solenoid pilot valves for suitability. For probability of failure, contact us
- Installation/maintenance instructions are included with each valve

### SPARE PARTS KITS

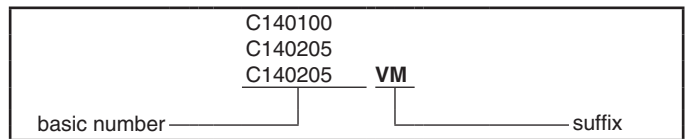
DN	spare parts kit no.	
	Ø 32 mm	Ø 50-63-90-125 mm
10	<b>C140100</b>	-
15	<b>C140101</b>	<b>C131204</b> <sup>(1)</sup>
20	<b>C140102</b>	<b>C131205</b> <sup>(1)</sup>
25	-	<b>C131206</b> <sup>(1)</sup>
32	-	<b>C131207</b> <sup>(1)</sup>
40	-	<b>C131208</b> <sup>(1)</sup>
50	-	<b>C131209</b> <sup>(1)</sup>
65	-	<b>C131622</b> <sup>(1)</sup>

<sup>(1)</sup> Standard suffix VM also applies to kits. [see page: 37 ([www.asco.com](http://www.asco.com))].  
- Not available

### ORDERING EXAMPLES:



### ORDERING EXAMPLES KITS:

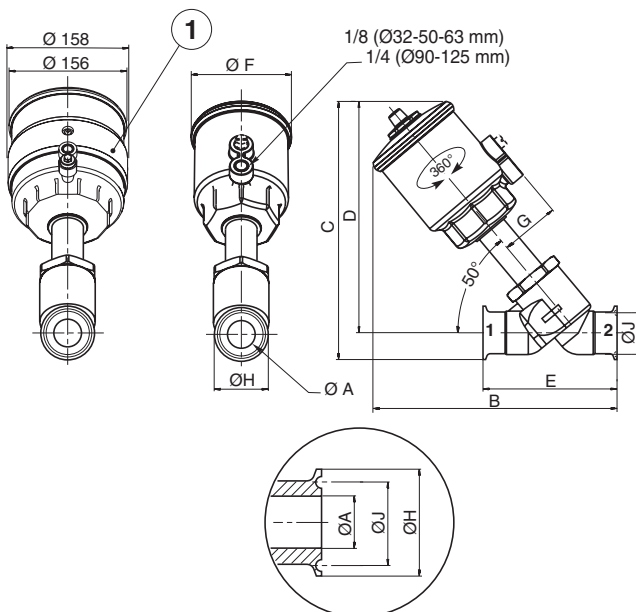


### DIMENSIONS (mm), WEIGHT



#### TYPE 01-02-03-04-05

clamp connection  
32, 50, 63, 90 and 125 mm operators  
Fluid entry: under the disc at 2  
above the disc at 1



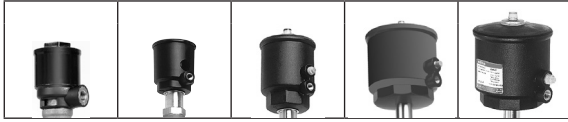
type	operator diameter	DN	ØA	B	C	D	E	ØF	G	ØH	ØJ	weight <sup>(1)</sup>
01	32	10	10	102,5	104,7	87,7	80	43,5	27	34	27,5	0,4
		15	16	110,7	105,8	88,8	101,6	43,5	27	34	27,5	0,43
		20	20	111,6	113,6	88,4	114	43,5	27	50,5	43,5	0,59
02	50	15	15,5	153	158,5	141	102	69	43	34	27,5	0,9
		20	21,5	158	168	143	114	69	43	50,5	43,5	1
03	63	25	26	167	170,5	145	129	69	43	50,5	43,5	1,4
		15	15,5	182	186	169	102	85	50,5	34	27,5	1,2
		20	21,5	184	195	170	114	85	50,5	50,5	43,5	1,3
		25	26	191	197	172	129	85	50,5	50,5	43,5	1,7
		32	35	226	236	204	140	85	50,5	64	56,5	2,1
		40	41	235	247	215	159	85	50,5	64	56,5	2,8
04	90	50	50	257	263	224	180	85	50,5	77,5	70,5	3,7
		25	26	209	214	189	129	118	67	50,5	43,5	2,2
		32	35	245	253	221	140	118	67	64	56,5	2,7
05	125	40	41	254	264	232	159	118	67	64	56,5	3,4
		50	50	275	280	241	180	118	67	77,5	70,5	4,2
		65	65	302	302,5	257	205	118	67	91	83,5	6,2
		32	35	291	307	273	140	156	86	64	56,5	5,2
		40	41	301	316	284	159	156	86	64	56,5	5,9
		50	50	322,5	332	293	180	156	86	77,5	70,5	6,7
		65	65	349,5	353,5	308	205	156	86	91	83,5	8,8

<sup>(1)</sup> Weight of valve without pilot. Add 0,2 for dia. 125 mm operator NO  
Solenoid pilot valves, see pages: 49 ([www.asco.com](http://www.asco.com)) [32, 50 and 63 mm operators]  
51 ([www.asco.com](http://www.asco.com)) [90 and 125 mm operators]

All leaflets are available on: [www.asco.com](http://www.asco.com)

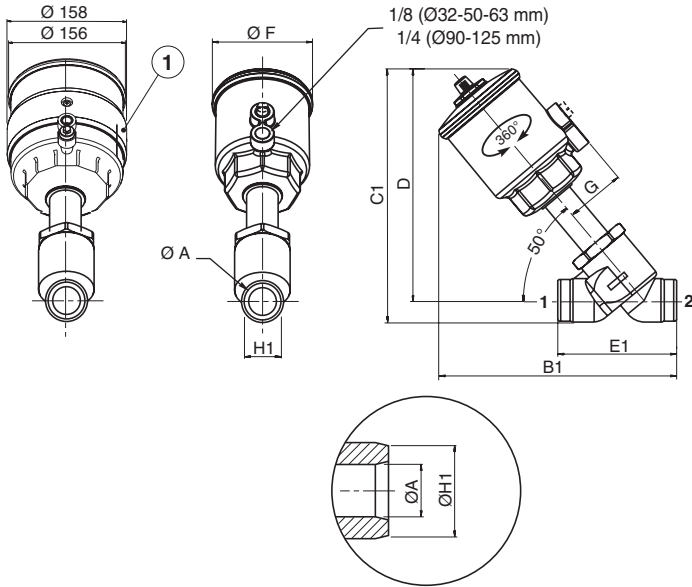


### DIMENSIONS (mm), WEIGHT



#### TYPE 01-02-03-04-05

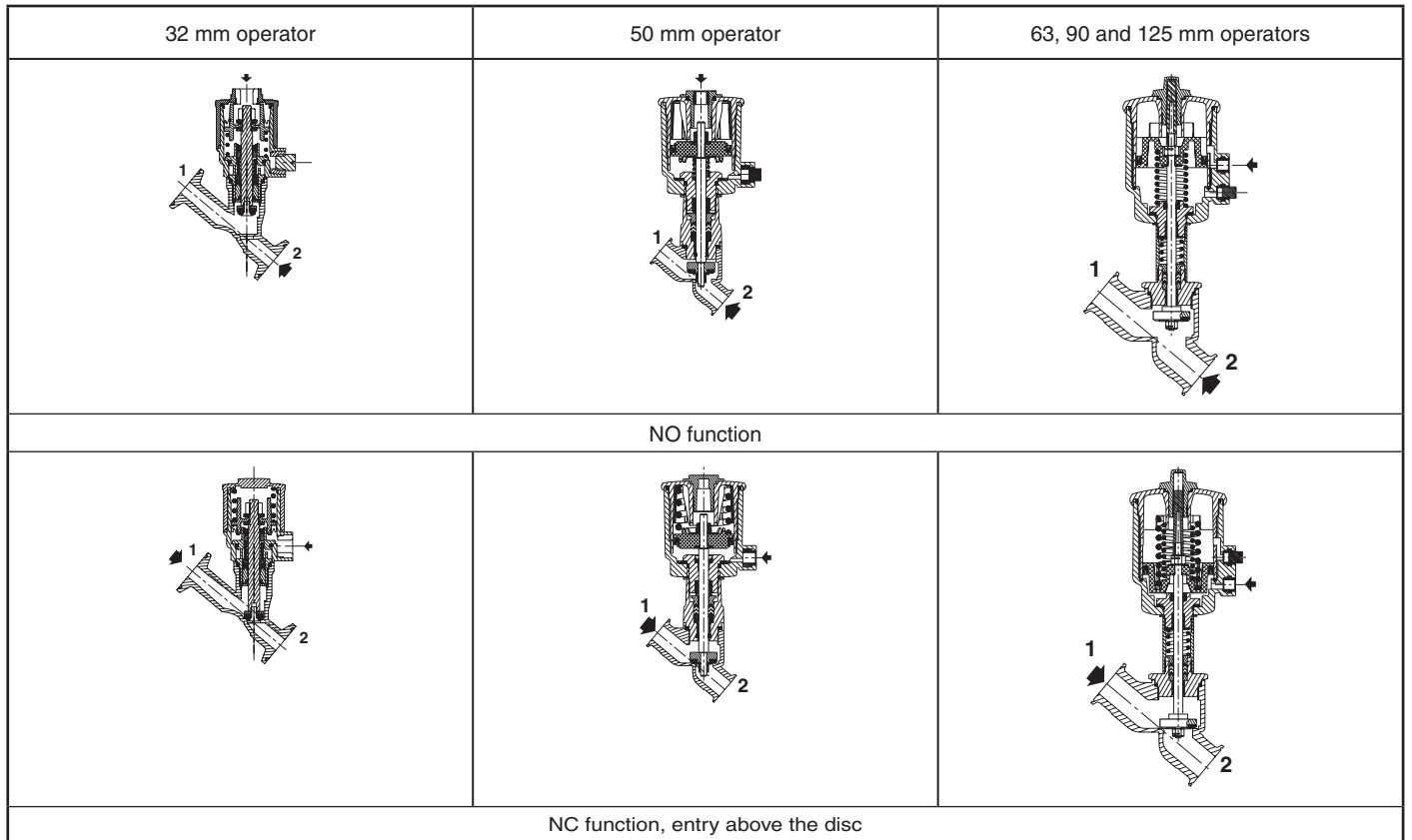
butt welding connection  
 32, 50, 63, 90 and 125 mm operators  
 Fluid entry: under the disc at 2  
 above the disc at 1



type	operator diameter	DN	ØA	B1	C1	D	E1	ØF	G	ØH1	weight <sup>(1)</sup>
01	32	10	10	102,5	96,9	87,7	80	43,5	27	17,2	0,37
		15	16	101,9	100,5	88,8	84	43,5	27	21,3	0,4
		20	20	103,6	102,4	88,4	98	43,5	27	26,9	0,45
02	50	15	15,5	144	152	141	84	69	43	21,3	0,9
		20	21,5	150	157	143	98	69	43	26,9	1
		25	26	159	162	145	113	69	43	33,7	1,3
03	63	15	15,5	172	181	169	84	85	50,5	21,3	1,2
		20	21,5	175	184	170	98	85	50,5	26,9	1,3
		25	26	183	190	172	113	85	50,5	33,7	1,6
		32	35	218	226	204	124	85	50,5	42,4	2
		40	41	227	240	215	143	85	50,5	48,3	2,7
04	90	50	50	249	254	224	164	85	50,5	60,3	3,6
		25	26	201	207	189	113	118	67	33,7	2,1
		32	35	237	243	221	124	118	67	42,4	2,6
		40	41	246	257	232	143	118	67	48,3	3,3
		50	50	267	271	241	164	118	67	60,3	4,1
05	125	65	65	294	295	257	189	118	67	76,1	6,1
		32	35	283	295	273	124	156	86	42,4	5,1
		40	41	294	308	284	143	156	86	48,3	5,8
		50	50	314,5	323	293	164	156	86	60,3	6,7
		65	65	341,5	346	308	189	156	86	76,1	8,7

① Operator dia. 125 mm, NO function

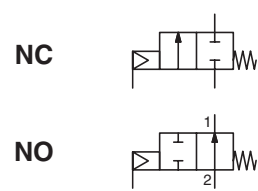
<sup>(1)</sup> Weight of valve without pilot. Add 0,2 for dia. 125 mm operator NO.  
 Solenoid pilot valves, see pages: [49 \(www.asco.com\)](#) [32, 50 and 63 mm operators]  
[51 \(www.asco.com\)](#) [90 and 125 mm operators]





# VALVES

pressure operated  
Food contact version  
stainless steel body, CLAMP or butt welding connection  
DN 10 to 65



2/2  
Series  
S290

## FEATURES

- Valve in conformity with Regulation (EC) 1935-2004, the material of the wetted parts are listed in the chart of the Annex I of Regulation (EC) 1935/2004
- All the material of the wetted parts are conform with FDA CFR21
- Valve with clamp type connection to ISO 2852 for quick disconnection, a system commonly used in the food processing industry or with butt welding connection to ISO 6761 for stainless steel pipe to ISO 1127
- CLAMP valve body pickled in nitric/fluoric acid bath (NET-INOX passivation treatment)
- High flow due to angled seat design
- Anti-waterhammer design (fluid entry under the disc)
- Vacuum operation up to  $10^{-2}$  mbar
- Wide range of piston-type operators (32 - 50- 63 - 90 - 125 mm dia.) rotatable through 360°, for maximum performance at different minimum pilot pressures
- High performance, maintenance-free stuffing box
- The valves satisfy Pressure Equipment Directive 2014/68/EU, category 1 (DN > 25) or article 4.3 (DN ≤ 25)
- The valves in conformity with IEC 61508 Standard (2010 route 2<sub>H</sub> version) certified with integrity levels: SIL 2 for HFT = 0
- Valve in conformity with the provisions of the directive RoHS 2 (EU 2001/65)



## GENERAL

Differential pressure	See «SPECIFICATIONS» [1 bar = 100 kPa]
Maximum allowable pressure	16 bar
Ambient temperature range	-10°C to +60°C
Maximum viscosity	600 cSt (mm <sup>2</sup> /s)
Pilot fluid	Filtered air or water <sup>(1)</sup>
Max. pilot pressure	10 bar
Min. pilot pressure	See below and following page
Pilot fluid temperature	-10°C to +60°C
Response time	See page 7 ( <a href="http://www.asco.com">www.asco.com</a> )

fluids (*)	temperature range	disc seal (*)
DN ≤ 50 : air et gaz groupes 1 & 2 DN 65: air and gas group 2 all DN: water, oil, liquids groups 1 & 2 and steam	- 10°C to + 184°C	PTFE

## MATERIALS IN CONTACT WITH FLUID

(\*) Ensure that the compatibility of the fluids in contact with the materials is verified

<b>Valve body</b>	CLAMP connection Butt welding connection	AISI 316L (NET-INOX treatment) AISI 316L
<b>Stuffing box housing</b>		AISI 316L (+ NET-INOX treatment on CLAMP)
<b>Stem</b>		Stainless steel
<b>Disc</b>		Stainless steel
<b>Stuffing box packing</b>		PTFE chevrons
<b>Wiper seal</b>		PTFE
<b>Disc seal</b>		PTFE
<b>Valve body seal</b>		PTFE

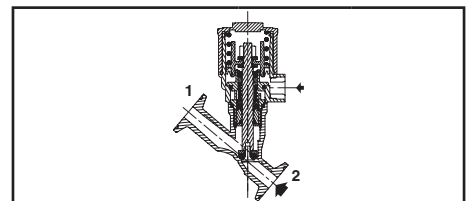
## OTHER MATERIALS

<b>Operator</b>	Glass fibre filled PA
<b>Optical position indicator</b>	PA 12, supplied standard on valves with 63, 90 and 125 mm operators

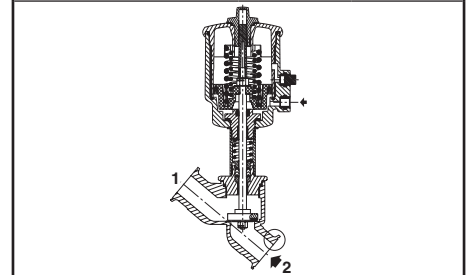
<sup>(1)</sup> For dia. 32, 50, 63, 90 and 125 mm operators: At service fluid temperatures inside the valve body above 100°C, it is prohibited to pilot the valve with water.

## SPECIFICATIONS

DN	O.D. of stub (clamp) (mm)	O.D. of stub (butt) (mm)	flow coefficient Kv		pilot pressure (bar)		operating pressure differential (bar)			operator diameter (mm)	catalogue number		
			(m <sup>3</sup> /h)	(l/min)	min.	max.	max.				clamp connection	butt welding connection	
							air, inert gas, aggressive fluids(*)	water, oil, liquids, aggressive liquids(*)	steam (*) (≤184°C)				
<b>NC - Normally closed, entry under the disc <sup>(1)</sup></b>													
10	34	17,2	2,8	47	4	10	0	16	16	10	32	S290A800FB	S290A802FB
			4,1	68	4	10	0	12	12	10	32	S290A804FB	S290A806FB
15	34	21,3	4,9	82	4	10	0	16	16	10	50	S290A408FB	S290A417FB
					2,5	10	0	16	16	10	63	S290B137FB	S290B205FB
			6,5	108	4	10	0	6	6	6	32	S290A808FB	S290A810FB
			9,4	157	4	10	0	10	10	10	50	S290A409FB	S290A418FB
								16	16	10	63	S290B140FB	S290B208FB

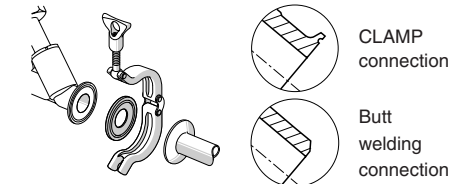


NC function, entry under the disc, 32 and 50 mm operators



NC function, entry under the disc, 63, 90 and 125 mm operators

CLAMP connection (not supplied)



**SPECIFICATIONS**

DN	O.D. of stub (clamp) (mm)	O.D. of stub (butt) (mm)	flow coefficient Kv (m <sup>3</sup> /h) (l/min)		pilot pressure (bar) min. max.		operating pressure differential (bar)			operator diameter (mm)	catalogue number		
							min.	max.			clamp connection	butt welding connection	
								air, inert gas, aggressive fluids(*)	water, oil, liquids, aggressive liquids(*)				steam (*) (≤184°C)
<b>NC - Normally closed, entry under the disc <sup>(1)</sup></b>													
25	50,5	33,7	12,8	213	4	10	0	6	6	6	50	S290A410FB	S290A419FB
			16,5	275	4	10	0	10	10	10	63	S290B145FB	S290B211FB
32	64	42,4	27	450	4	10	0	16	16	10	90	S290B146FB	S290B212FB
			29	483	4	10	0	6	6	6	63	S290A151FB	S290A215FB
			12	12	10	90	-	S290A216FB	-				
40	64	48,3	45	750	4	10	0	16	16	10	125	-	S290A670FB
			4	4	4	63	S290A155FB	S290A217FB					
			8	8	8	90	S290A156FB	S290A218FB					
50	77,5	60,3	48	800	4	10	0	16	16	10	125	S290A521FB	S290A573FB
			2,5	2,5	2,5	63	S290A687FB	S290A719FB					
			6	6	6	90	S290A688FB	S290A720FB					
65	91	76,1	66	1100	4	10	0	10	10	10	125	S290A689FB	S290A721FB
			94	1567	4	10	0	2	2	2	90	S290A691FB	S290A722FB
			111	1850	4	10	0	6	6	6	125	S290A690FB	-
<b>NO - Normally open, entry under the disc</b>													
10	34	17,2	2,8	47	IX (*)	10	0	16	16	10	32	S290A812FB	S290A814FB
15	34	21,3	4,1	68	IX (*)	10	0	16	16	10	32	S290A816FB	S290A818FB
			4,9	82	I (*)	10	0	16	16	10	50	S290A411FB	S290A420FB
20	50,5	26,9	6,5	108	IX (*)	10	0	16	16	10	32	S290A820FB	S290A822FB
			9,4	157	I (*)	10	0	16	16	10	50	S290A412FB	S290A421FB
			II (*)	10	0	16	16	10	63	S290B162FB	S290B222FB		
25	50,5	33,7	16,5	275	II (*)	10	0	16	16	10	63	S290B163FB	S290B223FB
32	64	42,4	27	450	II (*)	10	0	16	16	10	63	S290A164FB	S290A224FB
40	64	48,3	45	750	II (*)	10	0	11	11	10	63	S290A165FB	S290A225FB
50	77,5	60,3	59	983	III (*)	10	0	13	13	10	90	S290A694FB	S290A725FB
65	91	76,1	94	1567	III (*)	10	0	7	7	7	90	S290A695FB	S290A726FB
			111	1850	IV (*)	10	0	16	16	10	125	S290A696FB	S290A727FB
<b>NC - Normally closed, entry above the disc (version recommended for rapid-cycling steam applications)</b>													
10	34	17,2	2,8	47	X (*)	10	0	10	-	10	32	S290A824FB	S290A826FB
15	34	21,3	4,1	68	X (*)	10	0	10	-	10	32	S290A828FB	S290A830FB
			4,9	82	V (*)	10	0	10	-	10	50	S290A414FB	S290A423FB
			VI (*)	10	0	10	-	10	63	S290B167FB	S290B227FB		
20	50,5	26,9	6,5	108	X (*)	10	0	10	-	10	32	S290A832FB	S290A834FB
			9,4	157	V (*)	10	0	10	-	10	50	S290A415FB	S290A424FB
VI (*)	10	0	10	-	10	63	S290B168FB	S290B228FB					
25	50,5	33,7	12,8	213	V (*)	10	0	10	-	10	50	S290A416FB	S290A425FB
			16,5	275	VI (*)	10	0	10	-	10	63	S290B169FB	S290B229FB
32	64	42,4	27	450	VI (*)	10	0	10	-	10	63	S290A170FB	S290A230FB
40	64	48,3	45	750	VI (*)	10	0	10	-	10	63	S290A171FB	S290A231FB
			VII (*)	10	0	10	-	10	90	-	S290A259FB		
50	77,5	60,3	59	983	VI (*)	10	0	9	-	9	63	S290A697FB	S290A728FB
			VII (*)	10	0	10	-	10	90	S290A698FB	S290A729FB		
65	91	76,1	94	1567	VII (*)	10	0	10	-	10	90	S290A699FB	S290A730FB
			111	1850	VIII (*)	10	0	10	-	10	125	S290A700FB	S290A731FB

(\*) Minimum pilot pressure varies with differential pressure, see page: 7 ([www.asco.com](http://www.asco.com))

<sup>(1)</sup> Calculation of the minimum pilot pressure at a ΔP of max. 10 bar with allowable backpressure (backpressure not recommended with liquids as waterhammer may occur).

- 32 and 50 mm operators, 4 bar minimum pilot pressure version: add 2 bar to the minimum pilot pressure of chart V or X [see page: 7 ([www.asco.com](http://www.asco.com))]

- 63, 90 and 125 mm operators, 4 bar minimum pilot pressure version: add 1,5 bar to the minimum pilot pressure of chart VI, VII or VIII [see page: 7 ([www.asco.com](http://www.asco.com))]

### OPTIONS AND ACCESSORIES [see pages: 37 ([www.asco.com](http://www.asco.com)) / 43 ([www.asco.com](http://www.asco.com))]

- Signaling box or compact signaling unit
- Stroke limiter for opening
- Manual safety device
- Optical position indicator on 32-50 mm operators, NC function
- Adapter plate for NAMUR pad mounting pilot (63-90-125 mm operators only)
- NET-INOX passivation treatment on valve body with butt welding connection
- ATEX 2014/34/EU versions for potentially explosive atmospheres ([www.asco.com](http://www.asco.com))

### INSTALLATION

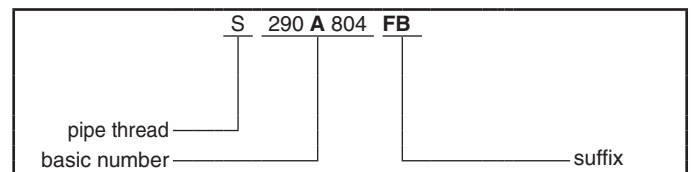
- The valves can be mounted in any position without affecting operation
- On clamp connection version: The connection stubs comply with ISO 2852.  
The strength of the quick-disconnect connection clamp must be compatible with the maximum pressure applied to the valve
- On butt welding version: Compatible with ASTM 1, 2 and 3 oils  
Butt welding connections comply with ISO 6761 and are compatible with pipe to ISO 1127
- Check temperature range of valve body and solenoid pilot valves for suitability. For probability of failure, contact us
- Installation/maintenance instructions are included with each valve

### SPARE PARTS KITS

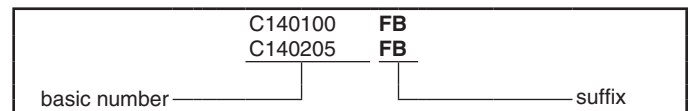
DN	spare parts kit no.	
	Ø 32 mm	Ø 50-63-90-125 mm
10	<b>C140100FB</b>	-
15	<b>C140101FB</b>	<b>C131204FB</b>
20	<b>C140102FB</b>	<b>C131205FB</b>
25	-	<b>C131206FB</b>
32	-	<b>C131207FB</b>
40	-	<b>C131208FB</b>
50	-	<b>C131209FB</b>
65	-	<b>C131622FB</b>

- Not available

### ORDERING EXAMPLES:



### ORDERING EXAMPLES KITS:

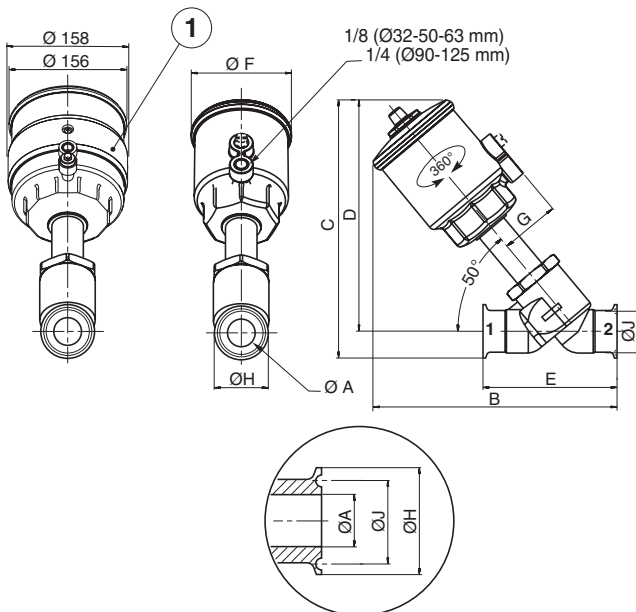


### DIMENSIONS (mm), WEIGHT



#### TYPE 01-02-03-04-05

clamp connection  
32, 50, 63, 90 and 125 mm operators  
Fluid entry: under the disc at 2  
above the disc at 1



① Operator dia. 125 mm, NO function

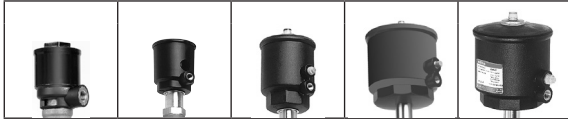
type	operator diameter	DN	ØA	B	C	D	E	ØF	G	ØH	ØJ	weight <sup>(1)</sup>
01	32	10	10	102,5	104,7	87,7	80	43,5	27	34	27,5	0,4
		15	16	110,7	105,8	88,8	101,6	43,5	27	34	27,5	0,43
		20	20	111,6	113,6	88,4	114	43,5	27	50,5	43,5	0,59
02	50	15	15,5	153	158,5	141	102	69	43	34	27,5	0,9
		20	21,5	158	168	143	114	69	43	50,5	43,5	1
		25	26	167	170,5	145	129	69	43	50,5	43,5	1,4
03	63	15	15,5	182	186	169	102	85	50,5	34	27,5	1,2
		20	21,5	184	195	170	114	85	50,5	50,5	43,5	1,3
		25	26	191	197	172	129	85	50,5	50,5	43,5	1,7
		32	35	226	236	204	140	85	50,5	64	56,5	2,1
		40	41	235	247	215	159	85	50,5	64	56,5	2,8
04	90	50	50	257	263	224	180	85	50,5	77,5	70,5	3,7
		25	26	209	214	189	129	118	67	50,5	43,5	2,2
		32	35	245	253	221	140	118	67	64	56,5	2,7
		40	41	254	264	232	159	118	67	64	56,5	3,4
		50	50	275	280	241	180	118	67	77,5	70,5	4,2
05	125	65	65	302	302,5	257	205	118	67	91	83,5	6,2
		32	35	291	307	273	140	156	86	64	56,5	5,2
		40	41	301	316	284	159	156	86	64	56,5	5,9
		50	50	322,5	332	293	180	156	86	77,5	70,5	6,7
		65	65	349,5	353,5	308	205	156	86	91	83,5	8,8

<sup>(1)</sup> Weight of valve without pilot. Add 0,2 for dia. 125 mm operator NO.

Solenoid pilot valves, see pages: 49 ([www.asco.com](http://www.asco.com)) [32, 50 and 63 mm operators]

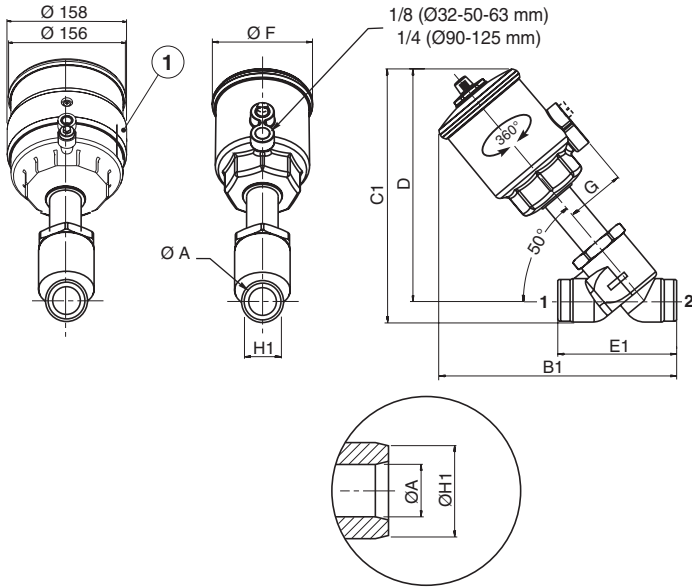
51 ([www.asco.com](http://www.asco.com)) [90 and 125 mm operators]

### DIMENSIONS (mm), WEIGHT



#### TYPE 01-02-03-04-05

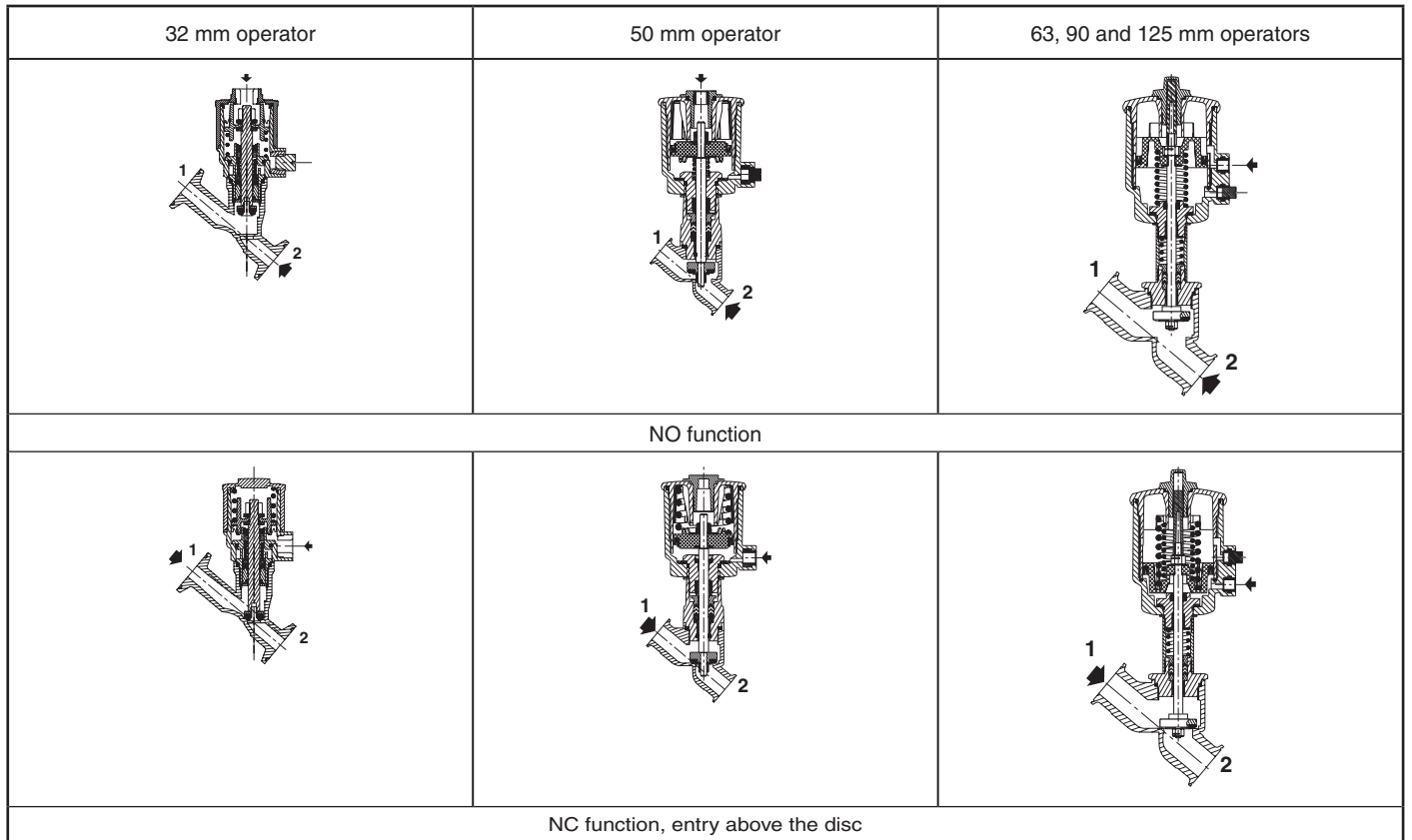
butt welding connection  
32, 50, 63, 90 and 125 mm operators  
Fluid entry: under the disc at 2  
above the disc at 1



type	operator diameter	DN	ØA	B1	C1	D	E1	ØF	G	ØH1	weight <sup>(1)</sup>
01	32	10	10	102,5	96,9	87,7	80	43,5	27	17,2	0,37
		15	16	101,9	100,5	88,8	84	43,5	27	21,3	0,4
		20	20	103,6	102,4	88,4	98	43,5	27	26,9	0,45
02	50	15	15,5	144	152	141	84	69	43	21,3	0,9
		20	21,5	150	157	143	98	69	43	26,9	1
		25	26	159	162	145	113	69	43	33,7	1,3
03	63	15	15,5	172	181	169	84	85	50,5	21,3	1,2
		20	21,5	175	184	170	98	85	50,5	26,9	1,3
		25	26	183	190	172	113	85	50,5	33,7	1,6
		32	35	218	226	204	124	85	50,5	42,4	2
		40	41	227	240	215	143	85	50,5	48,3	2,7
04	90	50	50	249	254	224	164	85	50,5	60,3	3,6
		25	26	201	207	189	113	118	67	33,7	2,1
		32	35	237	243	221	124	118	67	42,4	2,6
		40	41	246	257	232	143	118	67	48,3	3,3
		50	50	267	271	241	164	118	67	60,3	4,1
05	125	65	65	294	295	257	189	118	67	76,1	6,1
		32	35	283	295	273	124	156	86	42,4	5,1
		40	41	294	308	284	143	156	86	48,3	5,8
		50	50	314,5	323	293	164	156	86	60,3	6,7
		65	65	341,5	346	308	189	156	86	76,1	8,7

① Operator dia. 125 mm, NO function

<sup>(1)</sup> Weight of valve without pilot. Add 0,2 for dia. 125 mm operator NO.  
Solenoid pilot valves, see pages: [49](#) ([www.asco.com](http://www.asco.com)) [32, 50 and 63 mm operators]  
[51](#) ([www.asco.com](http://www.asco.com)) [90 and 125 mm operators]



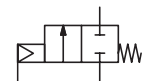




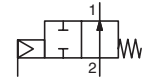
# VALVES

pressure operated  
bronze body  
with flanges PN16, DN 25 to 50

NC



NO



2/2  
Series  
T290

## FEATURES

- Remote-controlled valves with disc for industrial fluids
- Anti-waterhammer design (fluid entry under the disc)
- Vacuum operation up to  $10^2$  mbar
- Wide range of piston-type operators (63 - 90 - 125 mm dia.) rotatable through 360°, for maximum performance at different minimum pilot pressures
- High performance, maintenance-free stuffing box
- The valves satisfy Pressure Equipment Directive 2014/68/EU, category 1 (DN > 25) or article 4.3 (DN 25)
- The valves in conformity with IEC 61508 Standard (2010 route 2<sub>H</sub> version) certified with integrity levels: SIL 2 for HFT = 0

## GENERAL

Differential pressure	See «SPECIFICATIONS» [1 bar = 100 kPa]
Maximum allowable pressure	16 bar
Ambient temperature range	-10°C to +60°C
Maximum viscosity	600 cSt (mm <sup>2</sup> /s)
Pilot fluid	Filtered air or water <sup>(1)</sup>
Max. pilot pressure	10 bar
Min. pilot pressure	See below and following page
Pilot fluid temperature	-10°C to +60°C
Response time	See page 7 ( <a href="http://www.asco.com">www.asco.com</a> )

fluids (*)	temperature range	disc seal (*)
air and gas groups 1 & 2 water, oil, liquids groups 1 & 2 and steam	- 10°C to + 184°C	PTFE

## CONSTRUCTION

Connection Flange type 21 (ISO 7005) - PN 16  
Facing Type A

## MATERIALS IN CONTACT WITH FLUID

(\*) Ensure that the compatibility of the fluids in contact with the materials is verified

Valve body	Bronze
Stuffing box housing	Brass
Stem	Stainless steel
Disc	Brass
Stuffing box packing	PTFE chevrons
Wiper seal	FPM
Disc seal	PTFE
Valve body seal	PTFE

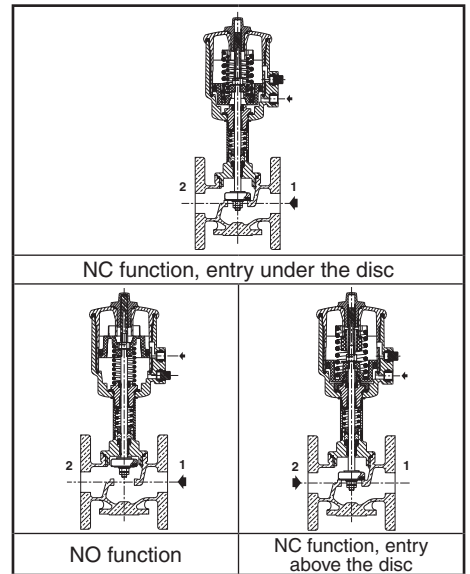
## OTHER MATERIALS

Operator	Glass fibre filled PA
Optical position indicator	PA 12, supplied standard on valves with 63, 90 and 125 mm operators

<sup>(1)</sup> For dia. 63, 90 and 125 mm operators: At service fluid temperatures inside the valve body above 100°C, it is prohibited to pilot the valve with water.

## SPECIFICATIONS

DN	orifice size (mm)	flow coefficient Kv (m <sup>3</sup> /h) (l/min)		pilot pressure (bar) min. max.		operating pressure differential (bar)			operator diameter (mm)	catalogue number	
						min.	max.				
							air inert gas (*)	water, oil, liquids (*)			steam (*) (≤184°C)
<b>NC - Normally closed, entry under the disc <sup>(1)</sup></b>											
25	25	12	200	4	10	0	10	10	10	63	T290A010
							16	16	10	90	T290A011
				2,5	10	0	6	6	6	63	T290A008
							12	12	10	90	T290A009
32	32	18	300	4	10	0	6	6	6	63	T290A016
							12	12	10	90	T290A017
				2,5	10	0	7	7	7	90	T290A015
							4	4	4	63	T290A020
40	40	32	530	4	10	0	8	8	8	90	T290A021
							16	16	10	125	T290A482
		35	583	2,5	10	0	10	10	10	125	T290A481
							2,5	2,5	2,5	63	T290A024
50	50	39	650	4	10	0	6	6	6	90	T290A025
							10	10	10	125	T290A485
		44	733	2,5	10	0	5	5	5	125	T290A484
							<b>NO - Normally open, entry under the disc</b>				
25	25	12	200	II (*)	10	0	16	16	10	63	T290A028
				III (*)	10	0	16	16	10	90	T290A029
32	32	18	300	II (*)	10	0	16	16	10	63	T290A030
		19	317	IV (*)	10	0	16	16	10	125	T290A643



## SPECIFICATIONS

DN	orifice size (mm)	flow coefficient Kv (m³/h)   (l/min)		pilot pressure (bar) min.   max.		operating pressure differential (bar)			operator diameter (mm)	catalogue number	
						min.	max.				
							air inert gas (*)	water, oil, liquids (*)			steam (*) (≤184°C)
<b>NO - Normally open, entry under the disc</b>											
40	40	32	530	II (*)	10	0	11	11	10	63	T290A032
				III (*)	10	0	16	16	10	90	T290A033
		35	583	IV (*)	10	0	16	16	10	125	T290A489
50	50	39	650	III (*)	10	0	13	13	10	90	T290A035
		44	733	IV (*)	10	0	16	16	10	125	T290A490
<b>NC - Normally closed, entry above the disc (version recommended for rapid-cycling steam applications)</b>											
25	25	12	200	VI (*)	10	0	10	-	10	63	T290A038
32	32	18	300	VI (*)	10	0	10	-	10	63	T290A039
				VII (*)	10	0	10	-	10	90	T290A136
40	40	32	530	VI (*)	10	0	10	-	10	63	T290A040
				VII (*)	10	0	10	-	10	90	T290A041
50	50	39	650	VI (*)	10	0	9	-	9	63	T290A042
				VII (*)	10	0	10	-	10	90	T290A043

(\*) Minimum pilot pressure varies with differential pressure, see page: 7 ([www.asco.com](http://www.asco.com))

(1) Calculation of the minimum pilot pressure at a ΔP of max. 10 bar with allowable backpressure (backpressure not recommended with liquids as waterhammer may occur) - 63, 90 and 125 mm operators, 4 bar minimum pilot pressure version: add 1,5 bar to the minimum pilot pressure of chart VI, VII or VIII [see page: 7 ([www.asco.com](http://www.asco.com))]

## OPTIONS AND ACCESSORIES [see pages: 37 ([www.asco.com](http://www.asco.com)) / 43 ([www.asco.com](http://www.asco.com))]

- Signaling box or compact signaling unit
- Stroke limiter for opening
- Manual safety device
- Adapter plate for NAMUR pad mounting pilot
- Oxygen service, pressure limited to 15 bar, temperature limited to + 60°C
- Vacuum applications up to 1,33 10<sup>-3</sup> mbar
- ATEX 2014/34/EU versions for potentially explosive atmospheres ([www.asco.com](http://www.asco.com))

## INSTALLATION

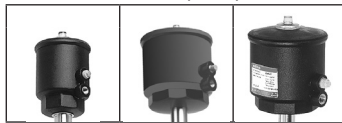
- The valves can be mounted in any position without affecting operation
- Compatible with ASTM 1, 2 and 3 oils
- Check temperature range of valve body and solenoid pilot valves for suitability. For probability of failure, contact us
- Installation/maintenance instructions are included with each valve

## SPARE PARTS KITS

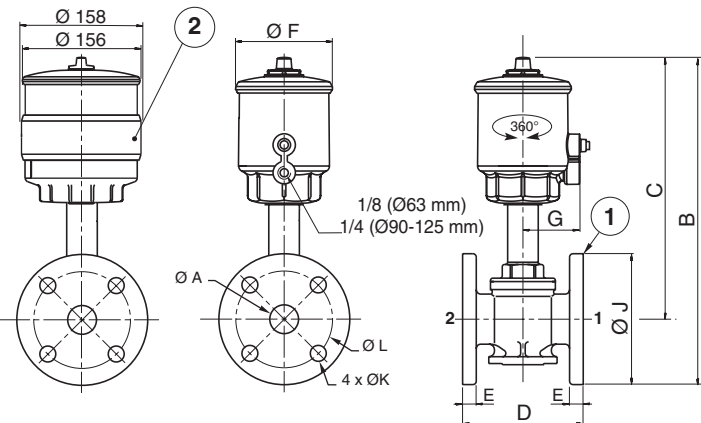
DN	spare parts kit no.
	Ø 63-90-125 mm
25	C140017 <sup>(2)</sup>
32	C140018 <sup>(2)</sup>
40	C140019 <sup>(2)</sup>
50	C140020 <sup>(2)</sup>

(2) Standard suffix VM also applies to kits. [see page: 37 ([www.asco.com](http://www.asco.com))].

## DIMENSIONS (mm), WEIGHT



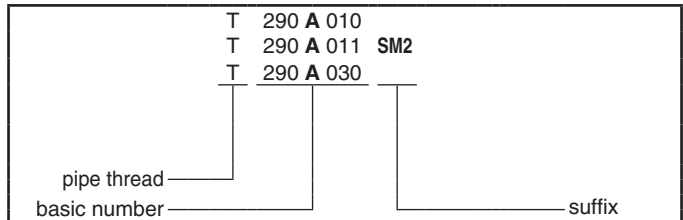
**TYPE 01-02-03**  
63, 90 and 125 mm operators  
Fluid entry:  
under the disc at 2  
above the disc at 1



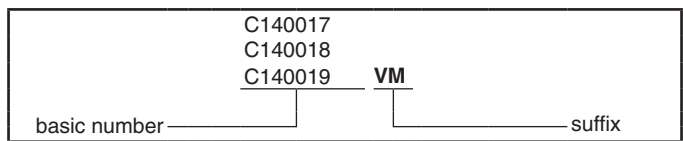
(1) Flange type 21 with flat faces, type A (ISO 7005)

(2) Operator dia. 125 mm, NO function

## ORDERING EXAMPLES:



## ORDERING EXAMPLES KITS:



type	operator diameter	ØA	B	C	D	E	ØF	G	ØJ	ØK	ØL	weight <sup>(3)</sup>
01	63	25	288	230	110	12	85	50,5	115	14	85	3,9
		32	313	243	130	14	85	50,5	140	18	100	5,9
		40	329	254	140	14	85	50,5	150	18	110	7,1
		50	354	271	160	16	85	50,5	165	18	125	10,5
02	90	25	303	246	110	12	118	67	115	14	85	4,5
		32	325	255	130	14	118	67	140	18	100	6,5
		40	341	266	140	14	118	67	150	18	110	7,7
03	125	50	365	283	160	16	118	67	165	18	125	11,1
		32	378	308	130	14	156	86	140	18	100	9
		40	394	319	140	14	156	86	150	18	110	10,2
		50	418	336	160	16	156	86	165	18	125	13,6

(3) Weight of valve without pilot. Add 0,2 for dia. 125 mm operator NO.

Solenoid pilot valves, see pages: 49 ([www.asco.com](http://www.asco.com)) [63 mm operator]













51 ([www.asco.com](http://www.asco.com)) [90 and 125 mm operators]







All leaflets are available on: [www.asco.com](http://www.asco.com)

### GENERAL / CONSTRUCTION / SPECIFICATIONS

See catalogue pages "Pressure Operated Valves (2/2)": 15, 19, 23, 25, 27, 31, 35  
 "Pressure Operated Valves (3/2)": 1

### CHOICE OF OPTIONS AND ACCESSORIES

construction type	see page	catalogue page								NC fluid entry under the disc	NO fluid entry under the disc	NC fluid entry above the disc	operator dia. compatibility (mm) Ø				body		
		15	19	23	25	27	31	35	1 (3/2 section)				32	50	63	90	125	bronze	stainless steel
 <b>01</b> Signaling box, with mechanical or inductive contacts	39	EE	EE	EE		II	II	II	II		•	•	•				///	///	///
 <b>02</b> Signaling unit for dia. 32 mm operators, with reed switch or magneto-resistive (MR) detectors	41	EE	EE	EE	EE	II	II	II	II		•	•	•				///	///	///
 <b>03</b> Signaling unit for dia. 50, 63, 90 and 125 mm operators, with reed switch or magneto-resistive (MR) detectors	39	EE	EE			II	II	II	II		•	•	•				///	///	///
 <b>04</b> Stroke limiter for opening	38	EE	EE			II	II	II	II		•	•	•				///	///	///
 <b>05</b> Manual safety device	38	EE	EE			II	II	II	II		•	•	•				///	///	///
 <b>06</b> Optical position indicator (Ø 32-50 mm) (Standard on dia. 63, 90 and 125 mm operators)	38	EE	EE	EE	EE	II	II	II	II		•	•	•				///	///	///
 <b>07</b> Adapter plate for NAMUR pad-mount pilot	38	EE	EE			II	II	II	II		•	•	•				///	///	///
 <b>08</b> Oxygen service (max. limits: 15 bar, +60°C)	38	EE		EE	EE	II	II		II		•	•	•	•	•	•	///	///	///
 <b>09</b> Vacuum applications up to 1.33 10 <sup>-3</sup> mbar	38	EE		EE	EE	II	II		II		•	•	•	•	•	•	///	///	///
 <b>10</b> NET-INOX treatment	38	EE	EE	EE		II	II		II		•	•	•	•	•	•	///	///	///
 <b>11</b> Conformity with Regulation (EC) 1935-2004	38		EE	EE	EE		II	II			•	•	•	•	•	•	///	///	///
 <b>12</b> All stainless steel AISI 316L version (Recommended for aggressive environments) For valve catalogue numbers = contact us																			

 Valves with female threaded ports.    
  Valves with butt welding connection    
  Valves with CLAMP connection  
 Valves with male threaded ports    
  Valves with flange connection.    
  Valves with male threaded ports DIN 11851

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### CONSTRUCTION 04

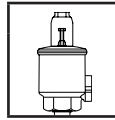
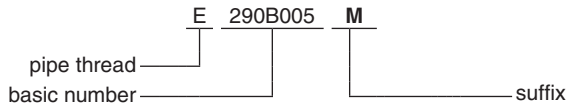
#### Stroke limiter for opening

- Fluid entry under the disc only
- Operator diameters 50 (NC), 63, 90 and 125 mm

**TO ORDER:** (for compatibility: see page 37)

- Add suffix **M**

#### ORDERING EXAMPLES:



### CONSTRUCTION 05

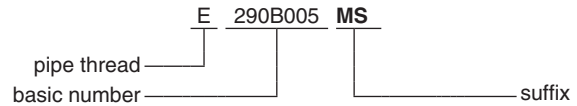
#### Manual safety device

- Allows opening of a de-energized valve
- For normally closed (NC) valves only

**TO ORDER:** (for compatibility: see page 37)

- Add suffix **MS**

#### ORDERING EXAMPLES:



### CONSTRUCTION 06

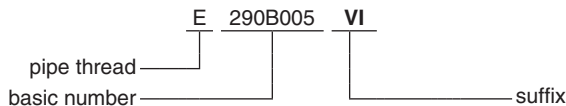
#### Optical position indicator

- Visual indication of open or closed position of NC valves with Ø 32 or 50 mm operator (standard with dia. 63, 90 and 125 mm operators)

**TO ORDER:** (for compatibility: see page 37)

- Add suffix **VI**

#### ORDERING EXAMPLES:



### CONSTRUCTION 07

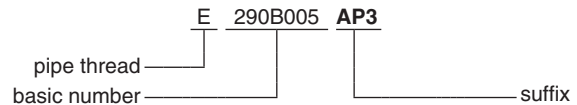
#### Adapter plate for NAMUR pad-mount pilot

- Adaptable on diameter Ø 63, 90 and 125 mm operators
- Stainless steel AISI 316L
- Solenoid pilot valves, series 551, 3/2 NC :
  - aluminium body, catalogue number SCG551A001 ([www.asco.com](http://www.asco.com))
  - St. steel body, AISI316L, catalogue number SCG551A409 ([www.asco.com](http://www.asco.com))

**TO ORDER:** (for compatibility: see page 37)

- Add suffix
  - stainless steel AISI 316L **AP3** (dia. 63 mm operator)
  - stainless steel AISI 316L **AP4** (dia. 90 and 125 mm operators)

#### ORDERING EXAMPLES:



### CONSTRUCTION 08

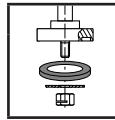
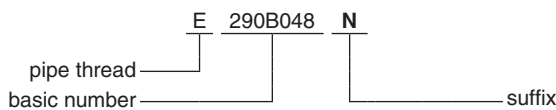
#### Oxygen service

- Special grease and cleaning
- Pressure limited to 15 bar/temperature limited to +60°C

**TO ORDER:** (for compatibility: see page 37)

- Add suffix **N**

#### ORDERING EXAMPLES:



### CONSTRUCTION 09

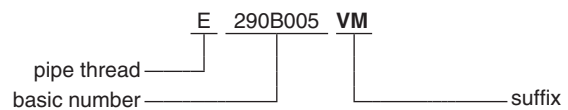
#### Vacuum applications up to 1,33 10<sup>-3</sup> mbar

- FPM disc for use with medium vacuum

**TO ORDER:** (for compatibility: see page 37)

- Add suffix **VM**

#### ORDERING EXAMPLES:



### CONSTRUCTION 10

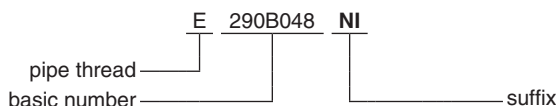
#### NET-INOX treatment

- Stainless steel valve body pickled in nitric hydrofluoric acid bath
- Treatment recommended for aggressive environments
- Standard on valves with CLAMP-type connections

**TO ORDER:** (for compatibility: see page 37)

- Add suffix **NI**

#### ORDERING EXAMPLES:



### CONSTRUCTION 11

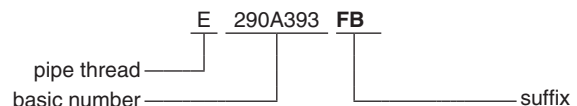
#### Conformity with Regulation (EC) 1935-2004

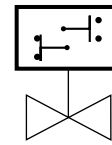
- The material of the wetted parts are listed in the chart of the Annex I of Regulation (EC) 1935/2004

**TO ORDER:** (for compatibility: see page 37)

- Add suffix **FB**

#### ORDERING EXAMPLES:





## FEATURES

- The signaling box fits all series 290 (2/2) and 390 (3/2) valves with 50 mm (NC) and 63 to 125 mm (NC/NO) operators to indicate whether the valve is open or closed
- It is rotatable through 360° and equipped with two mechanical or inductive contacts
- The signaling box is supplied pre-installed and pre-adjusted on the valve. It can be delivered separately for on-site installation on any valve already in service
- The version with mechanical contacts can be used with up to max. 250 V AC and in magnetic field environments.

## GENERAL / OPERATION

At both end-of-travel positions (open and closed) of the valve stem, cams on the signaling box plunger operate contacts which provide an electrical signal indicating that the end position is reached.

## CONSTRUCTION

**Body** PA  
**Cover** PA, transparent  
**Protection rating** IP65  
**Unit can be rotated through 360° around the centreline of the valve operator (set screw)**

## ELECTRICAL CHARACTERISTICS

mechanical contacts	inductive contacts
Breaking capacity of contacts: • resistive circuit: 3,2 A at 250 V AC • inductive circuit: 1,8 A under 250 V AC (cos Ø= 0.8)	• 10 to 30 V DC power supply • load current 200 mA max. • built-in electrical protection

## Electrical connection

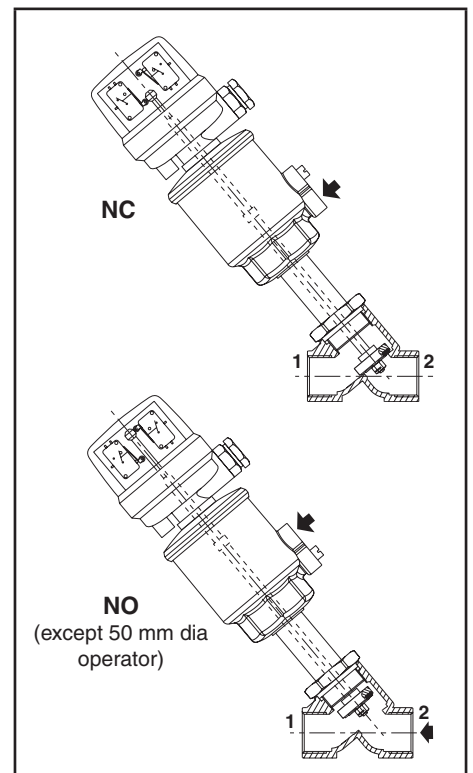
mechanical contacts 1 terminal strip with 6 screw terminals  
 inductive contacts 2 terminal strips with 2 screw terminals  
**Max. grip** 2,5 mm<sup>2</sup>  
**Cable entry** 1 cable gland (cable Ø 5-10 mm)

## SPECIFICATIONS

operator	suffix <sup>(1)</sup> signaling box supplied installed on valve	
	2 mechanical contacts	2 inductive contacts
Ø 50 mm (NC)	<b>SM2</b>	<b>SI2</b>
Ø 63, 90, 125 mm (NC-NO)		

<sup>(1)</sup> Add the appropriate suffix after the catalogue number of the selected valve, example:  
 - catalogue number of valve alone **E290B010**  
 - catalogue number of valve + pre-installed inductive contacts box = **E290B010 SI2** ;  
 The inductive contacts box is supplied installed on the valve and pre-adjusted.

NOTE - The signaling box can be supplied separately for on-site installation on any valve already in service (contact us).





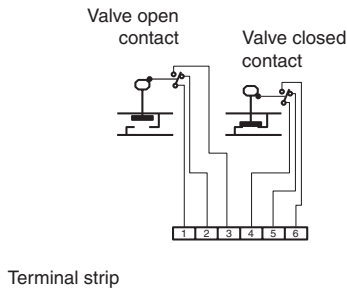
### OPTIONS

- Other types of contacts: contact us

### INSTALLATION

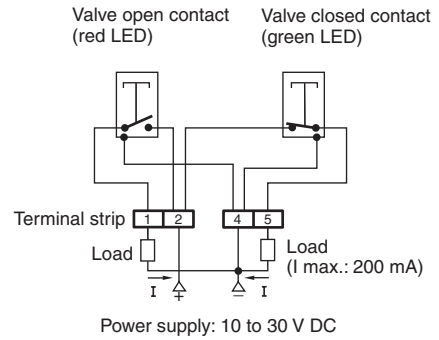
- The signaling box can be installed in any position
- Electrical connection:

#### mechanical contacts



#### inductive contacts

(valve closed)



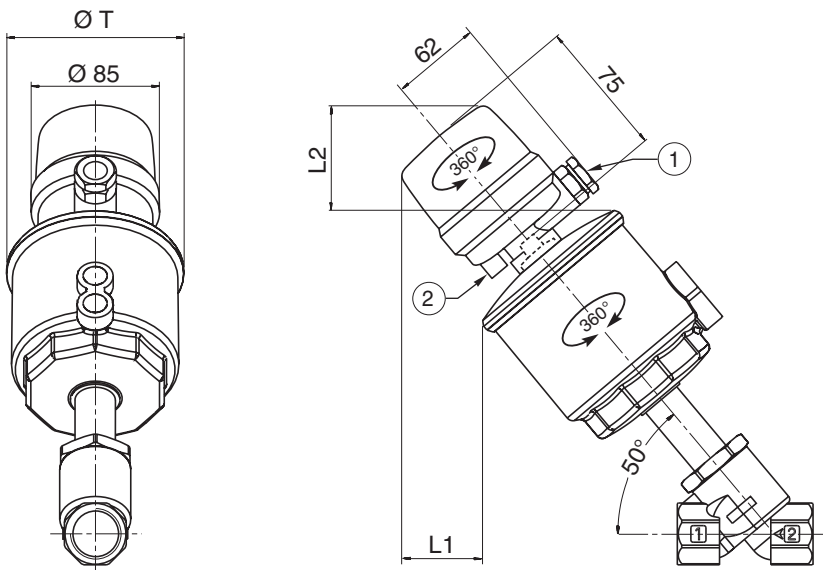
- Installation/maintenance instructions are included with each signaling box

### DIMENSIONS (mm), WEIGHT (kg)

Weight of unit alone: 0,310

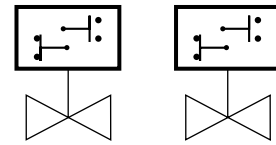
### INSTALLATION SUR SERIES 290 & 390

with dia 50 (NC), 63, 90 or 125 mm operator



operator dia.	50 mm	63 mm	90 mm	125 mm
L1	53	46	35	32
L2	75	70	56	50
Ø T	65	85	118	156

- ① 1 cable gland (cable Ø 5-10 mm)
- ② Unit rotation lock set screw (orientable through 360°)



## FEATURES

- The signaling unit fits all 290 (2/2) and 390 (3/2) valves with 32 mm/50 mm (NC), 63 to 125 mm (NC/NO) operators and electrically and visually indicates whether the valve is open or closed
- Size and shape adapted for easy valve installation
- Detectors held in place by lateral grooves
- Incorporated detectors for enhanced protection
- One standard detector support suitable for both reed switch and magneto-resistive (MR) "T"-type detectors

## GENERAL / OPERATION

The magnet support of the compact signaling unit is attached to the stem of the valve and contains the permanent magnet. The extreme positions of the valve stem can therefore be detected by either the reed switch or the magneto-resistive detectors.

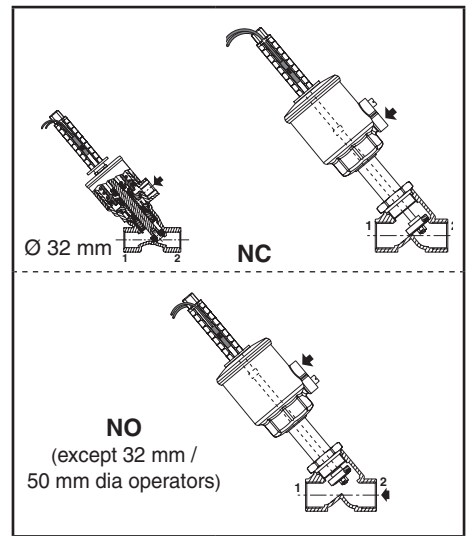
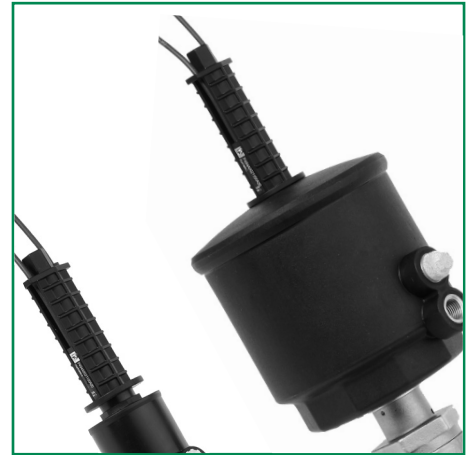
**It is possible to install one or two detectors to monitor one or both extreme positions of a valve.**

## CONSTRUCTION

**Support** PA  
**Detector encapsulation** PA + FV  
**Cable** PUR, resistant to cutting oils (PVC = M12, IP69K)

## CHARACTERISTICS

	Reed switch detector	Magneto-resistive detector
<b>Max. breaking power</b>	5 VA (AC) -5 W (DC)	3 W (DC)
<b>Switching voltage</b>	AC/DC: 5 to 120 V max.	10 to 30 V DC
<b>stripped ends connector</b>	AC: 5 to 50 V max. DC: 5 to 60 V max.	10 to 30 V DC
<b>Max. switching current</b>	100 mA	100 mA
<b>Short-circuit protection</b>	No	Yes
<b>Reverse polarity protection</b>	Yes (without LED function)	Yes
<b>Overload protection</b>	No	Yes
<b>Wiring</b>	-	PNP - NPN
<b>Voltage drop</b>	< 5 V	< 1,5 V (I = 50 mA) < 2,5 V (I = 100 mA)
<b>Breakdown voltage</b>	230 V DC	-
<b>Contact resistance</b>	max. 0,2 ohm	-
<b>Insulation resistance</b>	2.10 <sup>8</sup> ohm at 100 V	-
<b>Max. leakage current</b>	-	< 50 µA
<b>Max. allowable overvoltage</b>	-	32 V DC max. (100 ms)
<b>Sensitivity</b>	Min. 2,1 mTesla (21 Gauss)	Min. 2 mTesla (20 Gauss)
<b>Response time</b>		
<b>opening</b>	0,1 ms	110 µs
<b>closing</b>	0,6 ms	220 µs
<b>Repeatability</b>	< ± 0,2 mm	< 0,2 mm
<b>Temperature range</b>	-25°C to +70°C	-25°C to +85°C
<b>Degree of protection</b>	IP67	IP67 / IP69K
<b>Protection class</b>	Cable outlet, class II M8 + M12, class III	Class III
<b>Approval</b>	CE	CE (UL, cUL 2m + M8)
<b>Signal indication</b>	Yellow diode (LED) which lights up when contact is established	



## SPECIFICATIONS

### 1 SIGNALING SUPPORT

description	suffix
• Signaling support supplied installed on valve	<b>SU</b> <sup>(1)</sup>

### 2 MAGNETIC POSITION DETECTOR (Detectors are always delivered separately.)

description	IP	lead	catalogue number <sup>(1) (2)</sup>		
			reed switch detector	MR detector	
				PNP	NPN
• stripped ends	IP67	PUR  (0,14 mm <sup>2</sup> )	P494A0021300A00	-	-
			P494A0021100A00	-	-
			-	P494A0022300A00	P494A0022400A00
			-	P494A0022100A00	-
• 3-pin plug-in male connector and Ø M8	0,3 m	IP67 PUR 	P494A0021500A00	-	-
			P494A0021600A00	-	-
			-	P494A0022600A00	P494A0022700A00
			P494A0021700A00	-	-
• 3-pin screw-type male connector, Ø M12	0,3 m	IP67 PUR 	-	P494A0022800A00	-
			-	P494A0022900A00	-
			-	-	-

<sup>(1)</sup> Add the suffix "SU" after the catalogue number of the selected valve.

Example: catalogue number of valve alone **E290A010** / catalogue number of valve + pre-installed signaling support **E290A010SU** + catalogue number of detector and required quantity

<sup>(2)</sup> Each catalogue number corresponds to one single detector.

**INSTALLATION**

- Polarised magneto-resistive (MR) detector with output protected against possible short-circuits on load at an output current lower than or equal to 0,1 A. In case of inductive load, use a diode in parallel with the load
- Installation/maintenance instructions are supplied with each compact signaling unit

**ACCESSORIES**

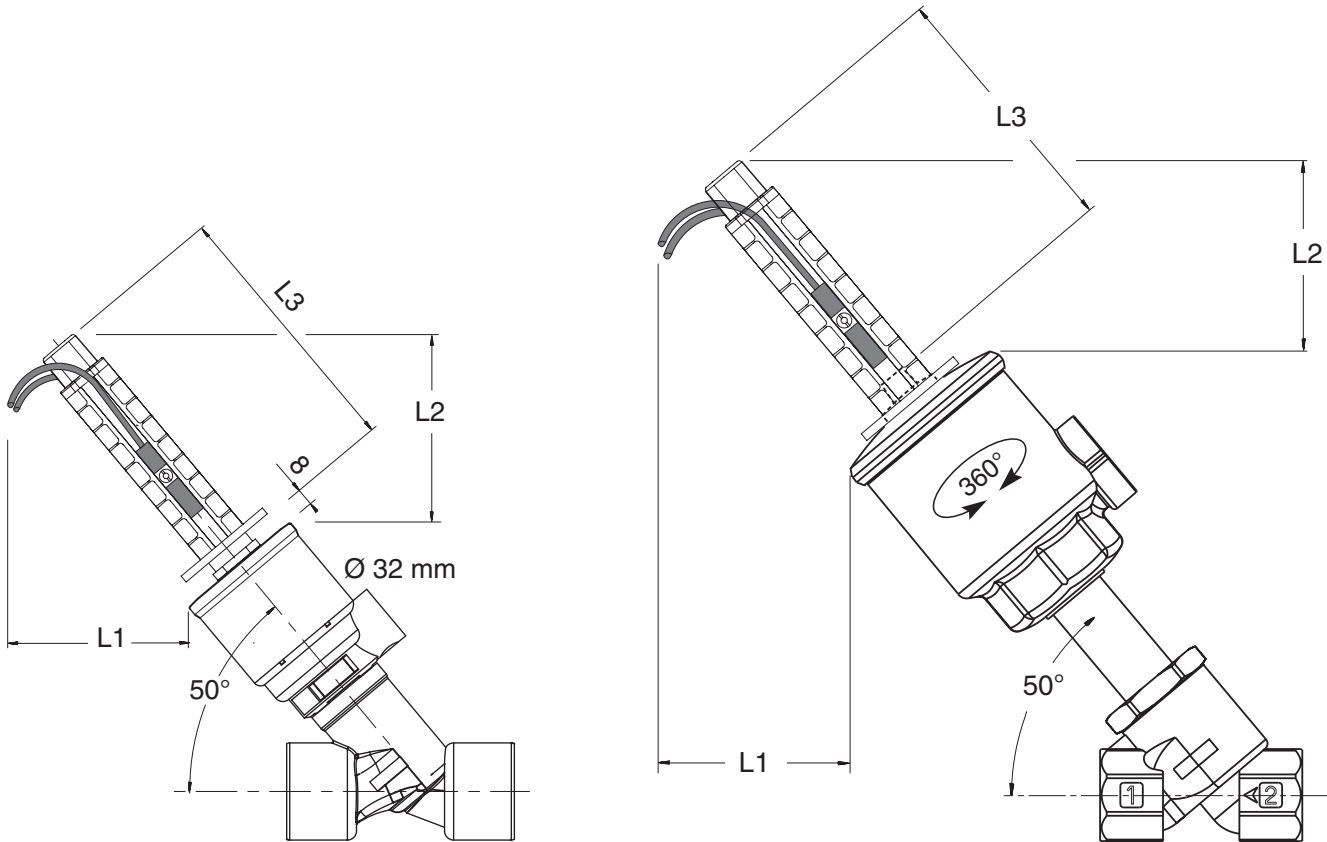
<ul style="list-style-type: none"> <li>• PVC extension cord, length 5 m, 3-wire conductors 0.25 mm<sup>2</sup> with 1 screw-type female M8 connector (other end plain)<sup>(1)</sup>, catalogue number <b>P4994406200N001</b></li> </ul>	
<ul style="list-style-type: none"> <li>• PVC extension cord, length 5 m, 3-wire conductors 0.25 mm<sup>2</sup> with 1 screw-type female M12 connector (other end plain)<sup>(1)</sup>, catalogue number <b>P4994406210N001</b></li> </ul>	
<ul style="list-style-type: none"> <li>• Straight 3-pin female connector Ø M8, IP67, catalogue number <b>P4994406220N001</b></li> </ul>	
<ul style="list-style-type: none"> <li>• Right angle 3-pin female connector Ø M8, orientable 90° x 90°, IP67, catalogue number <b>P4994406230N001</b></li> </ul>	
<ul style="list-style-type: none"> <li>• Block of memorizing position of adjustment detector, catalogue number <b>P4994406160N001</b></li> </ul>	

<sup>(1)</sup> Detector connection:  
**Magneto-resistive type:** brown wire = +, blue wire = -, black wire = load

**DIMENSIONS (mm), WEIGHT (kg)**

Weight of signaling support: 0,25

Weight of one single detector: 0,007 to 0,050 depending on connector configuration and cable length



	operator dia.				
	32 mm (NC)	50 mm (NC)	63 mm	90 mm	125 mm
L1	60	67	60	47	33
L2	66	47	42	38	19
L3	86	70	70	70	70

### FEATURES

- 2/2 or 3/2 valves NC/NO designed for use in potentially explosive atmospheres in accordance with ATEX-Directive 2014/34/EU, category 2 or 3
- Compliance with the Essential Health and Safety Requirements has been assured by compliance with European Standards EN 13463-1
- Recommended for applications in the chemical, oil, gas and paint coating industries etc.

### GENERAL / CONSTRUCTION / SPECIFICATIONS

operator diameter / DN		see page Pressure Operated Valves			classification (zones)													
		(2/2)		(3/2)	category 2					category 3								
		15, 19, 23, 25, 27, 31	35	1	gas safety code			category 2			gas safety code			category 3				
					IIA	IIB	IIC											
Ø 32 mm	10 → 20				21	1	1	·	Ex II 2 GD c IIB T4 T135°C			22	2	2	2	Ex II 3 GD c T4 T135°C		
Ø 50 mm	15 → 25				21	1	1	·	Ex II 2 GD c IIB T4 T135°C			22	2	2	2	Ex II 3 GD c T4 T135°C		
Ø 63 mm	15 → 50				21	1	1	·	Ex II 2 GD c IIB T4 T135°C			22	2	2	2	Ex II 3 GD c T4 T135°C		
Ø 90 mm	25 → 65				21	·	·	·	Ex II 2 D c T135°C			22	2	2	2	Ex II 3 GD c T4 T135°C		
Ø 125 mm	32 → 65																	

### ORDERING

Verify the compatibility of the category/zone with the selected valve.	suffix to be added to the valve's catalogue number (1)	
	category 2	category 3
	<b>GD2</b>	<b>GD3</b>

Example (see page 15):

Valve E290, DN 35, operator dia. 63 mm designed for use in zones 1 and 21 (category 2), catalogue number: **E290B010GD2**

### CHOICE OF OPTIONS AND ACCESSORIES

construction type	see page	catalogue page								NC fluid entry under the disc	NO fluid entry under the disc	NC fluid entry above the disc	operator dia. compatibility (mm) Ø					body		
		15	19	23	25	27	31	35	1 (3/2 section)				32	50	63	90	125	bronze	stainless steel	cast iron
Signaling box, intrinsically safe inductive contacts NAMUR	45									·	·	·	·	·	·	·	·	·	·	
Adapter plate (stainless steel) for NAMUR pad-mount pilot	44									·	·	·		·	·	·	·	·	·	
Oxygen service (max. limits: 15 bar, +60°C)	44									·	·	·	·	·	·	·	·	·	·	
Vacuum applications up to 1.33 10 <sup>-3</sup> mbar	44									·	·	·	·	·	·	·	·	·	·	
NET-INOX treatment	44									·	·	·	·	·	·	·	·	·	·	
Conformity with Regulation (EC) 1935-2004	44									·	·	·	·	·	·	·	·	·	·	
All stainless steel AISI 316L version (Recommended for aggressive environments) For valve catalogue numbers = contact us																				

Valves with female threaded ports. Valves with butt welding connection. Valves with CLAMP connection. Valves with male threaded ports. Valves with flange connection. Valves with male threaded ports DIN 11851.

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**CONSTRUCTION 07**

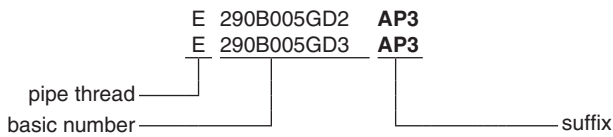
**Adapter plate for NAMUR pad-mount pilot**

- Adaptable on diameter Ø 63, 90 and 125 mm operators
- Stainless steel AISI 316L
- Solenoid pilot valves, series 551, 3/2 NC:
  - aluminium body, catalogue number **SCG551A001** ([www.asco.com](http://www.asco.com))
  - St. steel body, AISI316L, catalogue number **SCG551A409** ([www.asco.com](http://www.asco.com))

**TO ORDER:** (for compatibility: see page 43)

- Add suffix
  - stainless steel AISI 316L **AP3** (dia. 63 mm operator)
  - stainless steel AISI 316L **AP4** (dia. 90 and 125 mm operators)

**ORDERING EXAMPLES:**



**CONSTRUCTION 08**

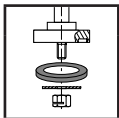
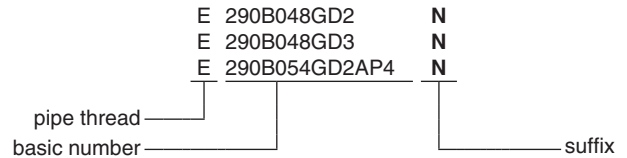
**Oxygen service**

- Special grease and cleaning
- **Pressure limited to 15 bar/temperature limited to +60°C**

**TO ORDER:** (for compatibility: see page 43)

- Add suffix **N**

**ORDERING EXAMPLES:**



**CONSTRUCTION 09**

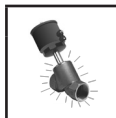
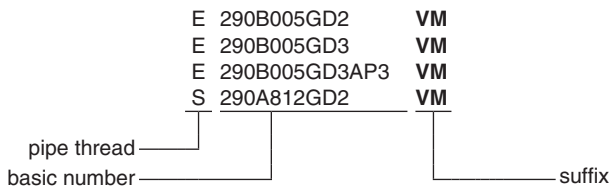
**Vacuum applications up to 1,33 10<sup>-3</sup> mbar**

- FPM disc for use with medium vacuum

**TO ORDER:** (for compatibility: see page 43)

- Add suffix **VM**

**ORDERING EXAMPLES:**



**CONSTRUCTION 10**

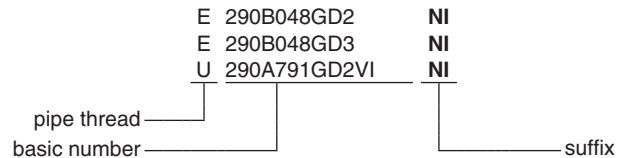
**NET-INOX treatment**

- Stainless steel valve body pickled in nitric hydrofluoric acid bath
- Treatment recommended for aggressive environments
- Standard on valves with CLAMP-type connections

**TO ORDER:** (for compatibility: see page 43)

- Add suffix **NI**

**ORDERING EXAMPLES:**



**CONSTRUCTION 11**

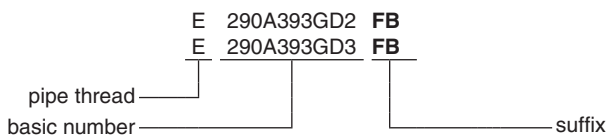
**Conformity with Regulation (EC) 1935-2004**

- The material of the wetted parts are listed in the chart of the Annex I of Regulation (EC) 1935/2004

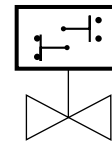
**TO ORDER:** (for compatibility: see page 43)

- Add suffix **FB**

**ORDERING EXAMPLES:**







## FEATURES

- The signaling box fits all series 290 (2/2) and 390 (3/2) valves with 50 mm (NC) and 63 to 125 mm (NC/NO) operators to indicate whether the valve is open or closed
- The version with 2 intrinsically safe inductive NAMUR contacts is designed for use in potentially explosive atmospheres to ATEX-Directive 2014/34/EU
- Compliance with the Essential Health and Safety Requirements has been assured by compliance with the International and European Standards EN 60079-0, EN 60079-11 and EN 60076-26
- The signaling box is supplied pre-installed and pre-adjusted on the valve. It is rotatable through 360°
- The signaling box complies with the EMC Directive 2014/30/EU

## OPERATION

At both end-of-travel positions (open and closed) of the valve stem, cams on the signaling box plunger operate contacts which provide an electrical signal indicating that the end position is reached.

## GENERAL

**Ambient temperature range** -10°C to +60°C

## CONSTRUCTION

**Body, cover** PA  
**Degree of protection** IP66  
**Unit can be rotated through 360° around the centreline of the valve operator (set screw)**

## ELECTRICAL CHARACTERISTICS

### intrinsically safe inductive NAMUR contacts

The protection rating of the installed signaling box depends on the type of selected valve (see page 1).

Contact characteristics:

- Power supply: 8,2 V DC
- Switching frequency: 800 Hz

Protection rating of contacts:

- II 1 G Ex ia IIB T6 Ga
- II 2 G Ex ia IIB T6 Gb
- II 1 D Ex ia IIC T90°C Da

• EC type examination certificate no.:  
**BVS 04 ATEX E153**  
**PTB 01 ATEX 2191**

• Recommended interfaces:  
*galvanic barrier*  
Pepperl & Fuchs type KFA6-SR2-EX1.W  
MTL instruments type MTL5011B  
*ZENER barrier*  
MTL instruments type MTL7742

safety parameters				
U <sub>i</sub>	I <sub>i</sub>	P <sub>i</sub>	L <sub>i</sub>	C <sub>i</sub>
15 V	50 mA	120 mW	110 µH	80 nF

## Electrical connection

intrinsically safe inductive NAMUR contacts

**Max. grip**  
**Cable entry**

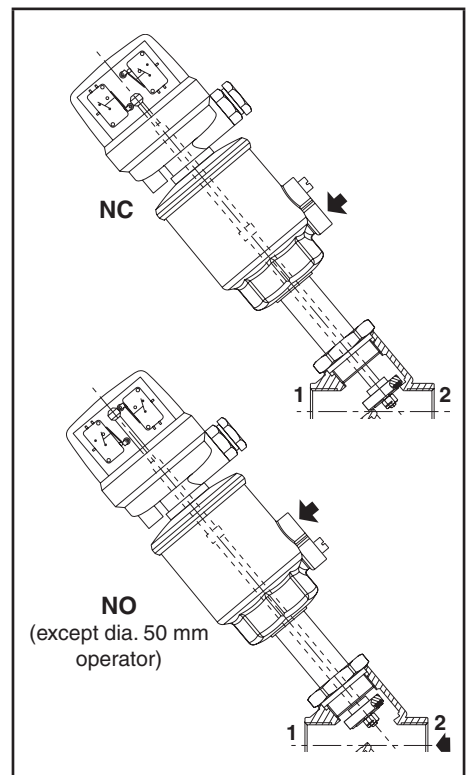
2 terminal strips with 5 screw terminals  
2,5 mm<sup>2</sup>  
1 cable gland (cable Ø 5-10 mm)

## SPECIFICATIONS

operator	suffix <sup>(1)</sup> signaling box supplied installed on valve 2 intrinsically safe inductive contacts
dia. 50 mm (NC), dia. 63, 90, 125 mm (NC-NO)	<b>SH2</b>

<sup>(1)</sup> Add the appropriate suffix after the catalogue number of the selected valve, example:

- catalogue number of valve alone **E290B010**
- catalogue number of valve + pre-installed intrinsically safe inductive contacts box = **E290B010 SH2**

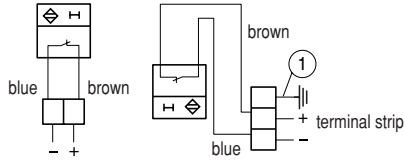


### OPTIONS

- Other types of contacts: contact us

### INSTALLATION

- The signaling box can be installed in any position
- Electrical connection:



① Electrical continuity terminal

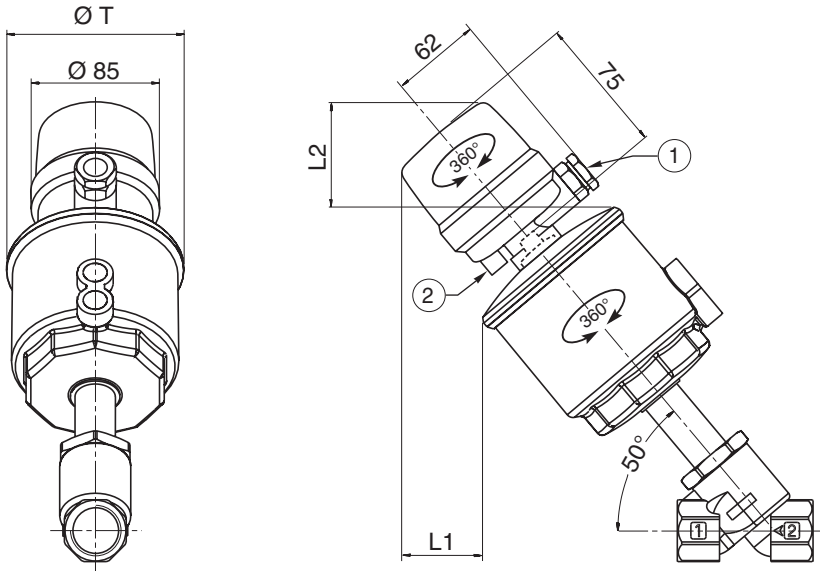
- Installation/maintenance instructions are included with each signaling box

### DIMENSIONS (mm), WEIGHT (kg)

Weight of unit alone: 0,310

### INSTALLATION ON SERIES 290 & 390

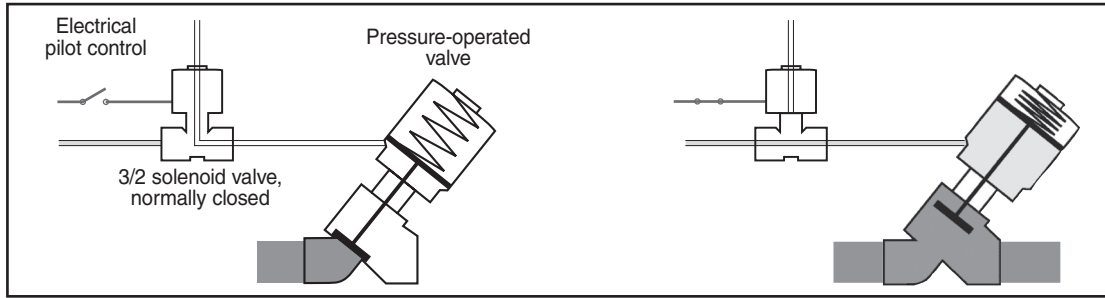
with dia 50 (NC), 63, 90 or 125 mm operator



operator dia.	50 mm	63 mm	90 mm	125 mm
L1	53	46	35	32
L2	75	70	56	50
Ø T	65	85	118	156

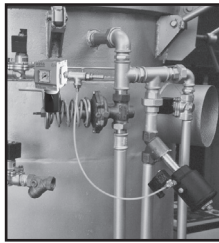
- ① 1 cable gland (cable Ø 5-10 mm)
- ② Unit rotation lock set screw (orientable through 360°)


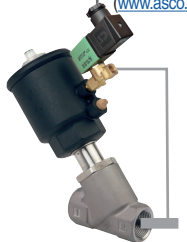

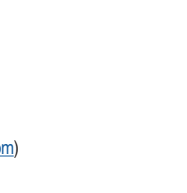
Pressure operated valves are piloted by a 3/2 solenoid valve either directly mounted on the valve or remotely connected.



### DIRECT OPERATED

- Short response times
- Easy on-site testing with the solenoid valve's manual override.
- Possibility to use the fluid (air, water) of the supply line as pilot fluid.



Electrical pilot control	3 to 11 W per valve	 <p>page 49 <a href="http://www.asco.com">www.asco.com</a></p>	 <p>page 51 <a href="http://www.asco.com">www.asco.com</a></p>
Compressed air		 <p><a href="http://www.asco.com">www.asco.com</a></p>	 <p>page 37 <a href="http://www.asco.com">www.asco.com</a></p>

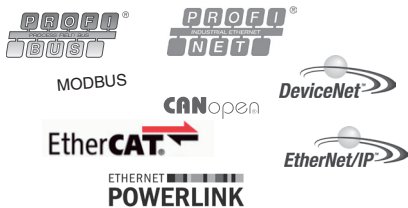
Namur interface

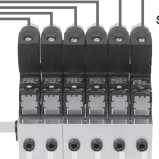




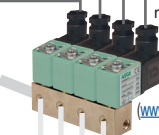



### REMOTE OPERATED

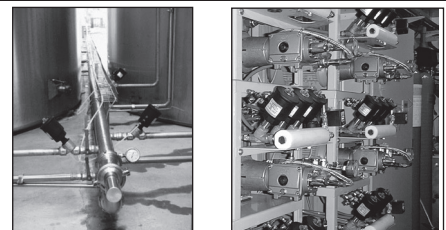
**Solution 1:** Solenoid pilot valves mounted on joinable subbases according to CNOMO standard with integrated instant fitting pneumatic connections or on manifolds.

**Solution 2:** Distribution islands with two 3/2 solenoid valves per module, up to 32 valves can be piloted with a series 501 island.

- Centralised electrical connection
- Integrated plug-in type valve power connection
- Modifiable connections thanks to cartridge-type instant fittings
- Compatible with the following fieldbuses:



Electrical pilot control	<p><b>Solution 1</b> 1 W per valve</p>  <p>subbases CNOMO page 21<sup>(1)</sup> <a href="http://www.asco.com">www.asco.com</a></p>	   
or fieldbus control	<p>4 W per valve</p>  <p>manifolds page 31<sup>(1)</sup> <a href="http://www.asco.com">www.asco.com</a></p>	
Compressed air	<p><b>Solution 2</b> 0,75 W per valve</p>  <p>page 1<sup>(2)</sup> <a href="http://www.asco.com">www.asco.com</a></p>	 



See sections: <sup>(1)</sup> Solenoid Valves (3/2)  
<sup>(2)</sup> Fieldbus Electronics

The valve islands and/or solenoid pilot valves can be grouped together in one place.  
Cabinet installation for use in "aggressive" environments.  
Reduced electrical wiring. Low power consumption.

All leaflets are available on: [www.asco.com](http://www.asco.com)

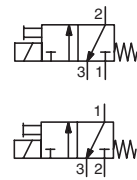




# SOLENOID PILOT VALVES

with 290/390 valves, 32, 50 & 63 mm operators  
direct operated  
1/8

NC



**3/2**  
Series  
**189/banjo**  
**356**

## FEATURES

- Compact design and low weight enabling easy installation on all series 290 & 390 valves with 32, 50 & 63 mm operators
- Manual operator allows an easy installation
- AC/DC interchangeability of the solenoid without disassembly of the valve
- Simple installation (supply port, solenoid valve body, coil and connector rotatable through 360°), built-in exhaust regulator (pilot valve series 189/banjo coupling)
- Compliance with UL and CSA standards (pilot valve series 356 coupling)
- The solenoid valves satisfy all relevant EU Directives

## GENERAL

**Differential pressure** See «SPECIFICATIONS» [1 bar = 100 kPa]  
**Maximum viscosity** 40 cSt (mm<sup>2</sup>/s)  
**Response time** See page 7 ([www.asco.com](http://www.asco.com))

pilot (series)	fluids (*)	temperature range (TS)	seal materials (*)
189 banjo	filtered air	-10°C to +60°C	NBR (nitrile)
356	filtered air and water		FPM (fluoroelastomer)

## MATERIALS IN CONTACT WITH FLUID

(\*) Ensure that the compatibility of the fluids in contact with the materials is verified

	Banjo pilot 189	Pilot 356
<b>Body</b>	PA, glass fibre reinforced	Brass or stainless steel AISI 316
<b>Core tube</b>	Brass	Stainless steel
<b>Core and plugnut</b>	Stainless steel	Stainless steel
<b>Springs</b>	Stainless steel	Stainless steel
<b>Seats</b>	PA + Stainless steel	Brass or stainless steel
<b>Seals</b>	NBR	FPM
<b>Shading coil</b>	Copper	Copper

## ELECTRICAL CHARACTERISTICS

**Coil insulation class** F  
**Connector** Spade plug (cable Ø 6-8 mm)  
**Connector specification** DIN 43650, 11 mm, industry standard B  
**Electrical safety** IEC 335  
**Electrical enclosure protection** Moulded IP65 (EN 60529)  
**Standard voltages** DC (=) : 24V - 48V  
(Other voltages and 60 Hz on request) AC (~) : 24V - 48V - 115V - 230V / 50 Hz

prefix option	power ratings				operator ambient temperature range (TS) (C°)	replacement coil		type <sup>(1)</sup>
	inrush ~	holding ~	hot/cold =			~	=	
	(VA)	(VA)	(W)	(W)		230 V/50 Hz	24 V DC	
-	6	3,5	2,5	2,5 / 3	-10 to +60	400127-097	400904-542	01
SC	12	6	4	5 / 6,9	-10 to +60	400127-197	400127-142	02

<sup>(1)</sup> Refer to the dimensional drawings on the following page.

## SPECIFICATIONS

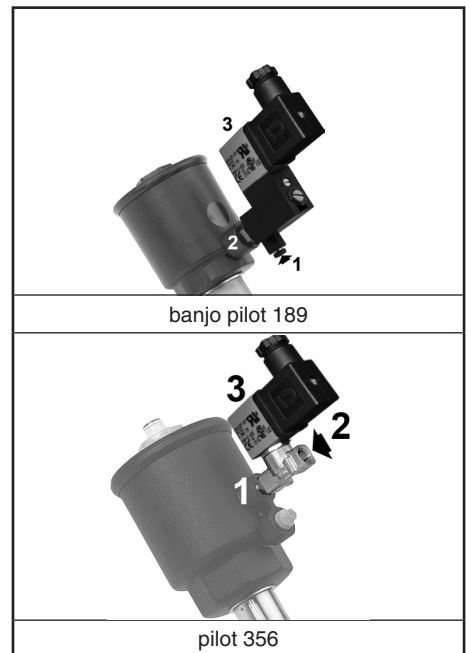
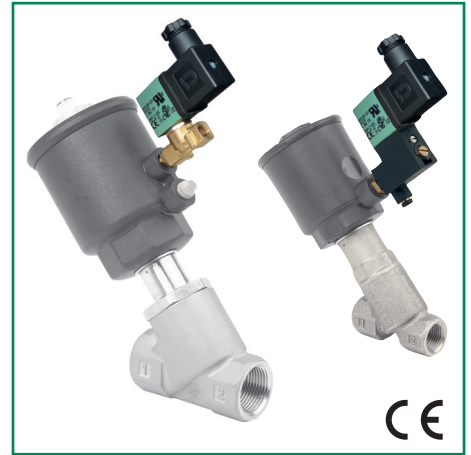
pipe size	orifice size		flow coefficient Kv				operating pressure differential (bar)				power coil (W)		catalogue number with maintained manual operator ~/=	
	2↔1 (mm)	1-2→3 (mm)	2↔1		1-2→3		min. <sup>(4)</sup>	max. (PS)		~	=			
			(m <sup>3</sup> /h)	(l/min)	(m <sup>3</sup> /h)	(l/min)		air (*)	water (*)					
<b>NC - Normally closed, series 189 banjo pilot</b>														
1/8 <sup>(2)</sup>	1,2	1,2	0,03	0,5	0,04	0,7	0	10	10	-	-	2,5	3	18900032
<b>NC - Normally closed, series 189 banjo pilot with built-in exhaust regulator</b>														
1/8 <sup>(2)(5)</sup>	1,2	1,2	0,03	0,5	0,04	0,7	0	10	10	-	-	2,5	3	18900047
<b>NC - Normally closed, series 356 pilot, brass body</b>														
1/8 <sup>(2)</sup>	1,6	1,2	0,08	1,33	0,05	0,8	0	10	10	10	10	4	6,9	SCG356B053VMS <sup>(3)</sup>
<b>NC - Normally closed, series 356 pilot, stainless steel body</b>														
1/8 <sup>(2)</sup>	1,6	1,2	0,08	1,33	0,05	0,8	0	10	10	10	10	4	6,9	SCG356B058VMS <sup>(3)</sup>

- <sup>(2)</sup> Pipe size:  
- Port 1: O.D. 4 mm instant fitting (189 banjo) / 1/8 (series 356)  
- Port 2: 1/8  
- Port 3 (exhaust): M5

<sup>(3)</sup> Solenoid valve with 1/8 adapter.

<sup>(4)</sup> Refer to leaflets on series 290/390 valves which show the minimum pilot pressure for each version of the product.

<sup>(5)</sup> Exhaust regulator integrated at port 3, M5.





### OPTIONS

- Explosionproof enclosures for use in zones 1/21-2/22, categories 2-3 to ATEX Directive 2014/34/EU ([www.asco.com](http://www.asco.com))
- Connector with visual indication and peak voltage suppression or with cable length of 2 m ([www.asco.com](http://www.asco.com))
- M5 exhaust regulator to fit port 3, catalogue number: **34600380**

### INSTALLATION

- The solenoid valves can be mounted in any position without affecting operation
- Pipe connection identifier is G = G (ISO 228/1)
- Installation/maintenance instructions are included with each valve

### ORDERING EXAMPLES:

18900032	230V / 50 Hz
SC G356B053 VMS	24V / DC
SC G356B053 VMS	230V / 50 Hz
catalogue number _____	_____ voltage

### DIMENSIONS (mm), WEIGHT



#### TYPE 01

Pilot 189/banjo  
Epoxy moulded  
IEC 335 / DIN 43650  
IP65

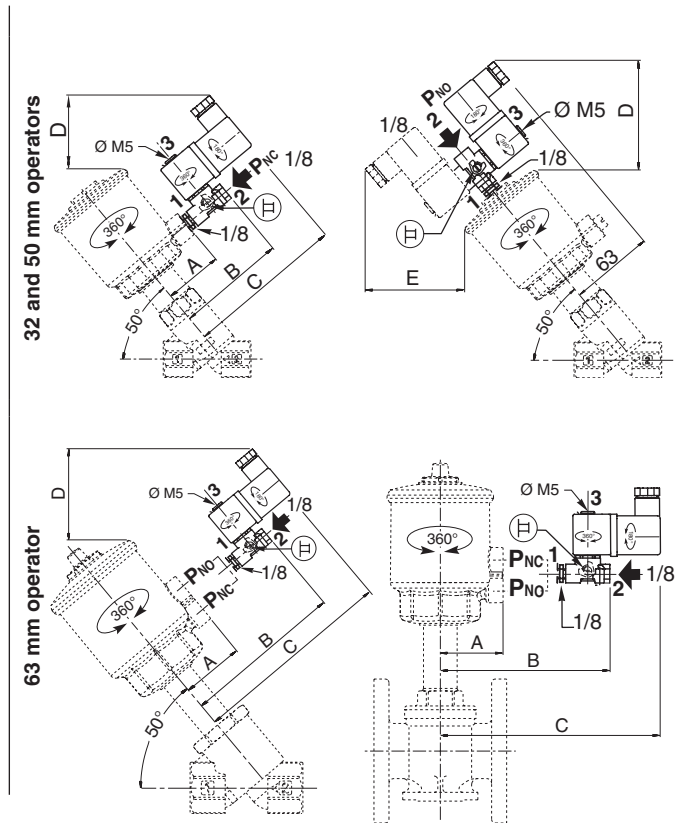
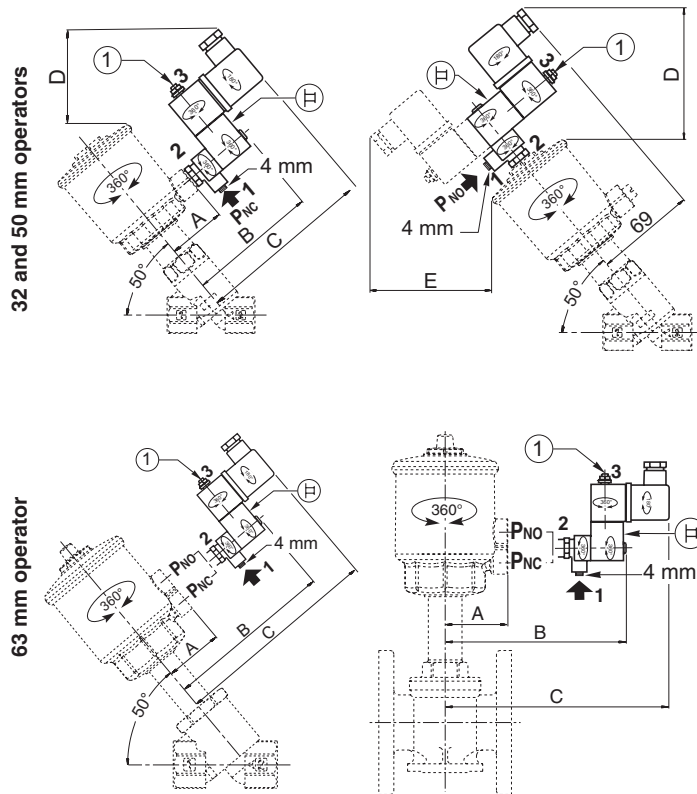
18900032 - 18900047



#### TYPE 02

Prefix "SC" Solenoid  
Pilot 356  
Epoxy moulded  
IEC 335 / DIN 43650 / IP65

SCG356B053VMS - SCG356B058VMS



type	prefix option	pilot	operator diameter	A	B	C	D		E	pilot inlet port		weight <sup>(1)</sup>
							NC	NO		NC	NO	
01	-	189/banjo series	32 mm	27	78,5	113,5	79	102	85	P <sub>NC</sub>	P <sub>NO</sub>	0,175
			50 mm	43	93	149	67	83	74			
			63 mm	50,5	100	156	53	62	-			
02	SC	356 series	32 mm	27	68	102	65	90	85	P <sub>NC</sub>	P <sub>NO</sub>	0,165
			50 mm	43	84	118	56	80	74			
			63 mm	50,5	91,5	125,5	41	59	-			

① Exhaust regulator location

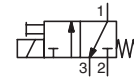
<sup>(1)</sup> including adapter connection (series 356), coil and connector.



# SOLENOID PILOT VALVES

with 290/390 valves, with 90 & 125 mm operators  
direct operated  
1/4

NC



3/2  
Series  
**314**  
**356**

## FEATURES

- Compact design and low weight enabling easy installation on all series 290 & 390 valves with 90 & 125 mm operators
- Manual operator allows an easy installation
- Pilot 356: AC/DC interchangeability of the solenoid without disassembly of the valve
- The solenoid valves satisfy all relevant EU Directives

## GENERAL

**Max. pilot pressure** 0 to 10 bar [1 bar = 100 kPa]  
**Maximum viscosity** Pilot 314: 65 cSt (mm<sup>2</sup>/s) / Pilot 356: 40 cSt  
**Response time** See page 7 ([www.asco.com](http://www.asco.com))

pilot (series)	fluids (*)	temperature range (TS)	seal materials (*)
314	filtered air and water	-10°C to +60°C	314/356 pilots: NBR (nitrile)
356			314 pilot: FPM (fluoroelastomer)

## MATERIALS IN CONTACT WITH FLUID

(\*) Ensure that the compatibility of the fluids in contact with the materials is verified

	Pilot 314	Pilot 356
<b>Body</b>	Brass or st. steel AISI 304	Brass or st. steel AISI 316
<b>Core tube</b>	Stainless steel	Stainless steel
<b>Core and plugnut</b>	Stainless steel	Stainless steel
<b>Springs</b>	Stainless steel	Stainless steel
<b>Seats</b>	Brass	Brass
<b>Seals / Disc</b>	NBR	FPM
<b>Upper disc</b>	FPM	-
<b>Shading coil</b>	Copper or silver	Copper

## ELECTRICAL CHARACTERISTICS

**Coil insulation class** F  
**Connector** Spade plug (cable Ø 6-10 mm)  
**Connector specification** ISO 4400 / EN 175301-803, form A  
**Electrical safety** IEC 335  
**Electrical enclosure protection** Moulded IP65 (EN 60529)  
**Standard voltages** DC (=) : 24V - 48V  
 (Other voltages and 60 Hz on request) AC (-) : 24V - 48V - 115V - 230V / 50 Hz

prefix option	power ratings			operator ambient temperature range (TS) (C°)	replacement coil		type <sup>(1)</sup>	
	inrush	holding	hot/cold		~	=		
	(VA)	(VA) (W)	(W)		230 V/50 Hz	24 V DC		
-	50	25	10,1	8,5 / 11,6	-10 to +60	238613-059	238713-006	01
SC	15	7	5	5 / 6,9	-10 to +60	400727-117	400727-185	02

<sup>(1)</sup> Refer to the dimensional drawings on the following page.

## SPECIFICATIONS (314 Series)

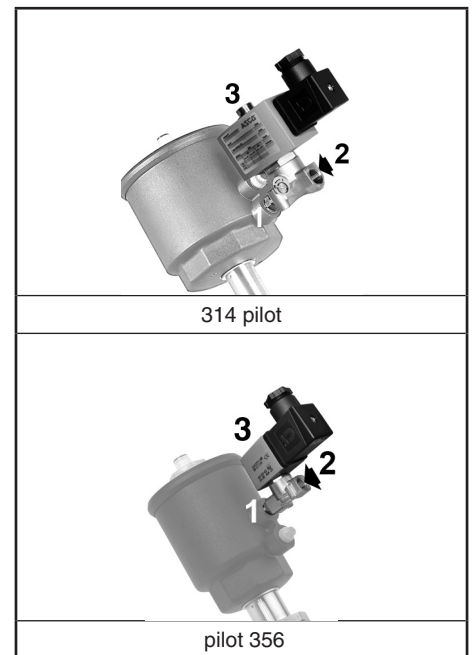
pipe size	orifice size	flow coefficient Kv		operating pressure differential (bar) max. (PS)						power coil (W)	thread type	dimensions / type <sup>(1)</sup>	15-DIGIT PRODUCT CODE											
		2 → 1	1 → 3	min. <sup>(3)</sup>			max. (PS)						brass <sup>(2)</sup>	stainless steel <sup>(2)</sup>	voltage code									
		(mm)	(m <sup>3</sup> /h)(l/min)	(m <sup>3</sup> /h)(l/min)	air (*)	water (*)	oil	~	=						~	=	24 V/50 Hz	48 V/50 Hz	115 V/50 Hz	230 V/50 Hz	24 V/DC	48 V/DC		
		~	=	~	=	-	-	~	=				~	=	FL	FR	FT	F8	F1	F9				
1/4	3,2	0,22	3,7	0,17	2,8	0	10	6	10	6	-	-	10,1	11,6	G*	01	E314K141S1N01	E314K140S1N01	FL	FR	FT	F8	F1	F9

## SPECIFICATIONS (356 Series)

pipe size	orifice size	flow coefficient Kv		operating pressure differential (bar) max. (PS)						power coil (W)	catalogue number <sup>(2)</sup>				
		2 → 1	1 → 3	min. <sup>(3)</sup>			max. (PS)				brass body	stainless steel body			
		(mm)	(mm)	(m <sup>3</sup> /h)(l/min)	(m <sup>3</sup> /h)(l/min)	air (*)	water (*)	~	=				~	=	
		~	=	~	=	-	-	~	=		~	=	~/=	~/=	
1/4	1,6	1,2	0,08	1,33	0,05	0,8	0	10	10	10	10	5	6,9	SCG356B467VMS	SCG356B473VMS

<sup>(2)</sup> Solenoid valve with 1/4 adapter.

<sup>(3)</sup> Refer to leaflets on series 290/390 valves which show the minimum pilot pressure for each version of the product.



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### OPTIONS

- Explosionproof enclosures for use in zones 1/21-2/22, categories 2-3 to ATEX Directive 2014/34/EU ([www.asco.com](http://www.asco.com))
- flow control device to fit port 3 (to increase air-operated pilot depressurization time):  
M5, catalogue number: **34600380** / 1/8, catalogue number: **34600107**
- Connector with visual indication and peak voltage suppression or with cable length of 2 m ([www.asco.com](http://www.asco.com))

### INSTALLATION

- The solenoid valves can be mounted in any position without affecting operation
- Pipe connection 1/4 (G\*) has standard combination thread according to ISO 228/1 and ISO 7/1. Pipe connection G 1/8 or G 1/4 has standard thread according to ISO 228/1
- Installation/maintenance instructions are included with each valve

### SPARE PARTS KIT

catalogue number	spare parts kit no.	
	~	=
E314K141S1N01	<b>M200071N00</b>	<b>M200067N00</b>
E314K140S1N01	<b>M200073N00</b>	<b>M200069N00</b>

### ORDERING EXAMPLES:

E314K141S1N01 F8	
SC G 356 B 467 VMS	24V / DC voltage
catalogue number	

### ORDERING EXAMPLES KITS:

M200071N00
basic number

### DIMENSIONS (mm), WEIGHT

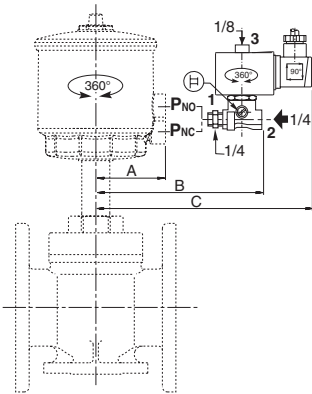
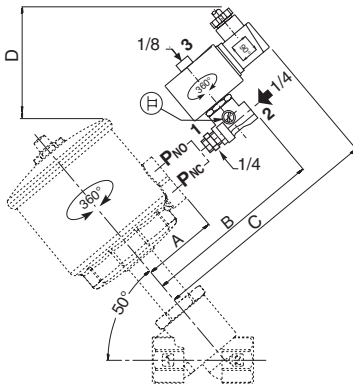


#### TYPE 01

Electrical interface "S1" (314 pilot)  
Epoxy moulded  
IEC 335 / ISO 4400  
IP65

E314K140S1N01/141S1N01

90 and 125 mm operators

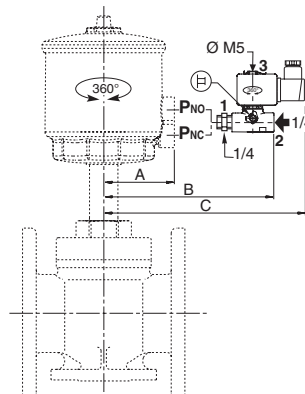
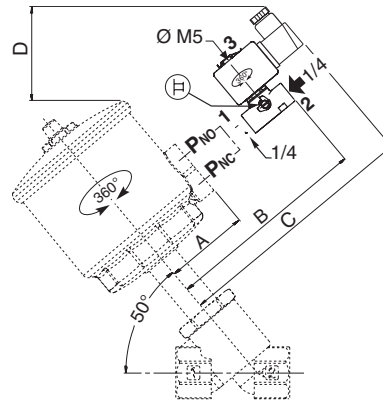


#### TYPE 02

Prefix "SC" Solenoid (pilot 356)  
Epoxy moulded  
IEC 335 / ISO 4400  
IP65

SCG356B467VMS/473VMS

90 and 125 mm operators



type	prefix option	pilot	operator diameter	A	B	C	D		pilot inlet		weight <sup>(1)</sup>
							NC	NO	NC	NO	
01	-	314 series	90 mm	67	128	169	72	91	P <sub>NC</sub>	P <sub>NO</sub>	0,610
			125 mm	86	147	188	123	142			
02	SC	356 series	90 mm	67	119	150	46	65	P <sub>NC</sub>	P <sub>NO</sub>	0,253
			125 mm	86	138	169	97	116			

<sup>(1)</sup> including adapter connection, coil and connector.



# VALVES

pressure operated  
stainless steel body  
with threaded ports PN40, 1/2 to 2

NC

NO

**2/2**  
Series  
**E298**

## FEATURES

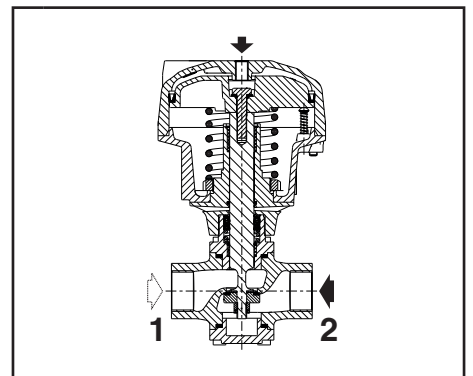
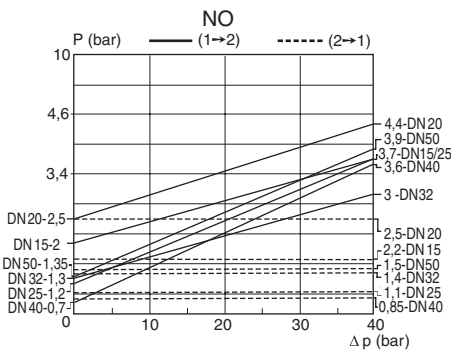
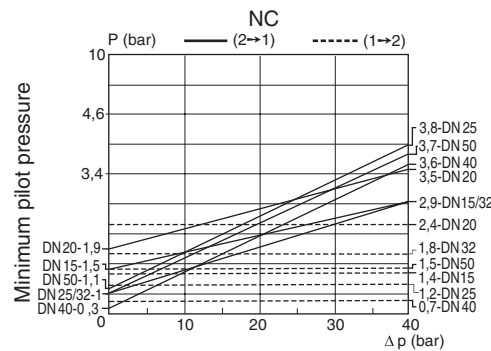
- Ruggedly built valve, particularly recommended for use with steam, superheated water, corrosive fluids
- High-performance, maintenance-free stuffing box, resistant to thermal shock
- Pressure can be applied to any port as needed by the process
- Anti-waterhammer design (fluid entry at orifice 1), recommended for use with liquids
- Vacuum operation up to  $10^{-2}$  mbar (PTFE and PEEK discs)
- Optical position indicator as standard
- Autoclavable valve for use at high ambient temperatures (up to 180°C)
- The valves satisfy Pressure Equipment Directive 2014/64/EU
- The valves in conformity with IEC 61508 Standard (2010 route 2<sub>H</sub> version) certified with integrity levels: SIL 2 for HFT = 0



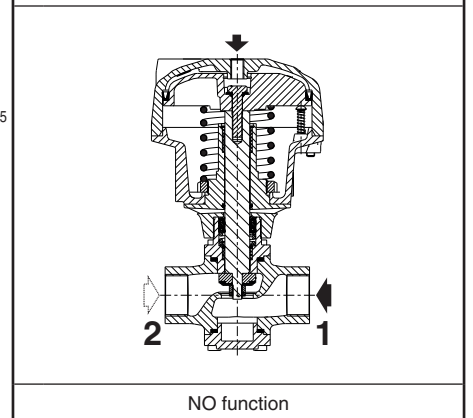
## GENERAL

Differential pressure	0 to 40 bar [1 bar =100 kPa]
Maximum allowable pressure	40 bar (within the specified limits, see diagram I)
Maximum back pressure	40 bar / 20 bar for PEEK sealing
Ambient temperature range	-20°C to +180°C [Option: -55°C to +70°C]
Maximum viscosity	5000 cSt (mm <sup>2</sup> /s)
Pilot fluid	Air
Max. pilot pressure	10 bar
Min. pilot pressure	See graphs below

fluids (*)	temperature range	disc seal (*)
DN 15-20-25: air and gas groups 1 & 2 DN 32-40-50: air and gas group 2 all DN: water, oil, liquids groups 1 & 2 and steam	-10°C to +233°C	PEEK
	-10°C to +250°C	metal-to-metal
	-10°C to +180°C	PTFE



NC function



NO function

## SPECIFICATIONS

<b>Body connection</b>	Threaded port, BSP DIN ISO 228/1 & ISO 7/1 NPTF ANSI B1.20.3
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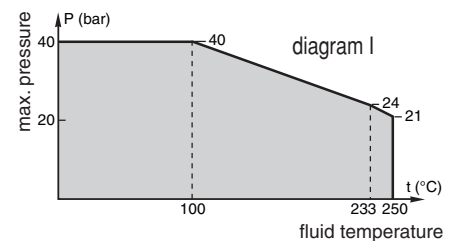
## GENERAL

MATERIALS IN CONTACT WITH FLUID	
(*) Ensure that the compatibility of the fluids in contact with the materials is verified	
Body and plug	304 stainless steel
Stuffing box housing	304 stainless steel
Stem, disc	431 stainless steel
Stuffing box packing	PTFE chevrons
Disc seals	PEEK or PTFE or Stainless steel
Valve body seal	PTFE

## OTHER MATERIALS

<b>Operator</b>	Aluminium, nickel plated
<b>Screws</b>	Galvanized steel

(\*) Ensure that the compatibility of the fluids in contact with the materials is verified.



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**OPTIONS**

Low temperature (media and ambient temperature), PTFE disc seal (-55°C to +70°C), see "15-DIGIT PRODUCT CODE" (*) <sup>(1)</sup>
Oxygen service, max. fluid pressure 15 bar, max. fluid temperature 150°C, PTFE disc, see "15-DIGIT PRODUCT CODE"
Signalling box, see "15-DIGIT PRODUCT CODE": - Dual mechanical contacts or dual inductive contacts (PNP 3 wires) - Dual inductive contacts ATEX Ex ia (NAMUR 2 wires) - Dual mechanical contact ATEX Ex d IIC T6 (Crouzet contacts type 83101-I-W1, ambient temperature -20°C to +80°C) - Dual mechanical contact ATEX Ex d IIC T6 (Honeywell contact type 1HS1, ambient temperature -55°C to +70°C). Use for low temperature option
For use in explosive atmospheres, zones 1/21-2/22, categories 2-3 to ATEX Directive 2014/34/EU: Ex IIC 2GD c x°C (Tx)
CUTR Certification (EAC), see "15-DIGIT PRODUCT CODE"
Valve seat leakage class VI as defined by FCI-2 ANSI B16.104 or Class A or B following EN 12266-1, contact us
Manual override on the top of the actuator (Manual safety device), contact us
Other flange types are available on request
Re-buildable valve program; rebuild services, contact us

(\*) Ensure that the compatibility of the fluids in contact with the materials is verified.

<sup>(1)</sup> The minimum ambient temperature of the valve is determined by the limitations of minimum temperature indicated.

**SPECIFICATIONS**

piping (ISO 6708)		orifice size	flow coefficient Kv				pilot pressure (bar)		operating pressure differential (bar)	operator diameter (mm)	catalogue number		
pipe size	DN		1 → 2		2 → 1		min.	max.			disc sealing		
(G*)		(mm)	(m³/h)	(l/min)	(m³/h)	(l/min)				PTFE	PEEK	metal-to-metal	
<b>NC - Normally closed</b>													
1/2	15	15	4,4	73	5	83	*	10	40	80	E298B0370TA0000	E298B0370VA0000	E298B0370EA0000
3/4	20	20	7,7	128	8,5	142	*	10	40	100	E298B04D0TA0000	E298B04D0VA0000	E298B04D0EA0000
1	25	25	11,5	192	12	200	*	10	40	100	E298B05D0TA0000	E298B05D0VA0000	E298B05D0EA0000
1 1/4	32	32	18	300	18	300	*	10	40	150	E298B06K0TA0000	E298B06K0VA0000	E298B06K0EA0000
1 1/2	40	40	29	483	29	483	*	10	40	150	E298B07K0TA0000	E298B07K0VA0000	E298B07K0EA0000
2	50	50	57	950	57	950	*	10	40	200	E298B08M0TA0000	E298B08M0VA0000	E298B08M0EA0000
<b>NO - Normally open</b>													
1/2	15	15	3,5	58	3,5	58	*	10	40	80	E298B1370TA0000	E298B1370VA0000	E298B1370EA0000
3/4	20	20	7,2	120	7	117	*	10	40	100	E298B14D0TA0000	E298B14D0VA0000	E298B14D0EA0000
1	25	25	11	183	11	183	*	10	40	100	E298B15D0TA0000	E298B15D0VA0000	E298B15D0EA0000
1 1/4	32	32	18	300	15	250	*	10	40	150	E298B16K0TA0000	E298B16K0VA0000	E298B16K0EA0000
1 1/2	40	40	28,2	470	28,2	470	*	10	40	150	E298B17K0TA0000	E298B17K0VA0000	E298B17K0EA0000
2	50	50	53	883	53	883	*	10	40	200	E298B18M0TA0000	E298B18M0VA0000	E298B18M0EA0000

\* Minimum pilot pressure varies with differential pressure. See piloting chart preceding page.



### HOW TO ORDER

[Configurator - CAD Files](#)

**15-DIGIT PRODUCT CODE**

**E 298 B 0 3 7 0 V A00 00**

**Connection**

**E** = ISO 228/1 & ISO 7/1  
(combination thread, G\*)  
**8** = NPTF (ANSI B1.20.3)

**Product series**

**298**

**Revision letter**

**B** = New Stuffing Box and Disc Materials

**Function**

**0** = Normally closed  
**1** = Normally open

**Diameter (mm)**

**3** = 15 mm  
**4** = 20 mm  
**5** = 25 mm  
**6** = 32 mm  
**7** = 40 mm  
**8** = 50 mm

**Operator Dia. - Piloting Connection Dia.**

**7** = Ø80 mm - G 1/8  
**8** = Ø80 mm - NPT 1/8 <sup>(1)</sup>  
**D** = Ø100 mm - G 1/8  
**E** = Ø100 mm - NPT 1/8 <sup>(1)</sup>  
**K** = Ø150 mm - G 1/4  
**L** = Ø150 mm - NPT 1/4 <sup>(1)</sup>  
**M** = Ø200 mm - G 1/4  
**N** = Ø200 mm - NPT 1/4 <sup>(1)</sup>

<sup>(1)</sup> Connection = 8 [NPTF (ANSI B1.20.3)]



**Options**

**A00** = Without  
**AT1** = ATEX zones 1/21  
**AT2** = ATEX zones 2/22  
**LTP** = PTFE disc for low temperature (-55°C to +70°C)  
**MC2** = Dual mechanical Contacts  
**AD2** = Dual position Contact ATEX Ex d  
**1S2** = Dual position Contact NAMUR ATEX Ex i  
**1C2** = Dual inductive contacts PNP 3 wires  
**02S** = PTFE disc for Oxygen service  
**124** = CUTR Certification  
**A24** = CUTR Certification for ATEX 1/21  
**LT1** = AT1 + LTP  
**LT2** = AT2 + LTP

**Disc Seal Material**

**T** = PTFE  
**E** = Metal-to-metal (stainless steel)  
**V** = PEEK

**SPARE PARTS KITS CODE (\*)**

		PTFE disc seal	PEEK disc version
	DN 15 NC	M29852671700100	M29852671400100
	DN 20 NC	M29852671700400	M29852671400400
	DN 25 NC	M29852671700700	M29852671400700
	DN 32 NC	M29852671701000	M29852671401000
	DN 40 NC	M29852671701300	M29852671401300
	DN 50 NC	M29852671701600	M29852671401600
	DN 15 NO	M29852671700200	M29852671400200
	DN 20 NO	M29852671700500	M29852671400500
	DN 25 NO	M29852671700800	M29852671400800
	DN 32 NO	M29852671701100	M29852671401100
	DN 40 NO	M29852671701400	M29852671401400
	DN 50 NO	M29852671701700	M29852671401700

(\*) Ensure that the compatibility of the fluids in contact with the materials is verified.

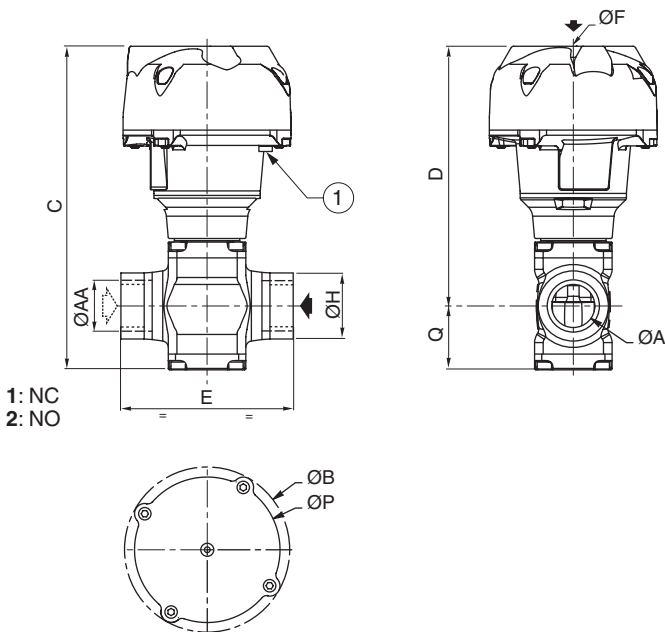
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**INSTALLATION**

- The valves can be mounted in any position without affecting operation
- Compatible with ASTM 1, 2 and 3 oils
- Check temperature range of valve body and solenoid pilot valves for suitability. For probability of failure, contact us
- Piloting thread connection: Pipe connections (G\*) have standard thread according to ISO 228/1 and ISO 7/1.  
Pipe connections (G) have standard thread according to ISO 228/1
- Piloting thread connections have standard thread = NPTF (ANSI B1.20.3)
- Declarations of conformity are available on request
- Installation/maintenance instructions are included with each valve

**DIMENSIONS (mm), WEIGHT (kg)**

[Configurator - CAD Files](#)

**TYPE 01-02-03-04**  
 "E" threaded connection

 1: NC  
 2: NO

① Optical position indicator

type	DN	operator diameter	ØA	ØAA	ØB	C	D	E	ØF	ØH	ØP	Q	weight	
													NC	NO
01	15	80	15	1/2"	110	184,1	151,6	85	G 1/8	33	95	32,5	1,82	1,80
02	20	100	20	3/4"	132,5	209,9	170,9	110	G 1/8	40	117	39	3,44	3,46
	25	100	25	1"	132,5	225,4	180,9	120	G 1/8	46	117	44,5	4,16	4,12
03	32	150	32	1"1/4	191	291,2	237,2	145	G* 1/4	57	172,5	54	9,32	9,26
	40	150	40	1"1/2	191	325,7	259,2	150	G* 1/4	65	172,5	66,5	11,38	11,36
04	50	200	50	2"	247	409	328,5	190	G* 1/4	75	230	80,5	23,48	21,68

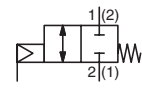


# VALVES

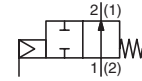
pressure operated  
stainless steel body

with flanges PN40, DIN and ANSI Class 300, DN 15 to 50

NC



NO



2/2  
Series  
T298

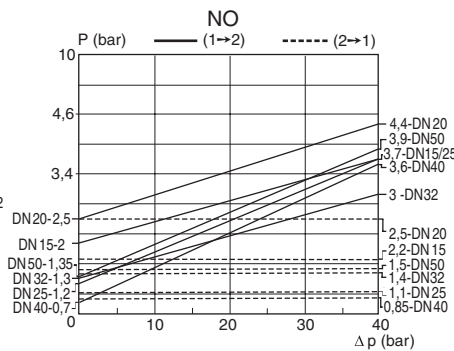
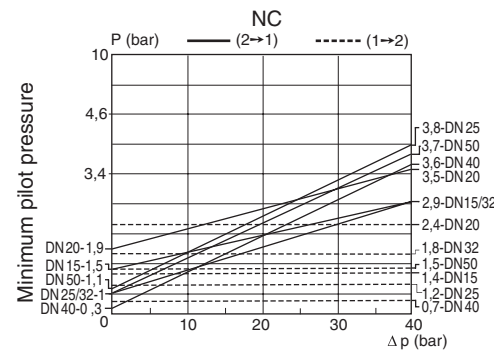
## FEATURES

- Ruggedly built valve, particularly recommended for use with steam, superheated water, corrosive fluids
- High-performance, maintenance-free stuffing box, resistant to thermal shock
- Pressure can be applied to any port as needed by the process
- Anti-waterhammer design (fluid entry at orifice 1), recommended for use with liquids
- Vacuum operation up to  $10^{-2}$  mbar (PTFE and PEEK discs)
- Optical position indicator as standard
- Autoclavable valve for use at high ambient temperatures (up to 180°C)
- The valves satisfy Pressure Equipment Directive 2014/64/EU
- The valves in conformity with IEC 61508 Standard (2010 route 2<sub>H</sub> version) certified with integrity levels: SIL 2 for HFT = 0

## GENERAL

Differential pressure	0 to 40 bar [1 bar =100 kPa]
Maximum allowable pressure	40 bar (within the specified limits, see diagram I)
Maximum back pressure	40 bar / 20 bar for PEEK sealing
Ambient temperature range	-20°C to +180°C [Option: -55°C to +70°C]
Maximum viscosity	5000 cSt (mm <sup>2</sup> /s)
Pilot fluid	Air
Max. pilot pressure	10 bar
Min. pilot pressure	See graphs below

fluids (*)	temperature range	disc seal (*)
DN 15-20-25: air and gas groups 1 & 2 DN 32-40-50: air and gas group 2 all DN: water, oil, liquids groups 1 & 2 and steam	-10°C to +233°C	PEEK
	-10°C to +250°C	metal-to-metal
	-10°C to +180°C	PTFE



## SPECIFICATIONS

Connection	Flanges PN40, type 21 (ISO 7005 / EN 1092-1) ANSI Class 300 ANSI B16-5
Face-to-face dimensions	EN 558-1
Face de joint	Type B

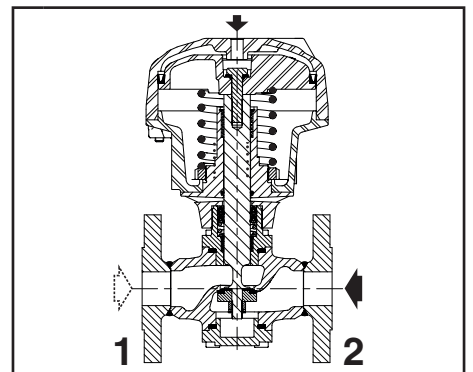
## GENERAL

MATERIALS IN CONTACT WITH FLUID	
(*) Ensure that the compatibility of the fluids in contact with the materials is verified	
Body and plug	304 stainless steel
Stuffing box housing	304 stainless steel
Stem, disc	431 stainless steel
Stuffing box packing	PTFE chevrons
Disc seals	PEEK or PTFE or Stainless steel
Valve body seal	PTFE

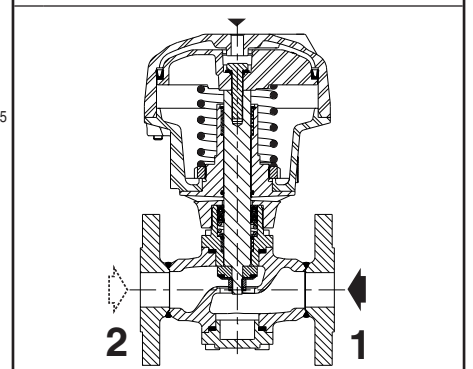
## OTHER MATERIALS

Operator	Aluminium, nickel plated
Screws	Galvanized steel

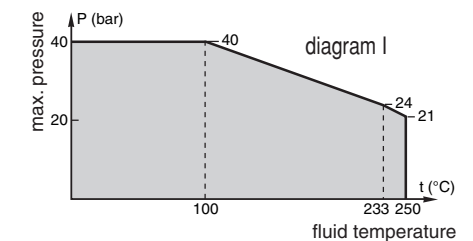
(\*) Ensure that the compatibility of the fluids in contact with the materials is verified.



NC function



NO function



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**OPTIONS**

Low temperature (media and ambient temperature), PTFE disc seal (-55°C to +70°C), see "15-DIGIT PRODUCT CODE" (*) <sup>(1)</sup>
Oxygen service, max. fluid pressure 15 bar, max. fluid temperature 150°C, PTFE disc, see "15-DIGIT PRODUCT CODE"
Signalling box, see "15-DIGIT PRODUCT CODE": - Dual mechanical contacts or dual inductive contacts (PNP 3 wires) - Dual inductive contacts ATEX Ex ia (NAMUR 2 wires) - Dual mechanical contact ATEX Ex d IIC T6 (Crouzet contacts type 83101-I-W1, ambient temperature -20°C to +80°C) - Dual mechanical contact ATEX Ex d IIC T6 (Honeywell contact type 1HS1, ambient temperature -55°C to +70°C). Use for low temperature option
For use in explosive atmospheres, zones 1/21-2/22, categories 2-3 to ATEX Directive 2014/34/EU: Ex IIC 2GD c x°C (Tx)
CUTR Certification (EAC), see "15-DIGIT PRODUCT CODE"
Valve seat leakage class VI as defined by FCI-2 ANSI B16.104 or Class A or B following EN 12266-1, contact us
Manual override on the top of the actuator (Manual safety device), contact us
Other flange types are available on request
Re-buildable valve program; rebuild services, contact us

(\*) Ensure that the compatibility of the fluids in contact with the materials is verified.

<sup>(1)</sup> The minimum ambient temperature of the valve is determined by the limitations of minimum temperature indicated.

**SPECIFICATIONS**

DN	orifice size (mm)	flow coefficient Kv				pilot pressure (bar)		operating pressure differential (bar)	operator diameter (mm)	catalogue number		
		1 → 2		2 → 1		disc sealing						
		(m³/h)	(l/min)	(m³/h)	(l/min)	min.	max.			PTFE	PEEK	metal-to-metal
<b>NC - Normally closed</b>										Flanges DIN EN 1092-1		
15	15	4,4	73	5	83	*	10	40	80	T298B037DTA0000	T298B037DVA0000	T298B037DEA0000
20	20	7,7	128	8,5	142	*	10	40	100	T298B04DDTA0000	T298B04DDVA0000	T298B04DDEA0000
25	25	11,5	192	12	200	*	10	40	100	T298B05DDTA0000	T298B05DDVA0000	T298B05DDEA0000
32	32	18	300	18	300	*	10	40	150	T298B06KDTA0000	T298B06KDVA0000	T298B06KDEA0000
40	40	29	483	29	483	*	10	40	150	T298B07KDTA0000	T298B07KDVA0000	T298B07KDEA0000
50	50	57	950	57	950	*	10	40	200	T298B08MDTA0000	T298B08MDVA0000	T298B08MDEA0000
<b>NO - Normally open</b>										Flanges ANSI 300		
15	15	4,4	73	5	83	*	10	40	80	T298B038PTA0000	T298B038PVA0000	T298B038PEA0000
20	20	7,7	128	8,5	142	*	10	40	100	T298B04EPTA0000	T298B04EPVA0000	T298B04EPEA0000
25	25	11,5	192	12	200	*	10	40	100	T298B05EPTA0000	T298B05EPVA0000	T298B05EPEA0000
32	32	18	300	18	300	*	10	40	150	T298B06LPTA0000	T298B06LPVA0000	T298B06LPEA0000
40	40	29	483	29	483	*	10	40	150	T298B07LPTA0000	T298B07LPVA0000	T298B07LPEA0000
50	50	57	950	57	950	*	10	40	200	T298B08NPTA0000	T298B08NPVA0000	T298B08NPEA0000
<b>NO - Normally open</b>										Flanges DIN EN 1092-1		
15	15	3,5	58	3,5	58	*	10	40	80	T298B137DTA0000	T298B137DVA0000	T298B137DEA0000
20	20	7,2	120	7	117	*	10	40	100	T298B14DDTA0000	T298B14DDVA0000	T298B14DDEA0000
25	25	11	183	11	183	*	10	40	100	T298B15DDTA0000	T298B15DDVA0000	T298B15DDEA0000
32	32	18	300	15	250	*	10	40	150	T298B16KDTA0000	T298B16KDVA0000	T298B16KDEA0000
40	40	28,2	470	28,2	470	*	10	40	150	T298B17KDTA0000	T298B17KDVA0000	T298B17KDEA0000
50	50	53	883	53	883	*	10	40	200	T298B18MDTA0000	T298B18MDVA0000	T298B18MDEA0000
<b>NO - Normally open</b>										Flanges ANSI 300		
15	15	3,5	58	3,5	58	*	10	40	80	T298B138PTA0000	T298B138PVA0000	T298B138PEA0000
20	20	7,2	120	7	117	*	10	40	100	T298B14EPTA0000	T298B14EPVA0000	T298B14EPEA0000
25	25	11	183	11	183	*	10	40	100	T298B15EPTA0000	T298B15EPVA0000	T298B15EPEA0000
32	32	18	300	15	250	*	10	40	150	T298B16LPTA0000	T298B16LPVA0000	T298B16LPEA0000
40	40	28,2	470	28,2	470	*	10	40	150	T298B17LPTA0000	T298B17LPVA0000	T298B17LPEA0000
50	50	53	883	53	883	*	10	40	200	T298B18NPTA0000	T298B18NPVA0000	T298B18NPEA0000

\* Minimum pilot pressure varies with differential pressure. See piloting chart preceding page.

### HOW TO ORDER

[Configurator - CAD Files](#)

#### 15-DIGIT PRODUCT CODE

**T 298 B 0 3 7 D V A00 00**

**Connection**  
T = Flanges

**Product series**  
298

**Revision letter**  
B = New Stuffing Box and Disc Materials

**Function**  
0 = Normally closed  
1 = Normally open

**Diameter (mm)**

- 3 = 15 mm
- 4 = 20 mm
- 5 = 25 mm
- 6 = 32 mm
- 7 = 40 mm
- 8 = 50 mm

**Operator Dia. - Piloting Connection Dia.**

- 7 = Ø80 mm - G 1/8
- 8 = Ø80 mm - NPT 1/8 <sup>(1)</sup>
- D = Ø100 mm - G 1/8
- E = Ø100 mm - NPT 1/8 <sup>(1)</sup>
- K = Ø150 mm - G 1/4
- L = Ø150 mm - NPT 1/4 <sup>(1)</sup>
- M = Ø200 mm - G 1/4
- N = Ø200 mm - NPT 1/4 <sup>(1)</sup>

<sup>(1)</sup> Connection = NPTF (ANSI B1.20.3) / Flanges ANSI Class 300

**Options**

- A00 = Without
- AT1 = ATEX zones 1/21
- AT2 = ATEX zones 2/22
- LTP = PTFE disc for low temperature (-55°C to +70°C)
- MC2 = Dual mechanical Contacts
- AD2 = Dual position Contact ATEX Ex d
- 1S2 = Dual position Contact NAMUR ATEX Ex i
- 1C2 = Dual inductive contacts PNP 3 wires
- 02S = PTFE disc for Oxygen service
- 124 = CUTR Certification
- A24 = CUTR Certification for ATEX 1/21
- LT1 = AT1 + LTP
- LT2 = AT2 + LTP

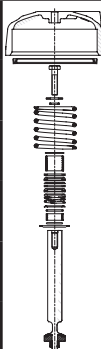
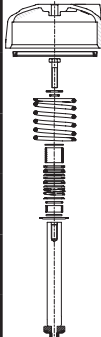
**Disc Seal Material**

- T = PTFE
- E = Metal-to-metal (stainless steel)
- V = PEEK

**Port Type**

- D = Flanges DIN EN 1092-1 (ISO 7005) Standard
- P = Flanges ANSI Class 300

#### SPARE PARTS KITS CODE (\*)

		PTFE disc seal	PEEK disc version
	DN 15 NC	M29852671700100	M29852671400100
	DN 20 NC	M29852671700400	M29852671400400
	DN 25 NC	M29852671700700	M29852671400700
	DN 32 NC	M29852671701000	M29852671401000
	DN 40 NC	M29852671701300	M29852671401300
	DN 50 NC	M29852671701600	M29852671401600
	DN 15 NO	M29852671700200	M29852671400200
	DN 20 NO	M29852671700500	M29852671400500
	DN 25 NO	M29852671700800	M29852671400800
	DN 32 NO	M29852671701100	M29852671401100
	DN 40 NO	M29852671701400	M29852671401400
	DN 50 NO	M29852671701700	M29852671401700

(\*) Ensure that the compatibility of the fluids in contact with the materials is verified.



## INSTALLATION

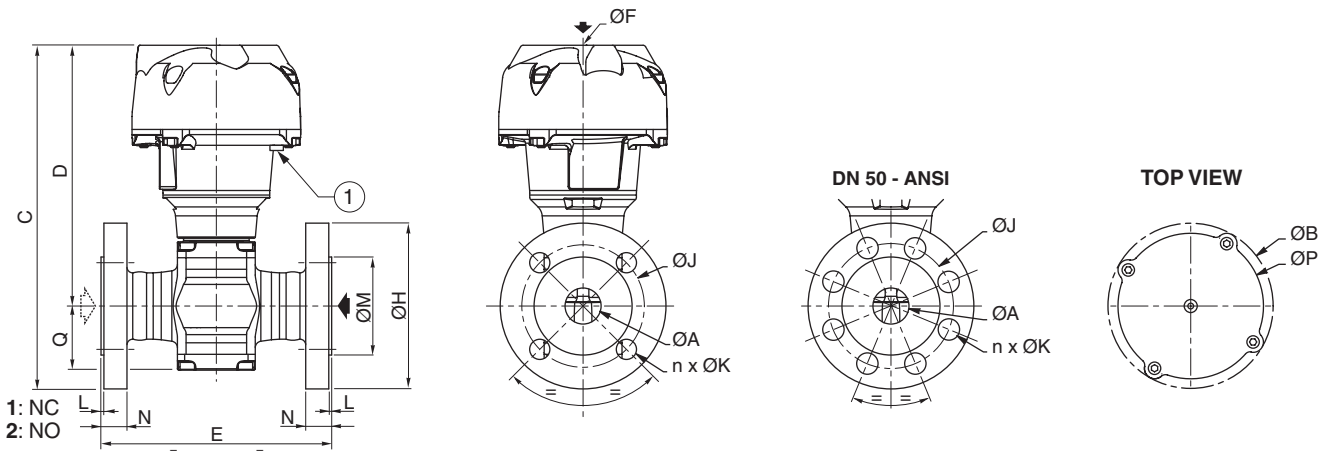
- The valves can be mounted in any position without affecting operation
- Compatible with ASTM 1, 2 and 3 oils
- Check temperature range of valve body and solenoid pilot valves for suitability. For probability of failure, contact us
- Piloting thread connection: Pipe connections (G\*) have standard thread according to ISO 228/1 and ISO 7/1.  
Pipe connections (G) have standard thread according to ISO 228/1
- Piloting thread connections have standard thread = NPTF (ANSI B1.20.3)
- Declarations of conformity are available on request
- Installation/maintenance instructions are included with each valve

## DIMENSIONS (mm), WEIGHT (kg)

[Configurator - CAD Files](#)



**TYPE 01-02-03-04**  
"T" flanges connection



① Optical position indicator

type	DN	operator diameter	ØA	ØB	C		D	E		ØF	
					DIN	ANSI		DIN	ANSI	DIN	ANSI
01	15	80	15	110	199,1	151,6	130	140	G 1/8	NPT 1/8	
02	20	100	20	132,5	223,4	230,9	170,9		G 1/8	NPT 1/8	
	25	100	25	132,5	238,4	243,4	180,9	160	170	G 1/8	NPT 1/8
03	32	150	32	191	307,2	304,7	237,2	180	190	G* 1/4	NPT 1/4
	40	150	40	191	334,2	336,7	259,2	200		G* 1/4	NPT 1/4
04	50	200	50	247	411	328,5	230		G* 1/4	NPT 1/4	

type	DN	operator diameter	ØH		ØJ		n x ØK		L		ØM		N		ØP	Q
			DIN	ANSI	DIN	ANSI	DIN	ANSI	DIN	ANSI	DIN	ANSI	DIN	ANSI		
01	15	80	95		65	66,5	4 x 14	4 x 16	2	1,6	45	35	16	14,2	95	32,5
	20	100	105	120	75	82,5	4 x 14	4 x 19	2	1,6	58	43	18	15,8	117	39
02	25	100	115	125	85	89	4 x 14	4 x 19	2	1,6	68	51	18	17,5	117	44,5
	32	150	140	135	100	98,5	4 x 18	4 x 19	2	1,6	78	64	18	19,1	172,5	54
03	40	150	150	155	110	114,5	4 x 18	4 x 22	2	1,6	88	73	18	20,6	172,5	66,5
	50	200	165		125	127	4 x 18	8 x 19	2	1,6	102	92	20	22,4	230	80,5

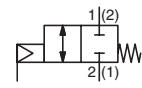
type	DN	operator diameter	weight			
			DIN		ANSI	
			NC	NO	NC	NO
01	15	80	3,3	3,3	3,2	3,2
	20	100	5,6	5,6	5,9	5,9
02	25	100	6,8	6,7	7,2	7,1
	32	150	13,2	13,2	13,2	13,3
03	40	150	16,4	16,4	17,2	17,2
	50	200	30,5	28,7	30,8	29



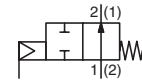
# VALVES

pressure operated  
stainless steel body  
with socket welding ends PN40, DN 15 to 50

NC



NO



2/2  
Series  
W298

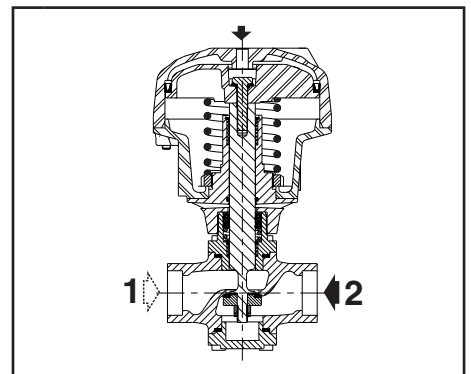
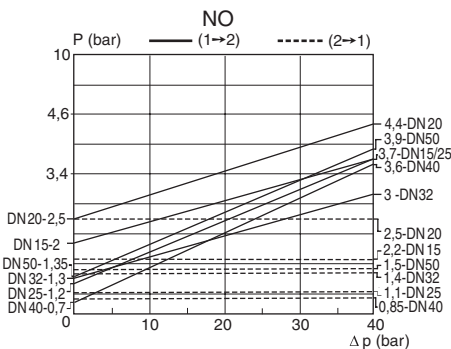
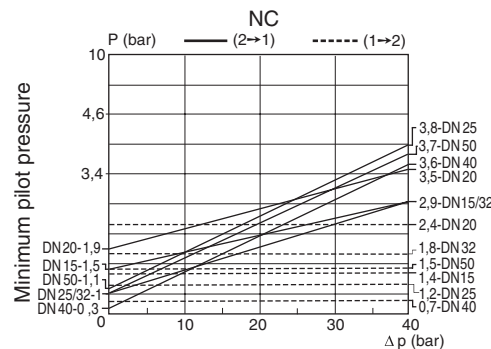
## FEATURES

- Ruggedly built valve, particularly recommended for use with steam, superheated water, corrosive fluids
- High-performance, maintenance-free stuffing box, resistant to thermal shock
- Pressure can be applied to any port as needed by the process
- Anti-waterhammer design (fluid entry at orifice 1), recommended for use with liquids
- Vacuum operation up to  $10^{-2}$  mbar (PTFE and PEEK discs)
- Optical position indicator as standard
- Autoclavable valve for use at high ambient temperatures (up to 180°C)
- The valves satisfy Pressure Equipment Directive 2014/64/EU
- The valves in conformity with IEC 61508 Standard (2010 route 2<sub>H</sub> version) certified with integrity levels: SIL 2 for HFT = 0

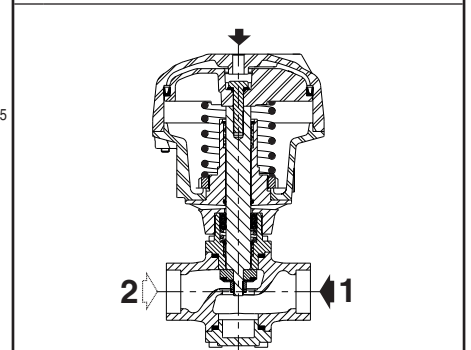
## GENERAL

Differential pressure	0 to 40 bar [1 bar =100 kPa]
Maximum allowable pressure	40 bar (within the specified limits, see diagram I)
Maximum back pressure	40 bar / 20 bar for PEEK sealing
Ambient temperature range	-20°C to +180°C [Option: -55°C to +70°C]
Maximum viscosity	5000 cSt (mm <sup>2</sup> /s)
Pilot fluid	Air
Max. pilot pressure	10 bar
Min. pilot pressure	See graphs below

fluids (*)	temperature range	disc seal (*)
DN 15-20-25: air and gas groups 1 & 2 DN 32-40-50: air and gas group 2 all DN: water, oil, liquids groups 1 & 2 and steam	-10°C to +233°C	PEEK
	-10°C to +250°C	metal-to-metal
	-10°C to +180°C	PTFE



NC function



NO function

## SPECIFICATIONS

Socket welding ends	EN 12760
---------------------	----------

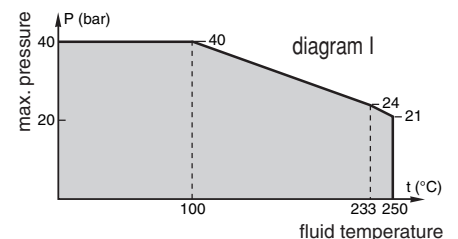
## GENERAL

MATERIALS IN CONTACT WITH FLUID	
(*) Ensure that the compatibility of the fluids in contact with the materials is verified	
Body and plug	304 stainless steel
Stuffing box housing	304 stainless steel
Stem, disc	431 stainless steel
Stuffing box packing	PTFE chevrons
Disc seals	PEEK or PTFE or Stainless steel
Valve body seal	PTFE

## OTHER MATERIALS

Operator	Aluminium, nickel plated
Screws	Galvanized steel

(\*) Ensure that the compatibility of the fluids in contact with the materials is verified.



**OPTIONS**

Low temperature (media and ambient temperature), PTFE disc seal (-55°C to +70°C), see "15-DIGIT PRODUCT CODE" (*) <sup>(1)</sup>
Oxygen service, max. fluid pressure 15 bar, max. fluid temperature 150°C, PTFE disc, see "15-DIGIT PRODUCT CODE"
Signalling box, see "15-DIGIT PRODUCT CODE": - Dual mechanical contacts or dual inductive contacts (PNP 3 wires) - Dual inductive contacts ATEX Ex ia (NAMUR 2 wires) - Dual mechanical contact ATEX Ex d IIC T6 (Crouzet contacts type 83101-I-W1, ambient temperature -20°C to +80°C) - Dual mechanical contact ATEX Ex d IIC T6 (Honeywell contact type 1HS1, ambient temperature -55°C to +70°C). Use for low temperature option
For use in explosive atmospheres, zones 1/21-2/22, categories 2-3 to ATEX Directive 2014/34/EU: Ex IIC 2GD c x°C (Tx)
CUTR Certification (EAC), see "15-DIGIT PRODUCT CODE"
Valve seat leakage class VI as defined by FCI-2 ANSI B16.104 or Class A or B following EN 12266-1, contact us
Manual override on the top of the actuator (Manual safety device), contact us
Other flange types are available on request
Re-buildable valve program; rebuild services, contact us

(\*) Ensure that the compatibility of the fluids in contact with the materials is verified.

<sup>(1)</sup> The minimum ambient temperature of the valve is determined by the limitations of minimum temperature indicated.

**SPECIFICATIONS**

DN	ext. pipe diameter	flow coefficient Kv				pilot pressure (bar)		operating pressure differential (bar)	operator diameter (mm)	catalogue number		
		1 → 2		2 → 1		disc sealing						
		(mm)	(m³/h) (l/min)	(m³/h) (l/min)	(m³/h) (l/min)	min.	max.			PTFE	PEEK	metal-to-metal
<b>NC - Normally closed</b>												
15	15	4,4	73	5	83	*	10	40	80	W298B037ATA0000	W298B037AVA0000	W298B037AEA0000
20	20	7,7	128	8,5	142	*	10	40	100	W298B04DATA0000	W298B04DAVA0000	W298B04DAEA0000
25	25	11,5	192	12	200	*	10	40	100	W298B05DATA0000	W298B05DAVA0000	W298B05DAEA0000
32	32	18	300	18	300	*	10	40	150	W298B06KATA0000	W298B06KAVA0000	W298B06KAEA0000
40	40	29	483	29	483	*	10	40	150	W298B07KATA0000	W298B07KAVA0000	W298B07KAEA0000
50	50	57	950	57	950	*	10	40	200	W298B08MATA0000	W298B08MAVA0000	W298B08MAEA0000
<b>NO - Normally open</b>												
15	15	3,5	58	3,5	58	*	10	40	80	W298B137ATA0000	W298B137AVA0000	W298B137AEA0000
20	20	7,2	120	7	117	*	10	40	100	W298B14DATA0000	W298B14DAVA0000	W298B14DAEA0000
25	25	11	183	11	183	*	10	40	100	W298B15DATA0000	W298B15DAVA0000	W298B15DAEA0000
32	32	18	300	15	250	*	10	40	150	W298B16KATA0000	W298B16KAVA0000	W298B16KAEA0000
40	40	28,2	470	28,2	470	*	10	40	150	W298B17KATA0000	W298B17KAVA0000	W298B17KAEA0000
50	50	53	883	53	883	*	10	40	200	W298B18MATA0000	W298B18MAVA0000	W298B18MAEA0000

\* Minimum pilot pressure varies with differential pressure. See piloting chart preceding page.

### HOW TO ORDER

[Configurator - CAD Files](#)

**15-DIGIT PRODUCT CODE**

**W 298 B 0 3 7 A V A00 00**

**Connection**

W = Socket Welded

**Product series**

298

**Revision letter**

B = New Stuffing Box and Disc Materials

**Function**

0 = Normally closed

1 = Normally open

**Diameter (mm)**

3 = 15 mm

4 = 20 mm

5 = 25 mm

6 = 32 mm

7 = 40 mm

8 = 50 mm

**Options**

A00 = Without

AT1 = ATEX zones 1/21

AT2 = ATEX zones 2/22

LTP = PTFE disc for low temperature (-55°C to +70°C)

MC2 = Dual mechanical Contacts

AD2 = Dual position Contact ATEX Ex d

1S2 = Dual position Contact NAMUR ATEX Ex i

1C2 = Dual inductive contacts PNP 3 wires

02S = PTFE disc for Oxygen service

124 = CUTR Certification

A24 = CUTR Certification for ATEX 1/21

LT1 = AT1 + LTP

LT2 = AT2 + LTP

**Disc Seal Material**

T = PTFE

E = Metal-to-metal (stainless steel)

V = PEEK

**Operator Dia. - Piloting Connection Dia.**

7 = Ø80 mm - G 1/8

8 = Ø80 mm - NPT 1/8 <sup>(1)</sup>

D = Ø100 mm - G 1/8

E = Ø100 mm - NPT 1/8 <sup>(1)</sup>

K = Ø150 mm - G 1/4

L = Ø150 mm - NPT 1/4 <sup>(1)</sup>

M = Ø200 mm - G 1/4

N = Ø200 mm - NPT 1/4 <sup>(1)</sup>

<sup>(1)</sup> Connection = NPTF (ANSI B1.20.3)

**SPARE PARTS KITS CODE (\*)**

PTFE disc seal

PEEK disc version

	DN 15 NC	M29852671700100	M29852671400100
	DN 20 NC	M29852671700400	M29852671400400
	DN 25 NC	M29852671700700	M29852671400700
	DN 32 NC	M29852671701000	M29852671401000
	DN 40 NC	M29852671701300	M29852671401300
	DN 50 NC	M29852671701600	M29852671401600
	DN 15 NO	M29852671700200	M29852671400200
	DN 20 NO	M29852671700500	M29852671400500
	DN 25 NO	M29852671700800	M29852671400800
	DN 32 NO	M29852671701100	M29852671401100
DN 40 NO	M29852671701400	M29852671401400	
DN 50 NO	M29852671701700	M29852671401700	

(\*) Ensure that the compatibility of the fluids in contact with the materials is verified.

01190GB-2017/R01  
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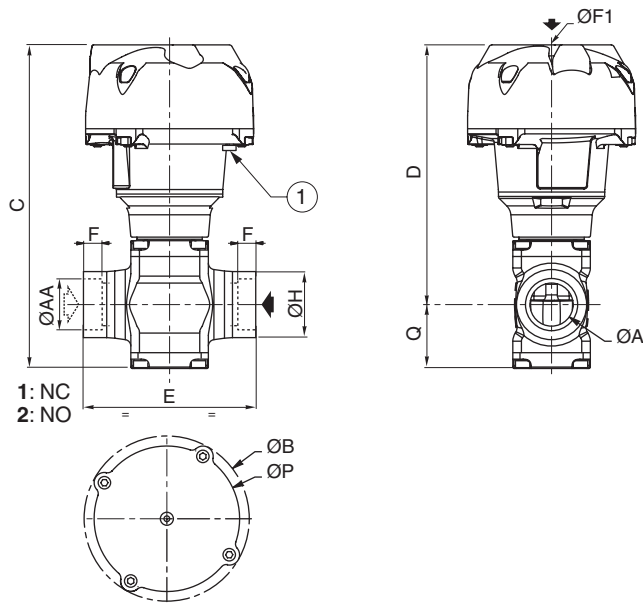
All leaflets are available on: [www.asco.com](http://www.asco.com)

**INSTALLATION**

- The valves can be mounted in any position without affecting operation
- Compatible with ASTM 1, 2 and 3 oils
- Check temperature range of valve body and solenoid pilot valves for suitability. For probability of failure, contact us
- Piloting thread connection: Pipe connections (G\*) have standard thread according to ISO 228/1 and ISO 7/1.  
Pipe connections (G) have standard thread according to ISO 228/1
- Piloting thread connections have standard thread = NPTF (ANSI B1.20.3)
- Declarations of conformity are available on request
- Installation/maintenance instructions are included with each valve

**DIMENSIONS (mm), WEIGHT (kg)**

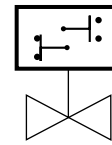
[Configurator - CAD Files](#)

**TYPE 01-02-03-04**  
 "W" socked welded ends

 1: NC  
 2: NO

① Optical position indicator

type	DN	operator diameter	ØA	ØAA	ØB	C	D	E	F	ØF1	ØH	ØP	Q	weight	
														NC	NO
01	15	80	15	22,4	110	184,1	151,6	85	9,5	G 1/8	33	95	32,5	1,81	1,79
	20	100	20	27,7	132,5	209,9	170,9	110	11	G 1/8	40	117	39	3,43	3,45
02	25	100	25	34,5	132,5	225,4	180,9	120	12,5	G 1/8	46	117	44,5	4,15	4,11
	32	150	32	43,2	191	291,2	237,2	145	14,5	G* 1/4	57	172,5	54	9,31	9,25
03	40	150	40	49,5	191	325,7	259,2	150	16	G* 1/4	65	172,5	66,5	11,38	11,36
	50	200	50	62	247	409	328,5	190	17,5	G* 1/4	75	230	80,5	23,48	21,68





## FEATURES

- The signaling box fits all series 298 (2/2) and 398 (3/2) valves to indicate whether the valve is open or closed
- It is rotatable through 360° and equipped with two mechanical or inductive contacts
- The signaling box is supplied pre-installed and pre-adjusted on the valve
- The version with mechanical contacts can be used with up to max. 250 V AC and in magnetic field environments

## GENERAL / OPERATION

At both end-of-travel positions (open and closed) of the valve stem, cams on the signaling box plunger operate contacts which provide an electrical signal indicating that the end position is reached.

**Ambient temperature range** -25°C to +80°C

## CONSTRUCTION

**Body, cover** PA  
**Degree of protection** IP66  
**Unit can be rotated through 360° around the centreline of the valve operator (set screw)**

## ELECTRICAL CHARACTERISTICS

mechanical contacts	inductive contacts
Breaking capacity of contacts: • resistive circuit: 3,2 A at 250 V AC • inductive circuit: 1,8 A at 250 V AC (cos Ø = 0,8)	• 10 to 30 V DC power supply • load current 200 mA max. • built-in electrical protection

## Electrical connection

mechanical contacts 1 terminal strip with 6 screw terminals  
 inductive contacts 2 terminal strips with 2 screw terminals

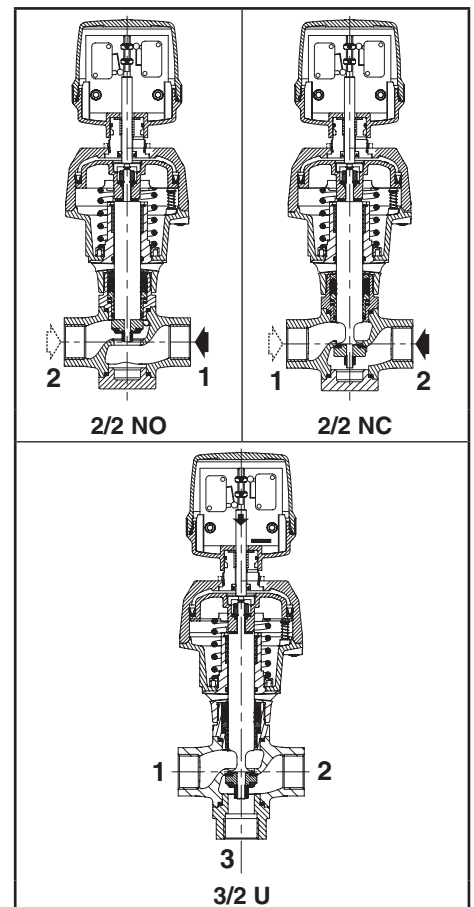
**Max. grip** 2,5 mm<sup>2</sup>

**Cable entry** 1 cable gland (cable Ø 5-10 mm)

## SPECIFICATIONS

operator	option code <sup>(1)</sup> signaling box supplied installed on valve	
	2 mechanical contacts	2 inductive contacts PNP
Ø 80 mm, Ø 100 mm, Ø 150 mm, Ø 200 mm	<b>MC2</b>	<b>1C2</b>

- <sup>(1)</sup> Add the appropriate digits after the catalogue number of the selected valve, example:  
 - catalogue number of valve alone **E298B0370TA0000**  
 - catalogue number of valve + pre-installed inductive contacts box = **E298B0370TMC200**



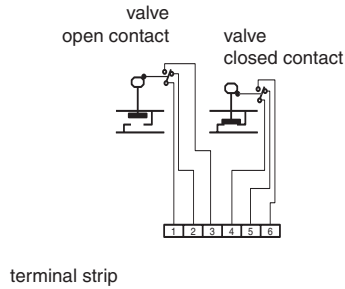
### OPTIONS

- Other types of contacts: contact us

### INSTALLATION

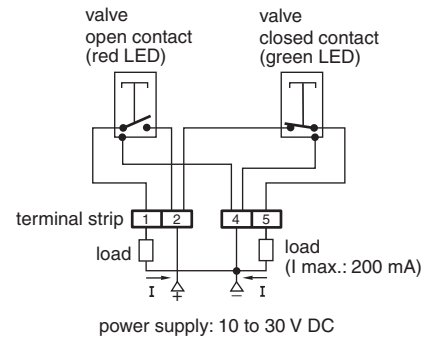
- The signaling box can be installed in any position
- Electrical connection:

#### mechanical contacts



#### inductive contacts

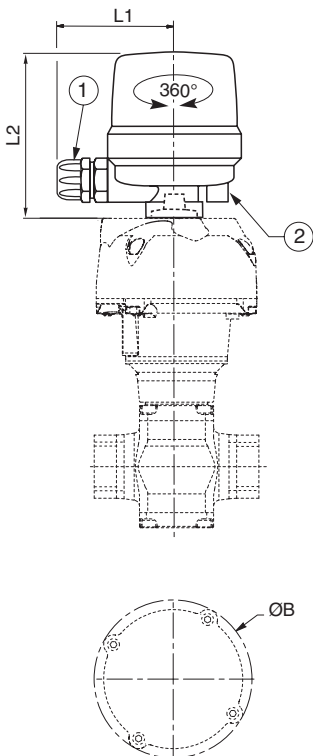
(valve closed)



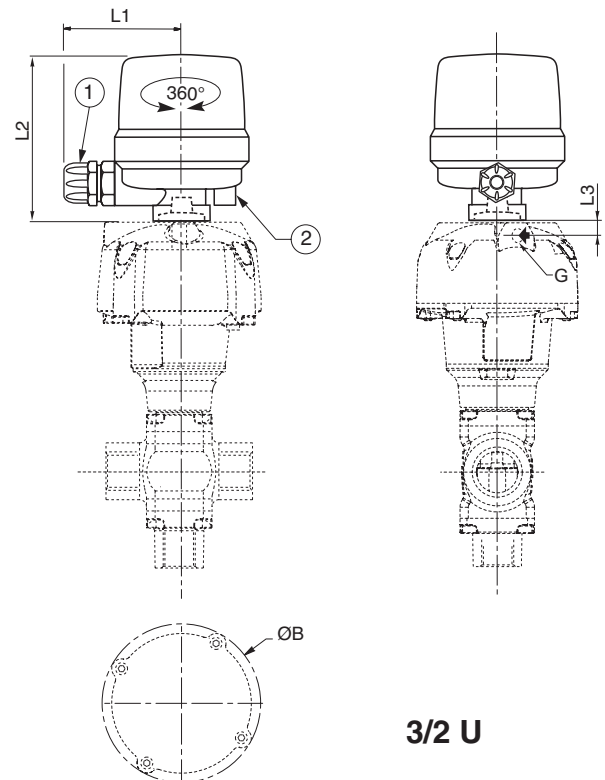
- Installation/maintenance instructions are included with each signaling box

### DIMENSIONS (mm), WEIGHT (kg)

Weight of unit alone: 0,310



**2/2 NO-NC**



**3/2 U**

operator dia.	80 mm	100 mm	150 mm	200 mm
L1	68	68	68	68
L2	100	100	100	100
L3	7	8	12	15
ø G	1/8	1/8	1/4	1/4
ø B	110	132,5	191	247

① 1 cable gland (cable Ø 5-10 mm)

② Unit rotation lock set screw (orientable through 360°)



# VALVES TO ATEX 2014/34/EU OPTIONS / ACCESSORIES

for potentially explosive atmospheres  
series 298 and 398



**2/2 - 3/2**  
Series  
**298 - 398**

## FEATURES

- 2/2 NC/NO or 3/2 U valves designed for use in potentially explosive atmospheres according to ATEX Directive 2014/34/EU, category 2
- Compliance with the Essential Health and Safety Requirements of the ATEX Directive has been assured by compliance with European Standards EN 13463-1 and EN 13463-5

## GENERAL / CONSTRUCTION / SPECIFICATIONS

Verify the compatibility of the category/zone with the selected valve.

operator diameter		DN	catalogue page	classification (zones)				
				category 2			safety code <sup>(c)</sup>	
			Pressure Operated Valves: 2/2, pages ► 53 (E298), 57 (T298), 61 (S298) 3/2, pages ► 3 (E398), 7 (T398), 11 (S398)	dusts	gas			
					IIA	IIB	IIC	
Ø 80 mm		15	=	21	1	1	1	II 2 GD c x°C (Tx)
Ø 100 mm		20 → 25						
Ø 150 mm		32 → 40						
Ø 200 mm		50						

x°C <sup>(c)</sup>	(Tx) <sup>(c)</sup>	Ts amb <sup>(c)</sup>	T fluid <sup>(c)</sup>
260°C	(T2)	180°C	250°C
200°C	(T3)	180°C	195°C
135°C	(T4)	130°C	130°C
100°C	(T5)	95°C	95°C
85°C	(T6)	80°C	80°C

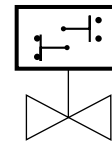
<sup>(c)</sup> x°C = Surface temperature  
 (Tx) = Temperature class  
 Ts amb = Ambient temperature  
 T fluid = Fluid temperature

## ORDERING

Verify the compatibility of the category/zone with the selected valve.	option code <sup>(1)</sup>
	category 2
	AT1

<sup>(1)</sup> Example: Valve E298, DN 20, solenoid operator Ø100 mm for use in zones 1 and 21 (category 2), catalogue number: **E298B04D0VAT100**





## FEATURES

- The signaling box fits all series 298 (2/2) and 398 (3/2) valves to indicate whether the valve is open or closed
- The version with 2 intrinsically safe inductive NAMUR contacts is designed for use in potentially explosive atmospheres to ATEX-Directive 2014/34/EU
- Compliance with the Essential Health and Safety Requirements has been assured by compliance with the International and European Standards EN 60079-0, EN 60079-11 and EN 60076-26
- The signaling box is supplied pre-installed and pre-adjusted on the valve. It is rotatable through 360°

## GENERAL / OPERATION

At both end-of-travel positions (open and closed) of the valve stem, cams on the signaling box plunger operate contacts which provide an electrical signal indicating that the end position is reached.

### Safety code

x°C <sup>(c)</sup>	(Tx) <sup>(c)</sup>	Ts amb <sup>(c)</sup>	T fluid <sup>(c)</sup>
85°C	(T6)	80°C	80°C

⊕ II 2 GD c IIB T6 T85°C  
<sup>(c)</sup> x°C = Surface temperature  
 (Tx) = Temperature class  
 Ts amb = Ambient temperature  
 T fluid = Fluid temperature

### Ambient temperature for operation of inductive detectors

-20°C to +70°C

## CONSTRUCTION

Body, cover

PA

Degree of protection

IP66

Unit can be rotated through 360° around the centreline of the valve operator (set screw)

## ELECTRICAL CHARACTERISTICS

### intrinsically safe inductive NAMUR contacts

The protection rating of the installed signaling box depends on the type of selected valve (see page: 67).

Contact characteristics:

- Power supply: 8,2 V DC nominal
- Switching frequency: 1 kHz

Protection rating of contacts:

- ⊕ II 1G Ex ia IIB T6 Ga
- ⊕ II 2G Ex ia IIC T6 Gb
- ⊕ II 1D Ex ia IIIC T 90°C Da

- Registration & Tests:  
**PTB 01 ATEX 2191**  
**BVS 04 ATEX E153**  
**IECEX BVS 06.0003**  
**EMC EN 60947-5-6**

- Recommended interfaces:  
*galvanic barrier*

Pepperl & Fuchs type KFA6-SR2-EX1.W  
 MTL instruments type MTL5011B

*ZENER barrier*  
 MTL instruments type MTL7742

Connection to certified intrinsic safety circuits with maximum values.

safety parameters				
U <sub>i</sub>	I <sub>i</sub>	P <sub>i</sub>	L <sub>i</sub>	C <sub>i</sub>
15 V	50 mA	120 mW	110 μH	80 nF

### Electrical connection of box

intrinsically safe inductive NAMUR contacts

2 terminal strips with 5 screw terminals  
 2,5 mm<sup>2</sup>

Max. grip

Cable entry

1 cable gland (cable Ø 5-10 mm)

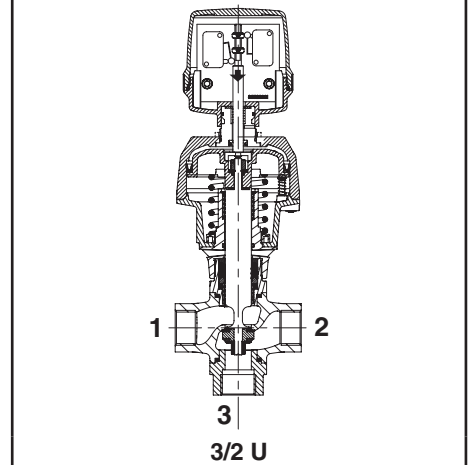
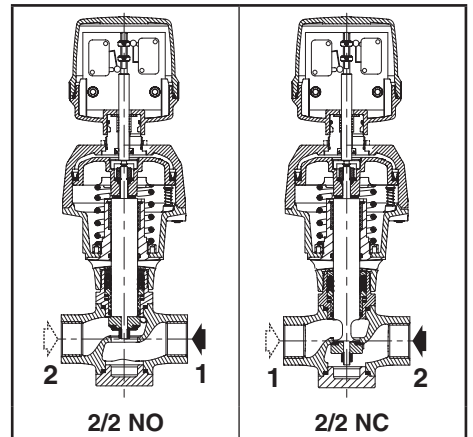
## SPECIFICATIONS

operator	option code <sup>(1)</sup> signaling box supplied installed on valve 2 intrinsically safe inductive contacts NAMUR
Ø 80 mm, Ø 100 mm, Ø 150 mm, Ø 200 mm	<b>1S2</b>

<sup>(1)</sup> Add the appropriate digits after the catalogue number of the selected valve, example:

- catalogue number of valve alone **E298B0370TA0000**

- catalogue number of valve + pre-installed intrinsically safe inductive contacts box = **E298B0370V1S200**



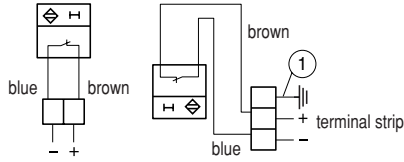


### OPTIONS

- Other types of contacts: contact us

### INSTALLATION

- The signaling box can be installed in any position
- Electrical connection:

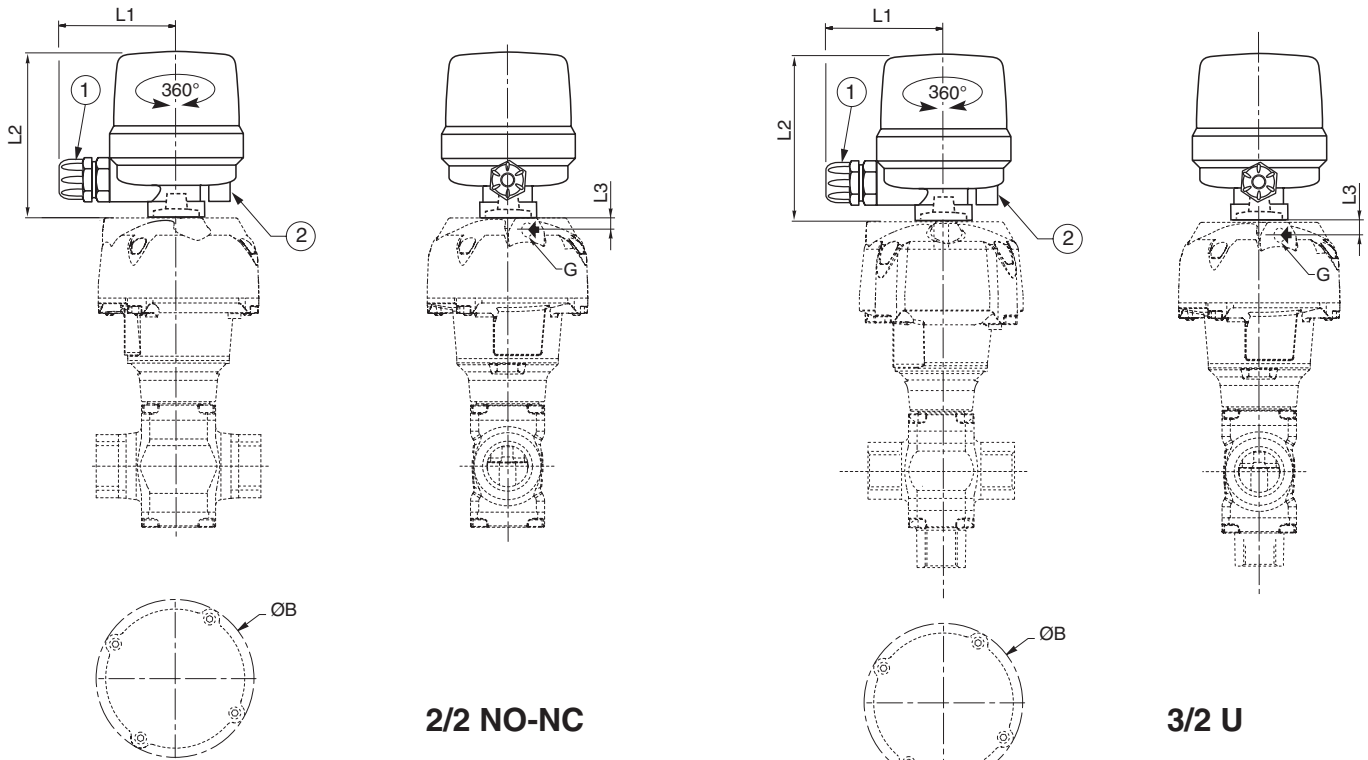


① Electrical continuity terminal

- Installation/maintenance instructions are included with each signaling box

### DIMENSIONS (mm), WEIGHT (kg)

Weight of unit alone: 0,310



operator dia.	80 mm	100 mm	150 mm	200 mm
L1	68	68	68	68
L2	100	100	100	100
L3	7	8	12	15
ø G	1/8	1/8	1/4	1/4
ø B	110	132,5	191	247

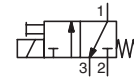
- ① 1 cable gland (cable Ø 5-10 mm)
- ② Unit rotation lock set screw (orientable through 360°)



# SOLENOID PILOT VALVES

for 298/398 valves, 80 & 100 mm operators  
direct operated  
1/8

NC



3/2  
Series  
356

## FEATURES

- Compact design and low weight enabling easy installation on all series 298 & 398 valves with dia. 80 & 100 mm operators
- Standard manual operator allows for easy installation and maintenance
- Quick disassembly of core tube for easy maintenance of internal parts
- Standard disc seal made of FPM suitable for a wide range of operating temperatures and compatible with many fluids
- AC/DC interchangeability of the solenoid without disassembling the valve
- Compliance with UL and CSA standards
- The solenoid valves satisfy all relevant EU Directives

## GENERAL

**Max. pilot pressure** See «SPECIFICATIONS» [1 bar = 100 kPa]  
**Maximum viscosity** 40 cSt (mm<sup>2</sup>/s)  
**Response time** See page 7 ([www.asco.com](http://www.asco.com))

pilot (series)	fluids (*)	temperature range (TS)	seal materials (*)
356	filtered air and water	-10°C to +60°C	FPM (fluoroelastomer)



## MATERIALS IN CONTACT WITH FLUID

(\*) Ensure that the compatibility of the fluids in contact with the materials is verified

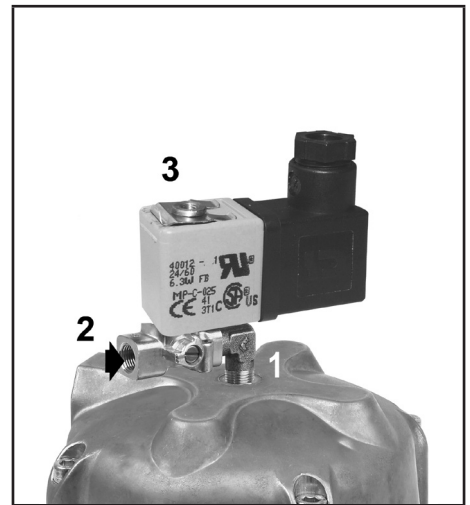
<b>Body</b>	Brass or AISI 316 SS
<b>Core tube</b>	Stainless steel
<b>Core and plugnut</b>	Stainless steel
<b>Springs</b>	Stainless steel
<b>Seats</b>	Brass or stainless steel
<b>Seals</b>	FPM
<b>Shading coil</b>	Copper

## ELECTRICAL CHARACTERISTICS

**Coil insulation class** F  
**Connector** Spade plug (cable Ø 6-7 mm)  
**Connector specification** DIN 43650, 11 mm, industry standard B  
**Electrical safety** IEC 335  
**Electrical enclosure protection** Moulded IP65 (EN 60529)  
**Standard voltages** DC (=) : 24V - 48V  
 AC (~) : 24V - 48V - 115V - 230V / 50 Hz  
 (Other voltages and 60 Hz on request)

prefix option	power ratings				operator ambient temperature range (TS) (C°)	replacement coil		type <sup>(1)</sup>
	inrush ~	holding ~	hot/cold =			~	=	
	(VA)	(VA)	(W)	(W)		230 V/50 Hz	24 V DC	
SC	12	6	4	5 / 6,9	-10 to +60	400127-197	400127-142	02

<sup>(1)</sup> Refer to the dimensional drawings on the following page.



## SPECIFICATIONS

pipe size	orifice size		flow coefficient Kv				operating pressure differential (bar)				power coil (W)		catalogue number with maintained manual operator	
	2→1 (mm)	1→3 (mm)	min. <sup>(4)</sup>		max. (PS)		air (*)		water (*)		~	=		
			(m <sup>3</sup> /h)	(l/min)	(m <sup>3</sup> /h)	(l/min)	~	=	~	=				
G			2→1 (m <sup>3</sup> /h)	2→3 (l/min)	2→1 (m <sup>3</sup> /h)	2→3 (l/min)	0	10	10	10	10	4	6,9	SCG356B059VMS <sup>(3)</sup>
<b>NC - Normally closed, series 356 pilot, brass body</b>														
1/8 <sup>(2)</sup>	1,6	1,2	0,08	1,33	0,05	0,8	0	10	10	10	10	4	6,9	SCG356B059VMS <sup>(3)</sup>
<b>NC - Normally closed, series 356 pilot, stainless steel body</b>														
1/8 <sup>(2)</sup>	1,6	1,2	0,08	1,33	0,05	0,8	0	10	10	10	10	4	6,9	SCG356B060VMS <sup>(3)</sup>

<sup>(2)</sup> Pipe size:

- Port 1 and 2: 1/8 (series 356)
- Port 3 (exhaust): M5

<sup>(3)</sup> Solenoid valve with 1/8 adapter.

<sup>(4)</sup> Refer to leaflets on series 298/398 valves which show the minimum pilot pressure for each version of the product.

### OPTIONS

- Explosionproof enclosures for use in zones 1/21-2/22, categories 2-3 to ATEX Directive 2014/34/EU ([www.asco.com](http://www.asco.com))
- Class H coil, max. ambient temperature +75°C, contact us
- M5 flow control regulator to fit port 3, catalogue number: **34600380**
- Connector with visual indication and peak voltage suppression or with cable length of 2 m ([www.asco.com](http://www.asco.com))

### INSTALLATION

- The solenoid valves can be mounted in any position without affecting operation
- Pipe connection identifier is G = G (ISO 228/1)
- Installation/maintenance instructions are included with each valve

### ORDERING EXAMPLES:

	SC G356B059 VMS	24V / DC
	SC G356B060 VMS	230V / 50 Hz
catalogue number _____		_____ voltage

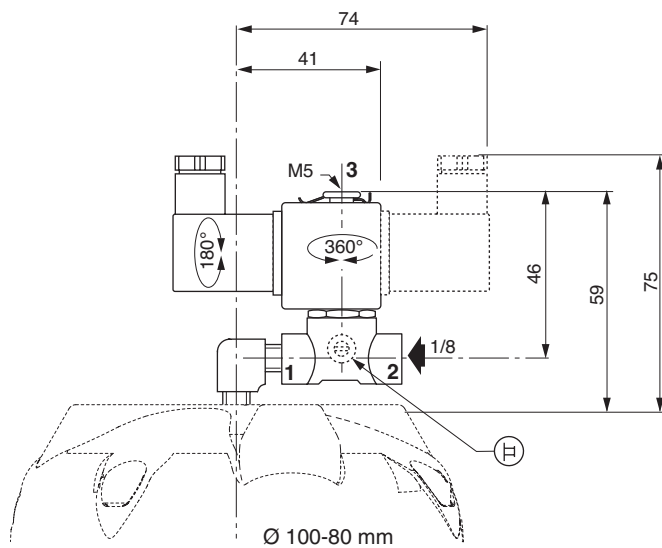
### DIMENSIONS (mm), WEIGHT (kg)



#### TYPE01

Prefix "SC" Solenoid  
Pilot 356  
Epoxy moulded  
IEC 335 / DIN 43650 / IP65

**SCG356B059VMS - SCG356B060VMS**



type	prefix option	pilot	operator diameter	weight <sup>(1)</sup>
01	SC	356 series	80 mm 100 mm	0,155

① Flow control regulator location

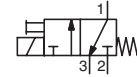
<sup>(1)</sup> Including adapter, coil and connector.



# SOLENOID PILOT VALVES

for 298/398 valves, 150 & 200 mm operators  
direct operated  
1/4

NC



3/2  
Series  
**314**  
**356**

## FEATURES

- Compact design and low weight enabling easy installation on all series 298 & 398 valves with dia. 150 & 200 mm operators
- Standard manual operator allows for easy installation and maintenance
- Pilot 356: AC/DC interchangeability of the solenoid without disassembly of the valve
- The solenoid valves satisfy all relevant EU directives

## GENERAL

**Max. pilot pressure** 0 to 10 bar [1 bar = 100 kPa]  
**Maximum viscosity** 40 cSt (mm<sup>2</sup>/s)  
**Response time** See page 7 ([www.asco.com](http://www.asco.com))

pilot (series)	fluids (*)	temperature range (TS)	seal materials (*)
314	filtered air and water	-10°C to +80°C	314/356 pilots: NBR (nitrile)
356			314 pilot: FPM (fluoroelastomer)



## MATERIALS IN CONTACT WITH FLUID

(\*) Ensure that the compatibility of the fluids in contact with the materials is verified

	Pilot 314	Pilot 356
<b>Body</b>	Brass or st. steel AISI 304	Brass or st. steel AISI 316
<b>Core tube</b>	Stainless steel	Stainless steel
<b>Core and plugnut</b>	Stainless steel	Stainless steel
<b>Springs</b>	Stainless steel	Stainless steel
<b>Seats</b>	Brass	Brass
<b>Seals</b>	NBR	FPM
<b>Upper disc</b>	FPM	-
<b>Shading coil</b>	Copper or silver	Copper

## ELECTRICAL CHARACTERISTICS

**Coil insulation class** F  
**Connector** Spade plug (cable Ø 6-10 mm)  
**Connector specification** ISO 4400 / EN 175301-803, form A  
**Electrical safety** IEC 335  
**Electrical enclosure protection** Moulded IP65 (EN 60529)  
**Standard voltages** DC (=) : 24V - 48V  
 (Other voltages and 60 Hz on request) AC (~) : 24V - 48V - 115V - 230V / 50 Hz

prefix option	power ratings				operator ambient temperature range (TS) (C°)	replacement coil		type <sup>(1)</sup>
	inrush	holding		hot/cold		~	=	
	~	~	=	=				
-	50 (VA)	25 (VA)	10,1 (W)	8,5 / 11,6 (W)	-10 to +60	230 V/50 Hz	24 V DC	01
SC	15	7	5	5 / 6,9	-10 to +60	400727-117	400727-185	02

<sup>(1)</sup> Refer to the dimensional drawings on the following page.

## SPECIFICATIONS (314 Series)

pipe size	orifice size	flow coefficient Kv				operating pressure differential (bar)						power coil (W)	thread type	dimensions / type <sup>(1)</sup>	15-DIGIT PRODUCT CODE									
		2 → 1		1 → 3		max. (PS)									brass <sup>(2)</sup>	stainless steel <sup>(2)</sup>	voltage code							
		min. <sup>(3)</sup>	air (*)	water (*)	-	-	-	-	-	-	~						=	24 V/50 Hz	48 V/50 Hz	115 V/50 Hz	230 V/50 Hz	24 V/DC	48 V/DC	
1/4	3,2	0,22	3,7	0,17	2,8	0	10	6	10	6	-	-	10,1	11,6	G*	01	E314K151S1N01	E314K150S1N01	FL	FR	FT	F8	F1	F9

## SPECIFICATIONS (356 Series)

pipe size	orifice size	flow coefficient Kv				operating pressure differential (bar)						power coil (W)	catalogue number <sup>(2)</sup>		
		2 → 1		1 → 3		max. (PS)							brass body	stainless steel body	
		min. <sup>(3)</sup>	air (*)	water (*)	-	-	-	-	-	-	-				~/=
G	(mm)	(mm)	(m <sup>3</sup> /h)	(l/min)	(m <sup>3</sup> /h)	(l/min)		~	=	~	=	~	=	SCG356B469VMS	SCG356B474VMS

<sup>(2)</sup> Solenoid valve with 1/4 adapter.

<sup>(3)</sup> Refer to leaflets on series 298/398 valves which show the minimum pilot pressure for each version of the product.

All leaflets are available on: [www.asco.com](http://www.asco.com)

Pressure Operated Valves (2/2) - 73

**OPTIONS**

- Explosionproof enclosures for use in zones 1/21-2/22, categories 2-3 to ATEX Directive 2014/34/EU ([www.asco.com](http://www.asco.com))
- flow control device to fit port 3 (to increase air-operated pilot depressurization time):  
M5, catalogue number: **34600380** / 1/8, catalogue number: **34600107**
- Connector with visual indication and peak voltage suppression or with cable length of 2 m ([www.asco.com](http://www.asco.com))

**INSTALLATION**

- The solenoid valves can be mounted in any position without affecting operation
- Pipe connection 1/4 (G\*) has standard combination thread according to ISO 228/1 and ISO 7/1. Pipe connection G 1/8 or G 1/4 has standard thread according to ISO 228/1
- Installation/maintenance instructions are included with each valve

**SPARE PARTS KIT**

catalogue number	spare parts kit no.	
	~	=
E314K151S1N01	<b>M200071N00</b>	<b>M200067N00</b>
E314K150S1N01	<b>M200073N00</b>	<b>M200069N00</b>

**ORDERING EXAMPLES / VALVES:**

E314K151S1N01 F8			
SC	G356B469	VMS	24V / DC
			_____ voltage
catalogue number _____			

**ORDERING EXAMPLES KITS:**

M200071N00
catalogue number _____

**DIMENSIONS (mm), WEIGHT (kg)**



**TYPE 01**

Electrical interface "S1" (314 pilot)  
Epoxy moulded  
IEC 335 / ISO 4400  
IP65

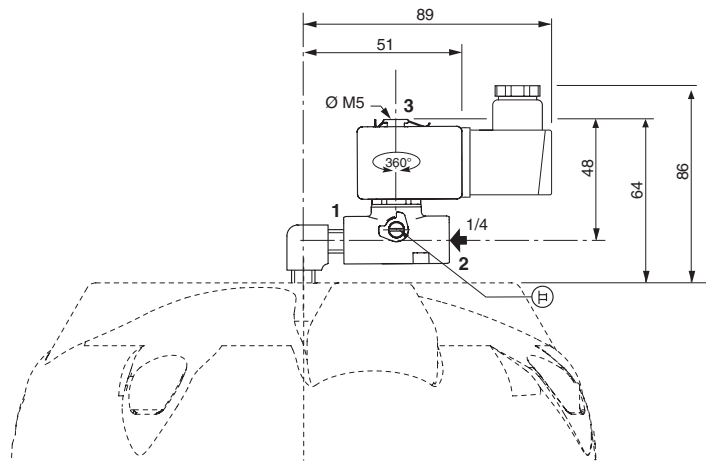
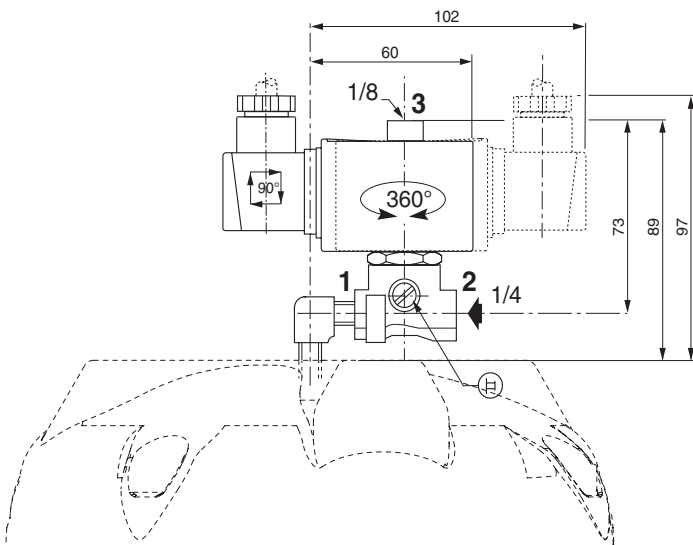
E314K150S1N01/151S1N01



**TYPE 02**

Prefix "SC" Solenoid (Pilot 356)  
Epoxy moulded  
IEC 335 / ISO 4400  
IP65

SCG356B469VMS - SCG356B474VMS



Ø 150-200 mm

type	prefix option	pilot	weight <sup>(1)</sup>
01	-	314 series	0,610
02	SC	356 series	0,253

<sup>(1)</sup> including adapter connection, coil and connector.

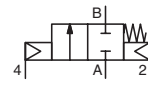




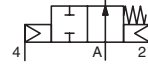
# VALVES

pressure operated  
coaxial, brass or stainless steel body  
3/8 to 1

NC



NO



2/2  
Series  
287

## FEATURES

- Control of high-pressure fluids
- NAMUR interface pilot for 1/4" solenoid spool valve
- Valve without actuator gland designed for long service life
- Vacuum operation up to 10<sup>-4</sup> mbar
- The valves satisfy article 4.3 of Pressure Equipment Directive 2014/68/EU

## GENERAL

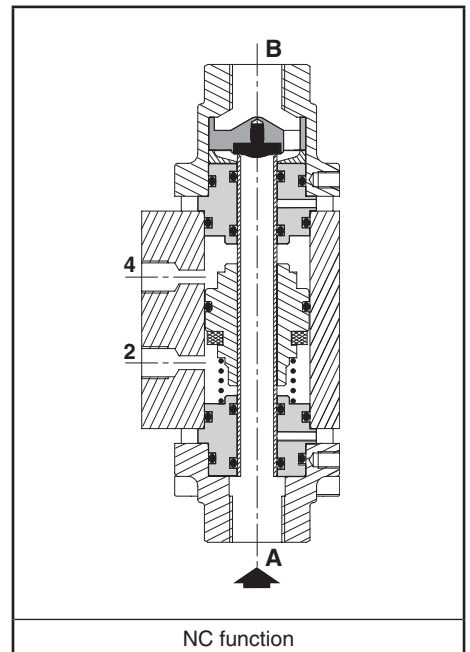
<b>Differential pressure</b>	[1 bar = 100 kPa]
pilot 3/2 NC	A → B : 40 bar, B → A : 12 bar
pilot 5/2	A → B : 40 bar, B → A : 40 bar
<b>Ambient temperature range</b>	- 20°C to + 100°C
<b>Maximum viscosity</b>	
pilot 3/2 NC	500 cSt (mm <sup>2</sup> /s)
pilot 5/2	6000 cSt (mm <sup>2</sup> /s)
<b>Pilot fluid</b>	Air or oil
<b>Pilot pressure</b>	4 to 8 bar
<b>Pilot fluid temperature</b>	0°C à +60°C
<b>Response time</b> (air operation ΔP = 4 bar)	
opening (ms)	3/8 1/2 3/4 1 30 35 40 50
closing (ms)	50 60 60 70

fluids (*)	temperature range (TS)	seal materials (*)
air and gas groups 1 & 2 water, oil, liquids groups 1 & 2	- 20°C to + 100°C	FPM (fluoroelastomer) PTFE

## MATERIALS IN CONTACT WITH FLUID

(\*) Ensure that the compatibility of the fluids in contact with the materials is verified

	Brass body	Stainless steel body
<b>Body</b>	Brass	Stainless steel
<b>Internal parts</b>	Brass	Stainless steel
<b>Tube</b>	Stainless steel	Stainless steel
<b>Seals</b>	FPM	FPM
<b>Disc seal</b>	PTFE	PTFE



## SPECIFICATIONS

pipe size	DN	flow coefficient Kv		operating pressure differential (bar)				catalogue number		
				min.	max. (PS)		brass			stainless steel
					air/gas/water/oil (*)					
G		(m <sup>3</sup> /h)	(l/min)		B → A	A → B				
<b>NC - Normally closed</b>										
3/8	10	2,2	36,6	0	12	40	<b>G287A101</b>	<b>G287A109</b>		
1/2	15	5,2	86,6	0	12	40	<b>G287A102</b>	<b>G287A110</b>		
3/4	20	7,5	125	0	12	40	<b>G287A103</b>	<b>G287A111</b>		
1	25	12,2	203,3	0	12	40	<b>G287A104</b>	<b>G287A112</b>		
<b>NO - Normally open</b>										
3/8	10	2,2	36,6	0	12	40	<b>G287A105</b>	<b>G287A113</b>		
1/2	15	5,2	86,6	0	12	40	<b>G287A106</b>	<b>G287A114</b>		
3/4	20	7,5	125	0	12	40	<b>G287A107</b>	<b>G287A115</b>		
1	25	12,2	203,3	0	12	40	<b>G287A108</b>	<b>G287A116</b>		

00065GB-2017/R01  
Availability, design and specifications are subject to change without notice. All rights reserved.

### OPTIONS

- ATEX 2014/34/EU versions for use in zones 1/21-2/22, categories 2-3, use suffix GD2 (example: G287A101GD2)
- Magnetic position detectors (MR) "T profile":
  - with 2 m PVC lead, 3 wires 0,14 mm<sup>2</sup>, stripped and tinned ends, catalogue number: **88100737**
  - with 5 m PVC lead, 3 wires 0,14 mm<sup>2</sup>, stripped and tinned ends, catalogue number: **88100738**
  - with 0,15 m PVC lead + plug-in male connector Ø M8 - 3 pins, catalogue number: **88100739**
  - with 0,15 m PVC lead + screw-type male connector Ø M12 - 3 pins, catalogue number: **88100740**

### INSTALLATION

- The valves can be mounted in any position without affecting operation
- Valves have two mounting holes in body
- Pipe connection identifier is G = G (ISO 228/1)
- Installation/maintenance instructions are included with each valve

### SPARE PARTS KITS & ACCESSORIES

catalogue number	spare parts kit no.		mounting bracket no.
	brass	stainless steel	
G287A101/109/105/113	<b>C140176</b>	<b>C140177</b>	<b>C140130</b>
G287A102/110/106/114	<b>C140180</b>	<b>C140181</b>	<b>C140131</b>
G287A103/111/107/115	<b>C140184</b>	<b>C140185</b>	<b>C140132</b>
G287A104/112/108/116	<b>C140188</b>	<b>C140189</b>	<b>C140133</b>

### ORDERING EXAMPLES:

	G 287 A 101
	G 287 A 105
	G 287 A 109
pipe thread	_____
basic number	_____

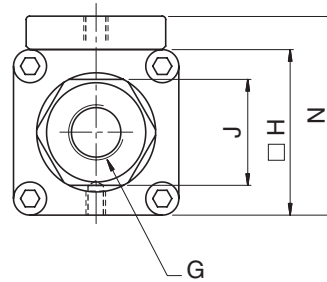
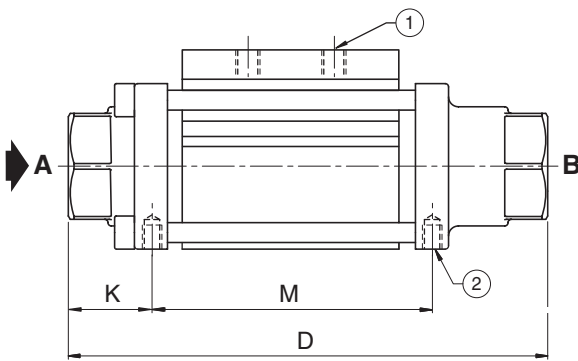
### DIMENSIONS (mm), WEIGHT (kg)



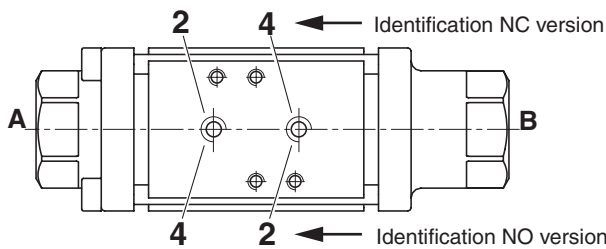
**TYPE 01**  
NAMUR interface pilot

### ORDERING EXAMPLES KITS:

	C140176
	C140181
basic number	_____



- ① 2 pilot ports G 1/8
- ② 2 mounting holes Ø M5, depth 7 mm



type	G	D	H	J	K	M	N	X	Y	Z	weight <sup>(1)</sup>
01	3/8	145	50	32	25	85	60	24	111	6	1,3
	1/2	173	70	41	31	103	68	38	136	6	2,5
	3/4	193	80	46	35	111	78	45	151	7	3,8
	1	212	90	55	36	121	88	50	165	7	5,1

<sup>(1)</sup> Without mounting brackets.

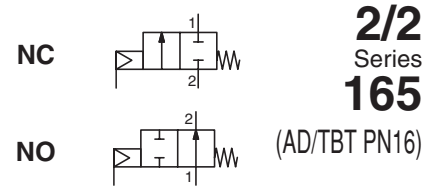
NAMUR interface pilot operation

position detectors	mounting brackets	NAMUR solenoid valves, series 551



# VALVES

pressure operated  
bronze body  
threaded ports, 1/2 to 2



**2/2**  
Series  
**165**

(AD/TBT PN16)

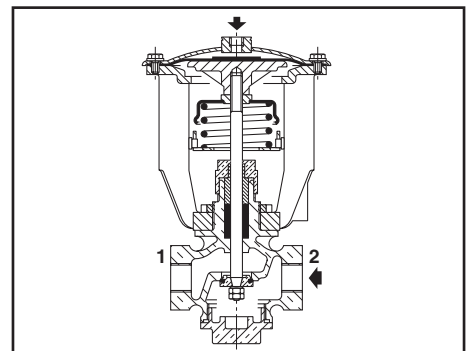
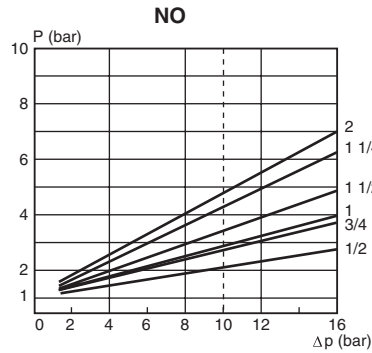
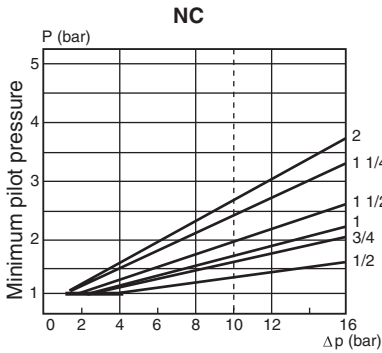
## FEATURES

- Differential-action valve for high-pressure fluid control at reduced piloting pressure
- Heavy-duty valve recommended for demanding applications
- Available with several accessories and options to handle the majority of industrial applications
- The valves satisfy Pressure Equipment Directive 2014/68/EU, category 1 (DN > 25) or article 4.3 (DN ≤ 25)

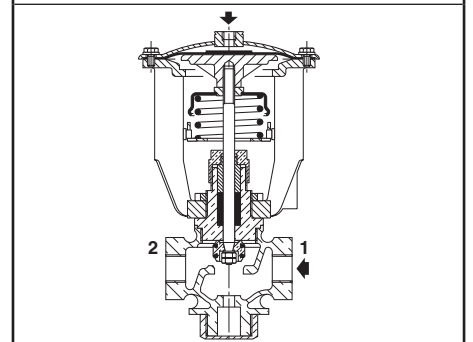
## GENERAL

fluids (*)	temperature range	disc seal (*)
air and gas groups 1 & 2 water, oil, liquids groups 1 & 2 and steam	- 10°C to + 184°C	PTFE

<b>Differential pressure</b>	0 to 16 bar [1 bar =100 kPa]
Steam	0 to 10 bar
<b>Maximum allowable pressure</b>	16 bar
<b>Ambient temperature range</b>	-5°C to +60°C
<b>Maximum viscosity</b>	5000 cSt (mm <sup>2</sup> /s)
<b>Response time</b>	See overleaf
<b>Pilot fluid</b>	Water, air, filtered
<b>Max. pilot pressure</b>	10 bar
<b>Min. pilot pressure</b>	See graphs (lower pressure: see Options)



NC function



NO function

## MATERIALS IN CONTACT WITH FLUID

(\*) Ensure that the compatibility of the fluids in contact with the materials is verified

<b>Valve body</b>	Bronze
<b>Stem</b>	Stainless steel
<b>Disc</b>	Brass
<b>Stuffing-box seal</b>	Braided PTFE
<b>Disc seal</b>	PTFE
<b>Valve body seal</b>	FPM
<b>Plug body</b>	Brass or bronze

## OTHER MATERIALS

<b>Diaphragm (operator)</b>	NBR
<b>Bonnet (operator)</b>	Steel

## SPECIFICATIONS

piping (ISO 6708)		flow coefficient Kv		maximum allowable pressure (bar)	pilot pressure (bar)		NC normally closed		NO normally open	
pipe size (G*)	DN	(m <sup>3</sup> /h)	(l/min)		min.	max.	catalogue number	reference	catalogue number	reference
1/2	15	4,5	75	16	*	10	<b>16500087</b>	2503-TBT	<b>16500101</b>	2503-TBT-NO
3/4	20	7,2	120	16	*	10	<b>16500088</b>	2504-TBT	<b>16500102</b>	2504-TBT-NO
1	25	12	200	16	*	10	<b>16500089</b>	2505-TBT	<b>16500103</b>	2505-TBT-NO
1 1/4	32	18	300	16	*	10	<b>16500090</b>	2506-TBT	<b>16500104</b>	2506-TBT-NO
1 1/2	40	31,8	530	16	*	10	<b>16500091</b>	2507-TBT	<b>16500105</b>	2507-TBT-NO
2	50	39	650	16	*	10	<b>16500092</b>	2508-TBT	<b>16500106</b>	2508-TBT-NO

\* The minimum pilot pressure varies according to the differential pressure across the valve. See pilot graphs above.

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**OPTIONS AND ACCESSORIES**

- Guard mounted on valves, 1/2 - 3/4: catalogue number **210555** / 1 - 1 1/4: catalogue number **210556** / 1 1/2 - 2: catalogue number **210557**
- Valves DN 15 to 50 to ATEX 2014/34/EU for categories 2 (II 2 GD c T6 T85°C) and 3 (II 3 GD c T6 T85°C X)
- Dry IP66 contacts
- 2 explosionproof switches with contacts for potentially explosive atmospheres to ATEX:

switch ambient temperature range	number of contacts	catalogue number	
		DN 15..32	DN 40..50
-20°C to +80°C	1	<b>260657</b>	<b>260658</b>
-20°C to +80°C	2	<b>260660</b>	<b>260661</b>
-55°C to +82°C	1	<b>260663</b>	<b>260664</b>

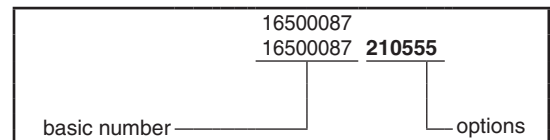
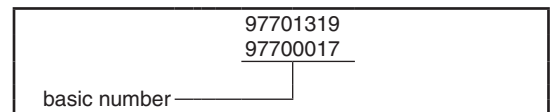
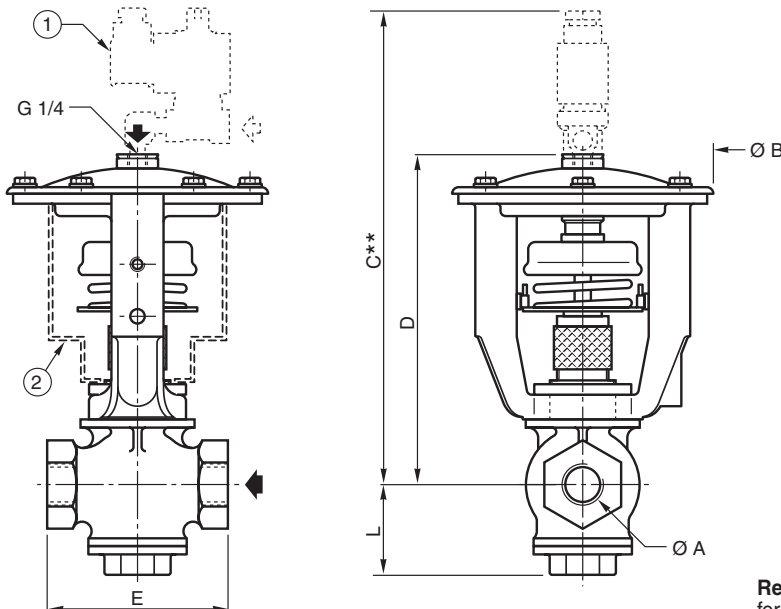
- Inductive M18 switch, IP66
- Inductive M18 switch, intrinsically safe to ATEX, II 1 GD EEx ia IIC T6 IP66 T85°C
- Manual override on the bonnet of the operator
- Accessories for adjustable response time (flow control, quick exhaust etc.)
- Anti-waterhammer device available with air-oil exchanger
- Backpressure applications possible by off-setting the yoke and using a reinforced spring
- Low pressure control (min. 1 bar) by off-setting the yoke
- Other types of stuffing-boxes are available depending on the nature of the fluid used
- Modifications for special environments (cold, hot, aggressive, marine etc.)
- Oxygen service, catalogue number **970509**, pressure/temperature limited to 15 bar / + 60°C
- Valve body degreased during assembly, catalogue number **970523**

**INSTALLATION**

- The valves can be mounted in any position, except with the operator downwards
- Be sure to observe the direction of fluid flow (NC from 2 to 1 ; NO from 1 to 2)
- Pipe connections (G\*) have standard combination thread according to ISO 228/1 and ISO 7/1. Pipe connection (G) has standard thread according to ISO 228/1

**SPARE PARTS KITS**

DN	spare parts kit no.				guard catalogue number
	stem and disc unit		stuffing-box unit	NBR diaphragm	
	NC	NO			
15	<b>97701319</b>	<b>97701351</b>	<b>97701320</b>	<b>97700017</b>	<b>88200035</b>
20	<b>97701321</b>	<b>97701352</b>	<b>97701320</b>	<b>97700017</b>	<b>88200035</b>
25	<b>97701322</b>	<b>97701353</b>	<b>97701320</b>	<b>97700018</b>	<b>88200036</b>
32	<b>97701323</b>	<b>97701354</b>	<b>97701324</b>	<b>97700018</b>	<b>88200036</b>
40	<b>97701325</b>	<b>97701355</b>	<b>97701324</b>	<b>97700019</b>	<b>88200037</b>
50	<b>97701326</b>	<b>97701356</b>	<b>97701327</b>	<b>97700019</b>	<b>88200037</b>

**ORDERING EXAMPLES:**

**ORDERING EXAMPLES KITS:**

**DIMENSIONS (mm), WEIGHT (kg)**


ØA (G*)	ØB	C**		D		E	L		weight <sup>(1)</sup>
		NC	NO	NC	NO		NC	NO	
1/2	127	284	290	165	171	68	39	46	3,5
3/4	127	289	292	170	173	84	44	51	4
1	156	306	307	187	188	92	48	56	5
1 1/4	156	311	314	192	193	110	55	61	5,5
1 1/2	200	343	344	224	225	125	60	66	10
2	200	353	352	234	233	145	70	82	12

<sup>(1)</sup> Weight of valve without pilot.

\*\* Maximum value given for reference and related to choice of electric pilot.

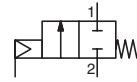
**Response time (in sec.)**  
for a valve with NC function

ØA (G*)	pilot fluid (6 bar)			
	air		water	
	O	C	O	C
1/2	0,3	1	0,7	2
3/4	0,3	1	0,7	2
1	0,4	1,5	1,5	4
1 1/4	0,4	1,5	1,5	4
1 1/2	0,6	2,5	3	9
2	0,6	2,5	3	9

① Solenoid pilot valves: see page: **83** ([www.asco.com](http://www.asco.com))

② Guard available as accessory, supplied separately or mounted on valve

- Response time is directly related to the Kv of the solenoid pilot valve. The time indicated at opening (O) and closing (C) of the valve is determined by a pilot (dia. 3 mm) with a Kv of 3,5.
- For an NO valve: swap the values of O and F.
- Consult us for shorter cycle times.



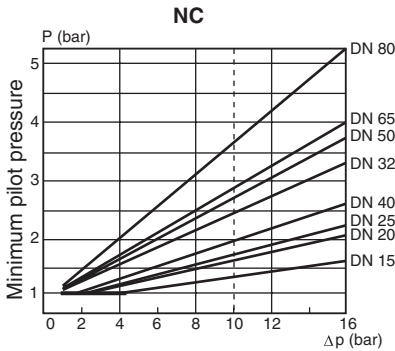
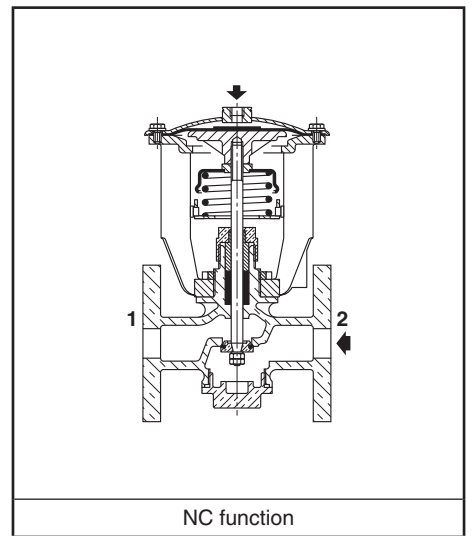
## FEATURES

- Differential-action valve for high-pressure fluid control at reduced piloting pressure
- Heavy-duty valve recommended for demanding applications
- Available with several accessories and options to handle the majority of industrial applications
- The valves satisfy Pressure Equipment Directive 2014/68/EU, category 1 (DN > 25) or article 4.3 (DN ≤ 25)

## GENERAL

fluids (*)	temperature range	disc seal (*)
DN ≤ 50: air and gas groups 1 & 2 DN > 50: air and gas group 2 all DN: water, oil, liquids groups 1 & 2 and steam	- 10°C to + 184°C	PTFE

<b>Differential pressure</b>	0 to 16 bar [1 bar = 100 kPa]
Steam	0 to 10 bar
<b>Maximum allowable pressure</b>	16 bar
<b>Ambient temperature range</b>	-5°C to +60°C
<b>Maximum viscosity</b>	5000 cSt (mm <sup>2</sup> /s)
<b>Response time</b>	See overleaf
<b>Pilot fluid</b>	Water, air, filtered
<b>Max. pilot pressure</b>	10 bar
<b>Min. pilot pressure</b>	See graphs (lower pressure: see Options)



## CONSTRUCTION

<b>Connection</b>	Flange type 21 (ISO 7005) - PN 16
<b>Facing</b>	Type A
<b>Pilot connection</b>	G 1/4

## MATERIALS IN CONTACT WITH FLUID

(\*) Ensure that the compatibility of the fluids in contact with the materials is verified

<b>Valve body</b>	Bronze
<b>Stem</b>	Stainless steel
<b>Disc</b>	Brass
<b>Stuffing-box seal</b>	Braided PTFE
<b>Disc seal</b>	PTFE
<b>Valve body seal</b>	FPM
<b>Plug body</b>	Brass or bronze

## OTHER MATERIALS

<b>Diaphragm (operator)</b>	NBR
<b>Bonnet (operator)</b>	Steel

## SPECIFICATIONS

DN	flow coefficient Kv		maximum allowable pressure	pilot pressure (bar)		NC normally closed	
						catalogue number	reference
15	4,5	75	16	*	10	<b>16500093</b>	2503-BBT
20	7,2	120	16	*	10	<b>16500094</b>	2504-BBT
25	12	200	16	*	10	<b>16500095</b>	2505-BBT
32	18	300	16	*	10	<b>16500096</b>	2506-BBT
40	31,8	530	16	*	10	<b>16500097</b>	2507-BBT
50	39	650	16	*	10	<b>16500098</b>	2508-BBT
65	63	1050	16	*	10	<b>16500099</b>	2510-BBT
80	99	1650	16	*	10	<b>16500100</b>	2511-BBT

\* The minimum pilot pressure varies according to the differential pressure across the valve. See pilot graphs above.



### OPTIONS AND ACCESSORIES

- Guard mounted on valves, DN 15-20: catalogue number **210555** / DN 25-32: catalogue number **210556** / DN 40-50: catalogue number **210557** / DN 65-80: catalogue number **210558**
- Valves DN 15 to 80 to ATEX 2014/34/EU for categories 2 (II 2 GD c T6 T85°C) and 3 (II 3 GD c T6 T85°C X)
- Dry IP66 contacts
- 2 explosionproof switches with contacts for potentially explosive atmospheres to ATEX:
 

switch ambient temperature range	number of contacts	DN 15..32 catalogue number	DN 40..80 catalogue number
-20°C to +80°C	1	<b>260657</b>	<b>260658</b>
-20°C to +80°C	2	<b>260660</b>	<b>260661</b>
-55°C to +82°C	1	<b>260663</b>	<b>260664</b>
- Inductive M18 switch, IP66
- Inductive M18 switch, intrinsically safe to ATEX, II 1 GD EEx ia IIC T6 IP66 T85°C
- Manual override on the bonnet of the operator
- Accessories for adjustable response time (flow control, quick exhaust etc.)
- Anti-waterhammer device available with air-oil exchanger
- Backpressure applications possible by off-setting the yoke and using a reinforced spring
- Low pressure control (min. 1 bar) by off-setting the yoke
- Other types of stuffing-boxes are available depending on the nature of the fluid used
- Modifications for special environments (cold, hot, aggressive, marine etc.)
- Other standardised flange forms
- Oxygen service, catalogue number **970509** (except DN 65 and 80), pressure/temperature limited to 15 bar / + 60°C
- Valve body degreased during assembly, catalogue number **970523**

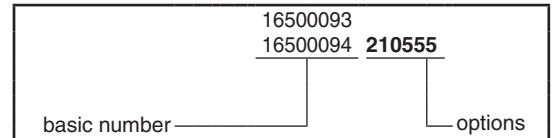
### INSTALLATION

- The valves can be mounted in any position, except with the operator downwards
- Be sure to observe the direction of fluid flow (NC from 2 to 1 ; NO from 1 to 2)
- Pipe connection (G) has standard thread according to ISO 228/1

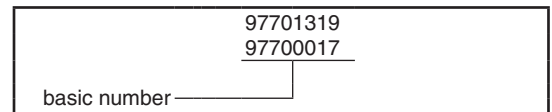
### SPARE PARTS KIT & ACCESSORIES

DN	spare parts kit no.				guard catalogue number
	stem and disc unit		stuffing-box unit	NBR diaphragm	
	NC	-			
15	<b>97701319</b>	-	<b>97701320</b>	<b>97700017</b>	<b>88200035</b>
20	<b>97701321</b>	-	<b>97701320</b>	<b>97700017</b>	<b>88200035</b>
25	<b>97701322</b>	-	<b>97701320</b>	<b>97700018</b>	<b>88200036</b>
32	<b>97701323</b>	-	<b>97701324</b>	<b>97700018</b>	<b>88200036</b>
40	<b>97701325</b>	-	<b>97701324</b>	<b>97700019</b>	<b>88200037</b>
50	<b>97701326</b>	-	<b>97701327</b>	<b>97700019</b>	<b>88200037</b>
65	<b>97701328</b>	-	<b>97701329</b>	<b>97700045</b>	<b>88200038</b>
80	<b>97701330</b>	-	<b>97701329</b>	<b>97700045</b>	<b>88200038</b>

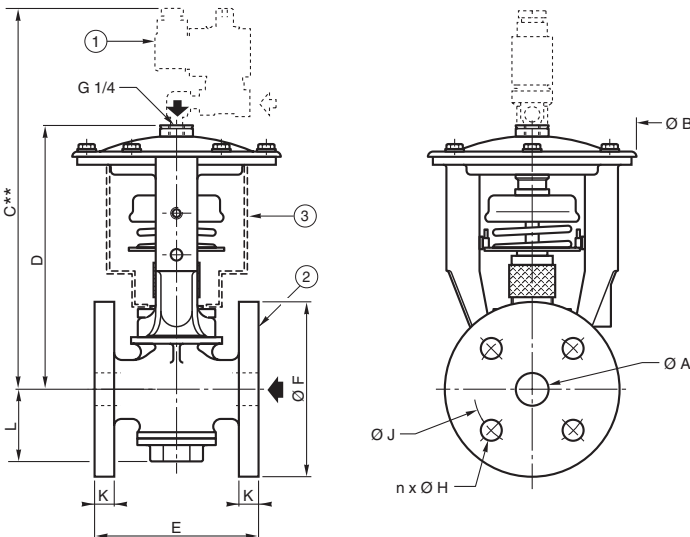
### ORDERING EXAMPLES:



### ORDERING EXAMPLES KITS:



### DIMENSIONS (mm), WEIGHT (kg)



ØA (mm)	ØB (mm)	C** (mm)	D (mm)	E (mm)	ØF (mm)	n x ØH (mm)	ØJ (mm)	K (mm)	L (mm)	weight <sup>(1)</sup> (kg)			
15	127	284	-	165	-	90	95	4 x Ø14	65	10	39	-	4,5
20	127	289	-	170	-	100	105	4 x Ø14	75	12	44	-	5,5
25	156	306	-	187	-	110	115	4 x Ø14	85	12	48	-	7
32	156	311	-	192	-	130	140	4 x Ø18	100	14	55	-	9
40	200	343	-	224	-	140	150	4 x Ø18	110	14	60	-	14
50	200	353	-	234	-	160	165	4 x Ø18	125	16	70	-	17
65	250	405	-	270	-	170	185	4 x Ø18	145	16	92,5	-	24
80	250	413	-	278	-	205	200	8 x Ø18	160	18	100	-	30

<sup>(1)</sup> Weight of valve without pilot.

\*\* Maximum value given for reference and related to choice of electric pilot.

### Response time (in sec.) for a valve with NC function

ØA (mm)	pilot fluid (6 bar)			
	air		water	
	O	C	O	C
15	0,3	1	0,7	2
20	0,3	1	0,7	2
25	0,4	1,5	1,5	4
32	0,4	1,5	1,5	4
40	0,6	2,5	3	9
50	0,6	2,5	3	9
65	0,8	4	5	9
80	0,8	4	5	15

- Solenoid pilot valves: see page: **83** ([www.asco.com](http://www.asco.com))
- Flange type 21 with flat faces, type A (ISO 7005)
- Guard available as accessory, supplied separately or mounted on valve

- Response time is directly related to the Kv of the solenoid pilot valve. The time indicated at opening (O) and closing (C) of the valve is determined by a pilot (dia. 3 mm) with a Kv of 3,5.
- Consult us for shorter cycle times.

## FEATURES

- The EN air/oil exchanger, specially designed for type AD differential action valves, ensures smooth and regular movement of the valve plunger to avoid waterhammer effect in certain applications
- It can be supplied pre-installed on a valve or separately for fitting on-site to any valve in service

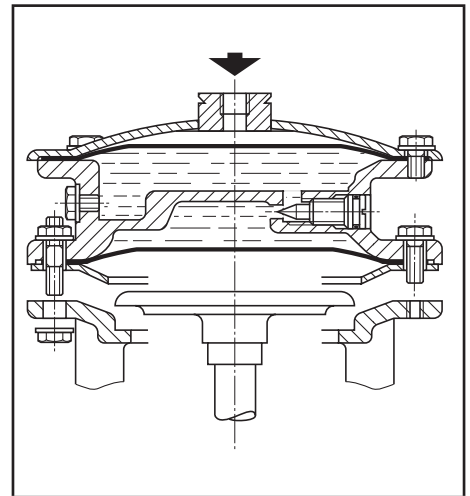
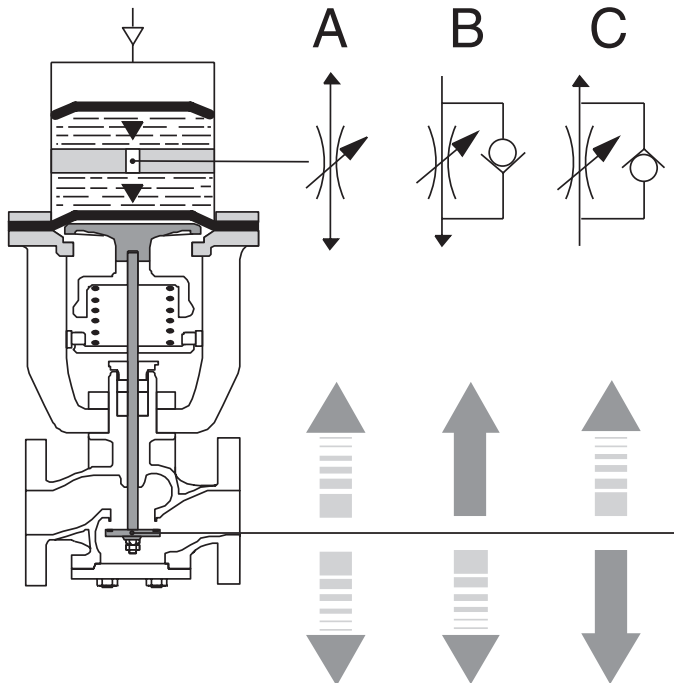
## OPERATION

Compressed air enters via the central boss in the upper dome. The resulting force is transmitted to the plunger of the valve by the flow of oil at a controlled rate through a needle valve, ensuring smooth action.

Depending on the function required, three operating modes are available:

- Mode "A"** Bi-directional with damping in both directions. The descent time must not exceed 20 seconds.
- Mode "B"** Uni-directional, downward movement damped.
- Mode "C"** Uni-directional, upward movement damped.

The letter indicates the mode.



## GENERAL

control fluid (*)	temperature range	diaphragms (*)
air, filtered	+5°C to +50°C	PA-reinforced synthetic rubber

**Max. pilot pressure** 10 bar [1 bar =100 kPa]  
**Recommended oil** Non-detergent, without aggressive additives  
**Ambient temperature range** -5°C to +50°C  
**Maximum viscosity** 20 to 50 cSt (mm<sup>2</sup>/s) at 50°C

## CONSTRUCTION

**Pilot connection** G 1/4

## MATERIALS IN CONTACT WITH FLUID

(\*) Ensure that the compatibility of the fluids in contact with the materials is verified

**Body** Cast iron  
**Domes (upper/lower)** Cast iron  
**Diaphragms** <sup>(1)</sup> PA-reinforced synthetic rubber

<sup>(1)</sup> The upper diaphragm is designed to prevent the risk of emulsion formation by separating the oil from the control air.

**SPECIFICATIONS**

DN	average capacity (liters)	yoke	mode	catalogue number		reference
				air/oil exchanger installed on valve <sup>(2)</sup>	air/oil exchanger sold separately	
15 <sup>(1)</sup> - 20 <sup>(1)</sup> 25 - 32	0,215	NB	A	335505	21800005	ENB
			B	335506	21800006	
			C	335507	21800007	
40 - 50	0,500	NC	A	335508	21800008	ENC
			B	335509	21800009	
			C	335510	21800010	
65 - 80	1,250	ND	A	335511	21800011	END
			B	335512	21800012	
			C	335513	21800013	

<sup>(1)</sup> Yoke offset on 15 and 20 dia. PN16 and PN25 valves.

<sup>(2)</sup> Number to be added to the catalogue number of the valve, see "ordering examples".

**OPTIONS AND ACCESSORIES**

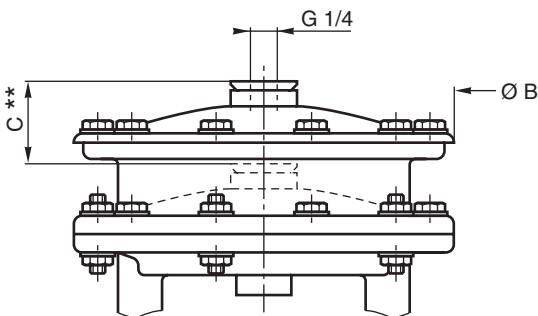
- Ambient temperature -20°C

**INSTALLATION**

- Installed on type AD valves in vertical position
- **Do not pressurise the air/oil exchanger before installation is completed**
- Adjustment screw and drain screw incorporated in the air/oil exchanger body
- The air/oil exchanger is filled with oil, even when supplied as a separate part
- Pipe connection identifier is G = G (ISO 228/1)
- Installation/maintenance instructions are included with each valve

**ORDERING EXAMPLES:**

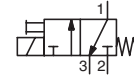
	21800005		16500087	335505
basic number				options

**DIMENSIONS (mm), WEIGHT (kg)**


reference	ØB	C**	weight
ENB	156	47	2,4
ENC	200	52	3,6
END	250	76	7,6

\*\* Additional dimension to be added to dimension C of a standard valve.

Note: The air/oil exchanger cannot be fitted with a manual operator.



## FEATURES

- Compact design and low weight enabling easy installation on all AD valves
- Manual operator allows an easy installation
- The solenoid valves satisfy all relevant EU Directives

## GENERAL

**Max. pilot pressure** 0 to 10 bar [1 bar = 100 kPa]  
**Maximum viscosity** 40 cSt (mm<sup>2</sup>/s)  
**Response time** See AD valve leaflets

fluids (*)	temperature range (TS)	seal materials (*)
filtered air and water	-10°C to +80°C	NBR (nitrile)

## MATERIALS IN CONTACT WITH FLUID

(\*) Ensure that the compatibility of the fluids in contact with the materials is verified

**Body** Brass or st. steel AISI 304  
**Core tube** Stainless steel  
**Core and plugnut** Stainless steel  
**Springs** Stainless steel  
**Seats** Brass  
**Seals** NBR  
**Upper disc** FPM  
**Shading coil** Copper or silver

## ELECTRICAL CHARACTERISTICS

**Coil insulation class** F  
**Connector** Spade plug (cable Ø 6-10 mm)  
**Connector specification** ISO 4400 / EN 175301-803, form A  
**Electrical safety** IEC 335  
**Electrical enclosure protection** Moulded IP65 (EN 60529)  
**Standard voltages**  
 DC (=) : 24V - 48V  
 AC (~) : 24V - 48V - 115V - 230V / 50 Hz

power ratings				operator ambient temperature range (TS)	replacement coil		type <sup>(1)</sup>
inrush ~	holding ~		hot/cold =		~	=	
(VA)	(VA)	(W)	(W)	(C°)	230 V/50 Hz	24 V DC	
50	25	10,1	8,5 / 11,6	-10 to +60	238613-059	238713-006	01

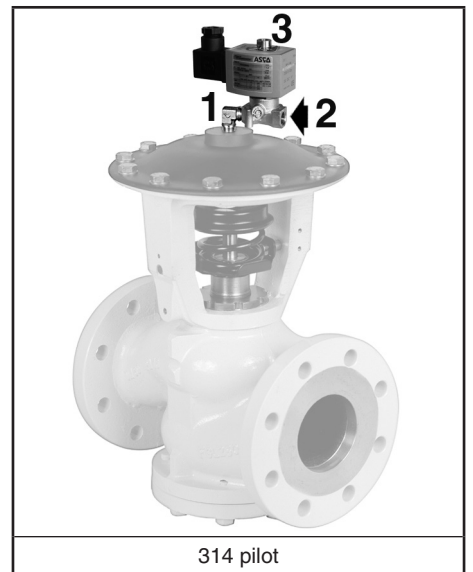
<sup>(1)</sup> Refer to the dimensional drawings on the following page.

## SPECIFICATIONS

pipe size	orifice size	flow coefficient Kv				operating pressure differential (bar)					power coil (W)	thread type	dimensions / type <sup>(1)</sup>	15-DIGIT PRODUCT CODE										
		2 → 1		1 → 3		max. (PS)								brass <sup>(2)</sup>	stainless steel <sup>(2)</sup>	voltage code								
		min. <sup>(3)</sup>	air (*)	water (*)	-	-	-	-	-	24 V/50 Hz						48 V/50 Hz	115 V/50 Hz	230 V/50 Hz	24 V/DC	48 V/DC				
1/4	3,2	0,22	3,7	0,17	2,8	0	10	6	10	6	-	-	10,1	11,6	G*	01	E314K151S1N01	E314K150S1N01	FL	FR	FT	F8	F1	F9

<sup>(2)</sup> Solenoid valve with 1/4 adapter.

<sup>(3)</sup> Refer to leaflets on series 165/166 valves which show the minimum pilot pressure for each version of the product.



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**OPTIONS**

- Explosionproof enclosures for use in zones 1/21-2/22, categories 2-3 to ATEX Directive 2014/34/EU ([www.asco.com](http://www.asco.com))
- Connector with visual indication and peak voltage suppression or with cable length of 2 m ([www.asco.com](http://www.asco.com))
- flow control device to fit port 3 (to increase air-operated pilot depressurization time): - G 1/8, catalogue number: **34600107**
- Class H coil

**INSTALLATION**

- The solenoid valves can be mounted in any position without affecting operation
- Pipe connection 1/4 (G\*) has standard combination thread according to ISO 228/1 and ISO 7/1. Pipe connection G 1/8 has standard thread according to ISO 228/1
- Installation/maintenance instructions are included with each valve

**SPARE PARTS KIT**

catalogue number	spare parts kit no.	
	~	=
E314K151S1N01	M200071N00	M200067N00
E314K150S1N01	M200073N00	M200069N00

**ORDERING EXAMPLES:**

E314K151S1N01 F8 \_\_\_\_\_ voltage  
 15-digit product code \_\_\_\_\_

**ORDERING EXAMPLES KITS:**

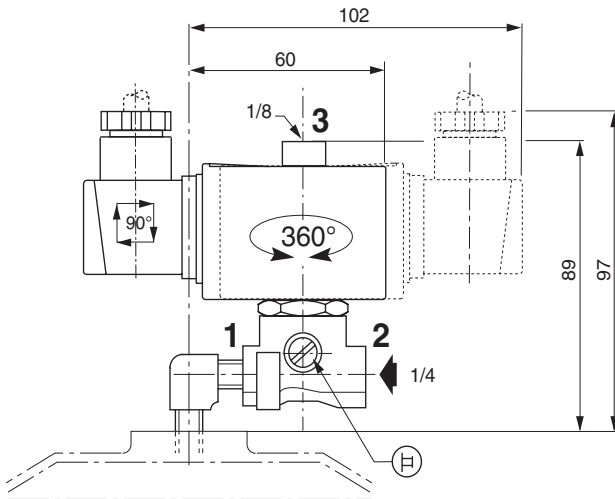
M200071N00  
 basic number \_\_\_\_\_

**DIMENSIONS (mm), WEIGHT (kg)**



**TYPE 01**  
 Electrical interface "S1" (314 pilot)  
 Epoxy moulded  
 IEC 335 / ISO 4400  
 IP65

E314K150S1N01/151S1N01



weight <sup>(1)</sup>
0,610

<sup>(1)</sup> including adapter connection, coil and connector.