

ASCO™ Proportional Valves with Positioner^D

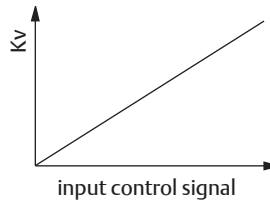
2-way / 3-way, Pressure Operated, all standard connection types

NC
Series

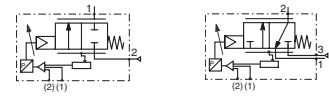
290/390

Features & Benefits

- Precise, quick-acting and robust valve suitable for use in outside industrial environments
- Exceptional long service life
- Variable flow proportional to the control signal
- Real-time control
- Ready-to-use valve
- The positioner can be directly connected to an external sensor (double loop control)
- Power saving function and no air consumption when position is reached
- Manual valve operator
- LED indicators for valve status display



NC



General

Differential pressure

0 to 16 bar (0 to 240 psi) for standard
0 to 25 bar (0 to 360 psi) with P16 option
refer to dedicated catalog page for product features

Maximum allowable pressure

16 bar (240 psi)
25 bar (360 psi) with P16 option

Ambient temperature range

0°C to +50°C

Maximum viscosity

600 cSt (mm²/s)

Pilot fluid

Air or inert gas, filtered 25 µm, unlubricated, condensate-free and water-free (observe the pressure dew point)⁽¹⁾

Pilot pressure

4.5 to 8 bar (75 to 120 psi)

Pilot fluid temperature

0°C to +50°C (32°F to 122°F)

Response time

See following page

Fluids

For type, temperature and materials compatibility, see the catalogue pages for the standard valves

⁽¹⁾ The actuator exhaust air is used to ventilate the electronics housing.

Electrical characteristics

Digital output

ON/OFF, 24 V PNP / max. 200 mA

Analog position feedback signal

0-10 V: load resistor > 5 kΩ /
4-20 mA: load resistor = 50...500 Ω

Analog setpoint

0-10V (R_{in} = 100 kΩ); 4-20 mA (R_{in} = 250 Ω)

Nominal supply voltage

24 V DC ± 10%, max. ripple 10%

Power

8 W (4 W, setpoint reached)

Connection

Screw terminals, cable gland (cable dia. 4 to 10 mm) or connection M12 (CNOMO E03.62.520.N)

Degree of protection

IP66 (EN 60529)

Electromagnetic compatibility

EMC 2004/108/EC

Regulation characteristics

Hysteresis < 2% ; Accuracy < 2% ; Repeatability < 1%

Construction

Valve disc (2/2)

Stainless steel profile disc and PTFE disc seal

Valve disc (3/2)

Stainless steel flat disc and PTFE-Carbon disc seal

Positioner body

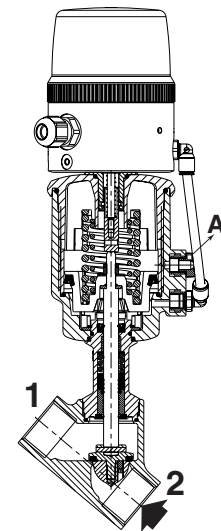
Aluminium anodised

Cable gland

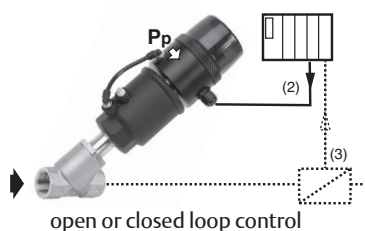
Plastic (cable dia. 4 to 10 mm [0.157 to 0.393 in])

Cover

PA 12, transparent

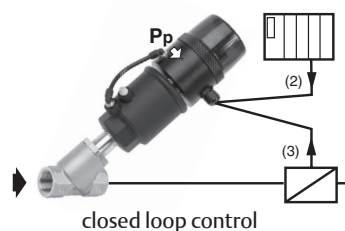


single loop



open or closed loop control

double loop for positioner with directly connected external sensor



closed loop control

⁽²⁾ Setpoint

⁽³⁾ Value measured by the process sensor

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Valve specifications

Actuator diameter (mm)	DN	Full opening flow Kv (Cv) values for 290 proportional valve						3-way
		2-way Threaded port		2-way Flange		2-way Clamp Butt welding		
		Kv (m ³ /h)	Cv (G/min)	(m ³ /h)	Cv (G/min)	(m ³ /h)	Cv (G/min)	
NC - Normally closed, entry under the disc								
50	15	5.6	6.5	3.9	4.5	5.2	6.0	Refer for flow value to the specific catalog page dedicated
	20	8	9.3	6.3	7.3	6	7.0	
	25	7.6	8.8	6.8	7.9	7.4	8.6	
63	15	5.4	6.3	3.7	4.3	5	5.8	
	20	7.5	8.7	6.1	7.1	5.9	6.8	
	25	15.7	18.2	10.1	11.7	13.1	15.2	
	32	24.5	28.4	17.4	20.2	25.8	29.9	
	40	28.5	33.1	21.5	24.9	27	31.3	
90	50	41.2	47.8	31.7	36.8	42.1	48.8	
	25	17.2	20.0	11.2	13.0	13.7	15.9	
	32	26.3	30.5	18.2	21.1	27.5	31.9	
	40	32.8	38.0	23.4	27.1	30.6	35.5	
	50	47.1	54.6	34.8	40.4	49	56.8	
125	65	71.5	82.9	55.5	64.4	73	84.7	
	32	26.1	30.3	18.9	21.9	28.2	32.7	
	40	41.9	48.6	26.5	30.7	34.5	40.0	
	50	64.3	74.6	36.9	42.8	66.3	76.9	
	65	85.9	99.6	59.8	69.4	86.8	100.7	

Response times

Series 290 / 390		Response time for full opening (in seconds) for NC valve series 290/390 (6 bar pilot air)					
		63 mm actuator		90 mm actuator		125 mm actuator	
Ø	(DN)	O	C	O	C	O	C
1/2"	(15)	1	1	-	-	-	-
3/4"	(20)	1	1	-	-	-	-
1"	(25)	2	2	2	2.5	-	-
1 1/4"	(32)	2	2	2	2.5	4.6	4.9
1 1/2"	(40)	2	2	2	2.5	5	6
2"	(50)	2	2	2	2.5	5	6
2 1/2"	(65)	-	-	2	2.5	5	6

ASCO™ Proportional Valves with Positioner^D

Positioner selection guide

		Catalog number Positioner ^D only		
		Cable gland (cable dia. 4 to 10 mm)	Connection M12	
Fail position maintained, single loop				
0-10 V		60566108		60567108
4-20 mA		60566308		60567308
Fail close, single loop				
0-10 V		60566118		60567118
4-20 mA		60566318		60567318
Fail close, double loop				
0-10 V		60566418		60567418
4-20 mA		60566518		60567518

When ordering the valve and the positioner^D, select:
 1. PFB option in first
 2. For other option, select also PFB (example: PFB + M31)

Product selection guide

PRODUCT CODE

E 290 D P 3 5 0 D A00 00

Connection type _____

E = ISO 228/1 & ISO 7/1 (combination thread, G*)
 8 = NPTF (ANSI B 1.20.3)
 T = Flange
 J = ISO 7/1 «Rc»
 W = Clamp or butt welding

Product series _____

290
390

Revision letter _____

D = Initial release

Function _____

P = Normally Closed w/ profil disc (2-way valves only)
 0 = Normally Closed - Under the disc (3-way valves)

Nominal diameter _____

2 = DN15 - 1/2"
 3 = DN20 - 3/4"
 4 = DN25 - 1"
 5 = DN32 - 1 1/4"
 6 = DN40 - 1 1/2"
 7 = DN50 - 2"
 8 = DN65 - 2 1/2"

Actuator diameter - Piloting connections _____

5 = 63 mm plastic - G 1/8"
 6 = 63 mm plastic - NPTF 1/8"
 B = 90 mm plastic - G 1/4"
 C = 90 mm plastic - NPTF 1/4"
 H = 125 mm plastic - G 1/4"
 J = 125 mm plastic - NPTF 1/4"

Configurator - CAD Files

Options

A00 = Valve alone w/profil disc
 PFB = Prepared for Positioner^D mounting⁽¹⁾
 TC6 = Test tightness class VI
 VAC = Industrial vacuum 10⁻³ mbar (FPM disc seal)
 M31 = Stainless steel valve body material certified 3.1
 FB0 = EC 1935-2004 and FDA CFR 21 material
 FEM = Fugitive emission class BH according to ISO 15848-1
 WSP = PTFE wiper seal
 WSF = FPM piston seal
 SSF = Stainless steel insert for plastic actuator
 P16 = PS > 16 bar (240 psi)

Valve body material

D = Bronze body
 S = Stainless steel body
 Y = All 316L

Port type 1 and 2

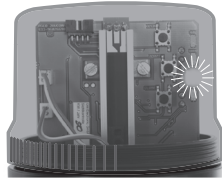
0 = Threaded port
 D = Flange DIN EN 1092-1 (ISO 7005) standard (2-way)
 P = Flange ANSI standard 150 (2-way)
 C = Clamp ISO 2852 / 1127
 4 = Clamp DIN 32676-A
 5 = Clamp SMS 3017
 6 = Clamp ASME BPE
 W = Butt welding ISO 1127
 1 = Butt welding DIN EN 10357-A (DIN 11850-S2)
 2 = Butt welding SMS 3008
 3 = Butt welding ASME BPE
 U = 1st and 2nd ways threaded and 3rd way ISO 228/1 and ISO 7/1
 V = 1st and 2nd ways threaded and 3rd way ISO 7/1 «Rc»
 8 = 1st and 2nd ways threaded and 3rd way NPTF (ANSI B 1.20.3)

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Installation

- Pilot port G 1/8 according to ISO 228/1
- Compatible with ASTM 1, 2 and 3 oils
- Installation/maintenance instructions in multiple languages are available on our website
- LED indicators for operating status display and diagnostic functions (Unit can be rotated through 360° around the centreline of the valve actuator)

status	hold position
	valve OPEN
	valve CLOSED
	valve moves to open
	valve moves to close
	positioner in initialisation mode
	positioner in manual mode
diagnostics	setpoint > 20.5 mA / 10.25 V
	setpoint < 3.5 mA
	positioner not initialised
	component error



Electrical connection:

Positioner^D, single loop

screw terminals



1	+ 24 V DC, supply	1
2	GND supply	3
3	+ setpoint (0-10 V or 4-20 mA)	2
4	GND setpoint	3
6	disc position feedback	4
7	+ 24V ON/OFF output	5

Positioner^D, double loop

screw terminals



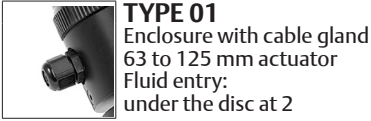
1	+ 24 V DC, supply	1
2	GND supply	3
3	+ setpoint (0-10 V or 4-20 mA)	2
4	GND setpoint	3
5	external sensor input	4
7	+ 24V ON/OFF output	5

1/8"

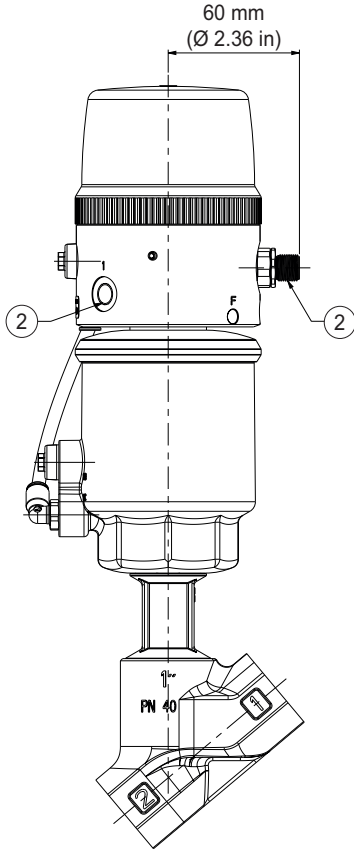
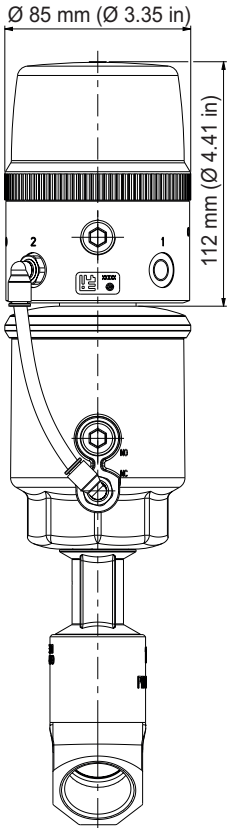
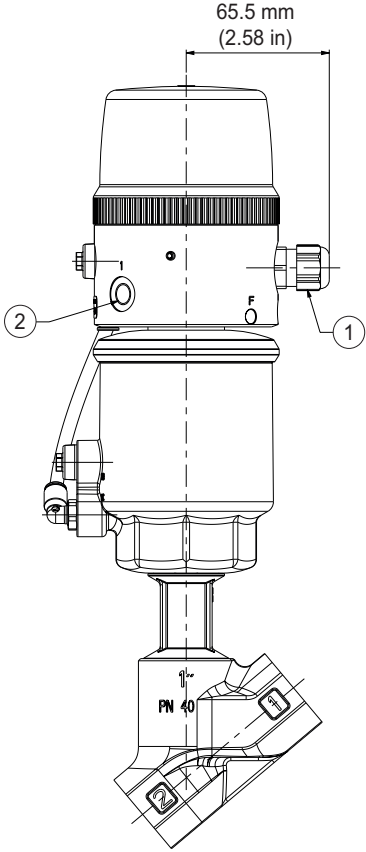
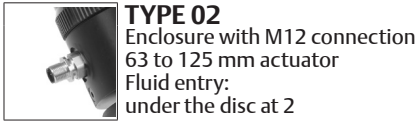
Spare Parts Kits

Spare parts kit no. Positioner ^D only		
	Cable gland (cable dia. 4 to 10 mm)	Connection M12
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0-10 V	60566418	60567418
4-20 mA	60566518	60567518
Mounting kit		
all	<p>M29055128700100</p>	

Dimensions (mm), Weight (kg)



Configurator - CAD Files



- ① M16 x 1.5 mm cable gland
- ② M12 connection
- ③ G 1/8 pilot connection

Weight of positioner without valve: 0.3 kg (0.66 Lbs)

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