

Proportional Pressure Regulator with Flapper-Nozzle Control, Type 100X 53.40...53.57

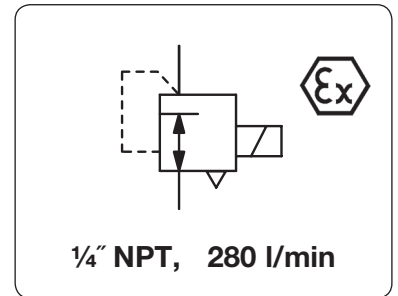
Description The pneumatic proportional valve translates an electrical command signal into a proportional pneumatic outlet signal (I/P or E/P converter). The transducer works on the flapper-nozzle principle. The electrical command signal generates a magnetic field in the coil. At the lower end of the coil there is a flapper valve which operates against a precision ground nozzle to create back pressure on the control diaphragm of a booster relay. The current flowing through the coil produces a force which proportionately controls the nozzle back pressure. This control pressure is applied to a servo mechanism which operates the high flow inlet and exhaust valves. An integral volume booster provides excellent flow capacity to give fast response in the majority of applications, including dead end service.

Two-wire system For the two-wire system no additional supply voltage is necessary. The current consumption is 20 mA in the 1 bar range and 60 mA in the 8 bar range. Also available with declining characteristic curve.

Three-wire system Additional supply voltage of 12 to 28 V necessary for the amplifier. Thereby the signal input is high-impedance (10 kΩ). The current consumption is only 1 mA at 10 V.

Atex version intrinsically safe according to Atex II 1 G Ex ia IIC T4

Mounting position upright, protection against vibration is necessary



General features

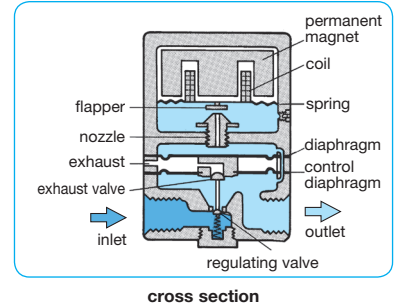
Description Flapper-nozzle principle: The electromagnetic field changes the space between flapper and nozzle and thus generates a proportional pressure variation.

Mounting position upright ± 15° **Protection class** IP 65

Temperature range -10 °C to 60 °C / 14 °F to 140 °F

Note protection against vibration is necessary

Material
 Body: zinc die-cast and plastic Elastomer: NBR/Buna-N
 Magnet: Magloy Flapper and nozzle: plastic and copper



Pneumatic features

Media dry, unlubricated and 5 µm filtered compressed air or non-corrosive gases

Supply pressure max. 1.4 bar at pressure range 0.2...1 bar, max. 6 bar for 0.14...4 bar, max. 10 bar for 0.14...8 bar

Flow rate 280 l/min*1

Exhaust The exhaust valve's diameter is three times greater than the regulating valve's diameter.

Air consumption max. 2 l/min, max. 1% of volume flow

Electrical features

Supply voltage 12...28 V DC ± 10%, necessary for three-wire systems only.
 current consumption 25 mA (100X) or current consumption 64 mA (101X) at 12 V supply voltage

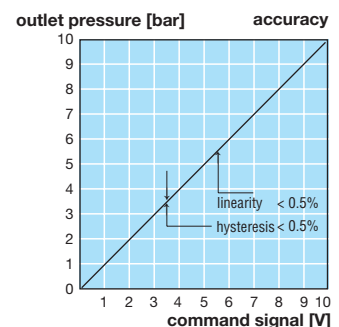
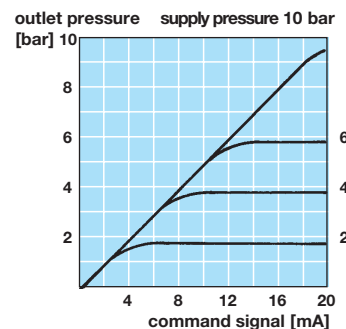
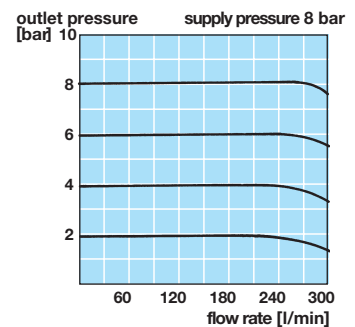
Command signal 4...20 mA / 0...60 mA / 1...10 V, adjustable to 0...10 mA / 0...20 mA / 1...5 V
 optionally declining characteristic curve

ATEX version ATEX II 1 G Ex ia IIC T4

Impedance 10 kΩ at voltage signal
 150 Ω or 200 Ω at current signal

Electrical connector square connector according to DIN 43650, size 30 x 30 mm

Note For long connection lines shielding is to be used. Pay attention to voltage drops. As the case may be, current signal is preferable.



Accuracy

Linearity	< 0.5 % FS at type 100X	< 1% FS at type 101X
Hysteresis	< 0.3 % FS at type 100X	< 0.5% FS at type 101X
Response sensitivity	< 0.07% FS at type 100X	< 0.3% FS at type 101X
Repeatability	< 0.5 % FS at type 100X	< 1% FS at type 101X
Regulating time	< 1 s over pressure range and 0.1 l volume flow	

Adjustment

Zero point The zero point can be considerably increased, e.g. from 0.2 bar to 0.6 bar. External adjustment via potentiometer "ZERO".

Range The maximum pressure value of the control range can be reduced by up to 20%, e.g. from 1 to 0.8 bar. External adjustment via potentiometer "RANGE".

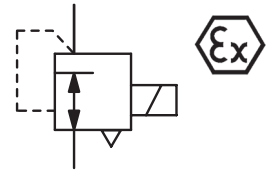
*1 at 7 bar supply pressure and 1.4 bar outlet pressure



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Technical features

• Pressure range	0.2...1 bar and 0.14...4 / 6 or 8 bar	• Linearity	< 0.5% or < 1%
• Command signal	4 ... 20 mA, 1...10 V and 0...60 mA	• Hysteresis	< 0.3% or < 0.5%
• Exhaust	nominal size 3x larger than on the main valve	• Response sensitivity	< 0.07% or < 0.3%
• ATEX version	up to 3 bar	• Repeatability	< 0.05% or < 0.1%
• Adjustment	zero point and range	• Regulating time	< 1 s
• Flow rate	280 l/min	• Air consumption	< 2 l/min, max. 1% of volume flow



1/4" NPT, 280 l/min

Type	Supply voltage VDC	Two-/Three-wire system	Impedance Ω/kΩ	Command signal mA/V	Pressure range bar	Order number
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Proportional pressure valve

1/4" NPT, 280 l/min*1, with mounting bracket

Type 100X

100X	-	2	100 Ω	4 ... 20 mA	0.2...1	53.4021.00
100XS	-	2	200 Ω	1 ... 10 V	0.2...1	53.4421.00
100X-IS	Ex version	2	200 Ω	4 ... 20 mA	0.2...1	53.4921.00
101XA	12 ... 28	3	10 kΩ	1 ... 10 V	0.14...4	53.5600.3X
100X	-	2	150 Ω	4 ... 20 mA	0.14...4	53.4000.5X
101XA	12 ... 28	3	200 Ω	4 ... 20 mA	0.14...6	53.5701.2X
101X	-	2	150 Ω	0 ... 60 mA	0.14...8	53.5024.00
101XS	-	2	150 Ω	1 ... 10 V	0.14...8	53.5424.00
101XA	12 ... 28	3	200 Ω	4 ... 20 mA	0.14...8	53.5724.00
101XA	12 ... 28	3	10 kΩ	1 ... 10 V	0.14...8	53.5624.00



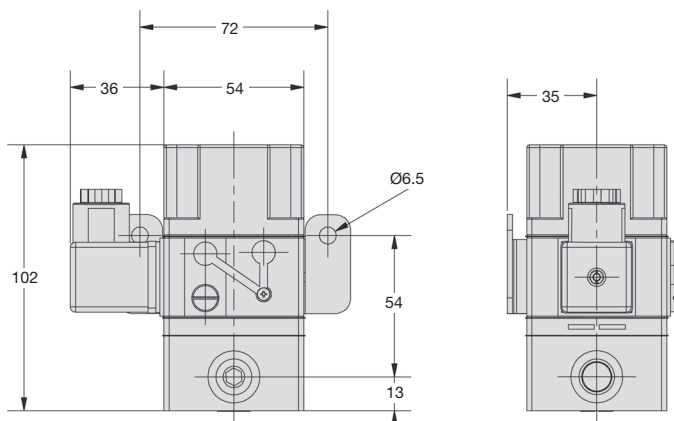
53.4021.00

Special options, add the appropriate letter

G1/4	connection thread	53..... B
declining characteristic curve	inverted outlet	53..... X59
deviant pressure range	to be indicated in clear text	53..... XX
mounting clips	for DIN rail	53..... C

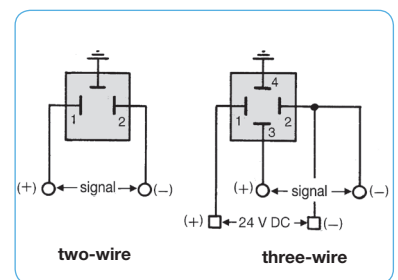


53.4021.00C with mounting clips



53.40 ... 53.57

*1 at 7 bar supply pressure and 1.4 bar outlet pressure



connection diagram

PDF CAD
www.aircom.net



Order example:
53.4021.00