

# Series CP directly operated and pressure compensated proportional solenoid valves

**New models**

Function: 2/2-way NC  
 Sizes: 16 and 20 mm



- » High flow and great precision
- » Low hysteresis
- » Cartridge body
- » Pressure compensated version (size 20mm only) available
- » Suitable to work also with oxygen

Series CP directly operated proportional solenoid valves can be used where an open loop flow control is required, with gas mixtures or to control flows. Their cartridge design makes them particularly compact, thus they can be mounted directly near the workstation.

Series CP valves have been designed to optimize dimensions and reduce friction and stick-slip effects. The output flow is proportional to the control signal. Apart from the pressure compensated version, these valves can work also in vacuum. A minimum working pressure is thus not required.

## GENERAL DATA

TECHNICAL FEATURES	Size 16mm, 2/2 NC	Size 20mm, 2/2 NC	Size 20mm, 2/2 NC pressure compensated
<b>Operation</b>	proportional directly operated cartridge	proportional directly operated cartridge	proportional pressure compensated cartridge
<b>Nominal diameters</b>	1 mm - 1.5 mm - 2 mm	3 mm - 3.5 mm	4.4 mm
<b>Free flow capacity</b>	70 NL/min - 80 NL/min - 90 NL/min	145 NL/min - 165 NL/min	200 l/min
<b>Operating pressure</b>	3 bar - 5 bar - 8 bar	2.8 bar - 2 bar	2.8 bar (max pressure 6 bar)
<b>Max overpressure</b>	16 bar	16 bar	16 bar
<b>Linearity (5-95%)</b>	3% FS	5% FS	2% FS
<b>Hysteresis</b>	10% FS	15% FS	15% FS
<b>Repeatability</b>	5% FS	5% FS	5% FS
<b>Operating temperature</b>	10°C ÷ 50°C	10°C ÷ 50°C	10°C ÷ 50°C
<b>Media</b>	filtered compressed air, unlubricated, according to ISO 8573-1 class 7.4.4, inert gas.	filtered compressed air, unlubricated, according to ISO 8573-1 class 7.4.4, inert gas.	filtered compressed air, unlubricated, according to ISO 8573-1 class 7.4.4, inert gas.
<b>Installation</b>	in any position	in any position	in any position
<b>MATERIALS IN CONTACT WITH THE MEDIUM</b>			
<b>Body</b>	brass, stainless steel, PPS	brass, stainless steel, PPS	brass, stainless steel, PPS
<b>Seals</b>	FKM	FKM	FKM
<b>ELECTRICAL FEATURES</b>			
<b>Operation</b>	PWM > 1000 Hz or current control	PWM > 500 Hz or current control	PWM > 1000 Hz or current control
<b>Operation voltage</b>	6 V DC, 12 V DC, 24 V DC	6 V DC, 12 V DC, 24 V DC	6 V DC, 12 V DC, 24 V DC
<b>Max power consumption</b>	3.1 W	5 W, 3.7 W	4.2 W
<b>Nominal resistance</b>	11.8 Ohm - 37.6 Ohm - 184.7 Ohm	5.4 Ohm, 21.6 Ohm, 86.4 Ohm, 6.4 Ohm, 25.1 Ohm, 102.1 Ohm	6.4 Ohm, 25.1 Ohm, 102.1 Ohm
<b>Rated current</b>	410 mA, 238 mA, 103 mA	820 mA, 410 mA, 205 mA	700 mA, 350 mA, 175 mA
<b>Duty cycle</b>	100% with air flow	100% with air flow	100% with air flow
<b>Electrical connection</b>	cable 300mm AWG24	cable 300mm AWG24	cable 300mm AWG24
<b>Protection class</b>	IP00 / IP40	IP00 / IP40	IP00 / IP40
<b>Average lifecycles</b>	50000000	50000000	50000000
<b>Command signal</b>	recommended PWM: 1000 Hz	recommended PWM: 500 Hz	recommended PWM: 1000 Hz

Versions available on demand base with 1/8, 1/4 ports

**CODING EXAMPLE**

<b>CP</b>	<b>-</b>	<b>C</b>	<b>6</b>	<b>2</b>	<b>1</b>	<b>-</b>	<b>G</b>	<b>W</b>	<b>2</b>	<b>-</b>	<b>0</b>	<b>P</b>	<b>3</b>
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<b>CP</b>	SERIES		
<b>C</b>	PORTS: C = cartridge S = subbase		
<b>6</b>	BODY SIZE: 6 = size 16mm		7 = size 20mm
	9 = size 20mm pressure compensated		
<b>2</b>	NUMBER OF PORTS: 2 = 2-way		
<b>1</b>	FUNCTION: 1 = NC		
<b>G</b>	ORIFICE DIAMETRES: F = 1mm (size 16mm only) G = 1.5mm (size 16mm only) N = 2mm (size 16mm only)		M = 3mm (size 20mm only) P = 3.5mm (size 20mm only)
	T = $\varnothing$ 4.4 mm (size 20mm only, pressure compensated)		
<b>W</b>	SEAL MATERIAL: W = FKM		
<b>2</b>	BODY MATERIAL: 2 = BRASS		
<b>0</b>	OVERMOULDING MATERIAL OF COIL: 0 = cartridge		
<b>P</b>	COIL DIMENSIONS: P = $\varnothing$ 16 7 = $\varnothing$ 20		
<b>3</b>	VOLTAGE: 1 = 6 V DC 3.1 W (size 16mm only) 3 = 24 V DC 3.1 W (size 16mm only) 5 = 12 V DC 3.1 W (size 16mm only)		2 = 12 V DC 4.3 W (size 20mm only) 4 = 24 V DC 4.3 W (size 20mm only) 6 = 6 V DC 4.3 W (size 20mm only) 7 = 6 V 4.8 W (only $\varnothing$ 3.5, size 20mm) 8 = 12 V 4.8 W (only $\varnothing$ 3.5, size 20mm) 9 = 24 V 4.8 W (only $\varnothing$ 3.5, size 20mm)
	10 = 6 V DC 4.2 W (size 20mm only, pressure compensated) 11 = 24 V DC 4.2 W (size 20mm only, pressure compensated) 12 = 12 V DC 4.2 W (size 20mm only, pressure compensated)		

SERIES CP PROPORTIONAL SOLENOID VALVES

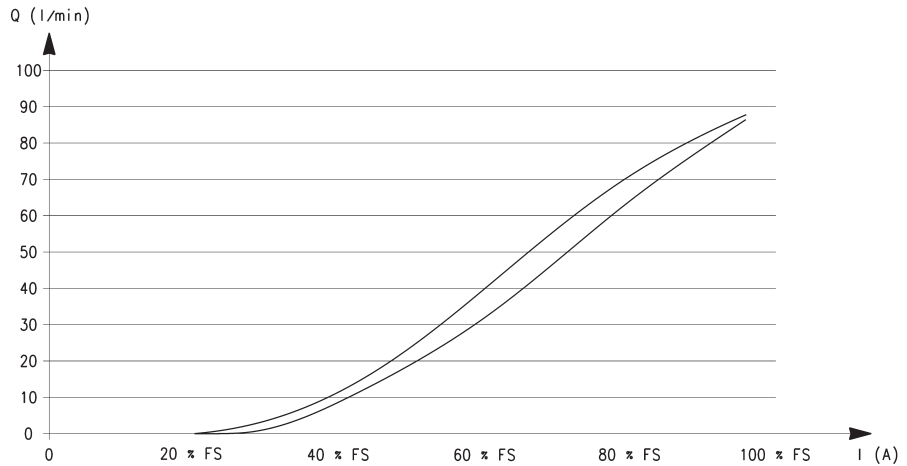
**HYSTERESIS AND RESPONSE TIMES**

**DIAGRAM LEGEND:**

Q = flow (l/min)  
I = current (A)  
FS = full scale

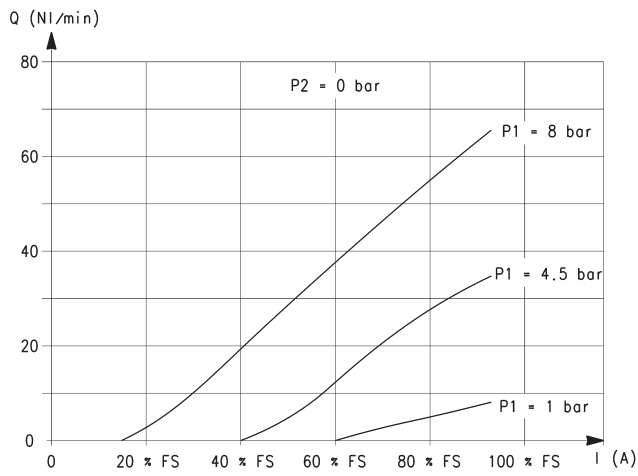
**NOTE TO THE TABLE:**

\* in the pressure compensated version the counter pressure at the valve outlet must be always lower than 15-20% of the inlet pressure.



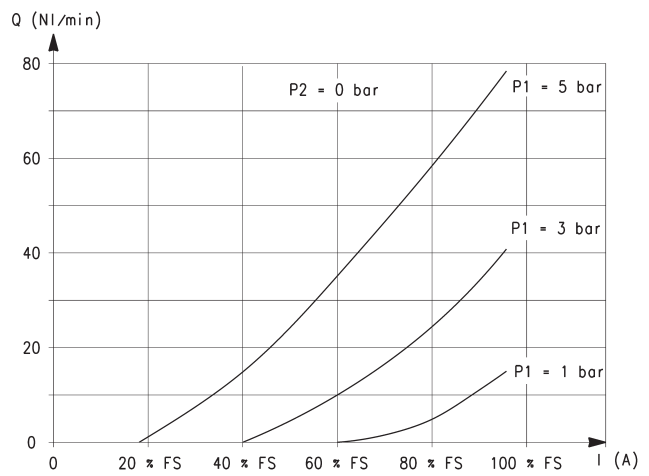
RESPONSE TIMES calculated according to the maximum flow at each operating pressure. [ Electromechanical response time: 10 ms ]							
$\varnothing$	Inlet pressure (bar)	Load response time (ms)			Exhaust response time (ms)		
		0% - 10%	0% - 90%	10% - 90%	100% - 90%	100% - 10%	90% - 10%
1 mm	8	12	42	30	9	33	24
1.5 mm	5	12	39	27	9	33	24
2 mm	3	11	39	28	9	33	26
3 mm	2.8	13	29	16	14	28.5	14.5
3.5 mm	2	15	31	16	12.5	27.5	15
4.4 mm *	2.8	13	52	49	10	37	27

**FLOW DIAGRAMS - Size 16mm**



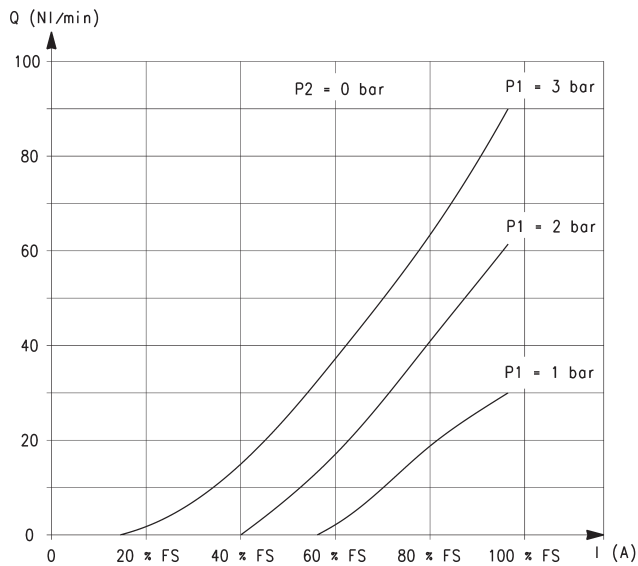
Nominal diameter 1mm

Q = flow (l/min)  
 I = current (A)  
 P1 = pressure in load (bar)  
 P2 = 0 [ free flow pressure ] (bar)



Nominal diameter 1.5mm

Q = flow (l/min)  
 I = current (A)  
 P1 = pressure in load (bar)  
 P2 = 0 [ free flow pressure ] (bar)



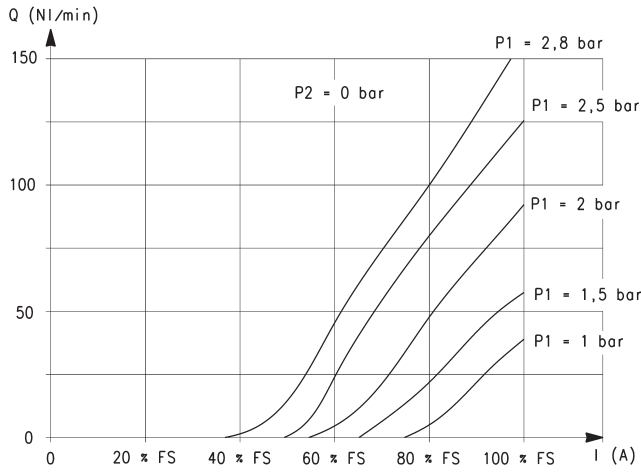
Nominal diameter 2mm

Q = flow (l/min)  
 I = current (A)  
 P1 = pressure in load (bar)  
 P2 = 0 [ free flow pressure ] (bar)

SERIES CP PROPORTIONAL SOLENOID VALVES

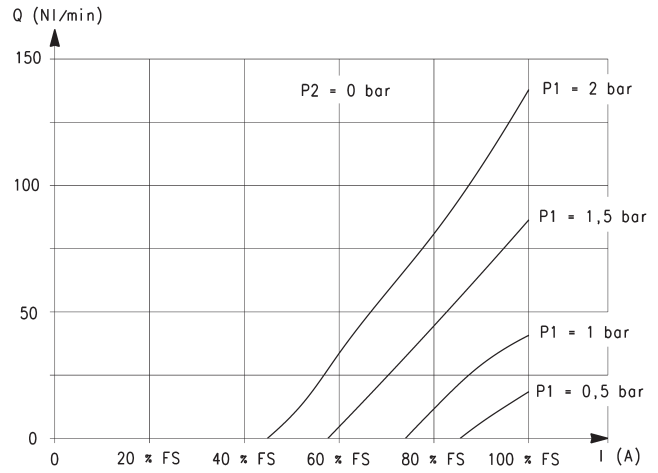
**FLOW DIAGRAMS - Size 20mm**

SERIES CP PROPORTIONAL SOLENOID VALVES



Nominal diameter 3mm

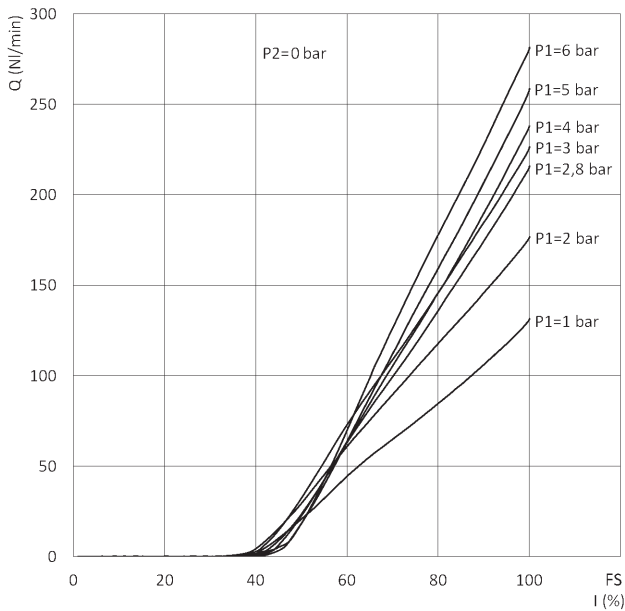
Q = flow (l/min)  
I = current (A)  
P1 = pressure in load (bar)  
P2 = 0 [ free flow pressure ] (bar)



Nominal diameter 3.5mm

Q = flow (l/min)  
I = current (A)  
P1 = pressure in load (bar)  
P2 = 0 [ free flow pressure ] (bar)

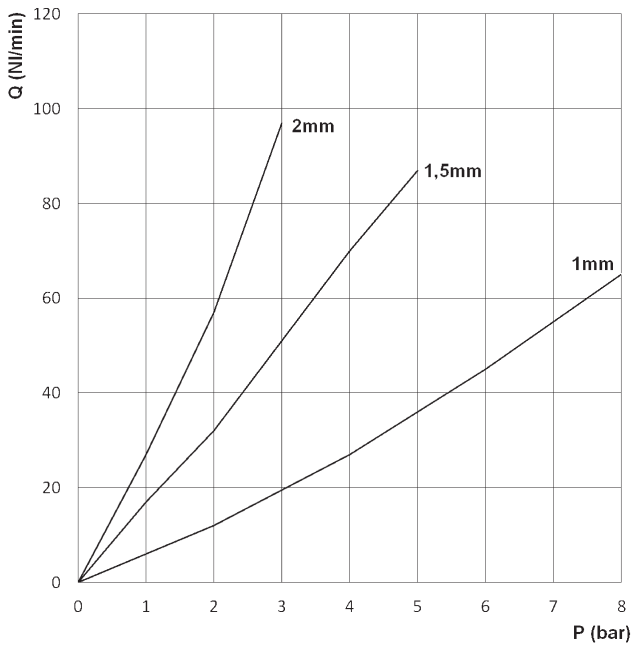
**FLOW DIAGRAMS - Size 20mm pressure compensated**



Nominal diameter 4.4mm

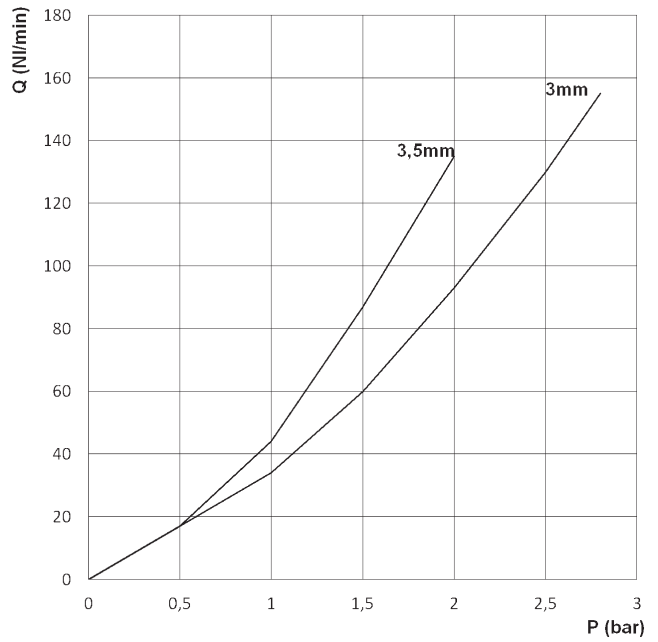
Q = flow (l/min)  
I = current (A)  
P1 = pressure in load (bar)  
P2 = 0 [ free flow pressure ] (bar)  
FS = full scale

**MAXIMUM FLOW ACCORDING TO THE INLET PRESSURE**



Size 16 mm

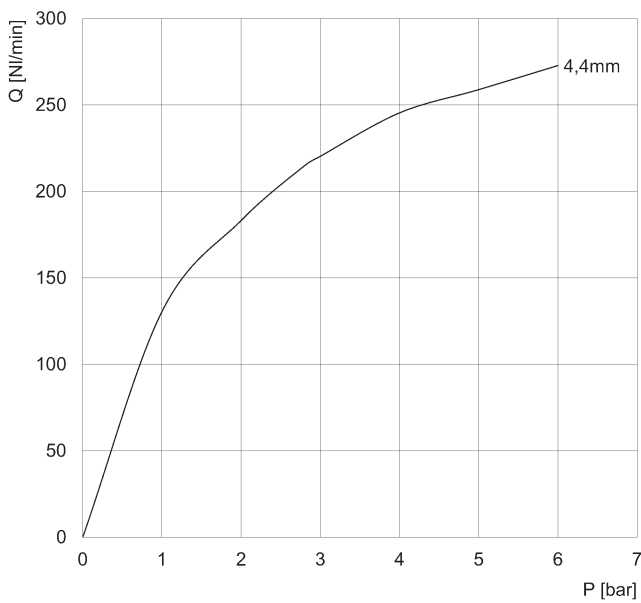
Q = Flow (NL/min)  
P = Inlet pressure (bar)



Size 20 mm

Q = Flow (NL/min)  
P = Inlet pressure (bar)

**MAXIMUM FLOW ACCORDING TO THE INLET PRESSURE**



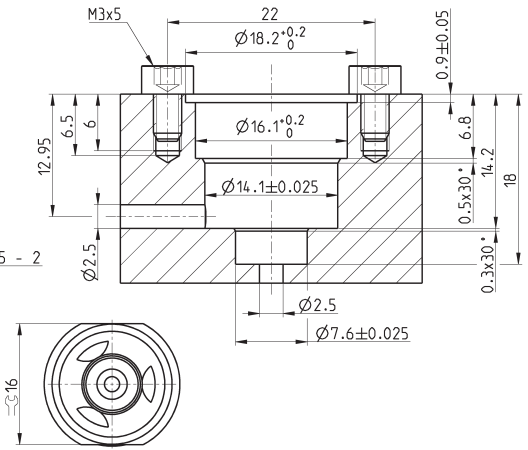
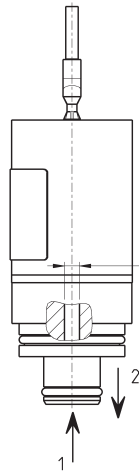
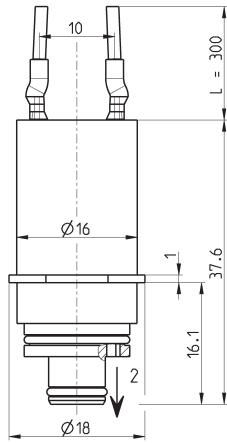
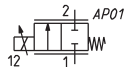
Size 20mm pressure compensated

Q = Flow (NL/min)  
P = Inlet pressure (bar)

**Solenoid valves, size 16mm**

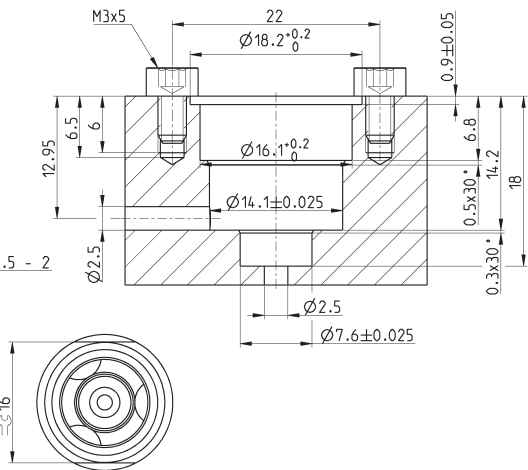
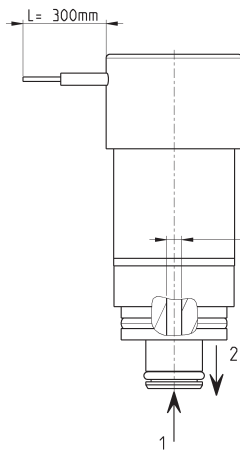
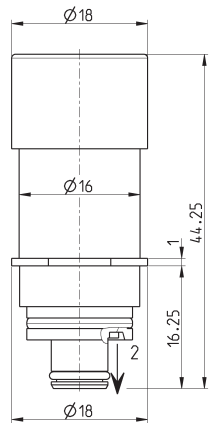
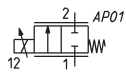


Out of stock version



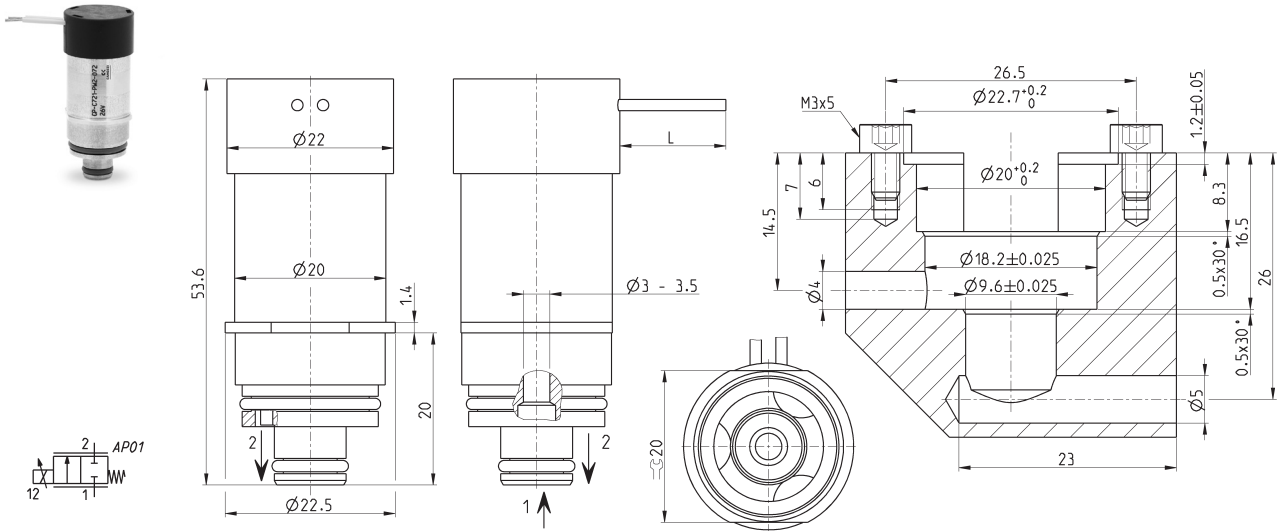
Mod.	Orifice Ø (mm)	Max operating pressure (bar)	Max flow (NI/min)	Max flow kv (l/min)	Operation voltage (V DC)	Max current (mA)
CP-C621-FW2-0P1	1	8	70	0.55	6	410
CP-C621-GW2-0P1	1.5	5	80	0.88	6	410
CP-C621-NW2-0P1	2	3	90	1.42	6	410
CP-C621-FW2-0P3	1	8	70	0.55	24	103
CP-C621-GW2-0P3	1.5	5	80	0.88	24	103
CP-C621-NW2-0P3	2	3	90	1.42	24	103
CP-C621-FW2-0P5	1	8	70	0.55	12	238
CP-C621-GW2-0P5	1.5	5	80	0.88	12	238
CP-C621-NW2-0P5	2	3	90	1.42	12	238

**Solenoid valves, size 16m**



Mod.	Orifice Ø (mm)	Max operating pressure (bar)	Max flow (NI/min)	Max flow kv (l/min)	Operation voltage (V DC)	Max current (mA)
CPN-C621-FW2-0P1	1	8	70	0.55	6	410
CPN-C621-GW2-0P1	1.5	5	80	0.88	6	410
CPN-C621-NW2-0P1	2	3	90	1.42	6	410
CPN-C621-FW2-0P3	1	8	70	0.55	24	103
CPN-C621-GW2-0P3	1.5	5	80	0.88	24	103
CPN-C621-NW2-0P3	2	3	90	1.42	24	103
CPN-C621-FW2-0P5	1	8	70	0.55	12	238
CPN-C621-GW2-0P5	1.5	5	80	0.88	12	238
CPN-C621-NW2-0P5	2	3	90	1.42	12	238

**Solenoid valves, size 20mm**

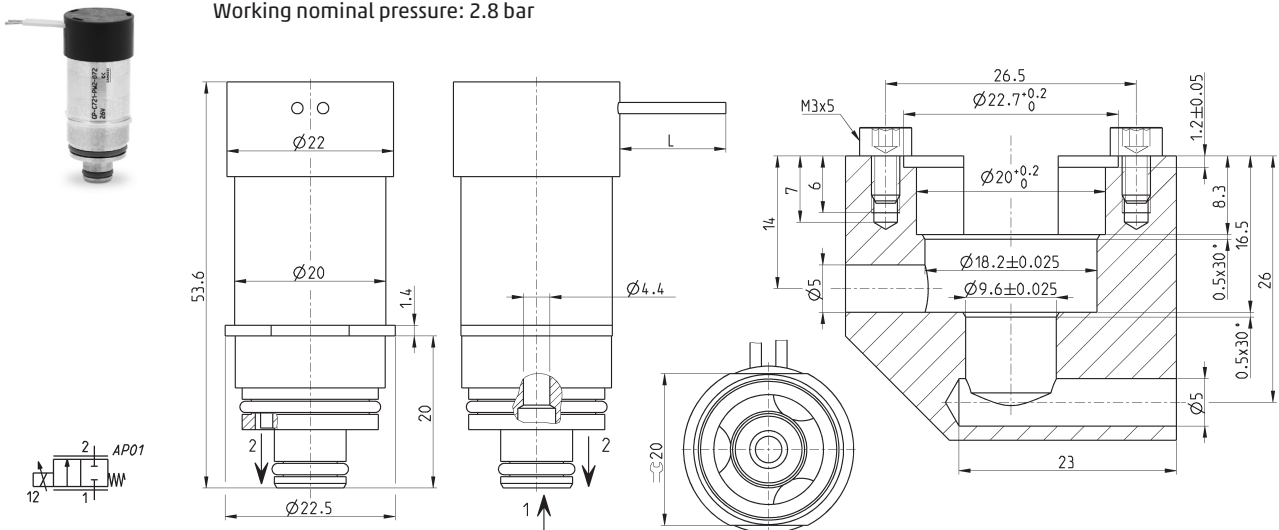


Mod.	Orifice Ø (mm)	Max operating pressure (bar)	Max flow (NL/min)	Max flow kv (l/min)	Operation voltage (V DC)	Max current (mA)
CP-C721-MW2-072	3	2.8	150	2.8	12	313
CP-C721-MW2-074	3	2.8	150	2.8	24	154
CP-C721-MW2-076	3	2.8	150	2.8	6	615
CP-C721-PW2-072	3.5	2	130	3	12	313
CP-C721-PW2-074	3.5	2	130	3	24	154
CP-C721-PW2-076	3.5	2	130	3	6	615
CP-C721-PW2-077	3.5	2	180	4.5	6	820
CP-C721-PW2-078	3.5	2	180	4.5	12	410
CP-C721-PW2-079	3.5	2	180	4.5	24	205

**Solenoid valves, size 20mm pressure compensated**

**New**

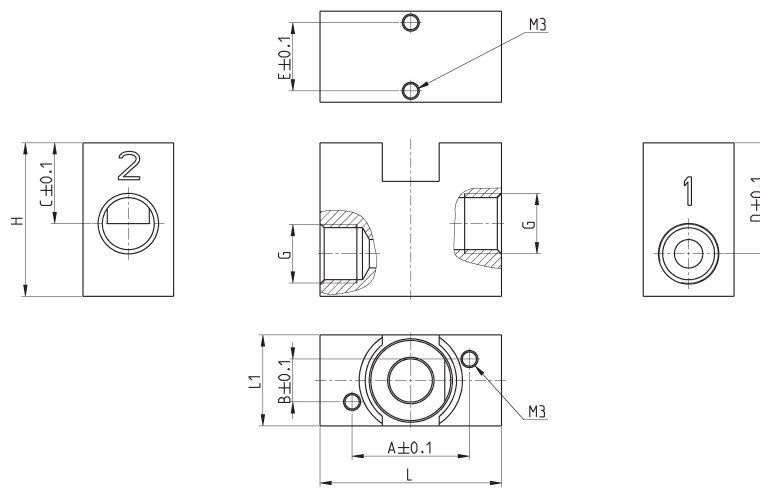
Working nominal pressure: 2.8 bar



Mod.	Orifice Ø (mm)	Max operating pressure (bar)	Max flow (NL/min)	Max flow kv (l/min)	Operation voltage (V DC)	Max current (mA)
CP-C921-TW2-0710	4.4	6	200	4	6	700
CP-C921-TW2-0711	4.4	6	200	4	24	175
CP-C921-TW2-0712	4.4	6	200	4	12	350

**Sub-base**

**New**



Mod.	∅	A	B	C	D	E	G	H	L	L1
CP-S6	16	20.7	7.5	14.2	19.5	12	G1/8	27	32	16
CP-S7	20	25.2	8	14	22.5	15	G1/4	31.5	45	22

SERIES CP PROPORTIONAL SOLENOID VALVES