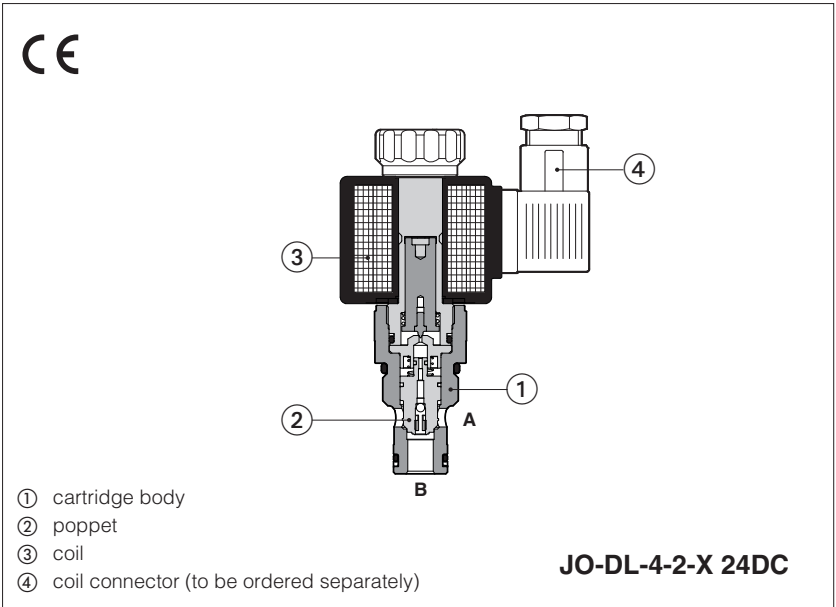


# Solenoid cartridge valves

screw-in, 2-way, poppet type, leak free



## JO-DL

Leak free, poppet type solenoid cartridges in screw-in execution normally used to cut off the hydraulic power supply line. They are available in normally closed NC, or normally open NO configurations.

Max flow: **300 l/min**  
Max pressure: **350 bar**

1 MODEL CODE																									
JO		-	D		L		-	4		-	2		/	NC		-	X		24 DC		**		/	*	
Cartridge valve screw-in type UNF																								Seals material, see section 4): - = NBR PE = FKM BT = HNBR	
D = Directional control																						Series number			
L = Poppet type																									
Size:																									
4 = 3/4"-16UNF-2A																									
6 = 7/8"-14UNF-2A																									
10 = 1 5/16"-12UNF-2A																									
2 = Two-way																									

### 3 GENERAL CHARACTERISTICS

Installation position	Any position
Cavity	JO-DL-4 = SAE-08-2N; JO-DL-6 = SAE-10-2N; JO-DL-10 = SAE-16-2N
MTTFd values according to EN ISO 13849	150 years, for further details see technical table P007
Ambient temperature	<b>Standard</b> execution = -20°C ÷ +50°C <b>/PE option</b> = -20°C ÷ +50°C <b>/BT option</b> = -40°C ÷ +50°C
Compliance	CE to Low Voltage Directive 2014/35/EU RoHS Directive 2011/65/EU as last update by 2015/863/EU REACH Regulation (EC) n°1907/2006

### 4 HYDRAULIC CHARACTERISTICS

Model	JO-DL-4-2/NC	JO-DL-4-2/NO	JO-DL-6-2/NC	JO-DL-6-2/NO	JO-DL-10-2/NC	JO-DL-10-2/NO
Operating pressure [bar]	Ports A and B <b>350</b>					
Max flow [l/min]	40		75		300	
Response time: energizing [ms]	35	50	30	50	35	150
de-energizing [ms]	50	35	60	35	70	35
Internal leakage	less than 5 drops/min ( $\leq 0,36 \text{ cm}^3/\text{min}$ ) max at 350 bar					

### 5 ELECTRIC CHARACTERISTICS

Relative duty factor	100%	
Supply voltage	See model code at section <b>I</b>	
Supply voltage tolerance	±10%	
Max power	20 Watt	
Power connector	666 (plastic - black); 3 pins, cable clamp PG11, cable max ø 11 mm	<b>to be ordered separately</b>
Connectors features	DIN 43650 - ISO 4400; IP65 (DIN 40050); VDE 0110C	

### 6 INSTALLATION NOTES

- 1) The assembling of cartridges inside manifolds must be done tightening the valve exagonal ring (for tightening torque, see section 10 ).  
Excessive values can cause anomalous deformation and poppet sticking.
- 2) The CE certification is valid only with shielded electric cables and connector. Consult also tab. P004.

### 7 SEALS AND HYDRAULIC FLUID - for other fluids not included in below table, consult Atos Technical Office

Seals, recommended fluid temperature	NBR seals (standard) = -20°C ÷ +80°C, with HFC hydraulic fluids = -20°C ÷ +50°C FKM seals (/PE option) = -20°C ÷ +80°C HNBR seals (/BT option) = -40°C ÷ +60°C, with HFC hydraulic fluids = -40°C ÷ +50°C		
Recommended viscosity	15 ÷ 100 mm <sup>2</sup> /s - max allowed range 2,8 ÷ 500 mm <sup>2</sup> /s		
Max fluid contamination level	ISO4406 class 20/18/15 NAS1638 class 9, see also filter section at <a href="http://www.atos.com">www.atos.com</a> or KTF catalog		
<b>Hydraulic fluid</b>	<b>Suitable seals type</b>	<b>Classification</b>	<b>Ref. Standard</b>
Mineral oils	NBR, FKM	HL, HLP, HLPD, HVLP, HVLPD	DIN 51524
Flame resistant without water	FKM	HFDR, HFDR	ISO 12922
Flame resistant with water	NBR	HFC	

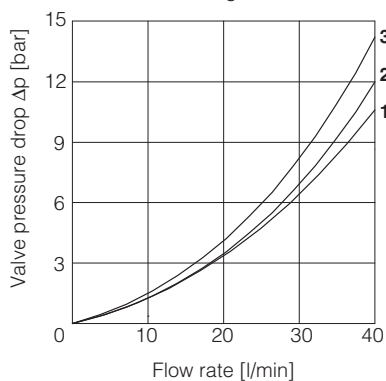
### 9.1 JO-DL-4

Valve pressure drop - NO version

1 = A → B de-energized

2 = B → A de-energized

3 = B → A energized

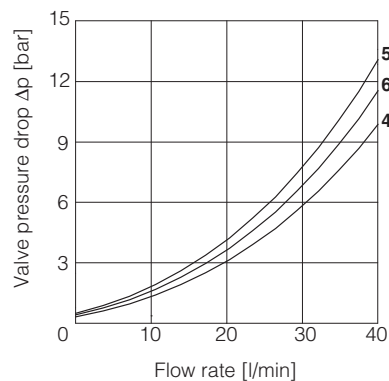


Valve pressure drop - NC version

4 = A → B energized

5 = B → A de-energized

6 = B → A energized



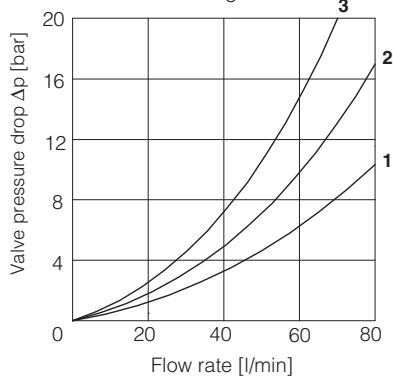
### 9.2 JO-DL-6

Valve pressure drop - NO version

1 = A → B de-energized

2 = B → A de-energized

3 = B → A energized

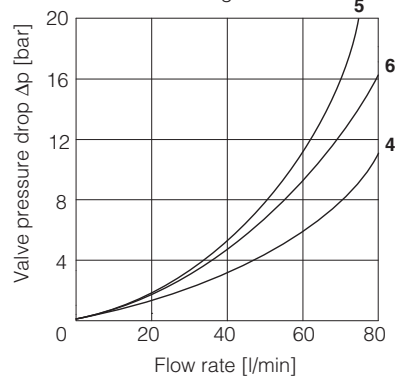


Valve pressure drop - NC version

4 = A → B energized

5 = B → A de-energized

6 = B → A energized



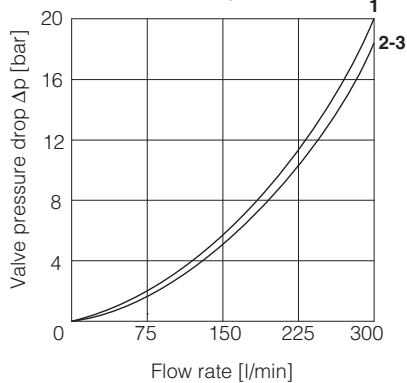
### 9.3 JO-DL-10

Valve pressure drop - NO version

1 = A → B de-energized

2 = B → A de-energized

3 = B → A energized

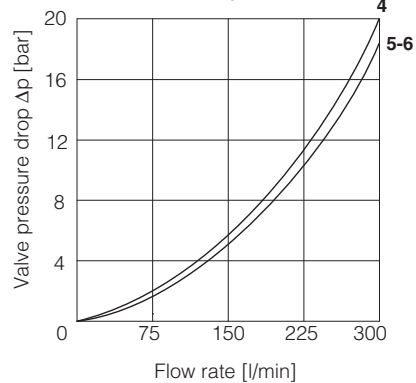


Valve pressure drop - NC version

4 = A → B energized

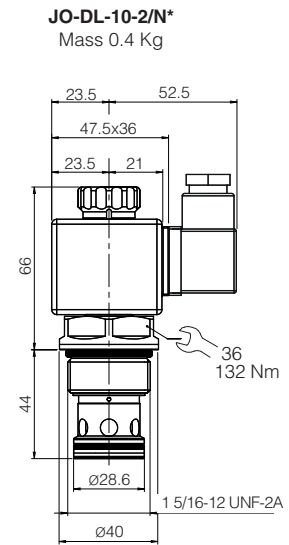
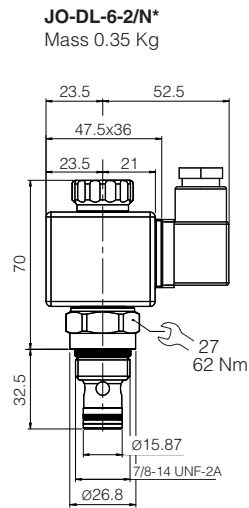
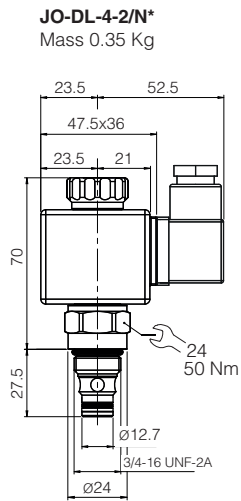
5 = B → A de-energized

6 = B → A energized



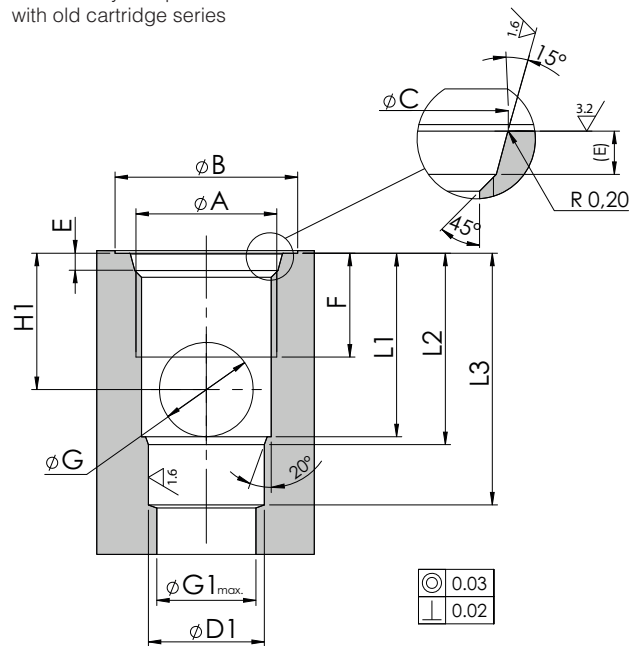
## 9 INSTALLATION DIMENSIONS [mm]

Version /NO and /NC



## 10 CAVITY DIMENSIONS

**Note:** cavity compatible with old cartridge series



	JO-DL-4-2	JO-DL-6-2	JO-DL-10-2
<b>A</b>	3/4-16 UNF	7/8-14 UNF	1 5/16-12 UNF
<b>B</b>	26	30	42
<b>C</b>	20.6 <sup>+0.1</sup> <sub>0</sub>	23.9 <sup>+0.1</sup> <sub>0</sub>	35.5 <sup>+0.1</sup> <sub>0</sub>
<b>D1</b>	12.7 <sup>+0.05</sup> <sub>0</sub>	15.87 <sup>+0.05</sup> <sub>0</sub>	28.60 <sup>+0.05</sup> <sub>0</sub>
<b>E</b>	2.6 <sup>+0.3</sup> <sub>0</sub>	2.6 <sup>+0.3</sup> <sub>0</sub>	3.3 <sup>+0.3</sup> <sub>0</sub>
<b>F</b>	13	15	20
<b>G</b>	9	12	19
<b>G1</b>	12	15	24
<b>H1</b>	14	18	25
<b>L1</b>	19.1	24.2	33.5
<b>L2</b>	20.5	25.5	36
<b>L3</b>	29	34.5	49