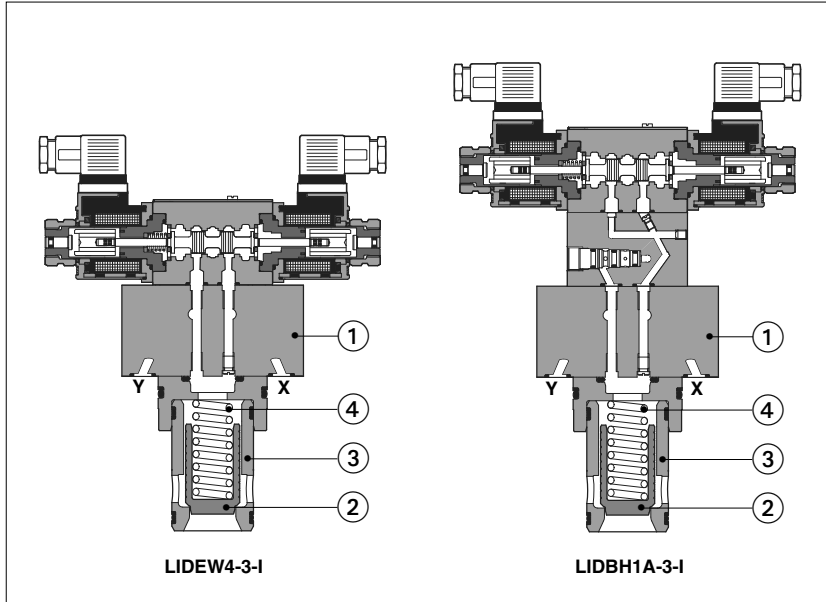


# Modular cartridge valves type LIDEW and LIDBH

directional control, ISO 7368 sizes from 16 to 100



LID\* are directional control valves composed by a 2-way cartridge housed in a recess of standard dimensions and by a closing functional element ① called "cover".

The cartridge is composed by a poppet ② hydraulically piloted by means of internal connections in the cover (X, Z1, Z2, F, Y) and sliding into a drilled sleeve ③.

The flow is inhibited or permitted according to a proper pilot control; cracking pressure value depends on poppet spring ④.

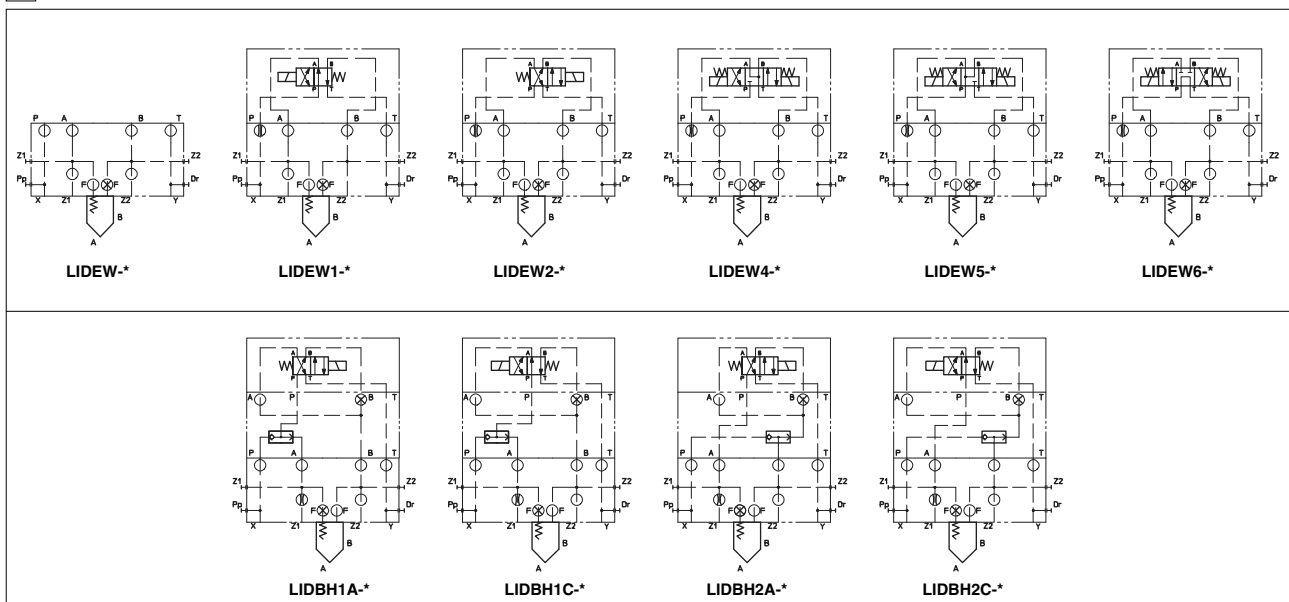
These valves are available in standard sizes 16 to 100 according to ISO 7368 (DIN 24342).

Flow up to 8000 l/min at  $\Delta p = 6$  bar.  
Pressure up to 350 bar.

## 1 MODEL CODE FOR COVERS

<b>LI</b>	<b>D</b>	<b>EW</b>	<b>- 1</b>	<b>/*</b>	<b>- I</b>	<b>X</b>	<b>24DC</b>	<b>**</b>	<b>/*</b>	<b>*</b>
Cover according to ISO 7368										Optional different provision or setting of the calibrated plugs in the pilot channels, see section ⑥
<p><b>D</b> = direct operated valve</p> <p><b>EW**</b> = with solenoid valve for pilot selection; <b>BH**</b> = as EW* but with shuttle valve for pilot selection.</p> <p>See section ② for configurations;</p> <p>Size:  <b>1</b> = 16;      <b>4</b> = 40;      <b>8</b> = 80  <b>2</b> = 25;      <b>5</b> = 50;      <b>10</b> = 100  <b>3</b> = 32;      <b>6</b> = 63;</p> <p>Options, see section ⑥</p> <p>For model code of poppet, see section ③ (1) see note in section ⑥ for other available solenoids</p>										
<p>Synthetic fluids:  <b>WG</b> = water-glycol  <b>PE</b> = phosphate ester</p> <p>Series number</p> <p>Supply voltage, see section ⑧  <b>00</b> = valve without coils (only for OI solenoid)</p> <p><b>X</b> = without connector          See section ⑧ for available connectors, to be ordered separately</p> <p>Solenoid of pilot valve: <b>- I</b> = solenoid OI for AC and DC supply (for size 1÷6)          (1)  <b>- E</b> = solenoid AE for AC and DC supply (for size 8 and 10)</p>										

## 2 HYDRAULIC SYMBOLS



## 2 HYDRAULIC CHARACTERISTICS

Covers		LIDEW*, LIDBH*																															
Poppet		32								33								42								43							
Size		16	25	32	40	50	63	80	100	16	25	32	40	50	63	80	100	16	25	32	40	50	63	80	16	25	32	40	50	63	80	100	
Max flow at $\Delta p = 6 \text{ bar}$ [l/min]		180	430	670	1400	2200	3500	5600	8500	160	330	530	1100	1700	2600	4000	6500	170	380	560	1300	2000	2800	4800	130	300	480	940	1500	2000	3500	5500	
Max pressure [bar]		350 bar at port A, B, X, Z1, Z2; 70 bar at port Y																															

## 3 MODEL CODE FOR POPPETS, see section 4 for function

<b>SC LI</b>	-	<b>16</b>	<b>43</b>	<b>1</b>	<b>**</b>	<b>/*</b>
Cartridge according to ISO 7368						Synthetic fluids: <b>WG</b> = water-glycol <b>PE</b> = phosphate ester
Size, the same of relevant cover: <b>16 40 80</b> <b>25 50 100</b> <b>32 63</b>						Design number
Type of poppet, see section 2 for maximum flow <b>32, 33</b> (size 16...100) <b>42</b> (size 16...80) = as 32 but with dumping nose <b>43</b> (size 16...100) = as 33 but with dumping nose						Spring cracking pressure: <b>1</b> = 0,3 bar for poppet 32, 42; <b>1</b> = 0,6 bar for poppet 33, 43; <b>2</b> = 1,5 bar for poppet 32, 42; <b>3</b> = 3 bar for all poppets <b>6</b> = 5,5 bar for all poppets

## 4 TYPICAL FUNCTIONS OF POPPETS

Code of poppet	32	33	42	43
Functional sketch (Hydraulic symbol)				
Typical section				
Area ratio (1)	1:1,1	1:2 for size 16, 25 1:1,6 for size 32 ÷ 100	1:1,1	1:2 for size 16, 25 1:1,6 for size 32 ÷ 100
Opening pressure A→B (2)	0,3 bar (spring 1) 1,5 bar (spring 2) 3 bar (spring 3) 6 bar (spring 6)	0,5 bar (spring 1) - 2,5 bar (spring 3) 6 bar (spring 6)	0,4 bar (spring 1) - 2,1 bar (spring 3) 4,3 bar (spring 6)	0,5 bar (spring 1) - 2,7 bar (spring 3) 6 bar (spring 6)
Opening pressure B→A (2)	3 bar (spring 1) 12,8 bar (spring 2) 32,5 bar (spring 3) 59,4 bar (spring 6)	0,5 bar (spring 1) - 2,5 bar (spring 3) 6 bar (spring 6)	0,7 bar (spring 1) - 3,7 bar (spring 3) 7,5 bar (spring 6)	0,5 bar (spring 1) - 2,4 bar (spring 3) 6 bar (spring 6)

(1) It is the ratio of the area on which the main pressure of the circuit is applied to the area on which the pilot pressure is applied

(2) Depending on the spring cracking pressure and the area ratio of the poppet

## 5 MAIN CHARACTERISTICS OF MODULAR DIRECTIONAL CONTROL CARTRIDGE VALVES TYPE LID\*

Assembly position / location	Any position
Subplate surface finishing	Roughness index $\sqrt{Ra}$ , flatness ratio 0,01/100 (ISO 1101)
Ambient temperature	-20 °C to + 70 °C
Fluid	Hydraulic oil as per DIN 51524 . . . 535; for other fluids see section 11
Recommended viscosity	15 ÷ 100 mm <sup>2</sup> /s at 40°C (ISO VG 15 ÷ 100)
Fluid contamination class	ISO 19/16, achieved with in line filters at 25 µm and $\beta_{25} \geq 75$ (recommended)
Fluid temperature	-20°C +60°C (standard and /WG seals) -20°C +80°C (/PE seals)

### 5.1 Coils characteristics

Insulation class	<b>H</b> (180°C) for coil of solenoid type OI, and for coil DC of solenoid type AE. <b>F</b> (155°C) for AC coils of solenoid type AE. Due to the occurring surface temperatures of the solenoid coils, the European standards EN563 and EN982 must be taken into account
Connector protection degree	IP 65
Relative duty factor	100%
Supply voltage and frequency	See electric feature 8
Supply voltage tolerance	± 10%

## 6 OPTIONS

For LIDEW\*, LIDBH\* covers (sizes 40...100):

**/E** = with external attachments Pp and underneath port X supplied plugged;

For all the models:

**/B** = cartridge piloted via port "B" of solenoid pilot valve;

**/F** = prearranged for coupling to an intermediate element with poppet position detector for safety function. See tab. E110.

**/WP** = prolonged manual override protected by rubber cap (only for OI solenoid). See table K150.

**\*\*\*** = Calibrated plugs different from standard ones. All covers are equipped with restrictors in the pilot channels according to the standard arrangement which is preset for each varian (see section 12). They can be exchanged with others for particular use. When ordering covers equipped with restrictors that are different from the standard ones it must be indicated at the end of the model code:

**LIDEW1 - 1 /EB -IX 24DC \*\* /WG X 06**

Channel where the restrictor have to be provided:  
**X** = channel X **Z1** = channel Z1  
**F** = channel F **Z2** = channel Z2

Size of the throttling hole in ten of millimeters:  
**05** = 0,5 mm **10** = 1 mm **17** = 1,7 mm  
**06** = 0,6 mm **12** = 1,2 mm **20** = 2 mm  
**08** = 0,8 mm **15** = 1,5 mm

Note:

OI solenoid pilot valve can be provided with the following handwheel(see table K150).

**SP-WPD/H** = manual override with detent, to be ordered separately.

Covers type LID\* can be also equipped with the following pilot solenoid valve:

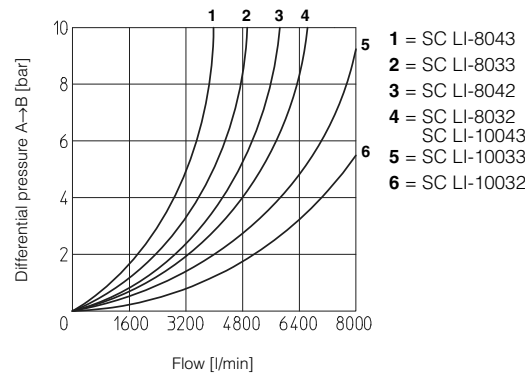
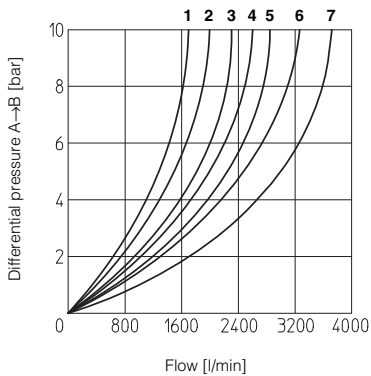
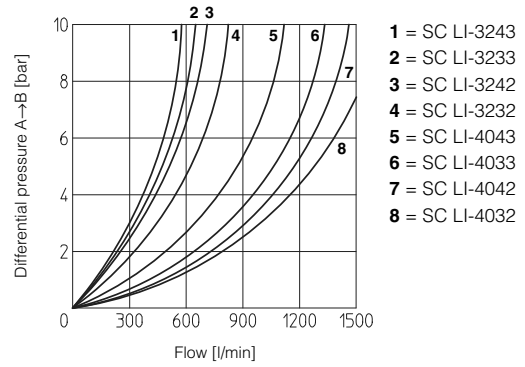
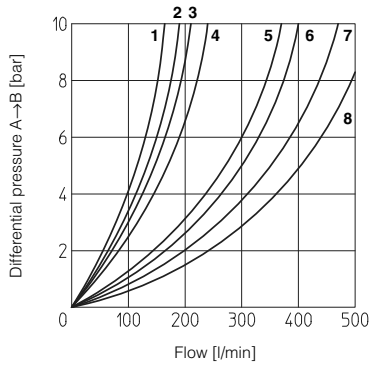
**-AO** = explosion-proof solenoid according to ATEX Norm (see table E120 for technical characteristics)

**-AO/RU** = explosion-proof solenoid according to ROSTECHNADZOR Russian Certification (see table E120 for technical characteristics)

**-AO/UL** = explosion-proof solenoid according to UL Norm (see table E125 for technical characteristics)

**-WO** = intrinsically safe solenoid according to ATEX Norm (see table E130 for technical characteristics)

## 7 DIAGRAMS OF POPPETS



## 8 ELECTRIC FEATURES

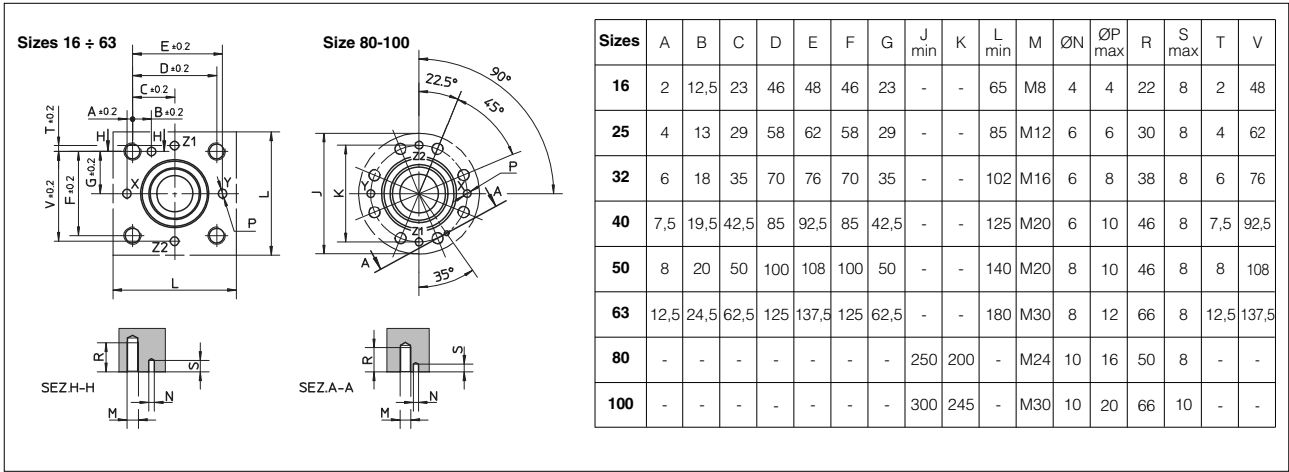
Type of solenoid	External supply nominal voltage $\pm 10\%$ (1)	Voltage code	Type of connector (3)	Power consumption (4)	Code of spare coil	Colour of coil label
OI	6 DC 12 DC 24 DC 48 DC	<b>6 DC</b> <b>12 DC</b> <b>24 DC</b> <b>48 DC</b>	SP-666 or SP-667	33 W	SP-COU-6DC SP-COU-12DC SP-COU-24DC SP-COU-48DC	brown green red silver
	110/50 AC (2) 120/60 AC 230/50 AC (2) 230/60 AC	<b>110/50 AC</b> <b>120/60 AC</b> <b>230/50 AC</b> <b>230/60 AC</b>		60 VA (5)	SP-COI-110/50/60AC SP-COI-120/60AC SP-COI-230/50/60AC SP-COI-230/60AC	yellow white light blue silver
AE	12 DC 14 DC 24 DC 28 DC 110 DC 220 DC	<b>12 DC</b> <b>14 DC</b> <b>24 DC</b> <b>28 DC</b> <b>110 DC</b> <b>220 DC</b>	SP-666 or SP-667	36 W	SP-CAE-12DC SP-CAE-14DC SP-CAE-24DC SP-CAE-28DC SP-CAE-110DC SP-CAE-220DC	-
	110/50/60 AC(2) 230/50/60 AC(2) 115/60 AC 230/60 AC 110/50/60 AC 230/50/60 AC	<b>110/50/60 AC</b> <b>230/50/60 AC</b> <b>115/60 AC</b> <b>230/60 AC</b> <b>110 DC</b> <b>220DC</b>		85 VA (5)	SP-CAE-110/50/60AC SP-CAE-120/60AC SP-CAE-230/50/60AC SP-CAE-230/60AC	-
			SP-669	36 W	SP-CAE-110DC SP-CAE-220DC	

- For other supply voltages available on request, see technical table E010.
- Coil can be supplied also with 60 Hz of voltage frequency: in this case the performances are reduced by 10 ÷ 15% and the power consumption is 55 VA for OI solenoids and 80 VA for AE solenoids.
- Connectors according to DIN46350: see table E010 and K500 for characteristics.
- Average values based on tests performed at nominal hydraulic condition and ambient/coil temperature of 20°C.
- When solenoid is energized, the inrush current is approx 3 times the holding current. Inrush current values correspond to a power consumption of about 150 VA for OI solenoids and about 280 VA for AE solenoids.

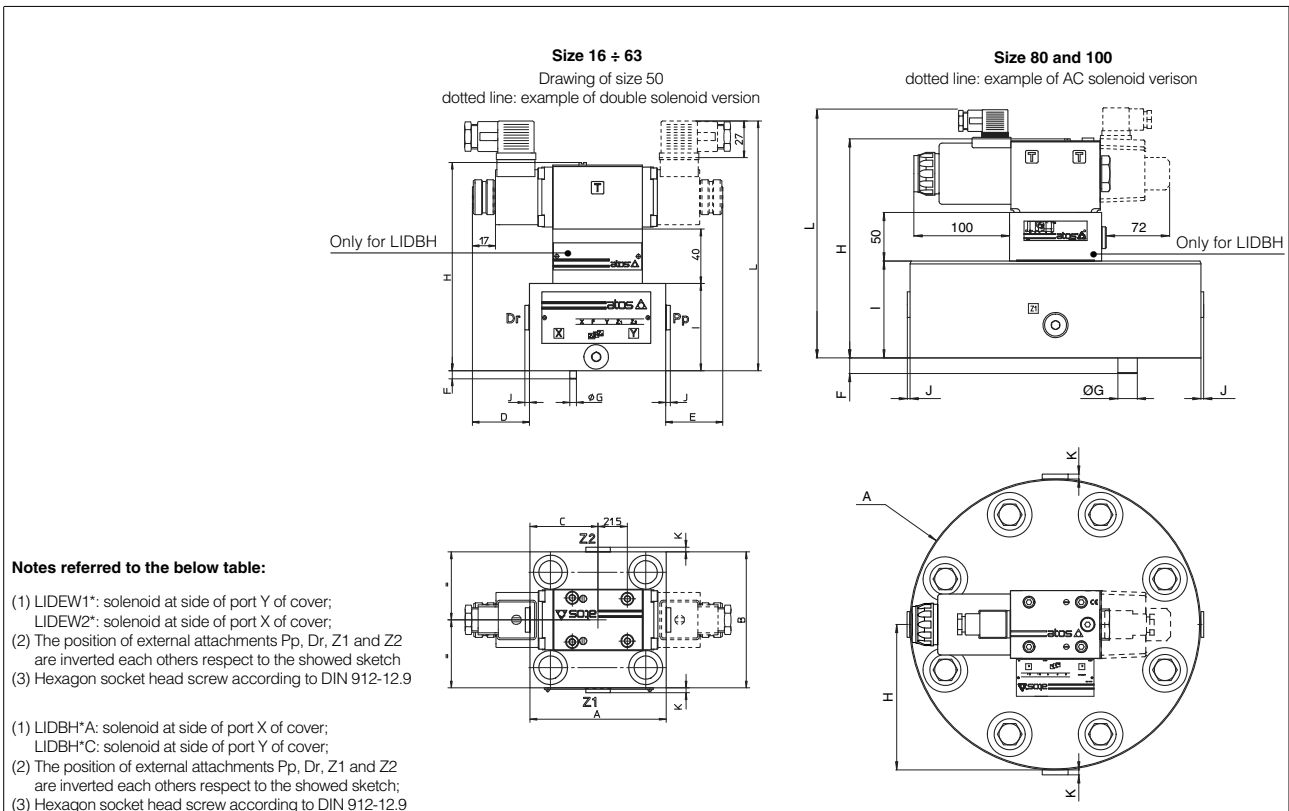
## 9 RECESS DIMENSIONS [mm]

Sizes	Ø d1	Ø d2	Ø d3 max	Ø d4 max	L1	L2	L3	L4 max	L5	L6	L7	U	W
16	32	25	16	22,5	43 <sup>+0,1</sup> <sub>0</sub>	56 <sup>+0,1</sup> <sub>0</sub>	54	42,5	20	2	2	0,03	0,05
25	45	34	25	27	58 <sup>+0,1</sup> <sub>0</sub>	72 <sup>+0,1</sup> <sub>0</sub>	70	57	30	2,5	2,5	0,03	0,05
32	60	45	32	38,5	70 <sup>+0,1</sup> <sub>0</sub>	85 <sup>+0,1</sup> <sub>0</sub>	83	68,5	30	2,5	2,5	0,03	0,1
40	75	55	40	54,5	87 <sup>+0,1</sup> <sub>0</sub>	105 <sup>+0,1</sup> <sub>0</sub>	102	84,5	30	3	3	0,05	0,1
50	90	68	50	62,5	100 <sup>+0,1</sup> <sub>0</sub>	122 <sup>+0,1</sup> <sub>0</sub>	117	97,5	35	3	3	0,05	0,1
63	120	90	63	87	130 <sup>+0,1</sup> <sub>0</sub>	155 <sup>+0,1</sup> <sub>0</sub>	150	127	40	4	4	0,05	0,2
80	145	110	80	100	175 <sup>+0,2</sup> <sub>0</sub>	205 <sup>+0,2</sup> <sub>0</sub>	200	170,5	40	5	5	0,05	0,2
100	180	135	100	120	210 <sup>+0,2</sup> <sub>0</sub>	245 <sup>+0,2</sup> <sub>0</sub>	239	205,5	50	5	5	0,05	0,2

**10 COVER INTERFACE DIMENSIONS [mm]**



**11 COVER DIMENSIONS [mm]**



Size (1)	A	B	C	D	E	F	G	H LIDEW	H LIDBH	I	L	J	K	Ports Pp-Dr	Ports Z1-Z2	Seals	Fastening bolts (3)	Tightening torque [Nm]	Weight [Kg]
16	70	65	29	63,5	50,5	4	3	89	129	40	119 <sup>(4)</sup>	-	-	-	-	4 OR-108	Nr. 4 M8x45	35	2,6 ÷ 3
25	85	85	42,5	49,5	49,5	6	5	89	129	40	119 <sup>(4)</sup>	-	-	-	-	4 OR-108	Nr. 4 M12x45	125	3 ÷ 3,4
32	100	100	50	42,5	42,5	6	5	99	139	50	129 <sup>(4)</sup>	-	-	-	-	4 OR-2043	Nr. 4 M16x55	300	3,5 ÷ 4
40	125	125	62,5	29,5	29,5	6	5	109	149	60	139 <sup>(4)</sup>	3,5	-	G 1/4	-	4 OR-2050	Nr. 4 M20x70	600	6,4 ÷ 6,9
50	140	140	70	22	22	4	6	119	159	70	149 <sup>(4)</sup>	3,5	3,5	G 1/4	G 1/4	4 OR-2050	Nr. 4 M20x80	600	9,5 ÷ 10
63	180	180	90	2	2	4	6	129	169	80	159 <sup>(4)</sup>	3,5	3,5	G 3/8	G 3/8	4 OR-2056	Nr. 4 M30x90	2100	17,3 ÷ 17,7
80	Ø250	-	125	-	-	6	8	151	201	80	181 <sup>(4)</sup>	3,5	3,5	G 3/8	G 3/8	4 OR-123	Nr. 8 M24x90	1000	27,1 ÷ 27,7
100	Ø300	-	150	-	-	8	10	181	221	100	211 <sup>(4)</sup>	3,5	3,5	G 1/2	G 1/2	4 OR-130	Nr. 8 M30x120	2100	53 ÷ 54

Overall dimensions refer to the pilot valves with connectors type SP-666

**12 SCREWED ORIFICES IN STANDARD COVER EXECUTION: DIMENSIONS (1)**

Port	Cover	LIDEW*-1 LIDBH*-1	LIDEW*-2 LIDBH*-2	LIDEW*-3 LIDBH*-3	LIDEW*-4 LIDBH*-4	LIDEW*-5 LIDBH*-5	LIDEW*-6 LIDBH*-6	LIDEW*-8 LIDBH*-8	LIDEW*-10 LIDBH*-10
Z1 (only for LIDBH**)		M4 12A	M4 12A	M6 15A	M6 17A	M6 20A	M6 20A	M8 20A	M8 20A
P		M6 12A	M6 12A	M6 15A	M6 17A	M6 20A	M6 20A	M8 20A	M8 25A

Note: The showed codes define the orifice thread, diameter of the throttling hole in ten of millimeters and the form of throttle sectional area: **A** = short calibrated hole, **F** = long calibrated hole