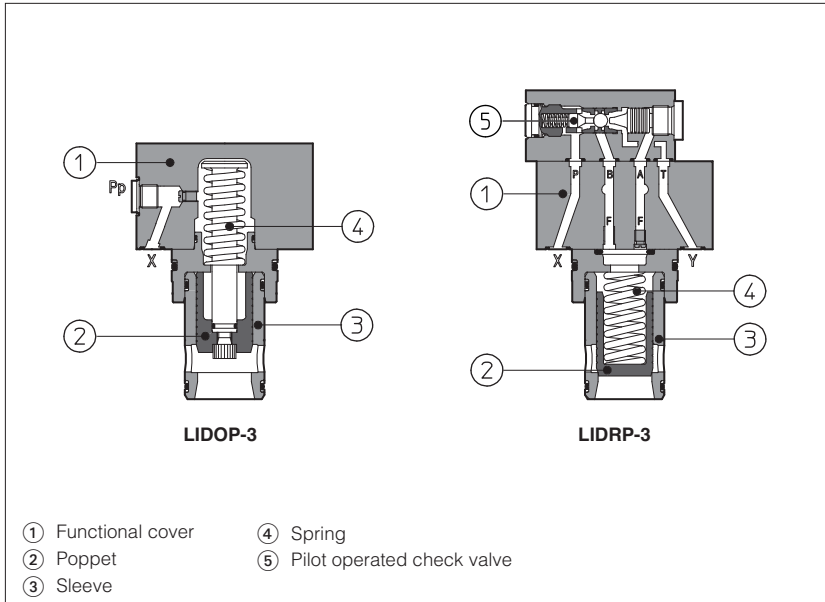


# Modular cartridge valves type LID\*P

Check function, ISO 7368 size from 16 to 100



Directional control valves in ISO cartridge design, specific for check functions. They are made by a functional cover ① with the oil ports X, Y (Z1, Z2) and a **SC LI** slip-in cartridge.

Covers are available with different check functions:

- LIDAP**, normally closed
- LIDOP**, normally open
- LIDBP**, normally closed with shuttle valve for pilot selection
- LIDRP**, normally closed with hydraulically pilot operated check valve

The **SC LI** slip-in cartridge is available in different models to optimize the check control and it is made by a poppet ② sliding into a sleeve ③ and kept in normally closed position (open position for type 62 and 63) by the spring ④ available with different cracking pressure values.

Size: **16 to 100** ISO 7368

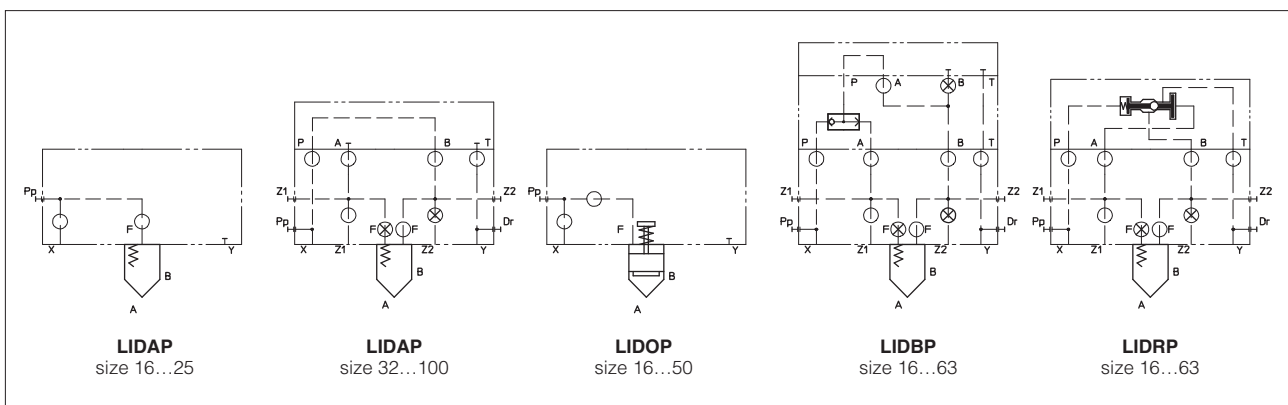
Max flow up to **9000 l/min** at  $\Delta p = 5$  bar

Max pressure up to **420 bar**

## 1 MODEL CODE OF FUNCTIONAL COVERS - for model code of slip-in cartridge, see section 3

<b>LI</b>	<b>D</b>	<b>A</b>	<b>P</b>	<b>- 1</b>	<b>*</b>	<b>** / **</b>	<b>*</b>
Cover according to ISO 7368							Optional different setting of calibrated plugs in the pilot channels, see section 6, 7
<b>D</b> = directional function							
<b>Cover configuration</b> see section 2:							
<b>A</b> = normally closed;							
<b>O</b> = normally open;							
<b>B</b> = with shuttle valve for pilot selection;							
<b>R</b> = with hydraulically operated pilot check valve;							
<b>P</b> = high pressure execution, <b>Pmax 420 bar</b>							
<b>Size:</b>							
<b>1</b> = 16;		<b>4</b> = 40;		<b>8</b> = 80 (only for LIDAP)			
<b>2</b> = 25;		<b>5</b> = 50;		<b>10</b> = 100 (only for LIDAP)			
<b>3</b> = 32;		<b>6</b> = 63 (not for LIDOP)					
LIDOP is available only in sizes 16 to 50							
						Series number	
<b>Options:</b> see section 6							

## 2 HYDRAULIC SYMBOLS (cover configuration)



### 3 MODEL CODE OF SLIP-IN CARTRIDGE

<b>SC LI</b>	-	<b>16</b>	<b>32</b>	<b>1</b>	<b>**</b>	<b>/*</b>
Cartridge according to ISO 7368						
Size, the same of relevant cover: <b>16 25 32 40 50 63 80 100</b>						
<b>Type of poppet:</b> <b>32, 33</b> (sizes 16...100) = for all models except LIDOP; <b>42</b> (sizes 16...80) = as 32 but with dumping nose; <b>43</b> (sizes 16...100) = as 33 but with dumping nose (for all models except LIDOP); <b>52</b> (sizes 16...50) = only for LIDAP; <b>62</b> (sizes 16, 25, 32, 40, 50) = only for LIDOP; <b>63</b> (sizes 16, 25, 32, 50) = as 62 but with dumping nose. Only for LIDOP						
<b>Seals material:</b> - = NBR <b>PE</b> = FKM <b>BT</b> = HNBR						
Series number						
<b>Spring cracking pressure:</b> <b>1</b> = 0,3 bar for poppet 32, 42, 52; <b>1</b> = 0,6 bar for poppet 33, 43; <b>2</b> = 1,5 bar for poppet 32, 42, 52; <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	52	62	63
Functional sketch (Hydraulic symbol)							
Typical section							
Area ratio A:AP	1 : 1,1	1 : 5	1 : 1,1	1 : 5	1 : 1,1	1 : 1,1	1 : 1,1
Opening pressure A→B (1)	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)	0,3 bar (spring 1) 1,3 bar (spring 2) 3,2 bar (spring 3) 6 bar (spring 6)	0,5 bar (spring 1) - 2,7 bar (spring 3) 6 bar (spring 6)	0,3 bar (spring 1) 1,5 bar (spring 2) 3 bar (spring 3) 6 bar (spring 6)	- - - -	- - - -
Opening pressure B→A (1)	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)	3 bar (spring 1) - 32,5 bar (spring 3) 59,4 bar (spring 6)	0,5 bar (spring 1) - 2,4 bar (spring 3) 6 bar (spring 6)	- - - -	- - - -	- - - -

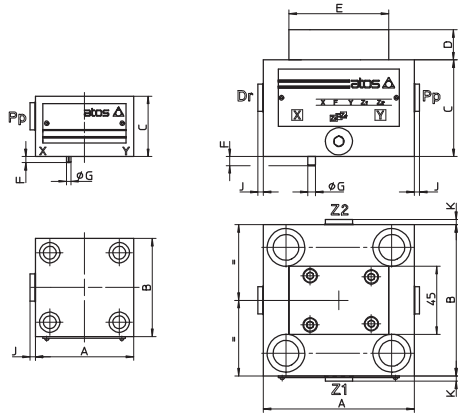
(1) Depending on the spring cracking pressure and the area ratio of the poppet

### 5 MAIN CHARACTERISTICS, SEALS AND HYDRAULIC FLUID

Assembly position / location	Any position		
Subplate surface finishing	Roughness index Ra 0,4 - flatness ratio 0,01/100 (ISO 1101)		
MTTFd values according to EN ISO 13849	150 years, for further details see technical table P007		
Ambient temperature	<b>Standard</b> execution = -30°C ÷ +70°C <b>/PE</b> option = -20°C ÷ +70°C <b>/BT</b> option = -40°C ÷ +70°C		
Seals, recommended fluid temperature	NBR seals (standard) = -20°C ÷ +60°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		
Fluid contamination class	ISO 4406 class 21/19/16 NAS 1638 class 10, in line filters of 25 µm (β <sub>25</sub> ≥ 75 recommended)		
<b>Hydraulic fluid</b>	<b>Suitable seals type</b>	<b>Classification</b>	<b>Ref. Standard</b>
Mineral oils	NBR, FKM, HNBR	HL, HLP, HLPD, HVL, HVLDP	DIN 51524
Flame resistant without water	FKM	HFDR, HFDR	ISO 12922
Flame resistant with water	NBR, HNBR	HFC	
Flow direction	As shown in the symbols of table 2		
<b>Operating pressure</b>	Ports P, A, B, X, 21, 22: <b>420</b> bar;		
<b>Maximum flow</b>	See diagrams Q/Δp at section 8		



9 COVER DIMENSIONS [mm] - for MOUNTING INTERFACE and CAVITY DIMENSIONS, see tech. table P006

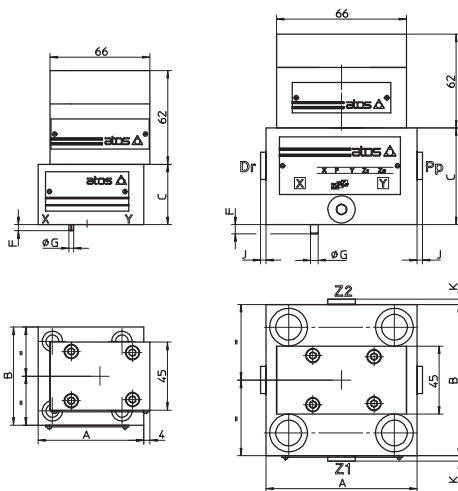


LIDAP (size 16 ÷ 25)  
LIDOP (size 16...50)

LIDAP (size 32...100)  
Note: for LIDAP-80 and LIDAP-100 the cover has round shape

Covers (1)	A	B	C	D	E	F	G	K	J	Port Pp-Dr	Port Z1-Z2	Seals	Fastening bolts (3)	Tightening torque [Nm]	Mass [Kg]
LIDAP-1 LIDOP-1	65	65	40	-	-	4	3	-	3,5	G 1/4	-	2 OR 108 1 OR 108 (2)	Nr. 4 M8x45	35	1,4
LIDAP-2 LIDOP-2	85	85	40	-	-	6	5	-	3,5	G 1/4	-	2 OR 108 1 OR 108 (2)	Nr. 4 M12x45 (4)	125	1,8
LIDAP-3 LIDOP-3	100	100	50 60 (2)	20	66	6	5	-	3,5	G 1/4	-	4 OR 2043 1 OR 2043 (2)	Nr. 4 M16x55 (5)	300	2,3
LIDAP-4 LIDOP-4	125	125	60 100	20	66	6	5	-	3,5 3	G 1/4	-	4 OR 2050 1 OR 2050	Nr. 4 M20x70 (6)	600	6,2
LIDAP-5 LIDOP-5	140	140	70 110 (2)	20	66	4	6	3,5	3,5	G 1/4	G 1/4	4 OR 2050 1 OR 2050 (2)	Nr. 4 M20x80 (7)	600	9,3
LIDAP-6	180	180	80	20	66	4	6	3,5	3,5	G 3/8	G 3/8	4 OR 2056	Nr. 4 M30x90	2100	17,1
LIDAP-8	∅ 250	-	80	30	73	6	8	3,5	3,5	G 3/8	G 3/8	4 OR 123	Nr. 8 M24x90	1000	27
LIDAP-10	∅ 300	-	150	30	73	8	10	3,5	3,5	G 1/2	G 1/2	4 OR 130	Nr. 8 M30x120	2100	54

- (1) For LIDOP-2: the external attachment Pp is located at Y port side of the cover;  
 (2) Only for LIDOP;  
 (3) Hexagon socket head screw according to DIN 912 class 12.9  
 (4) M12x50 for LIDOP-2;  
 (5) M16x60 for LIDOP-3;  
 (6) M20x100 for LIDOP-4;  
 (7) M20x110 for LIDOP-5;

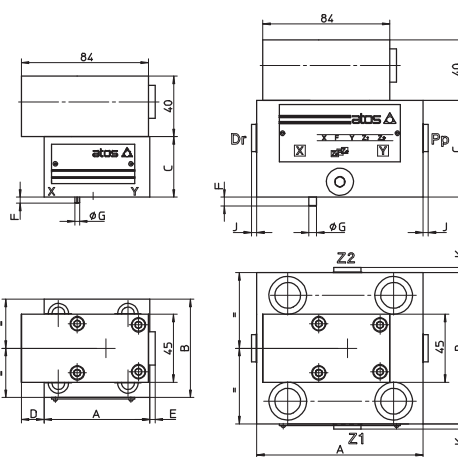


LIDBP (size 16)

LIDBP (size 25...63)

Covers	A	B	C	F	G	J	K	Port Pp-Dr	Port Z1-Z2	Seals	Fastening bolts (2)	Tightening torque [Nm]	Mass [Kg]
LIDBP-1	70	65	40	4	3	-	-	-	-	4 OR 108	Nr. 4 M8x45	35	2,2
LIDBP-2	85	85	40	6	5	-	-	-	-	4 OR 108	Nr. 4 M12x45	125	2,6
LIDBP-3	100	100	50	6	5	-	-	-	-	4 OR 2043	Nr. 4 M16x55	300	3,1
LIDBP-4	125	125	60	6	5	3,5	-	G 1/4	-	4 OR 2050	Nr. 4 M20x70	600	7
LIDBP-5	140	140	70	4	6	3,5	3,5	G 1/4	G 1/4	4 OR 2050	Nr. 4 M20x80	600	10,1
LIDBP-6 (1)	180	180	80	4	6	3,5	3,5	G 3/8	G 3/8	4 OR 2056	Nr. 4 M30x90	2100	17,9

- (1) The position of external attachments Pp, Dr, Z1 and Z2 are inverted each others respect to the showed sketch  
 (2) Hexagon socket head screw according to DIN 912 class 12.9



LIDRP (size 16...32)

LIDRP (size 40...63)

Covers	A	B	C	D	E	F	G	J	K	Port Pp-Dr	Port Z1-Z2	Seals	Fastening bolts (2)	Tightening torque [Nm]	Mass [Kg]
LIDRP-1	70	65	40	4	3,5	4	3	-	-	-	-	4 OR 108	Nr. 4 M8x45	35	2,5
LIDRP-2	85	85	40	13,5	-	6	5	-	-	-	-	4 OR 108	Nr. 4 M12x45	125	2,9
LIDRP-3	100	100	50	6	-	6	5	-	-	-	-	4 OR 2043	Nr. 4 M16x55	300	3,4
LIDRP-4	125	125	60	-	-	6	5	3,5	-	G 1/4	-	4 OR 2050	Nr. 4 M20x70	600	7,3
LIDRP-5	140	140	70	-	-	4	6	3,5	3,5	G 1/4	G 1/4	4 OR 2050	Nr. 4 M20x80	600	10,4
LIDRP-6 (1)	180	180	80	-	-	4	6	3,5	3,5	G 3/8	G 3/8	4 OR 2056	Nr. 4 M30x90	2100	18,3

- (1) The position of external attachments Pp, Dr, Z1 and Z2 are inverted each others respect to the showed sketch  
 (2) Hexagon socket head screw according to DIN 912 class 12.9