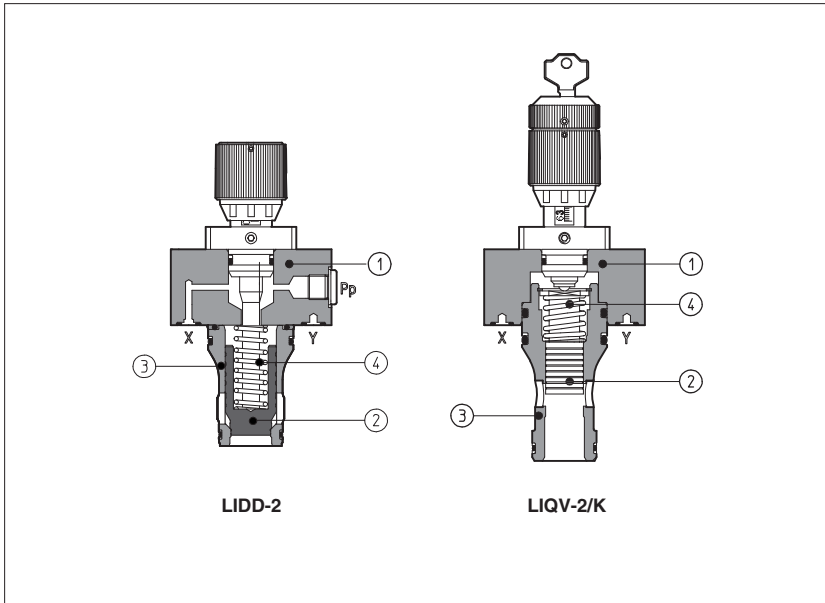


# ISO cartridge valves type LIDD and LIQV

Flow control, ISO 7368 sizes 16 ÷ 63



LIDD and LIQV are flow control valves not compensated, in ISO cartridge design, made by a functional "cover" ① and a 2-way SC LI slip-in cartridge.

Covers are provided with regulating screw to adjust the cartridge opening.

The cartridge is made by a spool (for LIQV) or poppet (for LIDD) ② sliding into a sleeve ③. The position of the spool or poppet and then the controlled flow, is manually set on the regulating screw of the cover; the cracking pressure value depends on poppet spring.

Size: **16 to 63**

Max flow up to **3500 l/min** at  $\Delta p$  5 bar

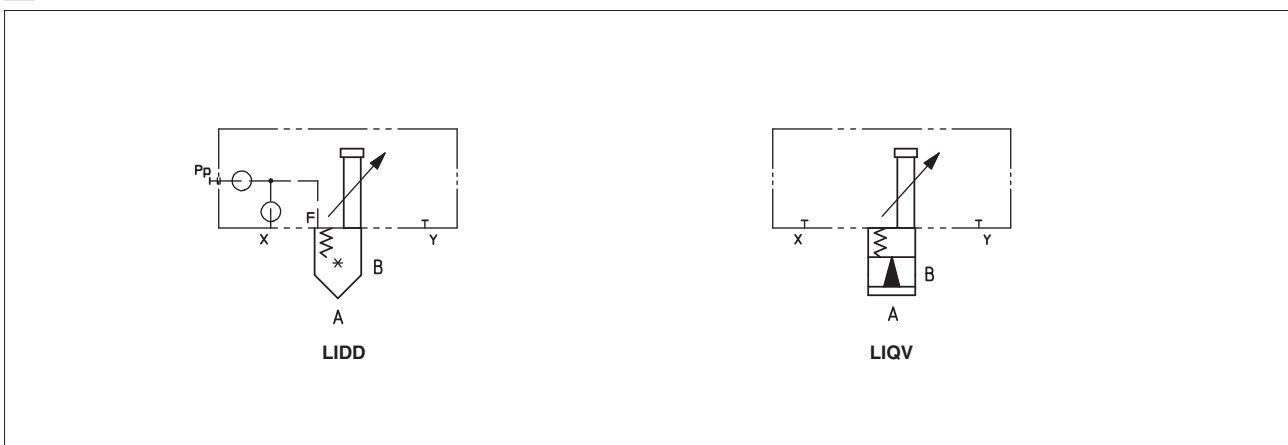
Max pressure: **LIDD 420 bar**  
**LIQV 350 bar**

## 1 MODEL CODE FOR COVERS - for model code of slip-in cartridge/spool, see section 3, 5

<b>LI</b>	<b>DD</b>	-	<b>1</b>	/	<b>*</b>	<b>**</b>	<b>/*</b>
Cover according to ISO 7368							Seals material: - = NBR <b>PE</b> = FKM <b>BT</b> = HNBR
Flow control valve: <b>DD</b> = normally closed with stroke limiter <b>QV</b> = with manual setting						Series number LIDD = <b>50</b> all sizes (1) LIQV = <b>20</b> all sizes	
Size for LIDD: <b>1</b> = 16 <b>4</b> = 40 <b>2</b> = 25 <b>5</b> = 50 <b>3</b> = 32 <b>6</b> = 63			Size for LIQV: <b>1</b> = 16 <b>2</b> = 25				Options: see section 8

**(1): New series 50 of LIDD cover is highly recommended in combination with new high flow cartridges series 40**  
The use of standard flow cartridges (old series 10, 11 and 31) may cause the impossibility to fully close the poppet

## 2 HYDRAULIC SYMBOLS AND CHARACTERISTICS



### 3 MODEL CODE OF SLIP-IN CARTRIDGES - for LIDD

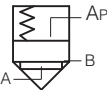
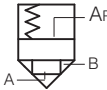
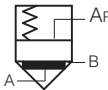

<b>SC LI</b>	-	<b>16</b>	<b>43</b>	<b>1</b>	<b>40</b>	/	<b>*</b>
Cartridge according to ISO 7368							
Size, the same of relevant cover: <b>16 25 32 40 50 63</b>							
<b>Type of poppet</b>							
<b>32, 33</b> (size 16 to 100) = without damping nose							
<b>42</b> (size 16 to 80) = as 32 but with damping nose							
<b>43</b> (size 16 to 100) = as 33 but with damping nose							
Series number <b>(1)</b>							
<b>High flow:</b>							
<b>40</b> = all sizes							
<b>Standard flow: (2)</b>							
<b>31</b> = size 16 to 50							
<b>11</b> = size 63 and 80							
<b>10</b> = size 100							
<b>Seals material:</b>							
- = NBR							
PE = FKM							
BT = HNBR							
<b>Spring cracking pressure:</b>							
<b>2</b> = 1,5 bar for poppet 32, 42							
<b>1</b> = 0,3 bar for poppet 32, 42							
<b>1</b> = 0,6 bar for poppet 33, 43							
<b>3</b> = 3 bar for all poppets							
<b>6</b> = 5,5 bar for all poppets							

**(1) New high flow series 40 is mechanically interchangeable with standard flow series 31, 11 and 10 - cavity according to ISO 7368**





**(2) New series 50 of LIDD cover is highly recommended in combination with new high flow cartridges series 40**

**The use of standard flow cartridges (old series 10, 11 and 31) may cause the impossibility to fully close the poppet**





### 4 TYPE OF POPPET - for LIDD

Type of poppet	<b>32</b>	<b>33</b>	<b>42</b>	<b>43</b>
Functional sketch (Hydraulic symbol)				

#### 4.1 new high flow series 40

<b>Operating pressure</b>		<b>420 bar max</b>			
<b>Nominal flow</b> at $\Delta p$ 5bar (l/min) see diagrams Q/ $\Delta p$ at section 10	Size <b>16</b>	270	270	240	240
	<b>25</b>	550	550	500	500
	<b>32</b>	1000	1000	800	800
	<b>40</b>	1700	1700	1400	1400
	<b>50</b>	2500	2500	2200	2200
	<b>63</b>	4000	4000	3300	3300
Typical section					
Area ratio A:Ap		<b>1:1,1</b>	<b>1:1,5</b>	<b>1:1,1</b>	<b>1:1,5</b>
Cracking pressure A→B	Spring <b>1</b>	0,3 bar	0,6 bar	0,3 bar	0,6 bar
	<b>2</b>	1,5 bar	-	1,5 bar	-
	<b>3</b>	3 bar	2,5 bar	3 bar	2,5 bar
	<b>6</b>	6 bar	6 bar	6 bar	6 bar
Cracking pressure B→A	Spring <b>1</b>	3 bar	0,9 bar	3 bar	0,9 bar
	<b>2</b>	12,8 bar	-	12,8 bar	-
	<b>3</b>	32,5 bar	3,8 bar	32,5 bar	3,8 bar
	<b>6</b>	59,4 bar	9 bar	59,4 bar	9 bar

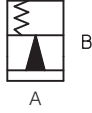
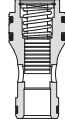
#### 4.2 standard flow series 31, 11, 10

<b>Operating pressure</b>		<b>420 bar max</b>					
<b>Nominal flow</b> at $\Delta p$ 5bar (l/min) see diagrams Q/ $\Delta p$ at section 10	Size <b>16</b>	170	150	140	120		
	<b>25</b>	400	300	350	280		
	<b>32</b>	610	610	480	430		
	<b>40</b>	1300	1000	1100	850		
	<b>50</b>	1700	1500	1350	1300		
	<b>63</b>	2800	2400	2400	1800		
Typical section							
Area ratio A:Ap		<b>1:1,1</b>	<b>1:2</b> for size 16, 25	<b>1:1,6</b> for size 32÷100	<b>1:1,1</b>	<b>1:2</b> for size 16, 25	<b>1:1,6</b> for size 32÷100
Cracking pressure A→B	Spring <b>1</b>	0,3 bar	0,6 bar	0,4 bar	0,3 bar	0,6 bar	0,4 bar
	<b>2</b>	1,5 bar	-	-	1,3 bar	-	-
	<b>3</b>	3 bar	2,5 bar	2,1 bar	3,2 bar	2,7 bar	2,1 bar
	<b>6</b>	6 bar	6 bar	4,3 bar	6 bar	6 bar	4,3 bar
Cracking pressure B→A	Spring <b>1</b>	3 bar	0,5 bar	0,7 bar	3 bar	0,5 bar	0,7 bar
	<b>2</b>	12,8 bar	-	-	12,8 bar	-	-
	<b>3</b>	32,5 bar	2,5 bar	3,7 bar	32,5 bar	2,4 bar	3,7 bar
	<b>6</b>	59,4 bar	6 bar	7,5 bar	59,4 bar	6 bar	7,5 bar

**5 MODEL CODE FOR SLIP-IN CARTRIDGES type 290 and 490 (for LIQV)**

<b>SC LI</b>	-	<b>16</b>	<b>290</b>	<b>**</b>	<b>/*</b>
Cartridge according to ISO 7368					Seals material: - = NBR <b>PE</b> = FKM <b>BT</b> = HNBR
Size, the same of relevant cover: <b>16</b> = 16 <b>25</b> = 25					
Type of spool (only for LIQV): <b>290</b> = for LIQV-1 <b>490</b> = for LIQV-1 and LIQV-2				Series number	

**6 TYPE OF SPOOLS - for LIQV**

Code of spool	<b>290</b>	<b>490</b>
<b>Operating pressure</b>	<b>350 bar max</b>	
<b>Nominal flow</b> at Δp 5 bar (l/min) Size <b>16</b>	60	180
see diagrams Q/Δp at section <sup>[10]</sup> <b>25</b>	-	400
Functional sketch (Hydraulic symbol)		
Typical section		
Area ratio (1)	<b>1 : 1</b>	

**7 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 /PE option = -20°C ÷ +70°C /BT 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, HVLP, HVLPD	DIN 51524
Flame resistant without water	FKM	HFDR, HFDR	ISO 12922
Flame resistant with water	NBR, HNBR	HFC	
Flow direction	A to B or B to A		
<b>Functional cover operating pressure</b>	<b>LIDD</b> : ports X, Y: <b>420</b> bar <b>LIQV</b> : ports X, Y: <b>350</b> bar		

**8 OPTIONS**

Only for LIQV:

**/K** = with lock key for setting knob.

Only for LIDD:

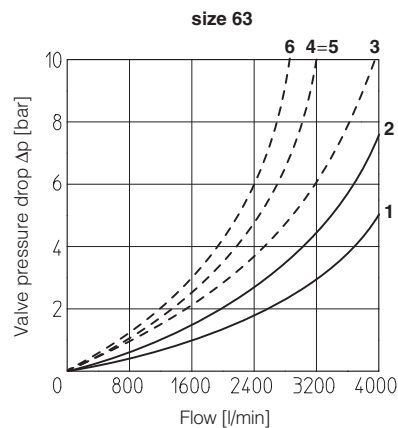
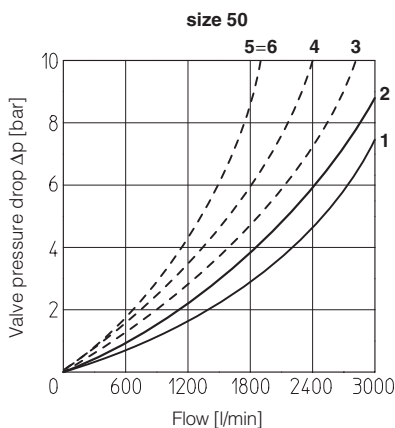
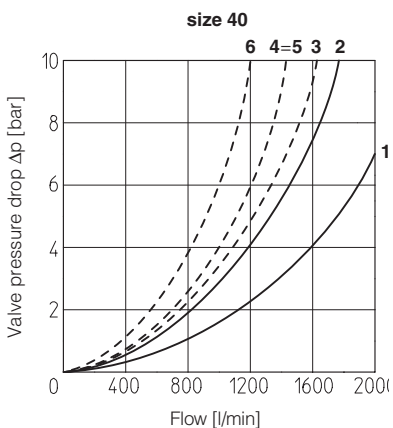
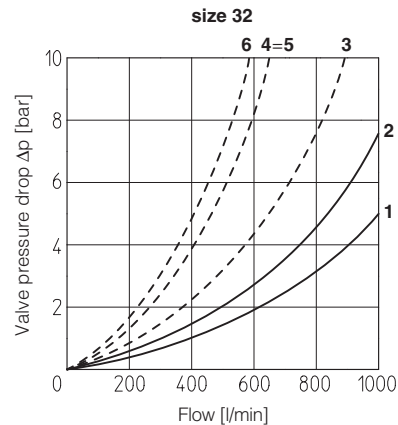
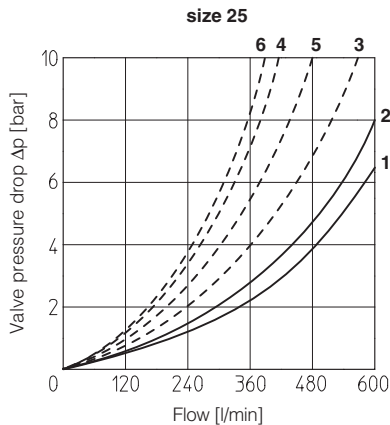
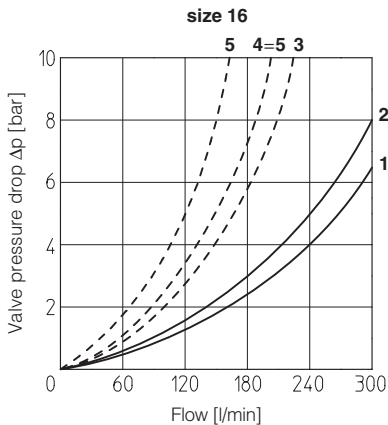
**/E** = with external attachments X and underneath port X supplied plugged;

**\*\*\*** = Calibrated plugs different from standard ones. LIDD covers in standard executions are not equipped with restrictors in the pilot channels. When ordering covers equipped with restrictors, it must be indicated at the end of the model code:

<b>LIDD</b>	-	<b>1</b>	<b>/E</b>	<b>X</b>	<b>06</b>
				Channel where the restrictor has to be provided: <b>X</b> = channel X	Size of the throttling hole in tenths of millimeters: <b>05</b> = 0,5 mm <b>10</b> = 1 mm <b>06</b> = 0,6 mm <b>12</b> = 1,2 mm <b>08</b> = 0,8 mm <b>15</b> = 1,5 mm

**9 Q/ΔP DIAGRAMS** - for LIDD, based on mineral oil ISO VG 46 at 50°C

**9.1 SC LI slip-in cartridges, poppet type 32, 33, 42, 43**



**SC LI New high flow - series 40**

- 1 = poppet type 32 and 33
- 2 = poppet type 42 and 43

**SC LI Standard flow - series 31 (size 16 to 50), 11 (size 63 and 80), 10 (size 100)**

- 3 = poppet type 32
- 4 = poppet type 33
- 5 = poppet type 42
- 6 = poppet type 43

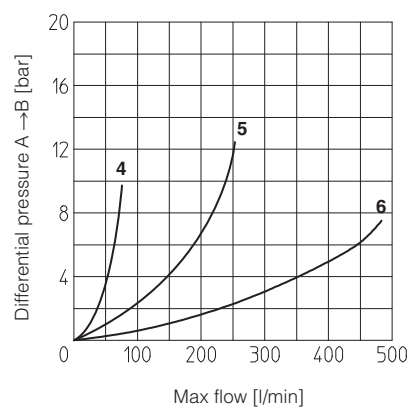
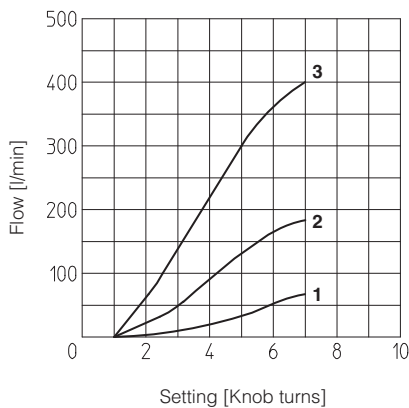
**10 Q/ΔP DIAGRAMS** - for LIQV

**10.1 Regulation diagram**

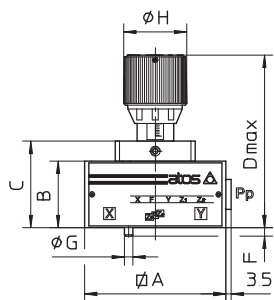
- 1 = SC LI-16290
- 2 = SC LI-16490
- 3 = SC LI-25490

**10.2 Operation diagram**

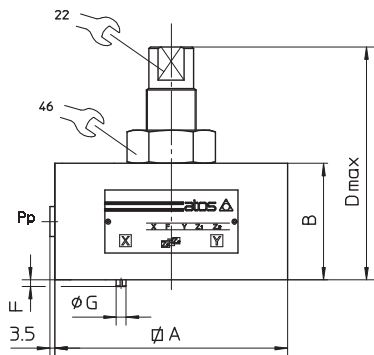
- 4 = SC LI-16290
- 5 = SC LI-16490
- 6 = SC LI-25490



11 LIDD COVER DIMENSIONS [mm] - for mounting interface and cavity dimensions, see tech. table P006



LIDD (dim. 16...40)

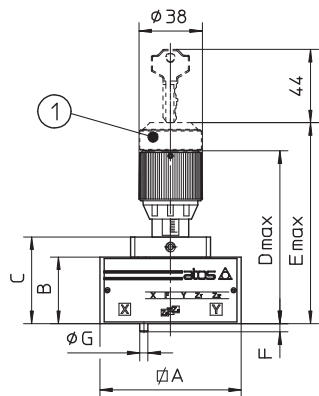


LIDD (size 50 ÷ 63)

Covers	A	B	C	D max	F	G	H	Port Pp	Seals	Fastening bolts (1)	Tightening torque [Nm]	Mass [Kg]
LIDD-1	65	40	52	104	4	3	38	G1/4	2 OR 108	Nr. 4 M8x45	35	2
LIDD-2	85	40	52	104	6	5	38	G1/4	2 OR 108	Nr. 4 M12x45	125	2,4
LIDD-3	100	50	75	156	6	5	50	G1/4	2 OR 2043	Nr. 4 M16x55	300	2,8
LIDD-4	125	60	85	166	6	5	50	G1/4	2 OR 3043	Nr. 4 M20x70	600	6,7
LIDD-5	140	70	-	140	4	6	-	G1/4	2 OR 3043	Nr. 4 M20x80	600	9,8
LIDD-6	180	80	-	151	4	6	-	G3/8	2 OR 3050	Nr. 4 M30x90	2100	17,5

(1) Hexagon socket head screw according to DIN 912 class 12.9

12 LIQV COVER DIMENSIONS [mm] - for mounting interface and cavity dimensions, see tech. table P006



① /K version with knob locking key

Covers	A	B	C	D max	E max	F	G	Seals	Fastening bolts (1)	Tightening torque [Nm]	Mass [Kg]
LIQV-1	65	40	52	104	121	4	3	2 OR 108	Nr. 4 M8x45	35	1,7
LIQV-2	85	40	52	104	121	6	5	2 OR 108	Nr. 4 M12x45	125	2,1

(1) Hexagon socket head screw according to DIN 912 class 12.9