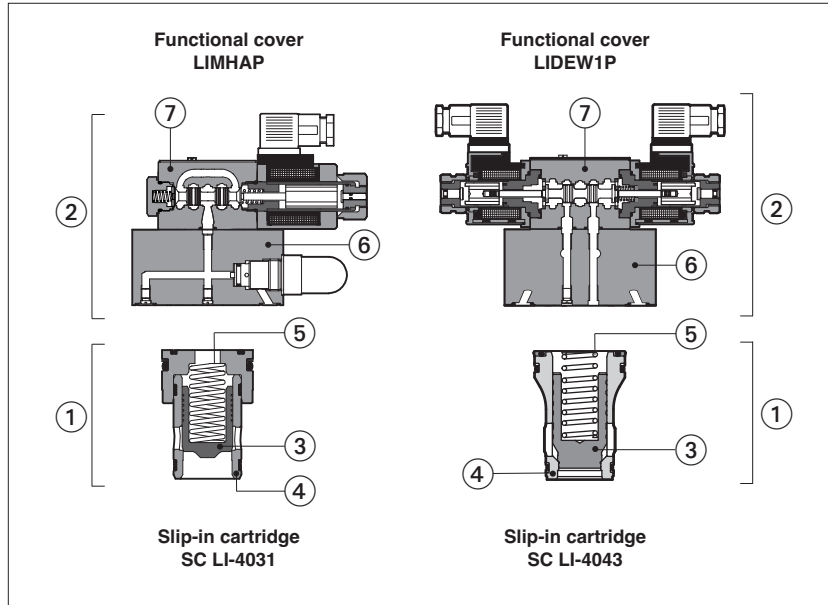


## Basics for 2 way cartridge valves Pmax 420 bar

LI\*\*P functional covers; SC LI slip-in cartridges - ISO 7368 size from 16 to 100



Modular ISO cartridge valves are designed for installation in compact manifolds and they are available in several versions to perform pressure, flow, directional and check controls. They permit to control very high flow rates at low pressure drops, reducing the manifold dimensions respect to subplate valves.

They are made by a 2 way slip-in cartridge ①, to be housed into ISO 7362 standard cavity, closed at the top side by a functional cover ②.

The cartridge is installed inside the manifold and it is the element that directly controls the flow passage.

It is made by a poppet ③ sliding into a sleeve ④ and kept in closed position by a spring ⑤ available with different cracking pressures

The cartridges are available with different geometrical shapes and area ratio specific for the type of control to be performed.

The functional covers are made by a closing element with ISO mounting surface ⑥ provided with internal piloting lines for the cartridge operation, equipped with pilot valves ⑦ and devices performing the specific control (pressure relief, flow metering, directional, check)

Sizes: **16 to 100** (ISO 7369)

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

Max pressure **420 bar**

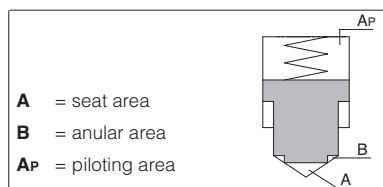
### 1 MAIN CHARACTERISTICS - LI\*\*P FUNCTIONAL COVER AND SC LI CARTRIDGE

Assembly position / location	Any position		
Cover mounting interface	ISO 7368, see technical table P006		
Cartridge cavity dimensions	ISO 7368, see technical table P006		
MTTFd values according to EN ISO 13849	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		
<b>Operating pressure</b>	<b>420 bar</b> , see technical table of specific valve		
<b>Maximum flow</b>	See section 8		
Mass (Kg)	<b>LI**P cover</b>	See H** technical table of specific valve	
	<b>SC LI cartridge</b>	16 = 0,19    40 = 1,68    80 = 12,7 25 = 0,46    50 = 3        100 = 23,6 32 = 0,88    63 = 6,65	

### 2 SEALS AND HYDRAULIC FLUID - for other fluids not included in below table, consult our technical office

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	20 ÷ 100 mm <sup>2</sup> /s - max allowed range 15 ÷ 380 mm <sup>2</sup> /s		
Fluid contamination class	ISO 4406 class 20/18/15 NAS 1638 class 9, in line filters of 10 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	HFDU, HFDR	ISO 12922
Flame resistant with water	NBR, HNBR	HFC	

### 3 SC LI CARTRIDGE AREAS



Pressure applied to areas A and B acts to open the poppet.

Pressure applied to area AP plus the spring force act to close the poppet

**4 TYPICAL FUNCTIONS OF COVERS - PRESSURE CONTROL, see table H010**

Function and type of control	Size	Hydraulic symbol	Cover size 6 ÷ 32	Cover size 40 ÷ 80	Cartridges
Pressure relief control with manual setting <b>LIMMP</b>	16				SC LI-**31* size 16... 80
	25				SC LI-**34* size 16
	32				
	40				
	50				
Pressure relief control with solenoid valve for venting <b>LIMHAP</b> = unloading when solenoid is de-energized <b>LIMHCP</b> = unloading when solenoid is energized <b>LIMH*</b>	16				SC LI-**31* size 16...80
	25				SC LI-**34* size 16
	32				
	40				
	50				
Pressure reducing control with manual setting. Open in resting position <b>LIRAP</b>	16				SC LI-**37* size 16...40
	25				
	32				
	40				
Pressure compensator to be coupled with flow control valves <b>LICP</b>	16				SC LI-**31* size 16...80
	25				
	32				
	40				
	50				
Pressure compensator with mechanical max pressure regulation to be coupled with flow control valves. <b>LICMP</b>	16				SC LI-**31* size 16...80
	25				
	32				
	40				
	50				

**5 FUNCTIONAL COVERS - FLOW CONTROL, see table H020**

Function and type of control	Size	Hydraulic symbol	Cover size 16 ÷ 63	Cartridges
Flow control with manual setting <b>LIQV</b> They can be coupled with LICP or LICMP valves with poppet type 31, 36 or 37 for compensated flow control	16			SC LI-**290 size 16
	25			SC LI-**490 size 16, 25
Flow control with stroke limiter <b>LIDDP</b>	16			SC LI-**32* SC LI-**33* size 16...63
	25			
	32			
	40			
	50			

**6 FUNCTIONALS COVERS - DIRECTIONAL CONTROL, see table H030**

Function and type of control	Size	Hydraulic symbol	Cover size 16 ÷ 100	Cartridges
Direct operated directional control valve with solenoid valve for pilot selection <b>LIDEW*P</b>	16			SC LI-**32* SC LI-**33* size 16 ... 100
	25			SC LI-**42* size 16 ... 80
	32			SC LI-**43* size 16 ... 100
	40			
	50			
	63			
Direct operated directional control valve with solenoid valve and shuttle valve for pilot selection <b>LIDBH1AP</b> = open when solenoid is de-energized <b>LIDBH1CP</b> = closed when solenoid is de-energized	16	<b>1A</b>		SC LI-**32* SC LI-**33* size 16 ... 100
	25			SC LI-**42* size 16 ... 80
	32			SC LI-**43* size 16 ... 100
	40			
	50			
	63			
Direct operated directional control valve with solenoid and shuttle valve for pilot selection <b>LIDBH2AP</b> = when solenoid is de-energized only connections X→F <b>LIDBH2CP</b> = when solenoid is de-energized only connections Z1→F	16	<b>2A</b>		SC LI-**32* SC LI-**33* size 16 ... 100
	25			SC LI-**42* size 16 ... 80
	32			SC LI-**43* size 16 ... 100
	40			
	50			
	63			
80				
100				

**7 FUNCTIONALS COVERS - CHECK FUNCTION, see table H040**

Function and type of control	Size	Hydraulic symbol	Cover size 16 ÷ 25	Cover size 32 ÷ 80	Cartridges
Direct operated check valve normally closed <b>LIDAP</b>	16				SC LI-**32* SC LI-**33* size 16 ... 80
	25				SC LI-**42* SC LI-**43* size 16 ... 80
	32				
	40				
	50				
63					
80					
Direct operated check valve normally open <b>LIDOP</b>	16				SC LI-**62* SC LI-**63* size 16, 25, 32, 50
	25				
	32				
	40				
	50				
Direct operated check valve with shuttle valve for pilot selection <b>LIDBP</b>	16				SC LI-**32* SC LI-**33* size 16 ... 63
	25				SC LI-**42* SC LI-**43* size 16 ... 63
	32				
	40				
	50				
63					
Direct operated check valve with hydraulically operated pilot check valve <b>LIDRP</b>	16				SC LI-**32* SC LI-**33* size 16 ... 63
	25				SC LI-**42* SC LI-**43* size 16 ... 63
	32				
	40				
	50				
63					

**8 TYPICAL FUNCTIONS OF SC LI SLIP-IN CARTRIDGES**

Size Type	SC LI-16	SC LI-25	SC LI-32	SC LI-40	SC LI-50	SC LI-63	SC LI-80	SC LI-100	Functional sketch (hydraulic symbol)	Typical section	Area ratio	Related cover
<b>31</b>	●	●	●	●	●	●	●	●			1 : 1	Poppet type LIMMP, LIMHAP, LIMHCP, LICP, LICMP
Q <sub>max</sub> [l/min] Δp = 5 bar	180	380	650	1100	2000	3200	5000	8500				
<b>32</b>	●	●	●	●	●	●	●	●			1 : 1,1	Poppet type LIDAP, LIDDP, LIDBP, LIDBHP, LIDEWP
Q <sub>max</sub> [l/min] Δp = 5 bar	290	500	950	1500	2800	3500	5000	9000				
<b>33</b>	●	●	●	●	●	●	●	●			1 : 5	Poppet type LIDAP, LIDDP, LIDBP, LIDBHP, LIDEWP
Q <sub>max</sub> [l/min] Δp = 5 bar	290	500	950	1500	2800	3500	5000	9000				
<b>34</b>	●	○	○	–	–	–	–	–			1 : 1	Poppet type LIMMP, LIMHAP, LIMHCP
Q <sub>max</sub> [l/min] Δp = 5 bar	200											
<b>35</b>	●	●	●	●	●	–	–	–			1 : 1,1	Poppet type LIMMP, LIMHAP, LIMHCP
Q <sub>max</sub> [l/min] Δp = 5 bar	200	400	670	1200	2200							
<b>36</b>	●	●	●	●	●	●	●	–			1 : 1	Spool type LICP, LICMP
Q <sub>max</sub> [l/min] Δp = 5 bar	180	380	650	1100	2000	3200	5000					
<b>37</b>	●	●	●	●	–	–	–	–			1 : 1	Spool type LIRAP
Q <sub>max</sub> [l/min] Δp = 5 bar	160	270	540	840								
<b>42</b>	●	●	●	●	●	●	●	–			1 : 1,1	Poppet type with dumping nose LIDAP, LIDDP, LIDBP, LIDBHP, LIDEWP
Q <sub>max</sub> [l/min] Δp = 5 bar	260	450	830	1300	1800	2700	3800	6000				
<b>43</b>	●	●	●	●	●	●	●	●			1 : 5	Poppet type with dumping nose LIDAP, LIDDP, LIDBP, LIDBHP, LIDEWP
Q <sub>max</sub> [l/min] Δp = 5 bar	260	450	830	1300	1800	2700	3800	6000				
<b>52</b>	●	●	●	●	●	–	–	–			1 : 1,1	Poppet type LIDAP
Q <sub>max</sub> [l/min] Δp = 5 bar	170	300	450	900	1800							
<b>62</b>	●	●	●	○	●	–	–	–			1 : 1,1	Poppet type LIDOP
Q <sub>max</sub> [l/min] Δp = 5 bar	170	300	450	900	1800							
<b>63</b>	●	●	●	○	●	–	–	–			1 : 1,1	Poppet type with dumping nose LIDOP
Q <sub>max</sub> [l/min] Δp = 5 bar	170	300	450	900	1800							
<b>69</b>	–	●	●	●	●	–	–	–			1 : 1,6	Poppet type with dumping nose LIDOP
Q <sub>max</sub> [l/min] Δp = 5 bar												
<b>290</b>	●	–	–	–	–	–	–	–			1 : 1	Spool type LIQV
<b>490</b>	●	●	–	–	–	–	–	–				

- normally available from stock
- on request
- not available