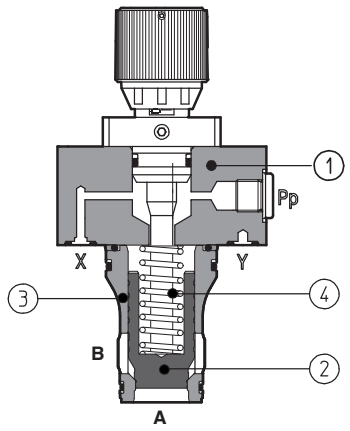
ISO cartridge valves type LIDD

Flow control



① Functional cover
② Poppet
③ Sleeve
④ Spring

LIDD-2

LIDD 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 poppet 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** ISO 7368
Max flow up to **4000 l/min** at Δp 5 bar
Max pressure: **LIDD 420 bar**

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

LI	DD	–	1	/	*	**	/*

LI: Cover according to ISO 7368

DD: Flow control valve:
DD = normally closed with stroke limiter

1: Size for LIDD:
1 = 16 **4** = 40
2 = 25 **5** = 50
3 = 32 **6** = 63

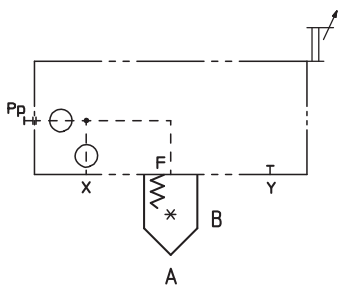
*: Options: see section 6

**: Series number
LIDD = **50** all sizes **(1)**

/*: Seals material:
- = NBR
PE = FKM
BT = HNBR

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

2 VHYDRAULIC SYMBOLS



3 MODEL CODE OF SLIP-IN CARTRIDGES - for LIDD

SC LI	-	16	43	1	40	/	*

Cartridge according to ISO 7368

Size, the same of relevant cover:
16 25 32 40 50 63

Type of poppet
32, 33 = without damping nose
42 = as 32 but with damping nose
43 = as 33 but with damping nose

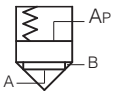
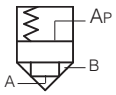
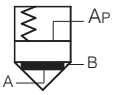
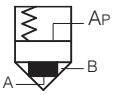
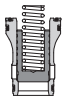
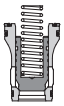
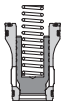
Series number **(1)**
40 = all sizes

Seals material:
- = NBR
PE = FKM
BT = HNBR

Spring cracking pressure, see section 4:
1 2 3 6

(1) New series 40 is mechanically interchangeable with standard flow series 31, 11 and 10 - cavity according to ISO 7368
New series 50 of LIDD cover is highly recommended in combination with new cartridges series 40
The use of old cartridges series 10, 11 and 31 may cause the impossibility to fully close the poppet

4 TYPE OF POPPET

Type of poppet		**32**				**33**				**42**				**43**			
Functional sketch (Hydraulic symbol)																	
Typical section																	
Area ratio A:Ap		**1:1,1**				**1:1,5**				**1:1,1**				**1:1,5**			
Operating pressure		**420 bar max**															
Nominal flow at Δp 5 bar (l/min) see diagrams Q/Δp at section 7																	
Size **16**		270				270				240				240			
Size **25**		550				550				500				500			
Size **32**		1000				1000				800				800			
Size **40**		1700				1700				1400				1400			
Size **50**		2500				2500				2200				2200			
Size **63**		4000				4000				3300				3300			
Cracking pressure (bar)																	
Spring		**1**	**2**	**3**	**6**	**1**	**2**	**3**	**6**	**1**	**2**	**3**	**6**	**1**	**2**	**3**	**6**
Size **16**	A→B	0.3	1.5	3	5.3	0.6	1.6	2.9	5.1	0.3	1.7	3.3	6.1	0.7	1.9	3.3	5.7
	B→A	3.2	16	30.5	50.3	1.2	3.2	5.8	10	3.6	17.7	34.5	63.4	1.3	3.7	6.5	11.2
Size **25**	A→B	0.3	1.5	3	5	0.6	1.4	3	5	0.3	1.7	3.3	6.1	0.7	1.5	3.3	5.8
	B→A	3.1	15.1	30.5	50.3	1.2	2.8	5.9	9.9	3.5	17.1	33.3	61.4	1.3	3	6.5	11.3
Size **32**	A→B	0.3	1.5	3	5	0.6	1.6	3	5.4	0.3	1.7	3.7	6.3	0.7	1.8	3.4	6.3
	B→A	3.5	17	34.2	56.7	1.2	3.2	6	10.7	3.9	18.8	41.6	71.1	1.4	3.6	6.9	12.7
Size **40**	A→B	0.3	1.5	3	5	0.6	1.5	3	5.5	0.4	1.8	3.5	6.4	0.7	1.8	3.6	7.3
	B→A	2.9	14.7	29.4	48.3	1.2	3	6	11	3.5	17.2	34	62	1.3	3.6	7.2	14.6
Size **50**	A→B	0.3	1.5	3	4.3	0.6	1.6	3	4.8	0.4	1.7	3.4	5.2	0.7	1.9	3.4	5.7
	B→A	3.6	16.9	33.8	48.4	1.4	3.6	6.7	10.8	4.2	18.9	38.1	58.9	1.5	4.4	7.7	12.9
Size **63**	A→B	0.3	1.5	2.9	4.2	0.6	1.5	2.9	5.8	0.4	1.7	3.4	4.7	0.7	1.8	3.3	6.5
	B→A	3.1	15	29.2	42	1.3	3.3	6.4	12.5	3.6	16.6	33.8	47.2	1.5	4	7.2	14.1

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	**Standard** execution = -30°C ÷ +70°C **/PE** option = -20°C ÷ +70°C **/BT** option = -40°C ÷ +70°C		
Compliance	RoHS Directive 2011/65/EU as last update by 2015/863/EU REACH Regulation (EC) n°1907/2006		
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 mm²/s - max allowed range 2.8 ÷ 500 mm²/s		
Max fluid contamination level	ISO4406 class 20/18/15 NAS1638 class 9, see also filter section at www.atos.com or KTF catalog		
Hydraulic fluid	**Suitable seals type**	**Classification**	**Ref. Standard**
Mineral oils	NBR, FKM, HNBR	HL, HLP, HLPD, HVLP, HVLPD	DIN 51524
Flame resistant without water	FKM	HFDU, HFDR	ISO 12922
Flame resistant with water	NBR, HNBR	HFC	
Flow direction	A to B or B to A		
Functional cover operating pressure	ports X, Y: **420** bar		

6 OPTIONS

/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:

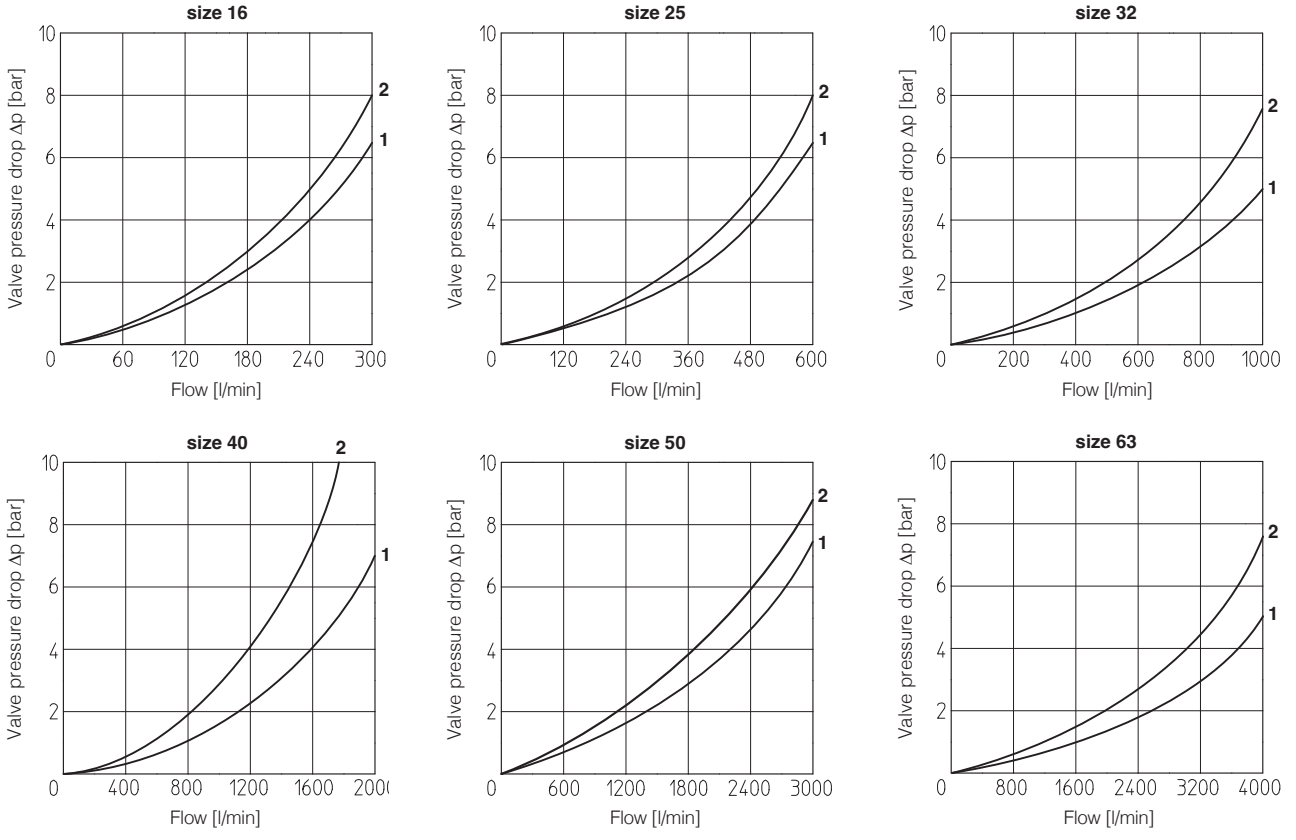
LIDD	-	1	/E	X	06
				Channel where the restrictor has to be provided: **X** = channel X	Size of the throttling hole in tenths of millimeters: **05** = 0,5 mm **10** = 1 mm **06** = 0,6 mm **12** = 1,2 mm **08** = 0,8 mm **15** = 1,5 mm

Note: For LIDD-***/E**, the calibrated orifices are located in the lateral port for external attachment
Calibrated orifices are not available for LIDD-1/E (size 16)

7 Q/ΔP DIAGRAMS - based on mineral oil ISO VG 46 at 50°C

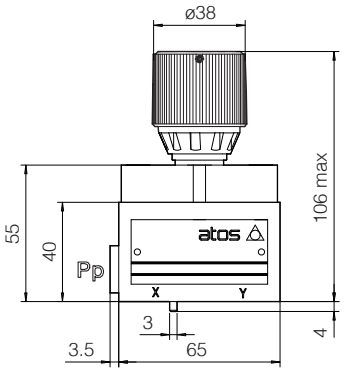
SC LI slip-in cartridges, poppet type 32, 33, 42, 43

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

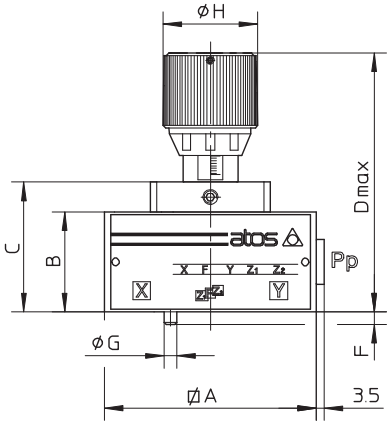


8 **LIDD COVER DIMENSIONS [mm] - for mounting interface and cavity dimensions, see tech. table P006**

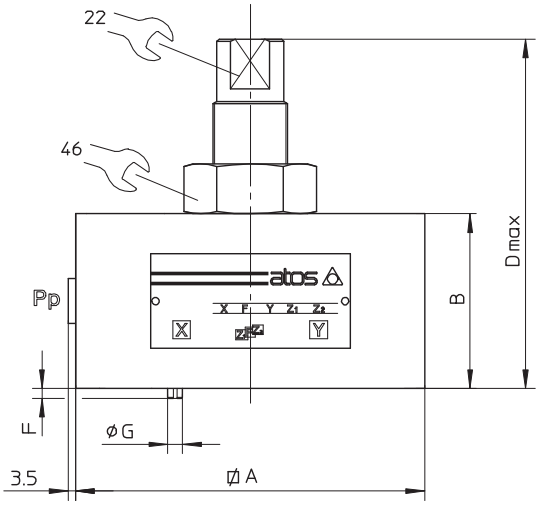
Size 16



Size 25÷40



Size 50÷63



Covers	A	B	C	D (max)	F	G	H	Port Pp	Seals	Fastening bolts DIN 912 class 12.9	Tightening torque [Nm]	Mass [Kg]
LIDD-1	65	40	55	107	4	3	38	G 1/4”	2 OR-108	N°4 M8x45	35	2
LIDD-2	85	40	55	107	6	5	38	G 1/4”	2 OR-108	N°4 M12x45	125	2.4
LIDD-3	100	50	75	156	6	5	50	G 1/4”	2 OR-2043	N°4 M16x55	300	2.8
LIDD-4	125	60	85	166	6	5	50	G 1/4”	2 OR-3043	N°4 M20x70	600	6.7
LIDD-5	140	70	-	140	4	6	-	G 1/4”	2 OR-3043	N°4 M20x80	600	9.8
LIDD-6	180	80	-	151	4	6	-	G 3/8”	2OR-3050	N°4 M30x90	2100	17.5