

Part number:

HYDROMA

HYDRAULICKÉ SYSTÉMY

**HIDROMA
SISTEMS**

UKŁADY HYDRAULICZNE

HYDROMA

ГИДРАВЛИЧЕСКИЕ СИСТЕМЫ



LOGIC ELEMENTS

SERIES 10

LC* CARTRIDGE VALVES

ISO 7368 - DIN 24342

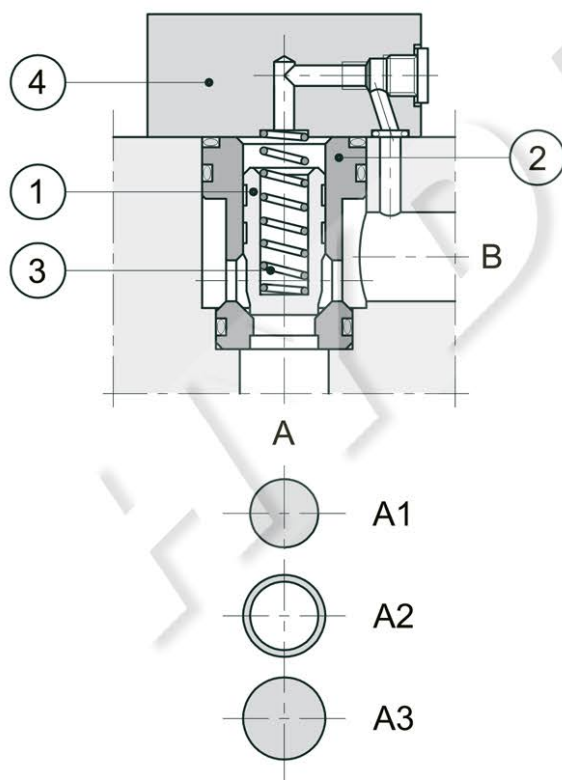
LP* COVERS FOR CARTRIDGE VALVES

ND 16-25-32-40-50

p max 420 bar

Q max (see performance ratings table)

OPERATING PRINCIPLE



— Logic elements are cartridge valves suitable for installation in blocks or manifolds. They are available in five different sizes: ND 16 - 25 - 32 - 40 - 50.

— They are designed to realise complex hydraulic circuits, using functional compact blocks, with high flow rates and low pressure drops.

— They are made of a cartridge valve with ISO7368 / DIN 24342 cavity bore and a control cover ④. The cover includes the cartridge valves pilot lines; some versions are designed for the installation of CETOP 03 valves, to realise different control functions (see par. 9 for diagrams and function descriptions).

— The cartridge valves are composed of a jacket ②, a poppet ①, and a closing spring ③. The poppet can either be standard (S) or with a damping nose (D), suitable for a smooth flow control during the valve opening and closing phases.

— There are two different types of cartridge valves available:

- Q type: this valve is used for flow and directional control and as a check valve.

The areas involved are:

A₁ - corresponding to the seat diameter area, considered as reference area = 1

A₃ - corresponding to the jacket internal diameter area.

A₂ - corresponding to the difference between A₃ - A₁

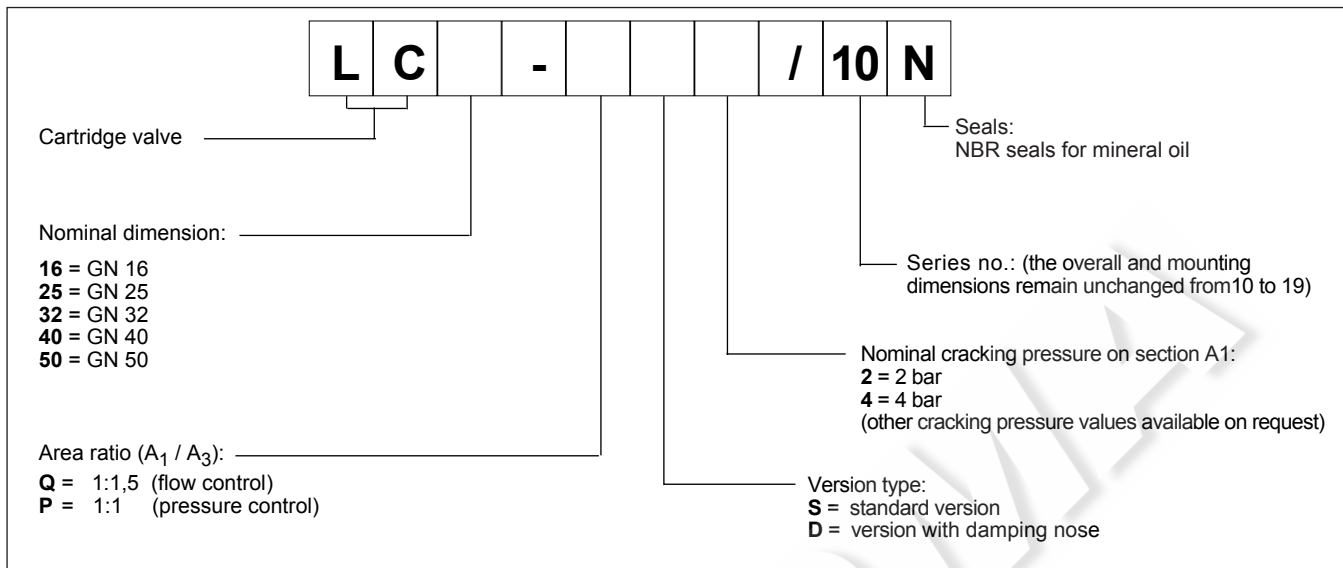
The area ratio A₁/A₃ is 1/1,5.

The valve opens when the pressure acting either on area A₁ (flow from A to B) or on area A₂ (flow from B to A) is higher than the pressure acting on area A₃ (added to the spring load value).

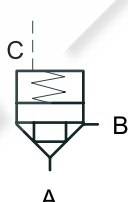
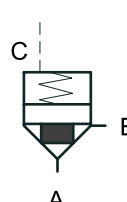
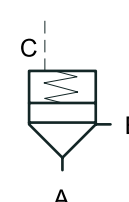
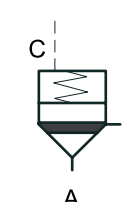
- P type: this valve is used for pressure control.

In this case the areas A₁ and A₃ are equivalent (area ratio 1:1) and the valve enables the flow direction from A to B only.

1 - IDENTIFICATION CODE



1.1 - Cartridge valves available combinations

Nominal dimension	QS2	QD4	PS2	PD4
LC16	X	X	X	-
LC25	X	X	X	X
LC32	X	X	X	-
LC40	X	X	X	-
LC50	X	-	X	-
SYMBOL				
AREA RATIO A_1 / A_3	1 : 1,5	1 : 1,5	1 : 1	1 : 1

2 - HYDRAULIC FLUIDS

Use mineral oil-based hydraulic fluids HL or HLP type, according to ISO 6743/3.

For fluids HFD-R type (phosphate esters) use FPM seals (code V).

For the use of other fluid types such as HFA, HFB, HFC, please consult our technical department.

Using fluids at temperatures higher than 70°C causes a faster degradation of the fluid and of the seals characteristics.

The fluid must be preserved in its physical and chemical characteristics.

3 - TECHNICAL CHARACTERISTICS (cartridge valve with control cover)

Max operating pressure LC cartridge valve	bar	420
- Max operating pressure limit of covers type C, CQ, DP, LCPM	bar	350
- Max operating pressure with distributor installed on cover	bar	see technical characteristics of installed distributor
Ambient temperature range	°C	-20 ÷ +50
Fluid temperature range	°C	-20 ÷ +80
Fluid viscosity range	cSt	10 ÷ 400
Recommended viscosity	cSt	25
Fluid contamination degree		< according to NAS 1638 class 9

3.1 - Cartridge valves type Q performances (flow control function)

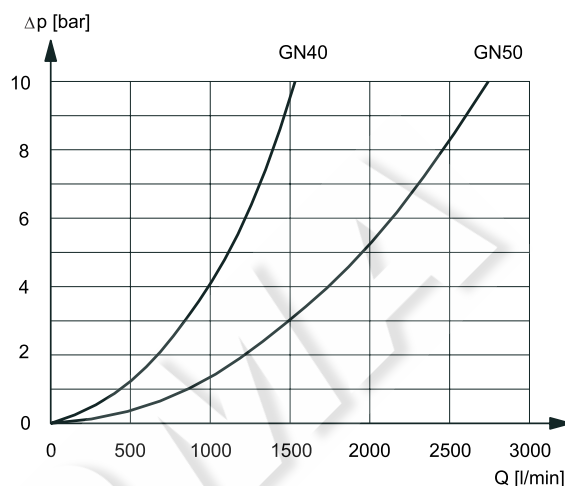
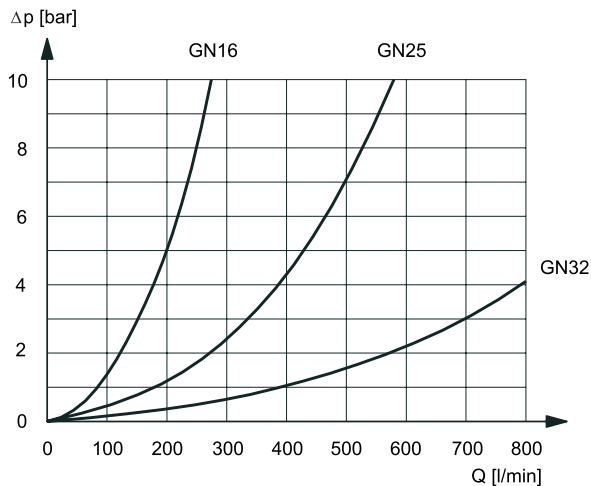
		NOMINAL SIZE				
		16	25	32	40	50
Area A ₁	cm ²	1,89	3,84	6,79	11,04	19,63
Area A ₂	cm ²	0,94	1,89	3,39	5,58	8,64
Area A ₃	cm ²	2,83	5,73	10,18	16,62	28,27
Opening stroke h	cm	0,90	1,26	1,48	1,70	2,00
Opening volume	cm ³	2,55	7,22	15,1	28,25	56,54
Cracking pressure	A → B { spring 2 spring 4	2,0 4,0	2,0 4,0	2,0 4,0	2,0 4,0	2,0 4,0
	B → A { spring 2 spring 4	4,1 7,9	4,2 8,1	4,1 8,0	4,0 7,9	4,5 9,0
Max recommended flow (version S)	l/min	230	500	900	1400	2400
Max recommended flow (version D)	l/min	200	450	800	1200	-
Mass	kg	0,25	0,50	1,10	1,90	3,90

3.2 - Cartridge valves type P performances (pressure control function)

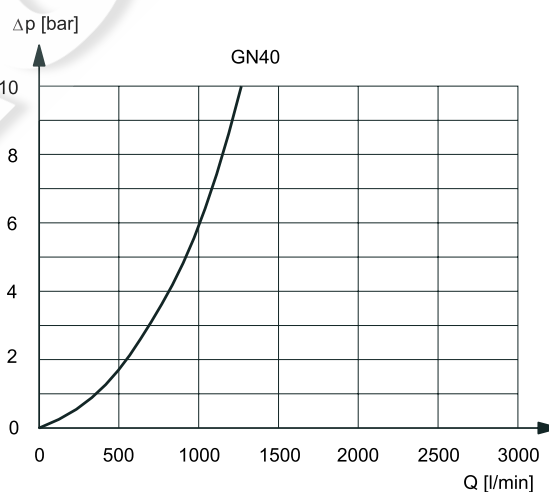
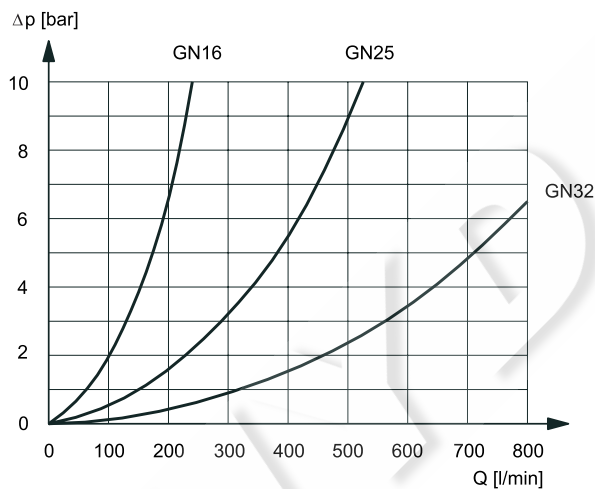
		NOMINAL SIZE				
		16	25	32	40	50
Area A ₁ = Area A ₃	cm ²	2,83	5,73	10,18	16,62	28,27
Cracking pressure	spring 2	2,0	2,0	2,0	2,0	2,0
	spring 4	4,0	4,0	4,0	4,0	4,0
Max recommended flow (version S)	l/min	170	360	600	900	1500
Max recommended flow (version D)	l/min	-	250	400	-	-
Mass	kg	0,25	0,50	1,10	1,90	3,90

4 - CHARACTERISTIC CURVES (values obtained with viscosity 36 cSt at 50°C)

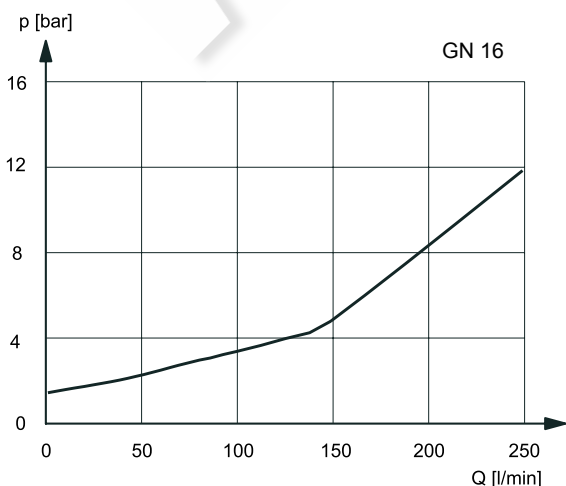
4.1 - Flow control function without damping nose LC*-QS

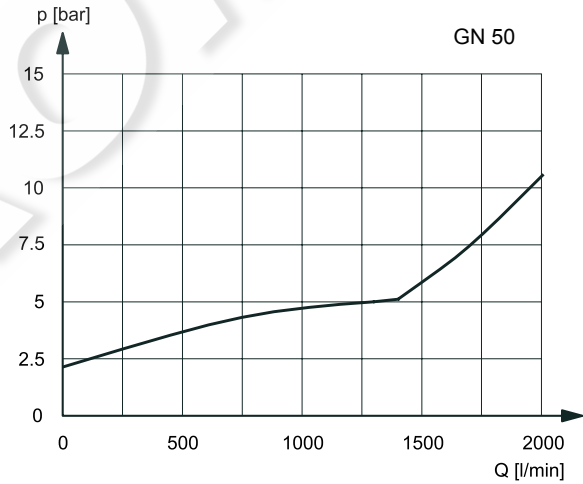
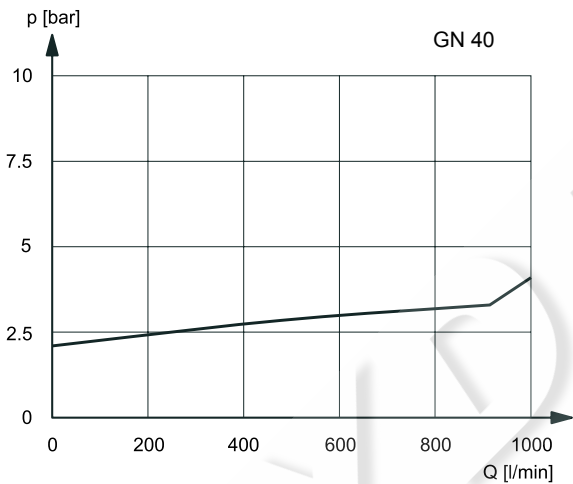
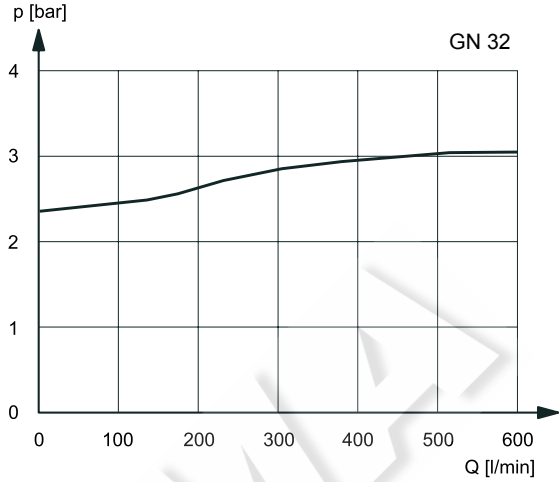
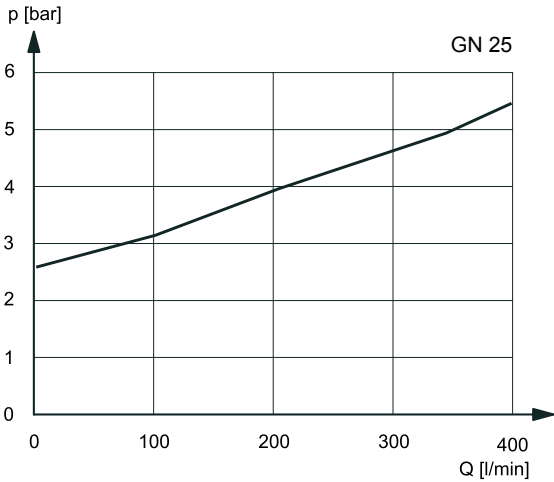


4.2 - Flow control function with damping nose LC*-QD

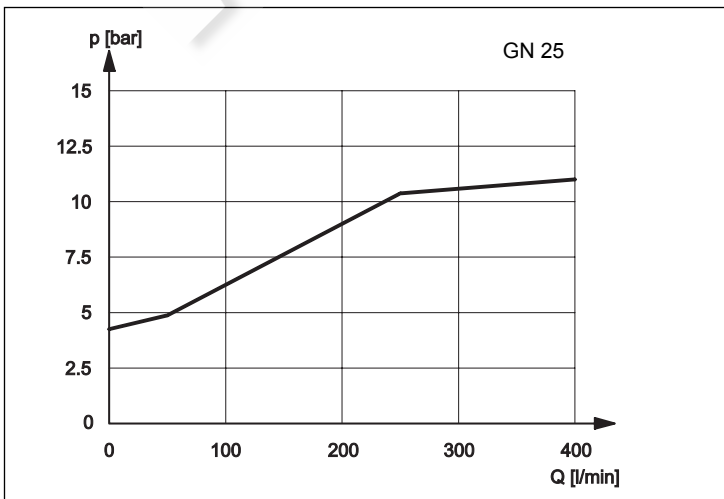


4.3 - Pressure control function without damping nose LC*-PS

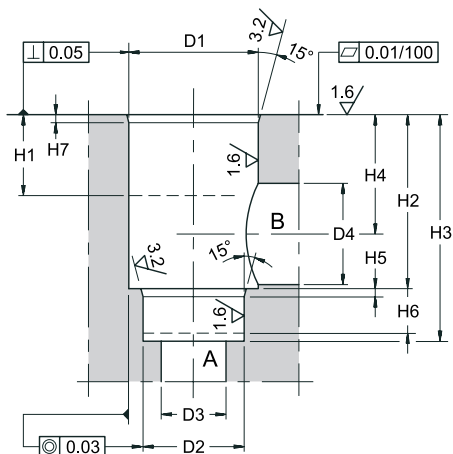




4.4 - Pressure control function with damping nose LC*-PD

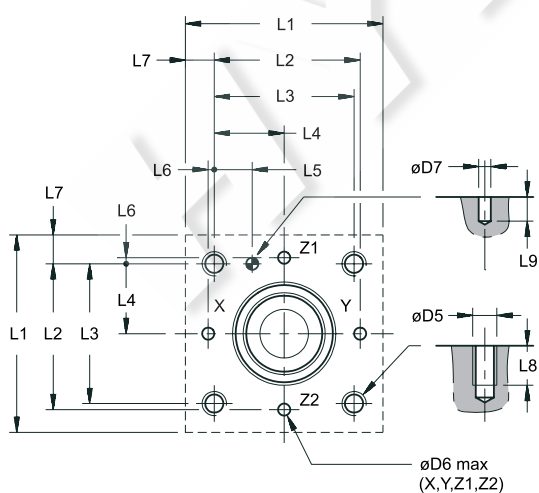


5 - LC CARTRIDGE VALVES SEAT DIMENSIONS ACCORDING TO ISO 7368 / DIN 24342



	LC CARTRIDGE VALVES NOMINAL SIZE				
	16	25	32	40	50
ØD1 ^{H7}	32	45	60	75	90
ØD2 ^{H7}	25	34	45	55	68
ØD3 max	16	25	32	40	50
ØD4	16	25	32	40	50
ØD4 max	25	32	40	50	63
H1 min	20	30	30	30	35
H2 ± 0,1	43	58	70	87	100
H3 ^{+0,1} / ₀	56	72	85	105	122
H4 referring to diameter ØD4	34	44	52	64	72
H4 referring to diameter ØD4 max	29,5	40,5	48	59	65,5
H5	2	2,5	2,5	3	3
H6 min	11	12	13	15	17
H7	2	2,5	2,5	3	4

6 - LP CONTROL COVERS INTERFACE DIMENSIONS ACCORDING TO ISO 7368 / DIN 24342



	LP CONTROL COVERS NOMINAL SIZE				
	16	25	32	40	50
ØD5	M8	M12	M16	M20	M20
ØD6 max	4	6	8	10	10
ØD7 ^{H13}	4	6	6	6	8
L1	*	85	102	125	140
L2 ± 0,2	48	62	76	92,5	108
L3 ± 0,2	46	58	70	85	100
L4 ± 0,2	23	29	35	42,5	50
L5 ± 0,2	12,5	13	18	19,5	20
L6 ± 0,2	2	4	6	7,5	8
L7	*	13,5	16	20	20
L8 min	15	20	28	35	35
L9 min	8	8	8	8	8

* = cover with special dimensions (see par. 10.2, 10.9)

7 - IDENTIFICATION CODE FOR CARTRIDGE VALVE COVERS

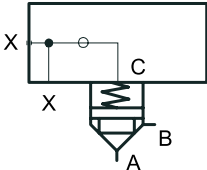
	<div style="display: flex; justify-content: space-around; align-items: center;"> <div style="border: 1px solid black; padding: 2px 5px;">L</div> <div style="border: 1px solid black; padding: 2px 5px;">P</div> <div style="border: 1px solid black; padding: 2px 5px;">/</div> <div style="border: 1px solid black; padding: 2px 5px;">10</div> <div style="border: 1px solid black; padding: 2px 5px;">N</div> </div>			
Cartridge valve cover two-way type LC		Seals: NBR seals for mineral oil		
Nominal dimension:		Series no.: (the overall and mounting dimensions remain unchanged from 10 to 19)		
16 = GN 16	40 = GN 40	Cover type:		
25 = GN 25	50 = GN 50	R	DF1	C
32 = GN 32		D	DF2	CQ
		DZ	Q	DP*
				} see description and symbols par. 8 and 9

8 - LP COVERS SYMBOLS AND AVAILABILITY

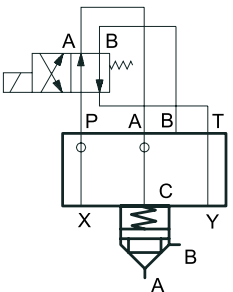
Available nominal size					COVER TYPE	COVER SYMBOL	SEE PAR. FOR DIAGRAMS	SEE PAR. FOR OVERALL DIMENS.
16	25	32	40	50				
X	X	X			R		9.1	10.1
X	X	X	X	X	D		9.2	10.2
X	X	X			DZ		9.3	10.3
	X	X			DF1		9.4	10.4
	X	X			DF2		9.5	10.5
X	X	X	X		Q		9.6	10.6
	X	X			C		9.7	10.7
	X	X			CQ		9.8	10.8
X	X	X			DP*		9.9	10.9
			X	X	DP		9.10	10.10

9 - FUNCTIONAL DIAGRAMS

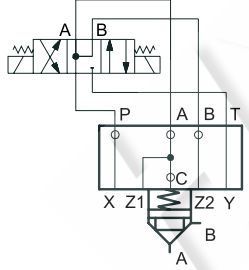
9.1 - R cover for directional control and check valve function with external pilot X

Functional diagrams	Description
	<p>Piloting of the cartridge valve through the X port, available on the mounting surface or with pipe connection 1/4" BSP.</p> <p>For GN 40 and GN 50 sizes, the external piloting function can be realised by using control cover type D, with blanking plate code 1950751 (to be ordered separately).</p>

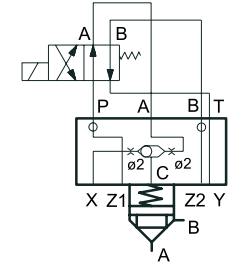
9.2 - D cover for directional control and check valve function

Functional diagrams	Description
	<p>Piloting of the cartridge valve by means of solenoid valve type MD1D-TA (to be ordered separately - see catalogue 41 200)</p> <ul style="list-style-type: none"> - solenoid valve OFF = A ↔ B intercepted flow - solenoid valve ON = A ↔ B free flow

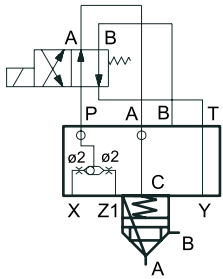
9.3 - DZ cover for directional control with possibility to pilot other cartridges in line

Functional diagrams	Description
	<p>The DZ cover enables the piloting of its cartridge valves and also of other valves connected to Z1 and Z2 pilot lines.</p> <p>The solenoid valve type MD1D-S10 must be ordered separately (see catalogue 41 200).</p>

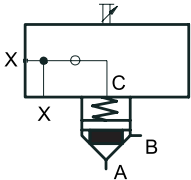
9.4 - DF1 cover for directional control and check function with double pilot line

Functional diagrams	Description
	<p>The DF1 cover gives the possibility of a double pilot line through X and Z1 ports.</p> <p>The solenoid valve type MD1D-TA must be ordered separately (see catalogue 41 200).</p> <ul style="list-style-type: none"> - solenoid valve OFF = A ↔ B intercepted flow - solenoid valve ON = A → B free flow , B → A intercepted (if pilot line X is connected with B and if Z1 is connected with A).

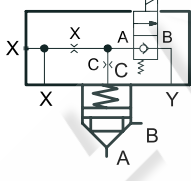
9.5 - DF2 cover for directional control and check function with priority piloting from two external lines

Functional diagrams	Description
	<p>The cartridge valve can be simultaneously piloted from X and Z1 lines.</p> <p>The shuttle valve, integrated in the cover, enables the automatic selection of the pilot line which has the higher pressure (priority line).</p> <p>The solenoid valve type MD1D-TA must be ordered separately (see catalogue 41 200).</p> <ul style="list-style-type: none"> - solenoid valve OFF = A ↔ B intercepted flow - solenoid valve ON = A ↔ B free flow

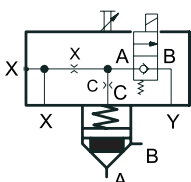
9.6 - Q cover for flow control function

Functional diagrams	Description
	<p>Flow control function by means of cover with stroke limiter.</p> <p>For a better flow control and to avoid the wear of the valve seat, this cover is normally used with a QD4 cartridge type.</p>

9.7 - C cover for solenoid operated check valve function

Functional diagrams	Description								
	<p>Cover with a built-in solenoid valve for electrical operated check valve function.</p> <p>The solenoid valve coil must be ordered separately (identification codes and available voltages shown below).</p> <table style="margin-left: 20px;"> <tr> <td>code 0750811</td> <td>24 Vcc</td> <td rowspan="3" style="font-size: 2em; vertical-align: middle;">}</td> <td rowspan="3">for alternating current supply to be used with rectifier connector D type</td> </tr> <tr> <td>code 0751026</td> <td>110 V</td> </tr> <tr> <td>code 0751025</td> <td>220V</td> </tr> </table>	code 0750811	24 Vcc	}	for alternating current supply to be used with rectifier connector D type	code 0751026	110 V	code 0751025	220V
code 0750811	24 Vcc	}	for alternating current supply to be used with rectifier connector D type						
code 0751026	110 V								
code 0751025	220V								

9.8 - CQ cover for flow control and solenoid operated check valve function

Functional diagrams	Description								
	<p>Flow control function by means of cover with a stroke limiter and built-in solenoid valve for electrical operated check valve function.</p> <p>The solenoid valve coil must be order separately (identification codes and available voltages shown below).</p> <table style="margin-left: 20px;"> <tr> <td>code 0750811</td> <td>24 Vcc</td> <td rowspan="3" style="font-size: 2em; vertical-align: middle;">}</td> <td rowspan="3">for alternating current supply to be used with rectifier connector D type</td> </tr> <tr> <td>code 0751026</td> <td>110 V</td> </tr> <tr> <td>code 0751025</td> <td>220V</td> </tr> </table>	code 0750811	24 Vcc	}	for alternating current supply to be used with rectifier connector D type	code 0751026	110 V	code 0751025	220V
code 0750811	24 Vcc	}	for alternating current supply to be used with rectifier connector D type						
code 0751026	110 V								
code 0751025	220V								

9.9 - DP* cover for pressure control function (for GN 16 - 25 - 32 sizes)

Functional diagrams	Description
	<p>Pressure control function with a built-in relief valve.</p> <ul style="list-style-type: none"> - max. adjustment pressure DP4 = 100 bar - DP6 = 350 bar <p>The top blanking plate code 1950591 must be ordered separately.</p>
	<p>Pressure control function with electrical unloading by means of MD1D-TA solenoid valve (to be ordered separately - see catalogue 41 200).</p> <ul style="list-style-type: none"> - solenoid valve OFF = unloading at minimum pressure - solenoid valve ON = pressure controlled by the built-in relief valve.
	<p>Pressure control function by means of CDE* proportional valve (to be ordered separately see catalogue 81 200).</p> <ul style="list-style-type: none"> - Proportional valve OFF = unloading at minimum pressure - Proportional valve ON = proportional control of pressure

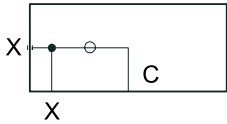
9.10 - DP cover for pressure control function (for GN 40 and 50 sizes)

Functional diagrams	Description
	<p>Pressure control function with manual adjustment relief valve.</p> <ul style="list-style-type: none"> - Relief valve MCD*-SP type (to be ordered separately - see catalogue 61 200). - Top blanking plate code 1950591 (to be ordered separately).
	<p>Pressure control function with manual adjustment relief valve and electrical unloading.</p> <ul style="list-style-type: none"> - Relief valve MCD*-SP type (to be ordered separately - see catalogue 61 200). - solenoid valve MD1D-TA type (to be ordered separately - see catalogue 41 200). - solenoid valve OFF = unloading at minimum pressure - solenoid valve ON = pressure controlled by MCD*-SP relief valve.
	<p>Proportional pressure control function.</p> <ul style="list-style-type: none"> - proportional pressure control valve CDE* type (to be ordered separately - see catalogue 81 200). - Pressure relief valve for safety function MCD*-SP type (to be ordered separately - see catalogue 61 200).

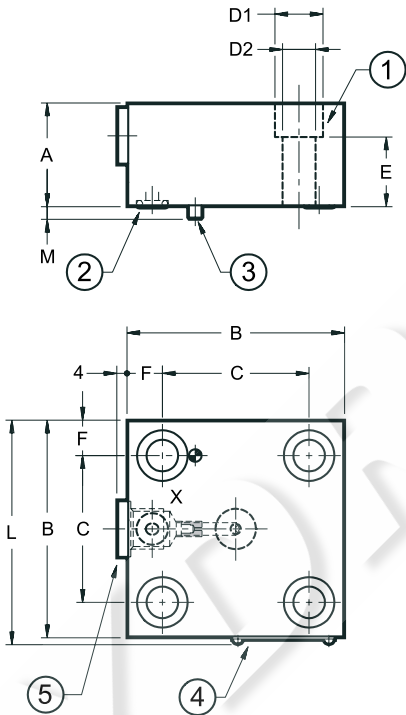
10 - OVERALL AND MOUNTING DIMENSIONS FOR CONTROL COVERS

10.1 - R type covers

dimensions in mm



LP16R
 LP25R
 LP32R



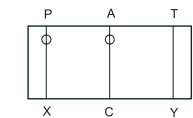
	NOMINAL SIZE		
	16	25	32
A	29	30	40
B	65	85	100
C	46	58	70
D1	13,5	19	25
D2	9	13	17
E	18	17	22
F	9,5	13,5	15
L	67,5	87,5	102,5
M	4	5	5
ports predisposed for restrictors M6x8	X port		

① fastening bolts	4 M8x30	4 M12x35	4 M16x45
② OR type	n. 1 2025	1 2037	1 2037
③ locating pin	Ø 3x10	Ø 5x14	Ø 5x14
④	identification plate		
⑤ X tap	1/4" BSP		
Mass [kg]	1,20	2,30	4,00

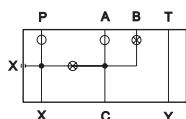
Note: Fastening bolts class 12.9 UNI 5391 are recommended for cover installation

10.2 - D type covers

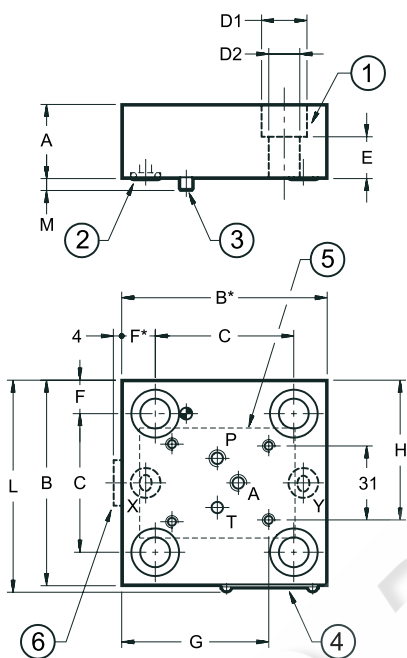
dimensions in mm



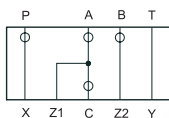
LP16D
LP25D
LP32D



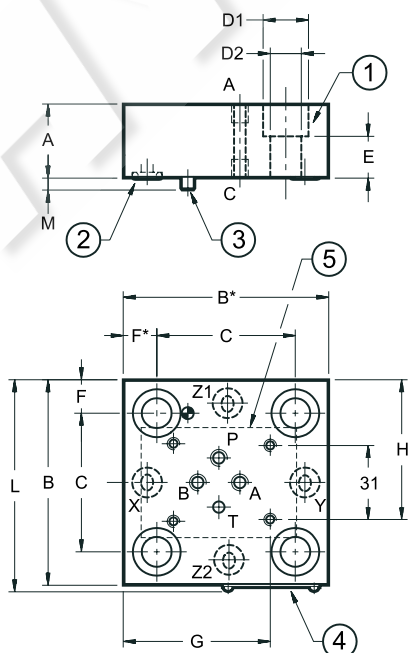
LP40D
LP50D



10.3 - DZ type covers



LP16DZ
LP25DZ
LP32DZ

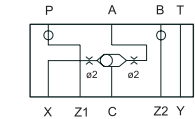


	NOMINAL SIZE					
	16	25	32	40	50	
	COVER TYPE					
	D	DZ	D	DZ	D	D
A	29	30	40	50	50	
B	65	85	100	125	140	
B*	75	85	100	125	140	
C	46	58	70	85	100	
D1	13,5	19	25	31	31	
D2	9	13	17	21	21	
E	18	17	22	30	30	
F	9,5	13,5	15	20	20	
F*	19,5	13,5	15	20	20	
G	52	61	69,5	84	91,5	
H	48	58	65,5	78	85,5	
L	67,5	87,5	102,5	127,5	142,5	
M	4	5	5	5	5	
ports predisposed for restrictors M6x8	P A	P A B C	P A B C	P A B C	P A B C	P A

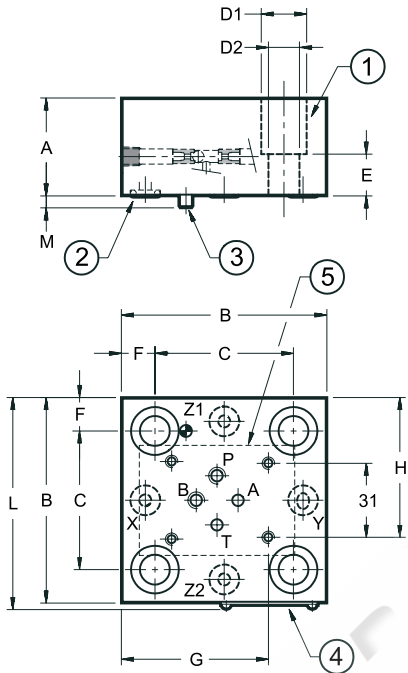
① fastening bolts	4 M8x30	4 M12x35	4 M16x45	4 M20x60	4 M20x60
② n. OR type	2 2025	2 4 2037	2 4 2037	2 2050	2 2050
③ locating pin	Ø 3x10	Ø 5x14	Ø 5x14	Ø 5x14	Ø 6x14
④	identification plate				
⑤	Mounting interface CETOP 4.2-4-03-350 (GN6)				
⑥ X tap	-	-	-	3/8" BSP	3/8" BSP
Mass [kg]	1,20	2,30	4,00	7,40	10,50

Note: Fastening bolts class 12.9 UNI 5391 are recommended for cover installation

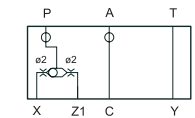
10.4 - DF1 type covers



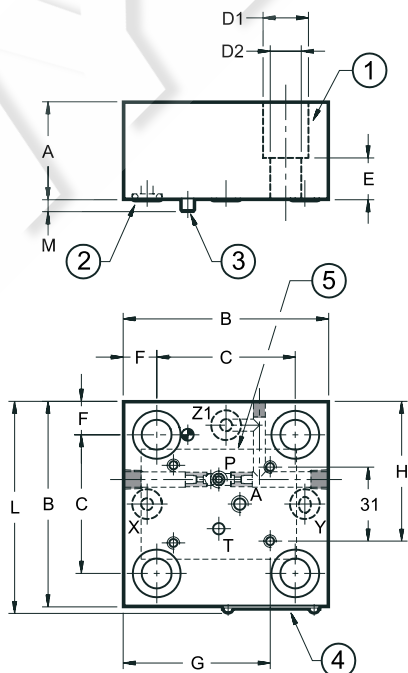
LP25DF1
LP32DF1



10.5 - DF2 type covers



LP25DF2
LP32DF2



dimensions in mm

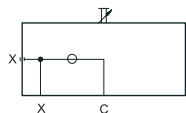
	NOMINAL SIZE			
	25		32	
	COVER TYPE			
	DF1	DF2	DF1	DF2
A	40		40	
B	85		100	
C	58		70	
D1	19		25	
D2	13		17	
E	17		22	
F	13,5		15	
G	62	61	59,5	71,5
H	58		65,5	
L	87,5		102,5	
M	5		5	
ports predisposed for restrictors M6x8	P	P	P	P
	B	A	B	A

① fastening bolts	4 M12x35	4 M16x45
② n. OR type	4 3 2037	4 3 2037
③ locating pin	Ø 5x14	Ø 5x14
④	identification plate	
⑤	mounting interface CETOP 4.2-4-03-350 (GN6)	
Mass [kg]	2,30	4,00

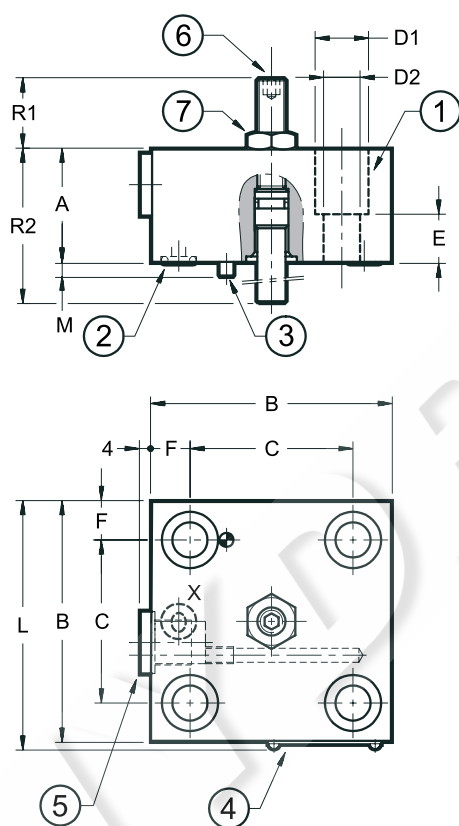
Note: Fastening bolts class 12.9 UNI 5391 are recommended for cover installation

10.6 - Q type covers

dimensions in mm



LP16Q
LP25Q
LP32Q
LP40Q

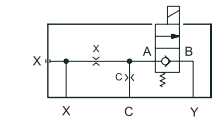


	NOMINAL SIZE			
	16	25	32	40
A	29	40	50	50
B	65	85	100	125
C	46	58	70	85
D1	13,5	19	25	31
D2	9	13	17	21
E	18	17	22	30
F	9,5	13,5	15	20
L	67,5	87,5	102,5	127,5
M	4	5	5	5
R1	6,3 ÷ 15,3	8,4 ÷ 21	10,2 ÷ 25	8,0 ÷ 25
R2	61 ÷ 70	70 ÷ 82,6	89 ÷ 103,8	111 ÷ 128
ports predisposed for restrictors M6x8	X port			

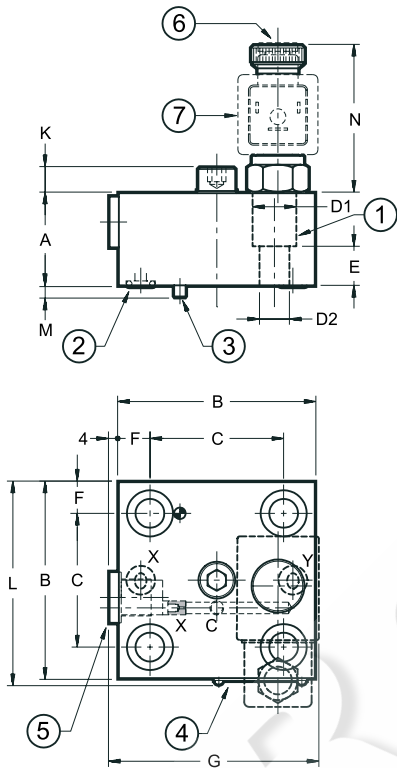
① fastening bolts	4 M8x30	4 M12x35	4 M16x45	4 M20x60
② n. OR type	1 2025	1 2037	1 2037	1 2050
③ locating pin	∅ 3x10	∅ 5x14	∅ 5x14	∅ 5x14
④	identification plate			
⑤ X tap	1/4" BSP	3/8" BSP		
⑥ countersunk hex stroke limiter	clockwise rotation to reduce stroke			
	1 turn = 1,25 mm spanner 4	1 turn = 1,5 mm spanner 5	1 turn = 1,75 mm spanner 6	
⑦ locking nut	spanner 13	spanner 17	spanner 19	
Mass [kg]	1,20	2,30	4,00	7,40

Note: Fastening bolts class 12.9 UNI 5391 are recommended for cover installation

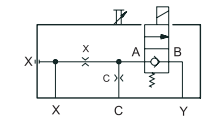
10.7 - C type covers



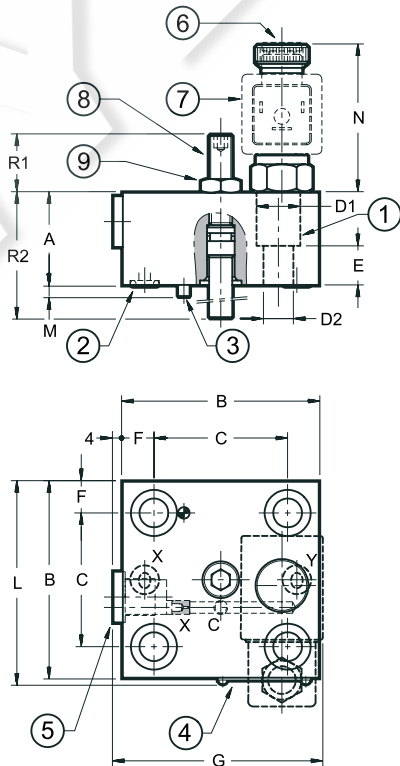
LP25C
LP32C



10.8 - CQ type covers



LP25CQ
LP32CQ



dimensions in mm

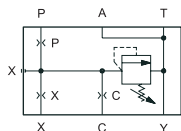
	NOMINAL SIZE	
	25	32
A	40	50
B	85	100
C	58	70
D1	19	25
D2	13	17
E	17	22
F	13,5	15
G	91	105,5
L	87,5	102,5
M	5	5
N	63	63
R1	8,4 ÷ 21	10,2 ÷ 25
R2	70 ÷ 82,6	89 ÷ 103,8
restrictors M6x8 X / C	Ø 0,8	Ø 1,0

① fastening bolts	4 M12x35	4 M16x45
②	2 OR 2037	2 OR 2037
③ locating pin	Ø 5x14	Ø 5x14
④	identification plate	
⑤ X tap	3/8" BSP	3/8" BSP
⑥	check valve	
⑦	coil to be ordered separately (see par. 9.7 and 9.8)	
⑧ countersunk hex stroke limiter	clockwise rotation 1 turn = 1,5 mm spanner 5	1 turn = 1,75 mm spanner 6
⑨ locking nut	spanner 17	spanner 19
Mass [kg]	2,30	4,00

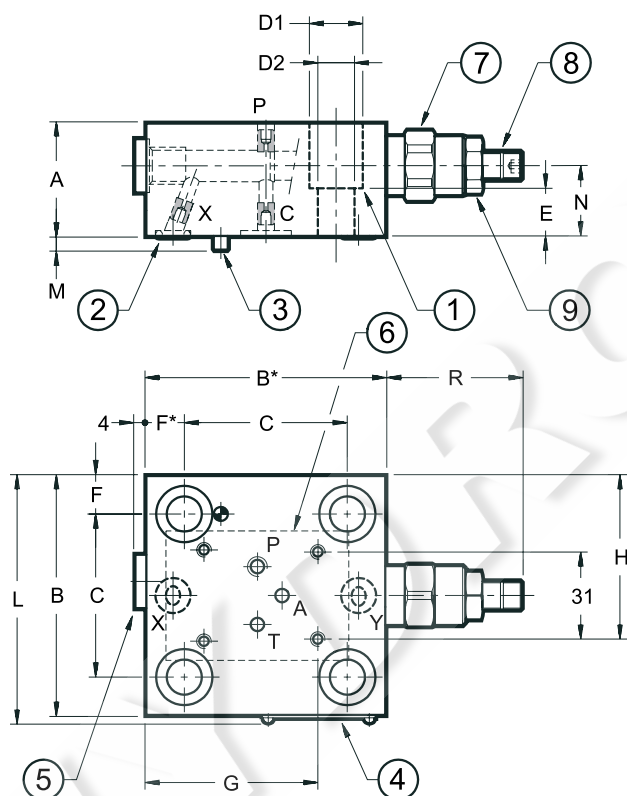
Note: Fastening bolts class 12.9 UNI 5391 are recommended for cover installation

10.9 - DP* type covers

dimensions in mm



LP16DP*
LP25DP*
LP32DP*



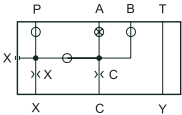
	NOMINAL SIZE		
	16	25	32
A	39	40	40
B	65	85	100
B*	75	85	100
C	46	58	70
D1	13,5	19	25
D2	9	13	17
E	18	17	22
F	9,5	13,5	15
F*	19,5	13,5	15
G	52	64	71,5
H	48	58	65,5
L	67,5	87,5	102,5
M	4	5	5
N	24	25	25
R	42 ÷ 48,5	42 ÷ 48,5	42 ÷ 48,5
restrictor diameter	X 0,8 C 1,0 P 1,0	0,8 1,0 1,0	0,8 1,2 1,0

①	fastening bolts	4 M8x30	4 M12x35	4 M16x45
②	n. OR type	2 2025	2 2037	2 2037
③	locating pin	Ø 3x10	Ø 5x14	Ø 5x14
④		identification plate		
⑤	X tap	1/4" BSP		
⑥		Mounting interface CETOP 4.2-4-03-350 (GN6)		
⑦		pressure control valve		
⑧		Countersunk hex adjustment screw - spanner 6 clockwise rotation to increase pressure		
⑨		locking nut - spanner 19		
Mass [kg]		1,36	2,46	4,16

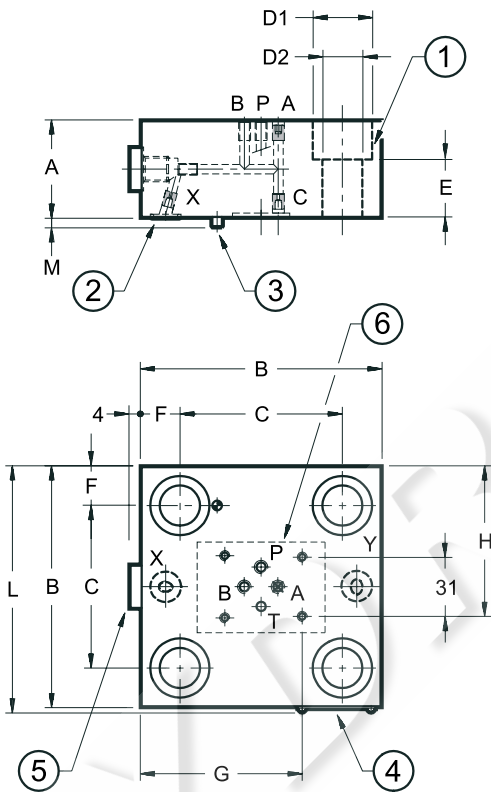
Note: Fastening bolts class 12.9 UNI 5391 are recommended for cover installation

10.10 - DP type covers

dimensions in mm



LP40DP
LP50DP



	NOMINAL SIZE	
	40	50
A	50	50
B	125	140
C	85	100
D1	31	31
D2	21	21
E	30	30
F	20	20
G	84	91,5
H	78	85,5
L	127,5	142,5
M	5	5
restrictor diameter M6x8	X 1,0 C 1,2	1,0 1,2
ports predisposed for restrictors M6x8	P B	P B

① fastening bolts	4 M20x60	4 M20x60
② $\frac{n.1}{OR}$ type	1 2050	1 2050
③ locating pin	Ø 5x14	Ø 6x14
④	identification plate	
⑤ X tap	3/8" BSP	3/8" BSP
⑥ note 1	Mounting interface CETOP 4.2-4-03-350 (GN6)	
Mass [kg]	7,40	10,50

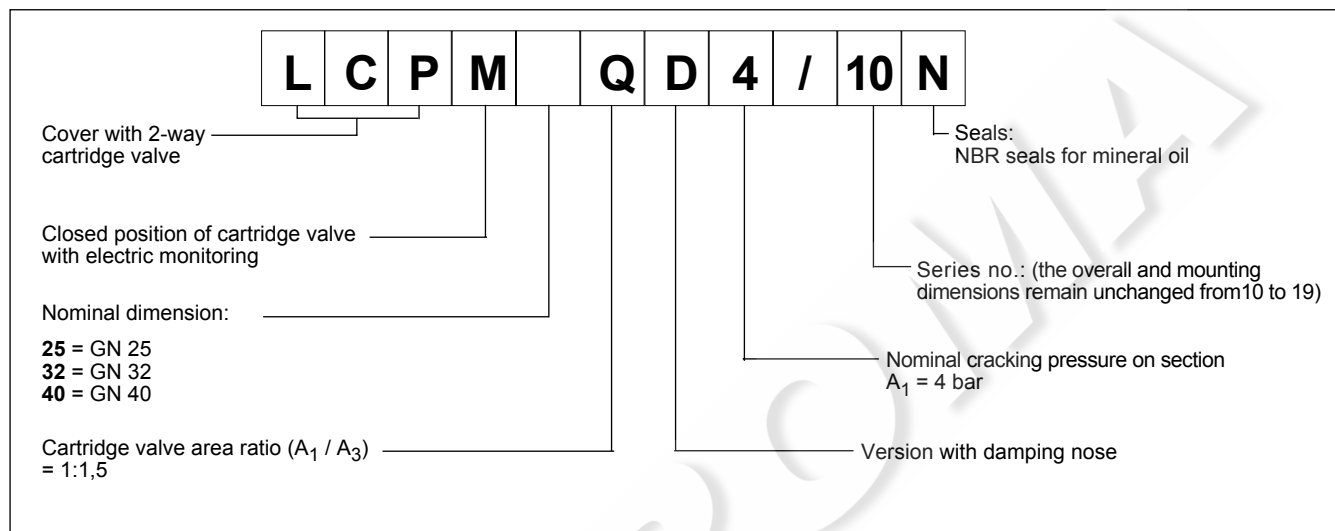
Note 1: LP40DP and LP50DP covers can realise pressure control function together with MCD*-SP valve (to be ordered separately - see catalogue 61 200).

Note: Fastening bolts class 12.9 UNI 5391 are recommended for cover installation

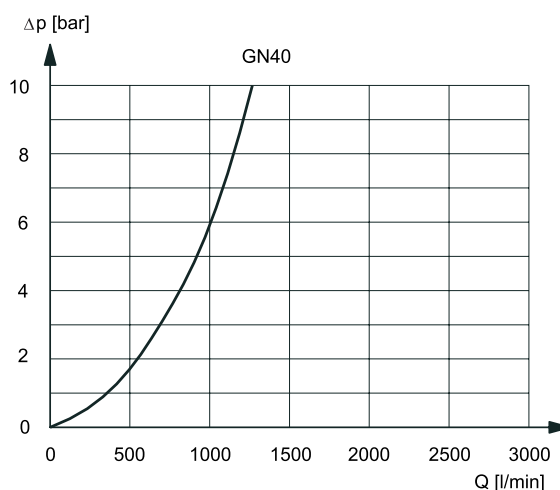
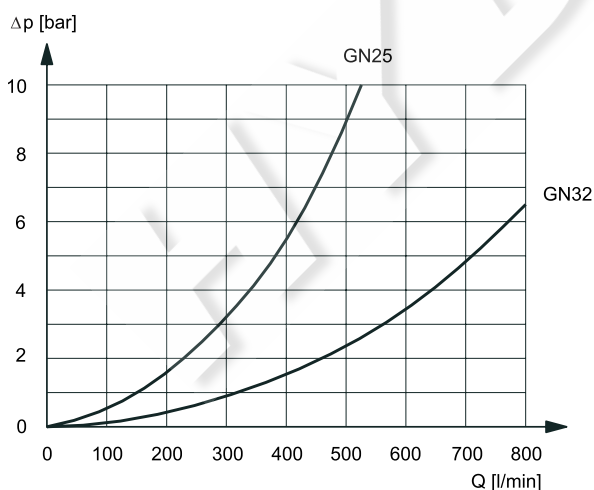
11 - MONITORED LOGIC ELEMENTS

Monitored logic elements are made of a directional function cartridge valve and a cover with built-in inductive proximity sensor. The PNP type sensor with closed contact states the condition of A↔B intercepted flow.

11.1 - Identification code of monitored logic elements



11.2 - CHARACTERISTIC CURVES (values obtained with viscosity 36 cSt at 50°C)



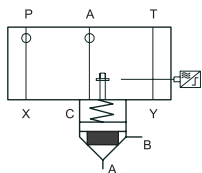
11.3 - Logic element symbol and functional diagrams

Logic element symbol	Functional diagrams	Description
		<p>Piloting of cartridge valve by means of solenoid valve type MD1D-TA (to be ordered separately - see catalogue 41 200)</p> <ul style="list-style-type: none"> - solenoid valve OFF = A↔B intercepted flow - solenoid valve ON = A↔B free flow
		<p>Piloting of cartridge valve by means of connection plate code 1950751 to be ordered separately.</p>
<p>Electrical diagram</p>		<p>For technical characteristics of proximity sensor and relevant connector see par. 11.4</p> <p>VALVE CLOSED= CLOSED CONTACT (A↔B intercepted flow)</p> <p>VALVE OPEN= OPEN CONTACT (A↔B free flow)</p>

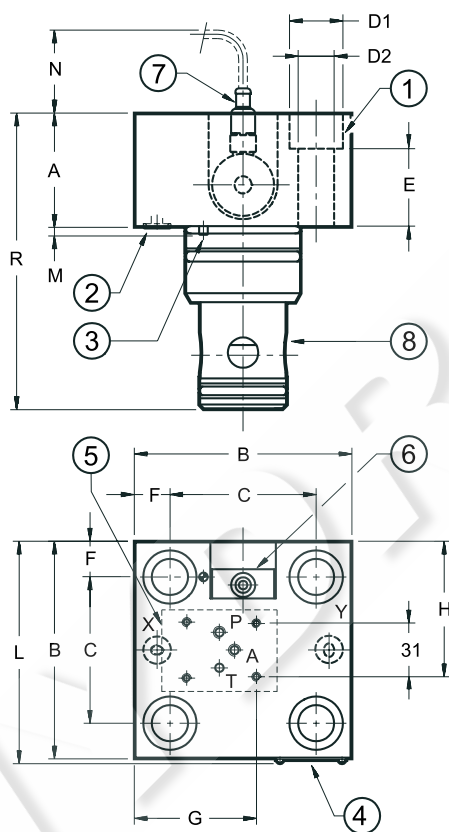
11.4 - Technical characteristics of proximity sensor and relevant connector

PROXIMITY SENSOR		ELECTRIC CONNECTOR (to be ordered separately)	
Inductive sensor type:		PNP	
Rated voltage	Vdc	24	
Power supply voltage range	Vdc	10 ÷ 30	
Absorbed current	mA	200	
Output	normally open contact		
Electric protection	- polarity inversion - short circuit - overvoltage		
Max operating pressure	bar	350	
Electric connection	with connector		
Operating temperature range	°C	-25 ÷ +80	
Class of protection according to IEC 144 Atmospheric agents	IP68		
Spool position LEDS	NO (present on connector)		
		<p>ECM3S / M12L / 10 -</p> <p>Pre-wired connector M12 - IP68 - cable with three 0.34 mm² conductors length 5 m. - cable material: polyurethane resin (oil resistant)</p> <p>LEDS: - valve at rest yellow LED ON - green LED ON switched valve yellow LED OFF - green LED ON</p> <p>NOTE: The green led indicates the presence of power supply voltage to the connector.</p> <p>supplied connector: Green led ON not supplied connector: Green led OFF</p>	

11.5 - OVERALL AND MOUNTING DIMENSIONS MONITORED LOGIC ELEMENTS



LPCM25QD4
LPCM32QD4
LPCM40QD4



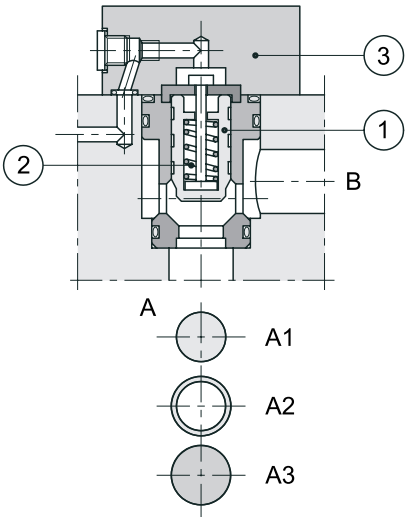
dimensions in mm

	NOMINAL SIZE		
	25	32	40
A	50	60	65
B	85	100	125
C	58	70	85
D1	19	25	31
D2	13	17	21
E	31	22	30
F	13,5	15	20
G	60	61	70
H	57,5	65,5	82
L	87,5	102,5	127,5
M	5	5	5
N	60	50	50
R	122	145	170
ports predisposed for restrictors M6x8	P A	P A	P A

① fastening bolts	4 M12x35	4 M16x45	4 M20x60
② n. OR type	2 2025	2 2037	2 2050
③	elastic pin \varnothing 5x14		
④	identification plate		
⑤	Mounting interface CETOP 4.2-4-03-350 (GN6)		
⑥	proximity sensor		
⑦	Connector for proximity sensor (to be ordered separately see par. 11.4)		
⑧	Cartridge valve always supplied with cover		
Mass [kg]	3.0	5.3	9.5

Note : for cartridge valve seat dimensions see par. 5 - dimensions 25 - 32 - 40

12 - NORMALLY OPEN LOGIC ELEMENTS



- The normally open logic elements are used as suction or filling valves
- They are made of a 2-way cartridge valve with ISO7368 / DIN24342 cavity bore and a control cover ③.
- The cartridge valve has an area ratio $A_1/A_3 = 1 : 1,5$. The poppet ① is normally open thanks to the spring ②. The poppet closes when the piloting pressure acting on area A_3 is higher than the force of the pressure acting either on area A_1 (pressure on A port) or on area A_2 (pressure on B port), added to the spring load value.

12.1 - Identification code of cartridge valve

	L	C		-	A	S	2	/	10	N
--	----------	----------	--	----------	----------	----------	----------	----------	-----------	----------

Cartridge valve

Nominal dimension:
16 = GN 16
25 = GN 25
32 = GN 32

Normally open version
 Area ratio $A_1 / A_3 = 1 : 1,5$

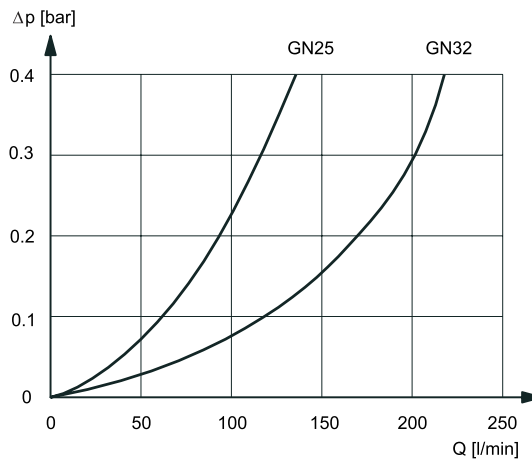
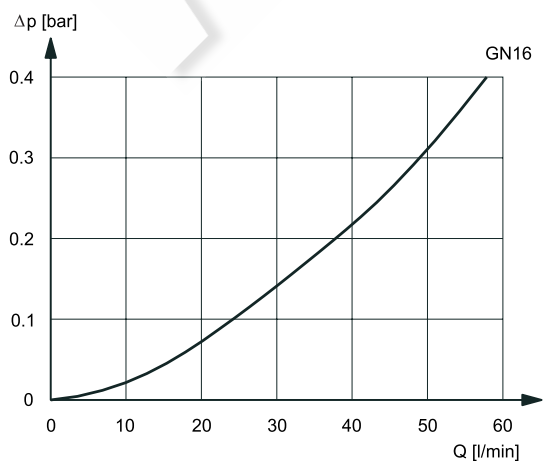
Standard version

Seals:
NBR seals for mineral oil

Series no.: (the overall and mounting dimensions remain unchanged from 10 to 19)

Nominal closing pressure = 2 bar

12.2 - CHARACTERISTIC CURVES (values obtained with viscosity 36 cSt at 50°C)



12.3 - Seat dimensions for normally open cartridge valves LC*-A

See par. 5.

12.4 - Interface dimensions of covers LP*RA

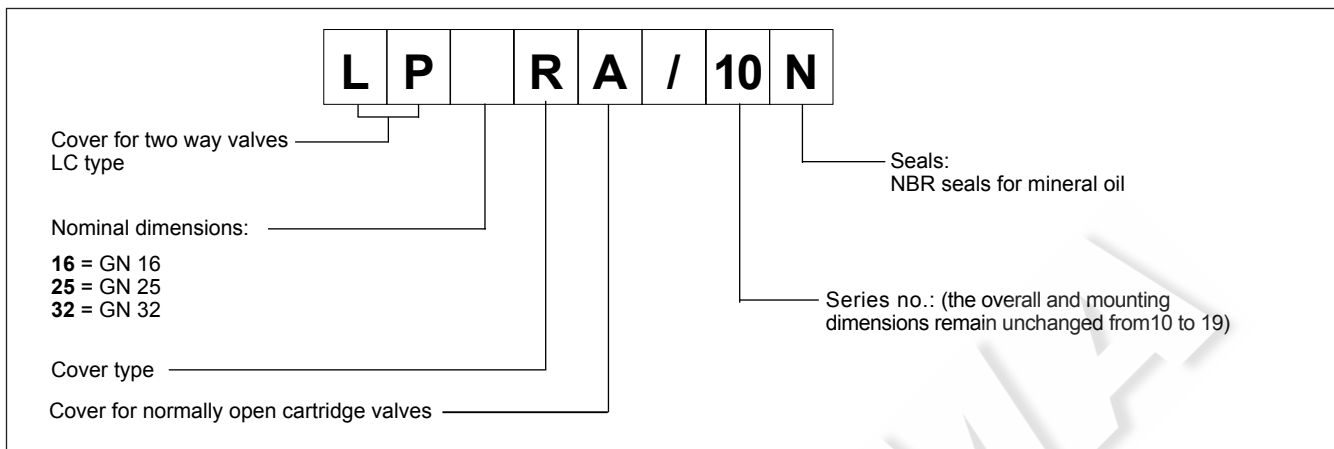
See par. 6.

12.5 - TECHNICAL CHARACTERISTICS (normally open cartridge valve with relevant covers)

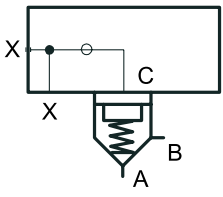
Max operating pressure of cartridge valve LC*-A	bar	420
Max operating pressure limit for RA type covers	bar	350
Ambient temperature range	°C	-20 ÷ +50
Fluid temperature range	°C	-20 ÷ +80
Fluid viscosity range	cSt	2.8 ÷ 380
Recommended viscosity	cSt	25
Fluid contamination degree		< according to NAS 1638 class 9

		NOMINAL SIZE				
		16	25	32		
Area A ₁	cm ²	1,89	3,84	6,79		
Area A ₂	cm ²	0,94	1,89	3,39		
Area A ₃	cm ²	2,83	5,73	10,18		
Opening stroke h	cm	0,90	1,26	1,48		
Piloting volume	cm ³	2,55	7,22	15,1		
Minimum closing pressure	bar	2,0	2,0	2,0		
Max recommended flow with Δp = 0,3 bar during suction and viscosity 36 cSt)	l/min	50	120	200		
Mass	kg	0,25	0,50	1,10		

12.6 - Identification code of cover

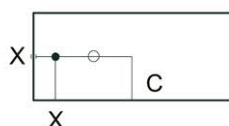


12.7 - Functional diagram of normally open logic element

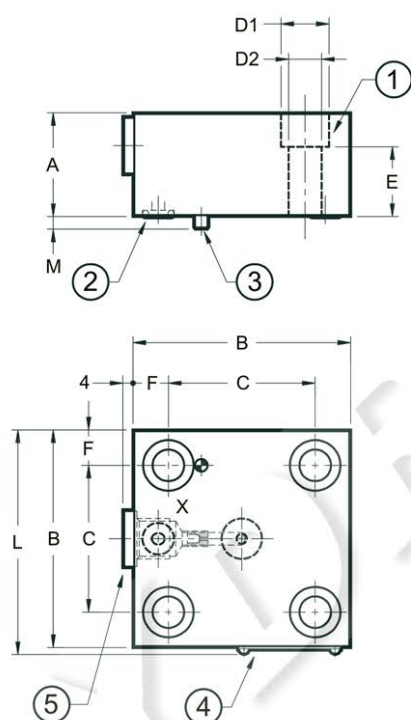
Functional diagram	Description
	<p>Check valve function with valve piloting through X port, available with mounting surface or with pipe connection 1/4" BSP.</p>

12.8 - OVERALL AND MOUNTING DIMENSIONS OF COVERS FOR NORMALLY OPEN LOGIC ELEMENTS

RA type cover



LP*16RA
LP*25RA
LP*32RA



dimensions in mm

	NOMINAL SIZE		
	16	25	32
A	29	30	40
B	65	85	100
C	46	58	70
D1	13,5	19	25
D2	9	13	17
E	18	17	22
F	9,5	13,5	15
L	67,5	87,5	102,5
M	4	5	5
ports predisposed for restrictors M6x8	port X		

① fastening bolts	4 M8x30	4 M12x35	4 M16x45
② n. OR type	1 2025	1 2037	1 2037
③ elastic pin	Ø 3x10	Ø 5x14	Ø 5x14
④	identification plate		
⑤ X tap	1/4" BSP		
Mass [kg]	1,20	2,30	4,00

Note: Fastening bolts class 12.9 UNI 5391 are recommended for cover installation