DUPLOMATIC
HYDRAULICS

LOGIC ELEMENTS

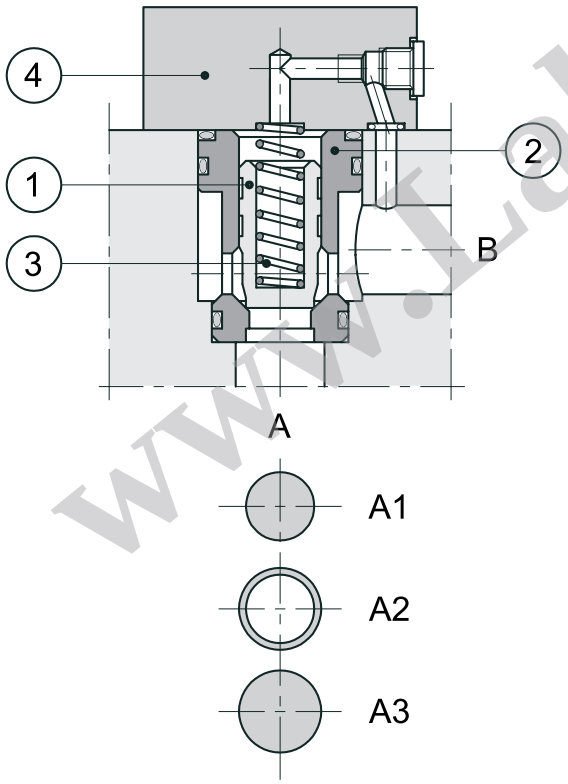
LC* CARTRIDGE VALVES
ISO 7368 - DIN 24342

LP* COVERS FOR CARTRIDGE VALVES

ND 16-25-32-40-50-63

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 - 63.

— 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. 8 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:
A_1 - corresponding to the seat diameter area, considered as reference area = 1
A_3 - corresponding to the jacket internal diameter area.
A_2 - corresponding to the difference between A_3 - A_1
The area ratio A_1/A_3 is 1/1,5.
The valve opens when the pressure acting either on area A_1 (flow from A to B) or on area A_2 (flow from B to A) is higher than the pressure acting on area A_3 (added to the spring load value).

- P type: this valve is used for pressure control.
In this case the areas A_1 and A_3 are equivalent (area ratio 1:1) and the valve enables the flow direction from A to B only.

1 - IDENTIFICATION CODE FOR CARTRIDGE VALVES

L	C		-				/		N

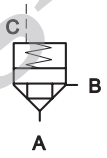
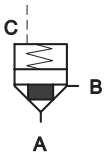
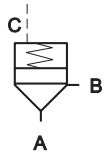
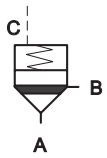
Cartridge valve

Seals:
NBR seals for mineral oil

Area ratio (A_1 / A_3):
Q = 1:1,5 (flow control)
P = 1:1 (pressure control)

Version type:
S = standard version
D = version with damping nose

Nominal cracking pressure on section A1:
0,5 = 0,5 bar
2 = 2 bar
4 = 4 bar
(other cracking pressure values available on request)

Nominal dimension (availability)						CARTRIDGE VALVE TYPE	SYMBOL	SERIES NO. (the overall and mounting dimensions remain unchanged from 10 to 19)
16 GN16	**25** GN25	**32** GN32	**40** GN40	**50** GN50	**63** GN63			
X	X	X	X	X	X	**QS2**		**10**
X	X	X	X	X		**QS0,5**		
X	X	X	X	X	X	**QD4**		**10**
X	X	X	X	X	X	**PS2**		**11**
	X					**PD4**		**10**

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)

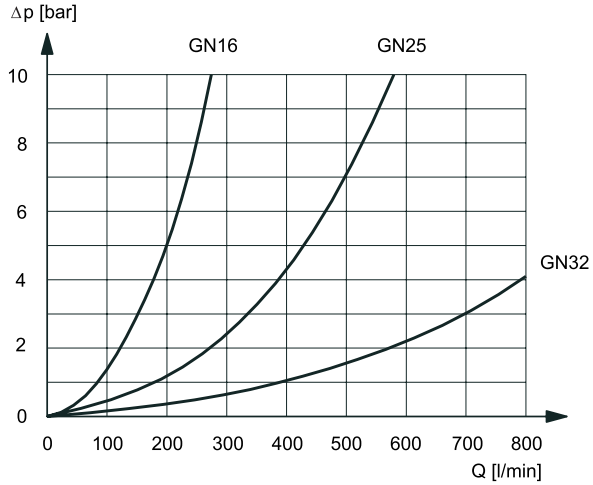
		NOMINAL SIZE					
		16	**25**	**32**	**40**	**50**	**63**
Area A_1	cm^2	1,89	3,84	6,79	11,04	19,63	30,19
Area A_2	cm^2	0,94	1,89	3,39	5,58	8,64	13,98
Area A_3	cm^2	2,83	5,73	10,18	16,62	28,27	44,17
Opening stroke h	cm	0,94	1,28	1,5	1,7	2	2,4
Opening volume	cm^3	2,66	7,33	15,27	28,25	56,54	106
Cracking pressure A → B spring 0,5	bar	0,5	0,5	0,5	0,5	0,5	
Cracking pressure A → B spring 2	bar	2	2	2	2	2	2
Cracking pressure A → B spring 4	bar	4	4	4	4	4	4
Cracking pressure B → A spring 0,5	bar	1	1	1	1	1,1	
Cracking pressure B → A spring 2	bar	4,1	4,2	4,1	4	4,5	4,3
Cracking pressure B → A spring 4	bar	7,9	8,1	8	7,9	9	8,6
Max recommended flow (version S)	l/min	250	500	900	1300	2000	3000
Max recommended flow (version D)	l/min	200	450	700	1100	1700	2700
Mass	kg	0,25	0,5	1,1	1,9	3,9	7,8

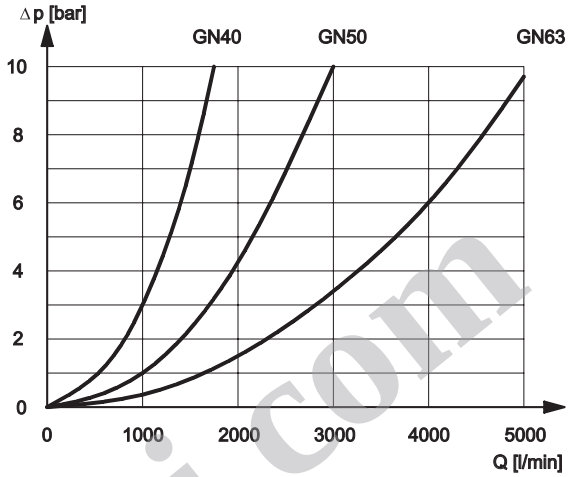
3.2 - Cartridge valves type P performances (pressure control function)

		NOMINAL SIZE					
		16	**25**	**32**	**40**	**50**	**63**
Area A_1 = Area A_3	cm^2	2,83	5,73	10,18	16,62	28,27	44,17
Cracking pressure spring 2	bar	2	2	2	2	2	2
Cracking pressure spring 4	bar	4	4	4	4	4	4
Max recommended flow (version S)	l/min	200	400	600	1000	1500	2500
Max recommended flow (version D)	l/min	-	250	-	-	-	-
Mass	kg	0,25	0,5	1,1	1,9	3,9	7,8

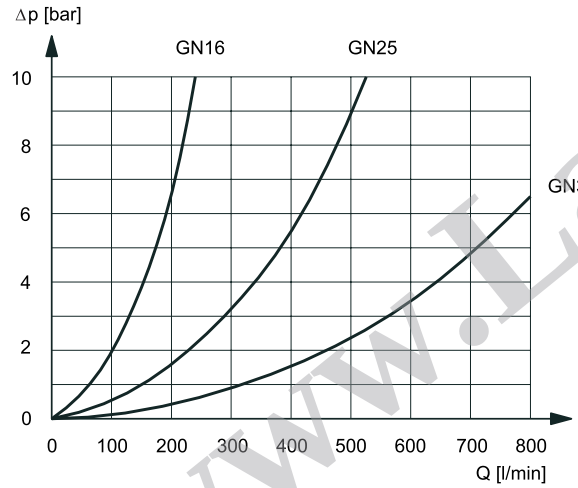
4 - CHARACTERISTIC CURVES (values obtained with viscosity 36 cSt at 50°C)

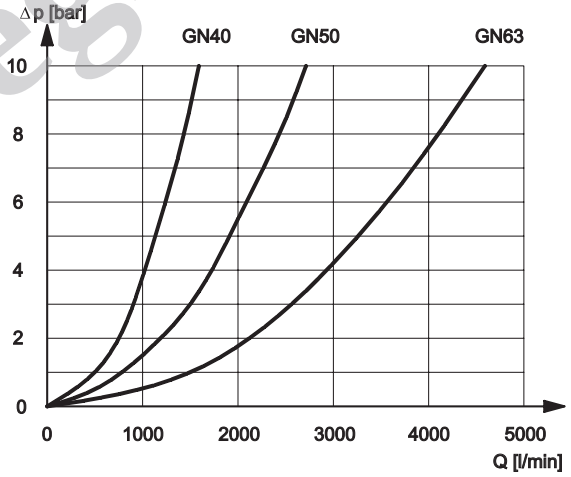
4.1 - Flow control function without damping nose LC*-QS



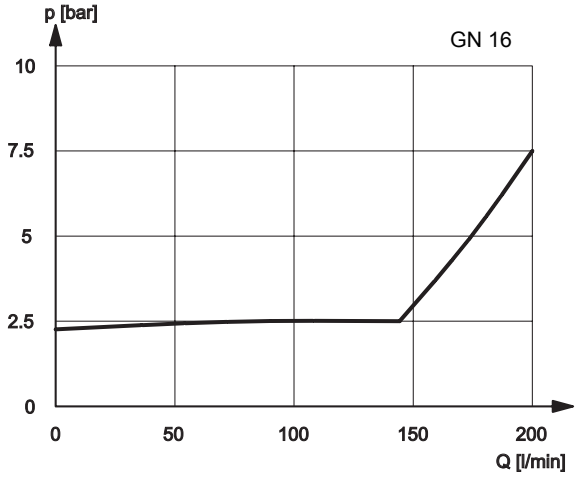


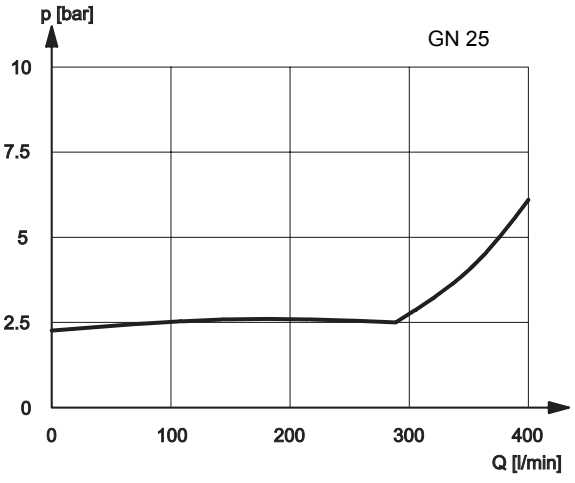
4.2 - Flow control function with damping nose LC*-QD

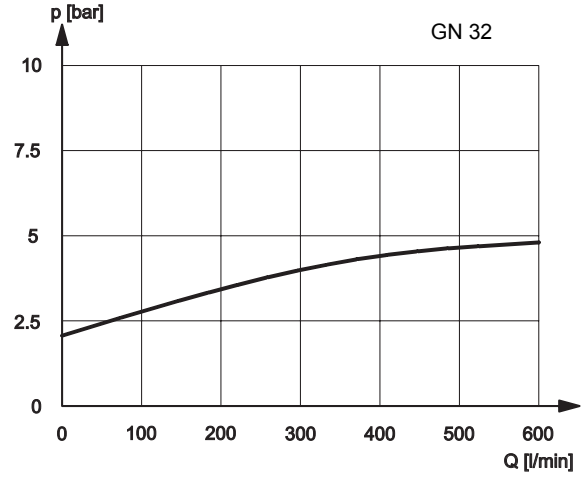


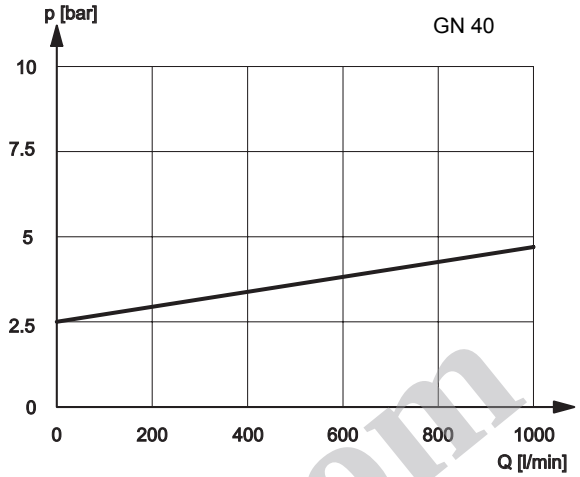


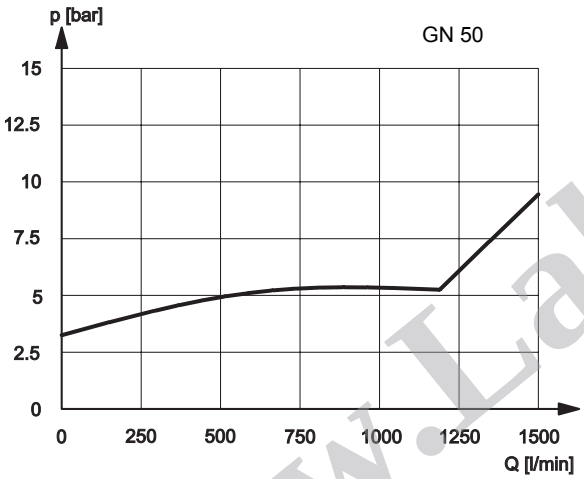
4.3 - Pressure control function without damping nose LC*-PS

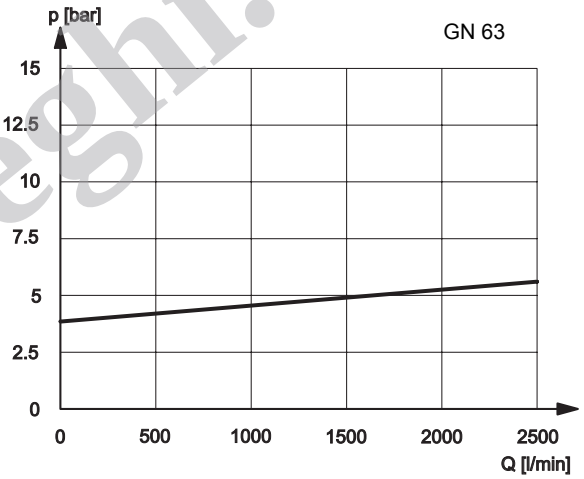




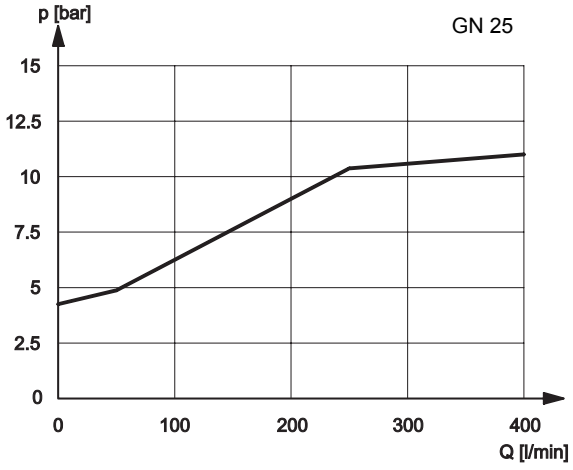




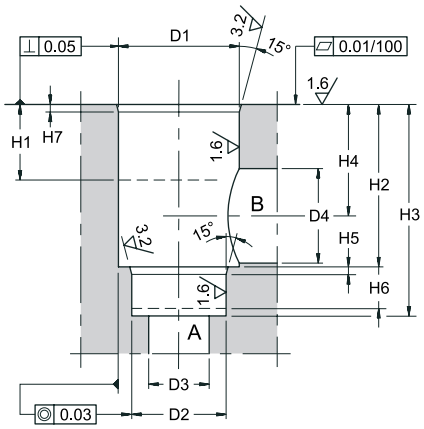




4.4 - Pressure control function with damping nose LC*-PD

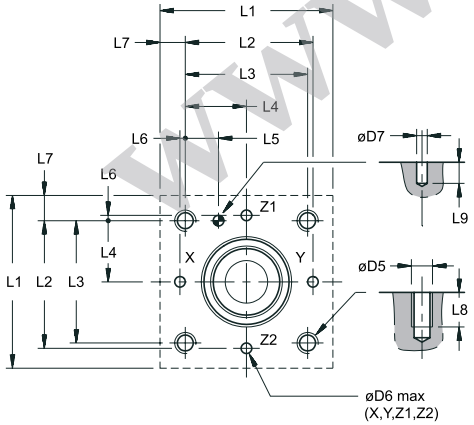


5 - LC CARTRIDGE VALVES SEAT DIMENSIONS ACCORDING TO ISO 7368 / DIN 24342



	LC CARTRIDGE VALVES NOMINAL SIZE					
	16	**25**	**32**	**40**	**50**	**63**
ØD1 ^{H7}	32	45	60	75	90	120
ØD2 ^{H7}	25	34	45	55	68	90
ØD3 max	16	25	32	40	50	63
ØD4	16	25	32	40	50	63
ØD4 max	25	32	40	50	63	80
H1 min	20	30	30	30	35	40
H2 ± 0,1	43	58	70	87	100	130
H3 $^{+0,1}_{0}$	56	72	85	105	122	155
H4 referring to diameter ØD4	34	44	52	64	72	95
H4 referring to diameter ØD4 max	29,5	40,5	48	59	65,5	86,5
H5	2	2,5	2,5	3	3	4
H6 min	11	12	13	15	17	20
H7	2	2,5	2,5	3	4	4

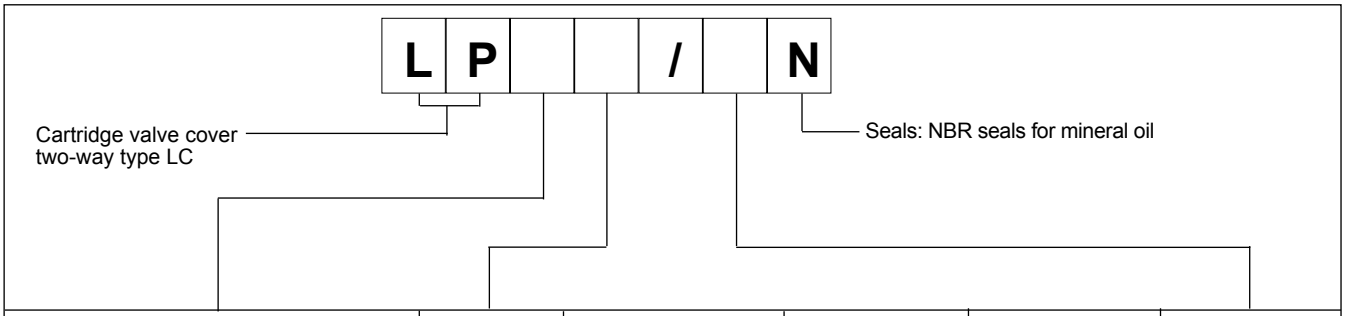
6 - LP CONTROL COVERS INTERFACE DIMENSIONS ACCORDING TO ISO 7368 / DIN 24342

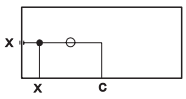
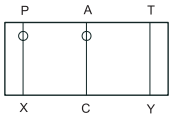
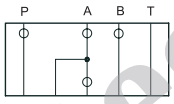
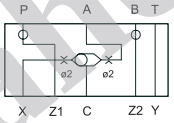
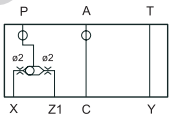
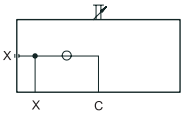
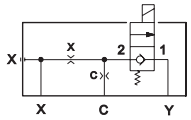
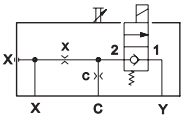
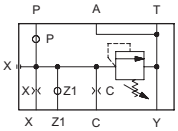
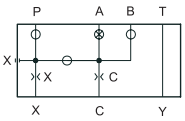


	LP CONTROL COVERS NOMINAL SIZE					
	16	**25**	**32**	**40**	**50**	**63**
ØD5	M8	M12	M16	M20	M20	M30
ØD6 max	4	6	8	10	10	12
ØD7 ^{H13}	4	6	6	6	8	8
L1	*	85	102	125	140	180
L2 ± 0,2	48	62	76	92,5	108	137,5
L3 ± 0,2	46	58	70	85	100	125
L4 ± 0,2	23	29	35	42,5	50	62,5
L5 ± 0,2	12,5	13	18	19,5	20	24,5
L6 ± 0,2	2	4	6	7,5	8	12,5
L7	*	13,5	16	20	20	27,5
L8 min	15	20	28	35	35	52
L9 min	8	8	8	8	8	8

* = cover with special dimensions (see par. 9.2, 9.9)

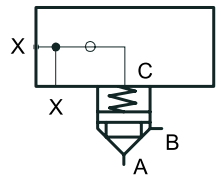
7 - IDENTIFICATION CODE FOR CARTRIDGE VALVE COVERS



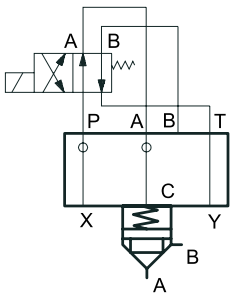
Nominal size (availability)						COVER TYPE	COVER SYMBOL	SEE PAR. FOR DIAGRAMS	SEE PAR. FOR OVERALL DIMENS.	SERIES NO. (the overall dimens. remain unchanged from 10 to19)
16 GN16	25 GN25	32 GN32	40 GN40	50 GN50	63 GN63					
X	X	X				**R**		8.1	9.1	**10**
X	X	X	X	X	X	**D**		8.2	9.2	**10**
X	X	X				**DZ**		8.3	9.3	**10**
X	X					**DF1**		8.4	9.4	**10**
X	X	X				**DF2**		8.5	9.5	**10**
X	X	X	X	X		**Q**		8.6	9.6	**10**
X	X					**C**		8.7	9.7	**11**
X	X					**CQ**		8.8	9.8	**11**
X	X	X				**DP***		8.9	9.9	**11**
			X	X		**DP**		8.10	9.10	**11**

8 - FUNCTIONAL DIAGRAMS

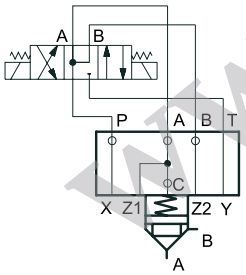
8.1 - R cover for directional control and check valve function with external pilot X

Functional diagrams	Description
	Piloting of the cartridge valve through the X port, available on the mounting surface or with pipe connection 1/4" BSP. 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).

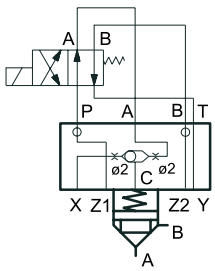
8.2 - D cover for directional control and check valve function

Functional diagrams	Description
	Piloting of the cartridge valve by means of solenoid valve type **DS3-TA** (to be ordered separately - see catalogue 41 150) - solenoid valve OFF = A ↔ B intercepted flow - solenoid valve ON = A ↔ B free flow

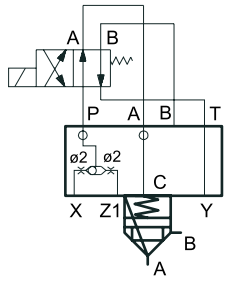
8.3 - DZ cover for directional control with possibility to pilot other cartridges in line

Functional diagrams	Description
	The DZ cover enables the piloting of its cartridge valves and also of other valves connected to Z1 and Z2 pilot lines. The solenoid valve type **DS3-S10** must be ordered separately (see catalogue 41 150).

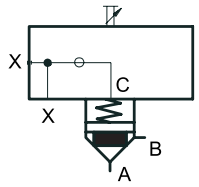
8.4 - DF1 cover for directional control and check function with double pilot line

Functional diagrams	Description
	The DF1 cover gives the possibility of a double pilot line through X and Z1 ports. The solenoid valve type **DS3-TA** must be ordered separately (see catalogue 41 150). - 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).

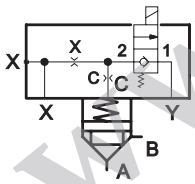
8.5 - DF2 cover for directional control and check function with priority piloting from two external lines

Functional diagrams	Description
	The cartridge valve can be simultaneously piloted from X and Z1 lines. The shuttle valve, integrated in the cover, enables the automatic selection of the pilot line which has the higher pressure (priority line). The solenoid valve type **DS3-TA** must be ordered separately (see catalogue 41 150). - solenoid valve OFF = A ↔ B intercepted flow - solenoid valve ON = A ↔ B free flow

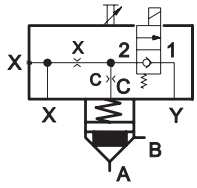
8.6 - Q cover for flow control function

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

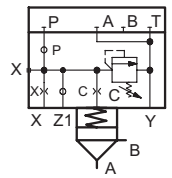
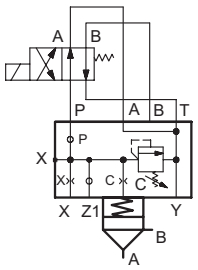
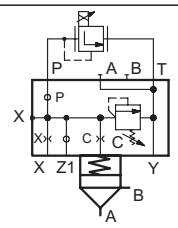
8.7 - C cover for solenoid operated check valve function

Functional diagrams	Description
	Cover with a built-in solenoid valve type KT08-2NC for electrical operated check valve function (see cat. 43 100). The solenoid valve coil must be ordered separately (see cat. 43 100).

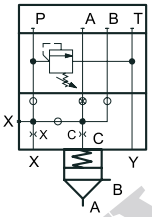
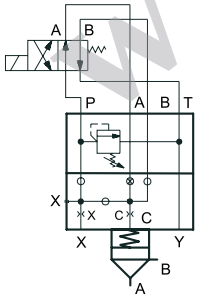
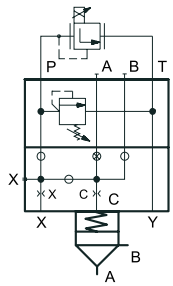
8.8 - CQ cover for flow control and solenoid operated check valve function

Functional diagrams	Description
	Flow control function by means of cover with a stroke limiter and built-in solenoid valve type KT08-2NC for electrical operated check valve function (see cat. 43 100). The solenoid valve coil must be ordered separately (see cat. 43 100).

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

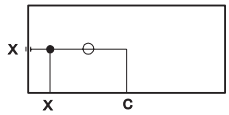
Functional diagrams	Description
	Pressure control function with a built-in relief valve. - max. adjustment pressure DP4 = 100 bar - DP6 = 350 bar The top blanking plate code **1950591** must be ordered separately.
	Pressure control function with electrical unloading by means of **DS3-TA** solenoid valve (to be ordered separately - see catalogue 41 150). - solenoid valve OFF = unloading at minimum pressure - solenoid valve ON = pressure controlled by the built-in relief valve.
	Pressure control function by means of **CDE*** proportional valve (to be ordered separately see catalogue 81 200). - Proportional valve OFF = unloading at minimum pressure - Proportional valve ON = proportional control of pressure

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

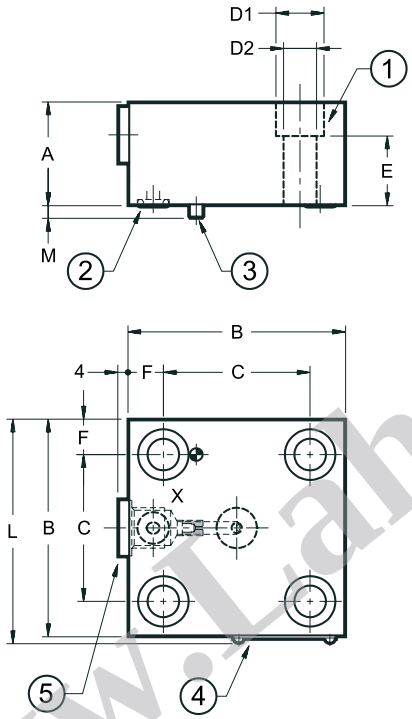
Functional diagrams	Description
	Pressure control function with manual adjustment relief valve. - Relief valve **MCD*-SP** type (to be ordered separately - see catalogue 61 200). - Top blanking plate code **1950591** (to be ordered separately).
	Pressure control function with manual adjustment relief valve and electrical unloading. - Relief valve **MCD*-SP** type (to be ordered separately - see catalogue 61 200). - solenoid valve **DS3-TA** type (to be ordered separately - see catalogue 41 150). - solenoid valve OFF = unloading at minimum pressure - solenoid valve ON = pressure controlled by **MCD*-SP** relief valve.
	Proportional pressure control function. - 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).

9 - OVERALL AND MOUNTING DIMENSIONS FOR CONTROL COVERS

9.1 - R type covers



LP16R
LP25R
LP32R



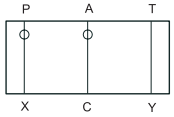
dimensions in mm

	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	X port		

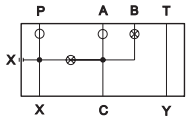
① fastening bolts (note)	4 M8x30	4 M12x35	4 M16x45
② OR n. / type	1 2025	1 2037	1 2037
③ locating pin	Ø 3x10	Ø 5x14	Ø 5x14
④	identification plate		
⑤ X tap	1/4" BSP		
Mass [kg]	1,20	2,30	4,00

Note: Fastening bolts class 12.9 UNI 5931 are recommended for cover installation (to be ordered separately).

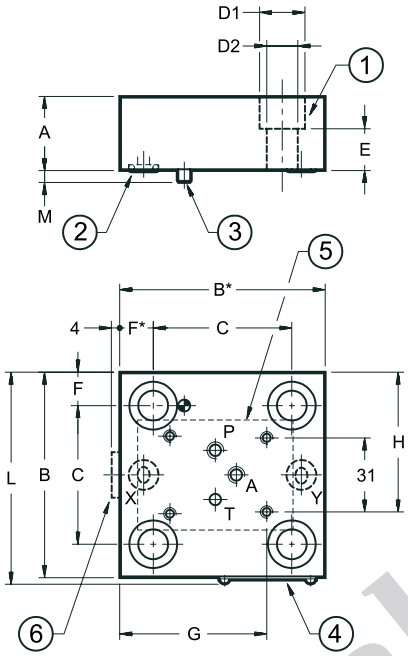
9.2 - D type covers



LP16D
LP25D
LP32D



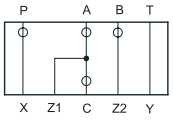
LP40D
LP50D



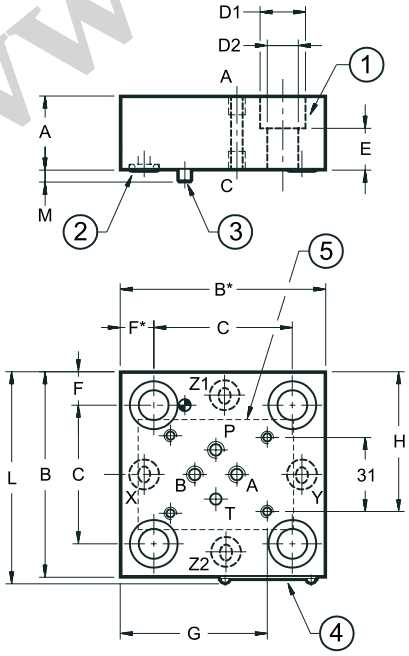
dimensions in mm

	NOMINAL SIZE									
	16		25		32		40	50		
	COVER TYPE									
	D	DZ	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	P A B C	P A	P A B C	P A	P A		

9.3 - DZ type covers



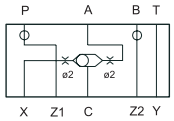
LP16DZ
LP25DZ
LP32DZ



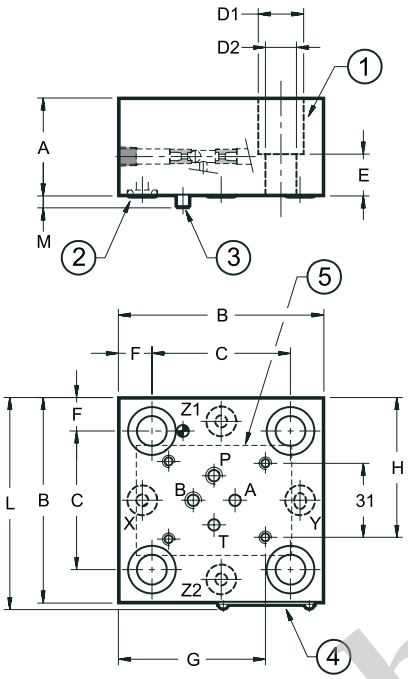
① fastening bolts (note)	4 M8x30	4 M12x35	4 M16x45	4 M20x60	4 M20x60
② n. OR type	2 2025	2 | 4 2037	2 | 4 2037	2 2050	2 2050
③ locating pin	Ø 3x10	Ø 5x14	Ø 5x14	Ø5x14	Ø6x14
④	identification plate				
⑤	Mounting interface CETOP 4.2-4-03-350 (GN6)				
⑥ X tap	-	-	-	3/8” BSP	3/8” BSP
Mass [kg]	1,20	2,30	4,00	7,40	10,50

Note: Fastening bolts class 12.9 UNI 5931 are recommended for cover installation (to be ordered separately).

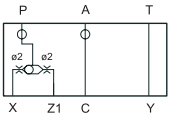
9.4 - DF1 type covers



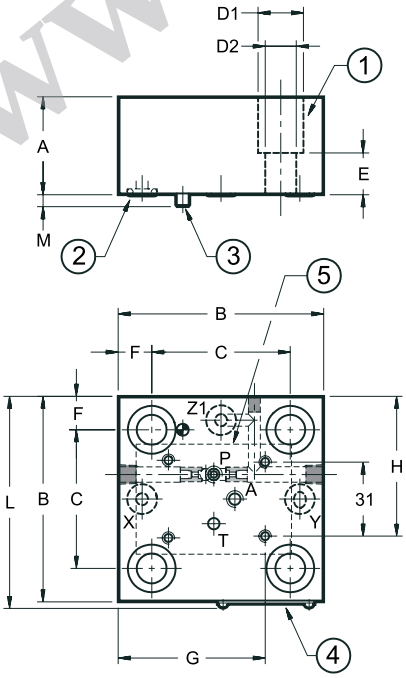
LP25DF1
LP32DF1



9.5 - DF2 type covers



LP25DF2
LP32DF2



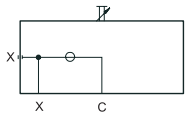
dimensions in mm

	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 B	P A	P B	P A

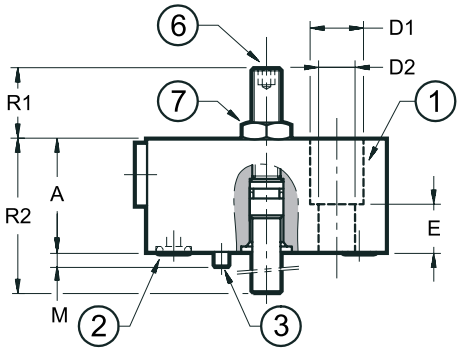
① fastening bolts (note)	4 M12x35	4 M16x45
② OR n. / type	4 / 3 2037	4 / 3 2037
③ locating pin	Ø 5x14	Ø 5x14
④	identification plate	
⑤	mounting interface CETOP 4.2-4-03-350 (GN6)	
Mass [kg]	2,30	4,00

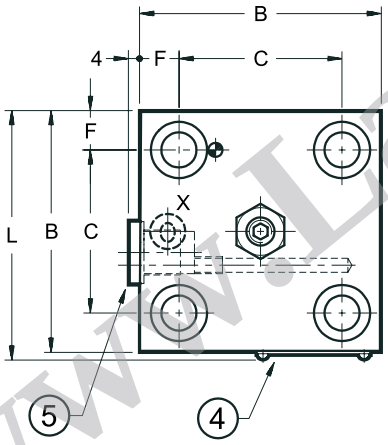
Note: Fastening bolts class 12.9 UNI 5931 are recommended for cover installation (to be ordered separately).

9.6 - Q type covers



LP16Q
LP25Q
LP32Q
LP40Q





dimensions in mm

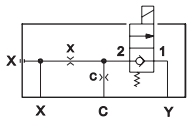
	NOMINAL SIZE			
	16	**25**	**32**	**40**
A	29	40	50	50
B	65	85	100	125
C	46	58	70	85
D1	13,5	19	25	31
D2	9	13	17	21
E	18	17	22	30
F	9,5	13,5	15	20
L	67,5	87,5	102,5	127,5
M	4	5	5	5
R1	6,3 ÷ 15,3	8,4 ÷ 21	10,2 ÷ 25	8,0 ÷ 25
R2	61 ÷ 70	70 ÷ 82,6	89 ÷ 103,8	111 ÷ 128
ports predisposed for restrictors M6x8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

① fastening bolts (note)	4 M8x30	4 M12x35	4 M16x45	4 M20x60
② n. OR type	1 2025	1 2037	1 2037	1 2050
③ locating pin	Ø 3x10	Ø 5x14	Ø 5x14	Ø5x14
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

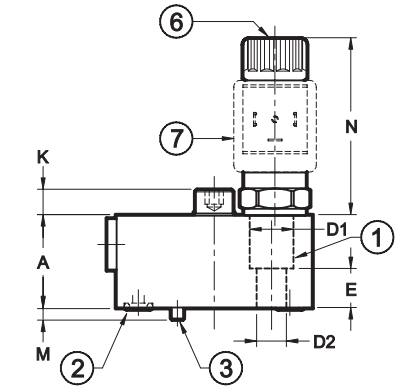
Note: Fastening bolts class 12.9 UNI 5931 are recommended for cover installation (to be ordered separately).

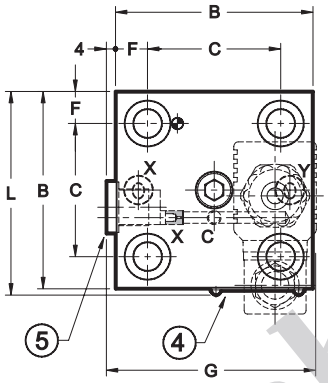
9.7 - C type covers

dimensions in mm



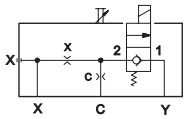
LP25C
LP32C



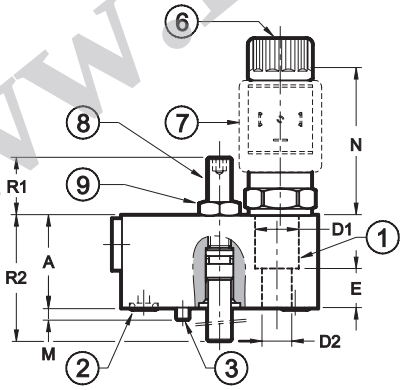


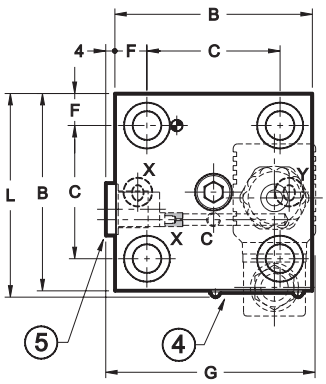
	NOMINAL SIZE	
	25	**32**
A	40	50
B	85	100
C	58	70
D1	19	25
D2	13	17
E	17	22
F	13,5	15
G	92	106,5
L	87,5	102,5
M	5	5
N	77	77
R1	8,4 ÷ 21	10,2 ÷ 25
R2	70 ÷ 82,6	89 ÷ 103,8
restrictors M6x8 X / C	Ø 0, 8	Ø 1,0

9.8 - CQ type covers



LP25CQ
LP32CQ



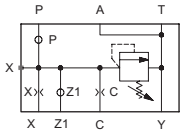


① fastening bolts (note)	4 M12x35	4 M16x45
②	2 OR 2037	2 OR 2037
③ locating pin	Ø 5x14	Ø 5x14
④	identification plate	
⑤ X tap	3/8" BSP	3/8" BSP
⑥	check valve	
⑦	coil to be ordered separately (see par. 8.7 and 8.8)	
⑧ countersunk hex stroke limiter	clockwise rotation to reduce stroke 1 turn = 1,5 mm spanner 5	1 turn = 1,75 mm spanner 6
⑨ locking nut	spanner 17	spanner 19
Mass [kg]	2,30	4,00

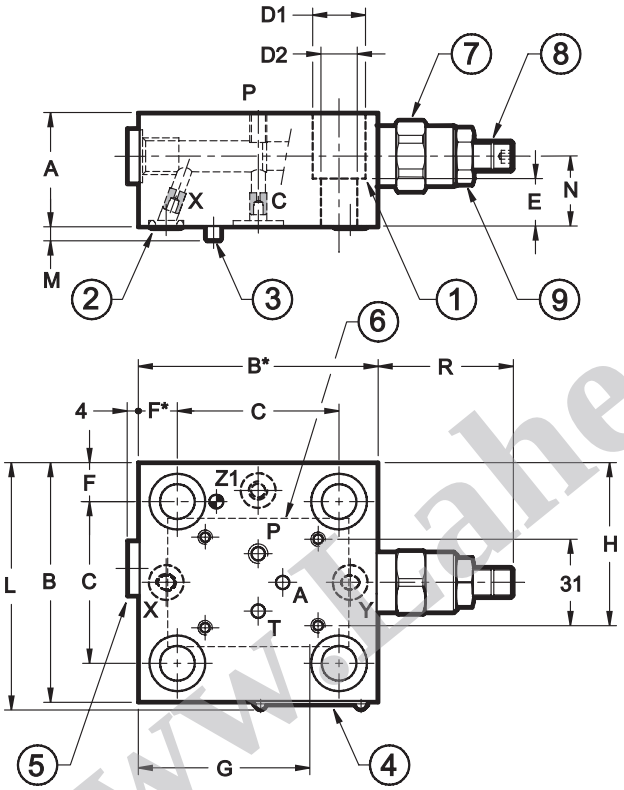
Note: Fastening bolts class 12.9 UNI 5931 are recommended for cover installation (to be ordered separately).

9.9 - DP* type covers

dimensions in mm



LP16DP*
LP25DP*
LP32DP*



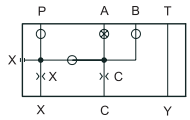
	NOMINAL SIZE		
	16	**25**	**32**
A	39	40	40
B	65	85	100
B*	75	85	100
C	46	58	70
D1	13,5	19	25
D2	9	13	17
E	18	17	22
F	9,5	13,5	15
F*	19,5	13,5	15
G	52	64	71,5
H	48	58	65,5
L	67,5	87,5	102,5
M	4	5	5
N	24	25	25
R	45 ÷ 51,5	45 ÷ 51,5	45 ÷ 51,5
restrictor diameter M6x8 X	1,2	1,2	1,2
restrictor diameter M6x8 C	0,7	0,7	1,5

① fastening bolts (note)	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 5 clockwise rotation to increase pressure		
⑨	locking nut - spanner 17		
Mass [kg]	1,36	2,46	4,16

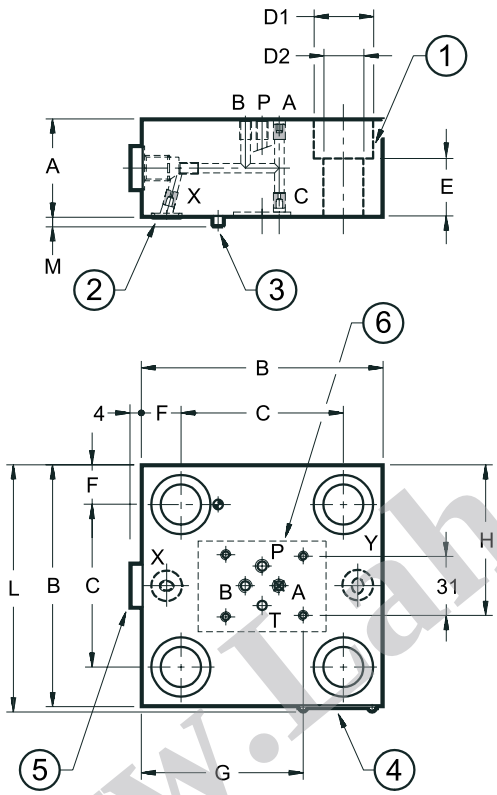
Note: Fastening bolts class 12.9 UNI 5931 are recommended for cover installation (to be ordered separately).

9.10 - 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	1,0
restrictor diameter M6x8 C	1,2	1,2
ports predisposed for restrictors M6x8	P B	P B

① fastening bolts (note)	4 M20x60	4 M20x60
② 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

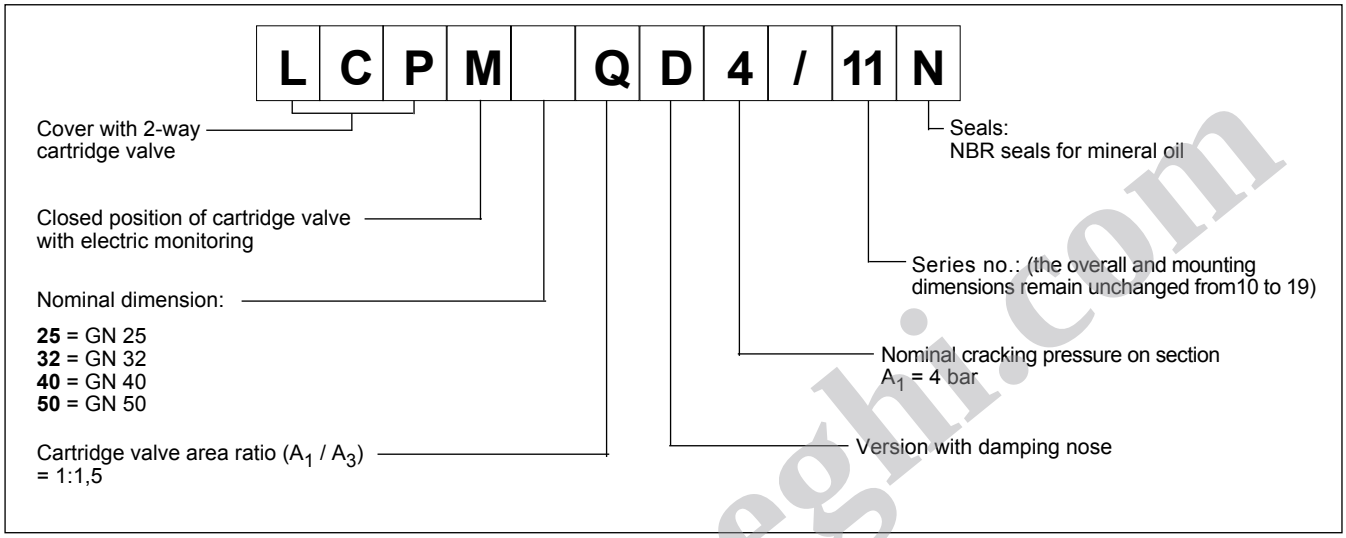
Note 1: LP40DP and LP50DP covers can realise pressure control function together with MCD*-SP valve (to be ordered separately - see catalogue 61 200).

Note: Fastening bolts class 12.9 UNI 5931 are recommended for cover installation (to be ordered separately).

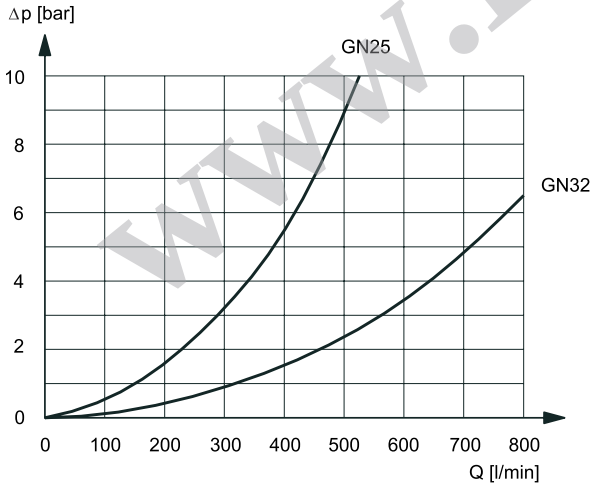
10 - MONITORED LOGIC ELEMENTS

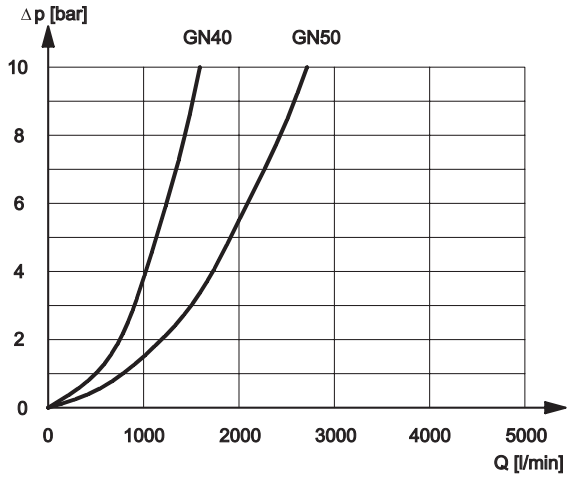
Monitored logic elements are made of a directional function cartridge valve and a cover with built-in inductive proximity sensor. The PNP type sensor with closed contact states the condition of A↔B intercepted flow.

10.1 - Identification code of monitored logic elements

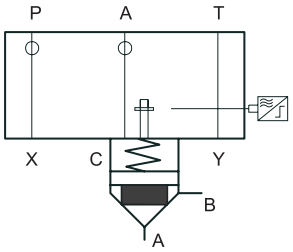
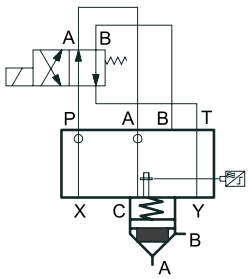
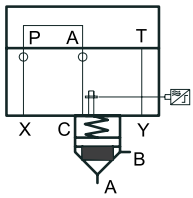
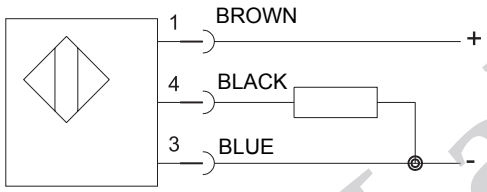


10.2 - CHARACTERISTIC CURVES (values obtained with viscosity 36 cSt at 50°C)





10.3 - Logic element symbol and functional diagrams

Logic element symbol	Functional diagrams	Description
		Piloting of cartridge valve by means of solenoid valve type **DS3-TA** (to be ordered separately - see catalogue 41 150) - solenoid valve OFF = A↔B intercepted flow - solenoid valve ON = A↔B free flow
		Piloting of cartridge valve by means of connection plate code 1950751 to be ordered separately.
Electrical diagram 		For technical characteristics of proximity sensor and relevant connector see par. 10.4 VALVE CLOSED= CLOSED CONTACT (A↔B intercepted flow) VALVE OPEN= OPEN CONTACT (A↔B free flow)

10.4 - Technical characteristics of proximity sensor and relevant connector

PROXIMITY SENSOR

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)

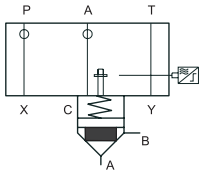
ELECTRIC CONNECTOR
(to be ordered separately)

ECM3S / M12L / 10 -
Pre-wired connector M12 - IP68 - cable with three 0.34 mm^2 conductors length 5 m. - cable material: polyurethane resin (oil resistant)
LEDS: - valve at rest yellow LED ON - green LED ON
switched valve yellow LED OFF - green LED ON

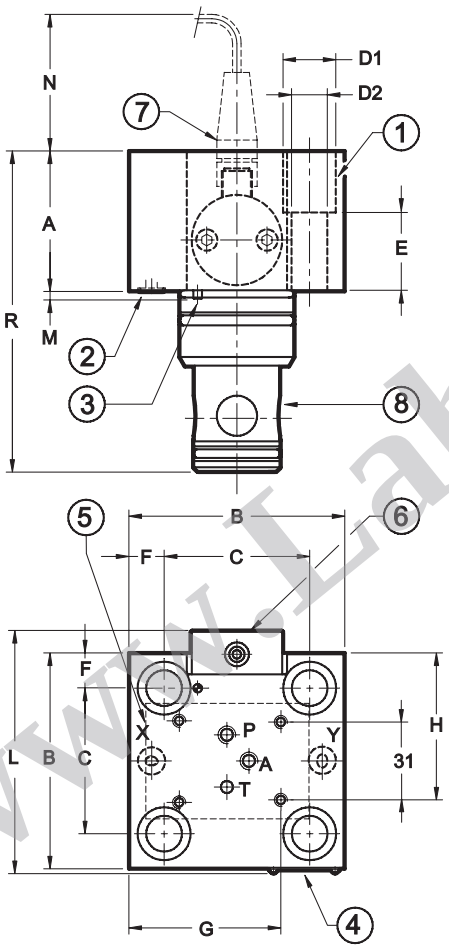
NOTE: The green led indicates the presence of power supply voltage to the connector.
supplied connector: Green led ON
not supplied connector: Green led OFF

10.5 - OVERALL AND MOUNTING DIMENSIONS MONITORED LOGIC ELEMENTS

dimensions in mm



LCPM25QD4
LCPM32QD4
LCPM40QD4
LCPM50QD4

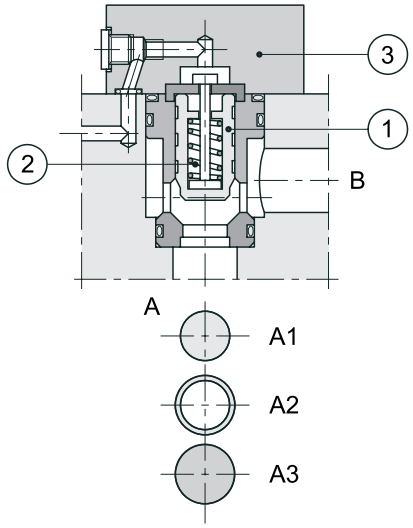


	NOMINAL SIZE			
	25	**32**	**40**	**50**
A	55	65	70	75
B	85	100	125	140
C	58	70	85	100
D1	18,5	25	31	31
D2	12,5	17	21	21
E	31	22	30	35
F	13,5	15	20	20
G	60	61	70	80
H	58	65,5	78	90
L	96,5	108	127,5	142,5
M	5	5	5	5
N	60	50	50	50
R	127	150	175	197
ports predisposed for restrictors M6x8	P A	P A	P A	P A

① fastening bolts (note1)	n.4 M12x50	n.4 M16x45	n.4 M20x60	n. 4 M20x65
② OR n. / type	2 2037	2 2037	2 2050	2 2050
③	elastic pin Ø 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. 10.4)			
⑧	Cartridge valve always supplied with cover			
Mass [kg]	3.0	5.3	9.5	12.5

Note1: Fastening bolts class 12.9 UNI 5931 are recommended for cover installation (to be ordered separately).
Note2: for cartridge valve seat dimensions see par. 5 - dimensions 25 - 32 - 40 - 50.

11 - NORMALLY OPEN LOGIC ELEMENTS



— The normally open logic elements are used as suction or filling valves.

— Recommended suction flow direction from A to B.

— They are made of a 2-way cartridge valve with ISO7368 / DIN24342 cavity bore and acontrol 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.

11.1 - 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
40 = GN 40

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

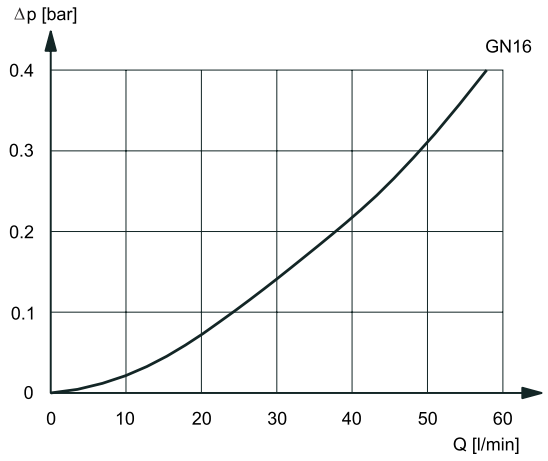
Standard version

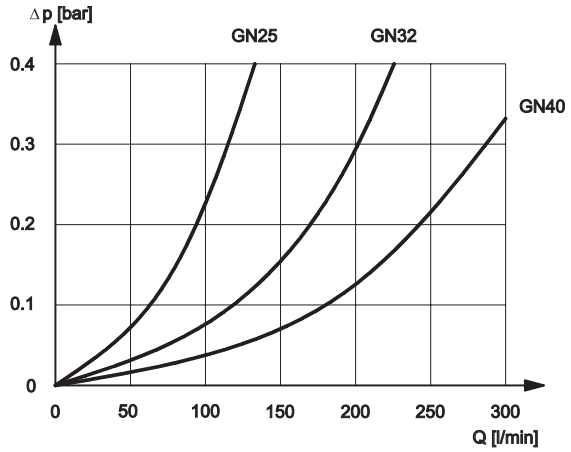
Nominal closing pressure = 2 bar

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

Seals:
NBR seals for mineral oil

11.2 - Characteristic curves with suction flow from A to B (values obtained with viscosity 36 cSt at 50°C)





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

See par. 5.

11.4 - Interface dimensions of covers LP*RA

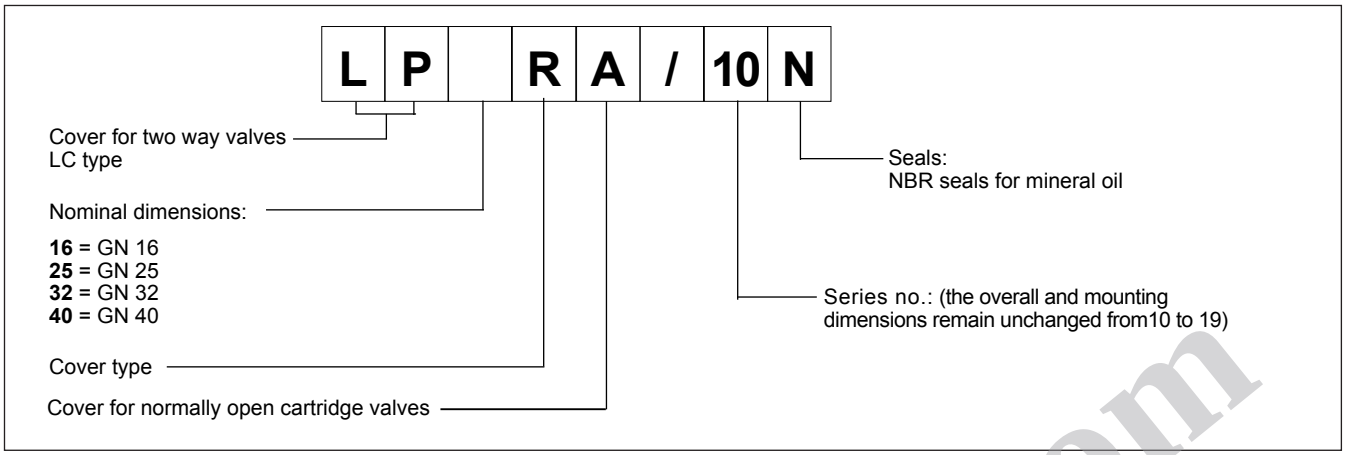
See par. 6.

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

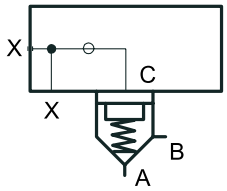
Max operating pressure of cartridge valve LC*-A	bar	420
Max operating pressure limit for RA type covers	bar	350
Ambient temperature range	°C	-20 ÷ +50
Fluid temperature range	°C	-20 ÷ +80
Fluid viscosity range	cSt	2.8 ÷ 380
Recommended viscosity	cSt	25
Fluid contamination degree		< according to NAS 1638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

		NOMINAL SIZE			
		16	**25**	**32**	**40**
Area A_1	cm^2	1,89	3,84	6,79	11,04
Area A_2	cm^2	0,94	1,89	3,39	5,58
Area A_3	cm^2	2,83	5,73	10,18	16,62
Closing stroke h	cm	0,94	1,28	1,5	1,7
Piloting volume	cm^3	2,66	7,33	15,27	28,25
Minimum closing pressure	bar	2	2	2	2
Max recommended flow (with Δp = 0,3 bar during suction and viscosity 36 cSt)	l/min	50	120	200	300
Mass	kg	0,25	0,50	1,10	2,5

11.6 - Identification code of cover



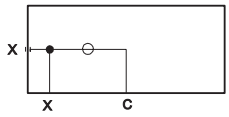
11.7 - Functional diagram of normally open logic element

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

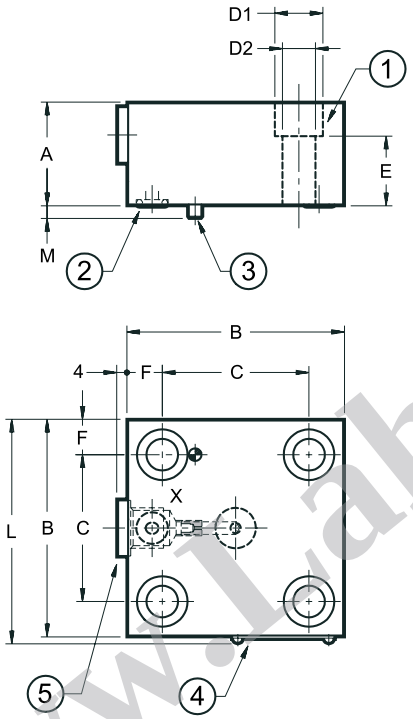
11.8 - OVERALL AND MOUNTING DIMENSIONS OF COVERS FOR NORMALLY OPEN LOGIC ELEMENTS

dimensions in mm

RA type cover



LP16RA
LP25RA
LP32RA
LP40RA



	NOMINAL SIZE			
	16	**25**	**32**	**40**
A	29	30	40	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
ports predisposed for restrictors M6x8	port X			

① fastening bolts (note)	n.4 M8x30	n.4 M12x35	n.4 M16x45	n.4 M20x60
② OR n. / type	1 2025	1 2037	1 2037	1 2050
③ elastic pin	Ø 3x10	Ø 5x14	Ø 5x14	Ø 5x14
④	identification plate			
⑤ X tap	1/4" BSP			
Mass [kg]	1,2	2,3	4	6

Note: Fastening bolts class 12.9 UNI 5931 are recommended for cover installation (to be ordered separately).

DUPLOMATIC HYDRAULICS

DUPLOMATIC OLEODINAMICA SpA
20025 LEGNANO (MI) - P.le Bozzi, 1 / Via Edison
Tel. 0331/472111 - Fax 0331/548328