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2-way Logic Cartridge Valves Pressure Function

Model: LC...7X (logic cartridge valves)
LFA...7X (control cover)

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- Size 16/63
- Maximum working pressure 420 bar
- Maximum working flow 2500 L/min

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Features

- Cartridge spool and various sleeves to meet relief and reducing function
- One sleeve with multi-spool in cartridge structure
- Area ratio 1:1 and 1.07:1
- Optional throttle
- Different cracking pressures

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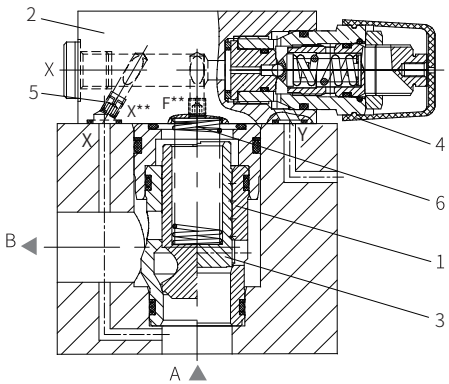
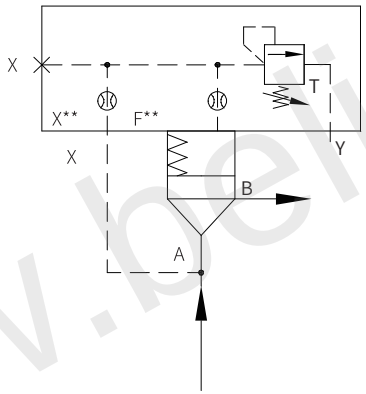
General
The 2-way logic cartridge pressure valves are pilot operated poppet valves or spool valves. The main valve component is a logic cartridge valve (1) which is inserted into the standard hole according to DIN 7368 and sealed with control cover.
The pilot valve (4) is integrated into the control cover (2) or installed as pilot valve onto the control cover (2). Its mounting surface is in accordance with DIN24340(2).
The different pressure functions can be realized by combining the logic cartridge valve and control cover.



Model LC..DB..D.. Model LC..DB..E..

Pressure relief function
Control cover LFA... DB...
Logic cartridge valve LC... DB...

The logic cartridge valve (1) (model LC... DB...) with pressure relief function is a seat valve with an area ratio 1:1 (no effective area at port B). The pressure acting at port A is fed to the spring cavity (6) of the main valve through the pilot oil supply orifice (5). When the pressure is lower than the setting pressure of the pilot valve (4), the hydraulic force on the main spool (3) is balanced and the spring force keeps the main valve closed. When the pressure reaches the set value, the main spool opens and limits the pressure at port A according to the pressure-flow characteristics.



Model LFA..DB..
Model LC..DB..

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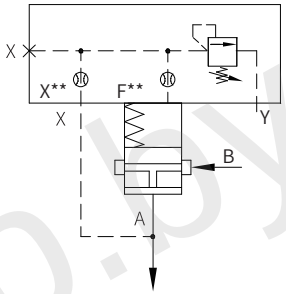
Pressure reducing function

a)Normally open: Control cover LFA...DB...
Logic cartridge valve LC...DR...

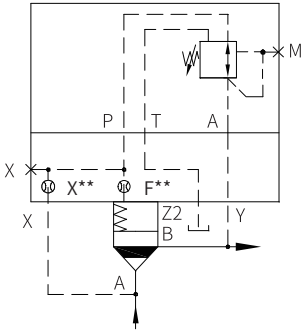
The logic cartridge valve with pressure reducing function is seat valve with an area ratio of 1:1 (no effective area at port B). It adopts the control cover (model LFA...DB...) which has same function with the relief valve as pilot valve.
The pressure acting at port A is fed to the spring cavity of the main valve through the pilot oil supply orifice. When the pressure is lower than the setting pressure of the pilot valve, the hydraulic force on the main spool is balanced and the spring force keeps the main valve spool opens. The fluid can flow freely from B to A. When the pressure reaches the set value, the main spool closes and reducing the pressure at port A according to the pressure-flow characteristics.



e.g. Model LFA..DB.. / Model LC..DR..

b) Normally closed: Control cover LFA...DR...
Logic cartridge valve LC...DB..D...

For the pressure reducing function with opening characteristics, a logic cartridge pressure relief valve (mode LC...DB..D...) and a control cover (model LFA...DR) with a pressure reducing valve as the pilot valve are used.
The pilot control oil supplied from port A flows into port B through the pilot oil supply orifice and the opened pilot reducing valve. The main spool is opened to allow freely flow from A to B. When the set pressure is reached, the main spool closes and reduces the pressure at port B according to the pressure-flow characteristics.
If the unexpected pressure increases on the pressure reducing side (port B), pressure relief via the third port of the pilot valve. By installing a directional valve, an additional isolating function can also be attained (model LFA...DRW...).



e.g. Model LFA..DR.. / Model LC..DB40D..

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Logic cartridge valves models and specifications

LC | DR | E – 7X | /

logic cartridge valve

size 16 =16
size 25 =25
size 32 =32
size 40 =40
size 50 =50
size 63 =63

reducing function

[1]Only for size 16, 25 and 32

sealing material
No code= NBR seals
V= FKM seals
(consult for other seals)

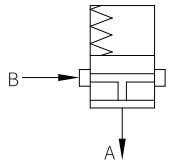
7X= 70 to 79 series
(70 to 79 series installation and connection size unchanged)

the spool valve without precise control groove

00= cracking pressure about 0MPa(without spring)
20= cracking pressure about 0.2[1]MPa
30= cracking pressure about 0.3[1]MPa
40= cracking pressure about 0.4MPa
50= cracking pressure about 0.5MPa

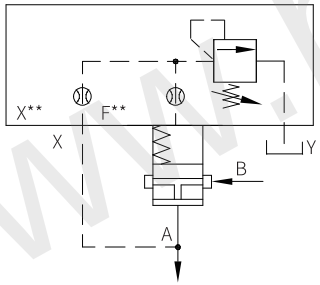
Logic cartridge valves functional symbols

Model: LC ..DR..



Attention!

It is composed of 2-way logic cartridge valve LC... DR... and control cover LFA... DB...



pressure reducing function

Normally open

Example:

Model: LFA..DB... / LC..DR40...

Technical parameters

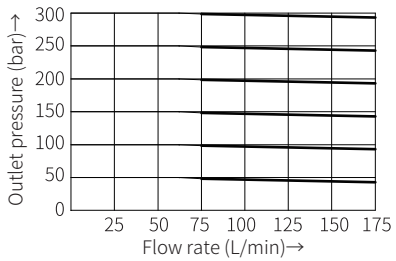
Maximum working pressure	Oil ports A and B	bar	315					
Maximum flow (Reference)	Size		16	25	32	40	50	63
	LC..DR20….	L/min	100	200	300	750	1000	600
	LC..DR40…	L/min	150	300	450	1000	1300	2000
Weight		kg	0.25	0.5	1.1	1.9	3.9	7.2
Work medium			Mineral oil - for NBR seal or FKM seal					
			Phosphate ester - for FKM seal					
Working medium temperature range		°C	-30 to +80 (NBR seal)					
			-20 to +80 (FKM seal)					
Viscosity range		mm^2/s	2.8 to 380					
Cleanliness of oil			The maximum allowable pollution level of oil is NAS1638 Class 9 and ISO4406 Class 20 / 18 / 15[1]					

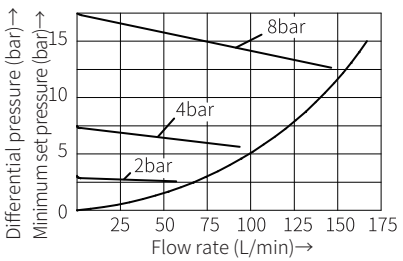
1) The oil must meet the cleanliness degree requested by the components in the hydraulic system. Effective oil filtration can prevent failure and increase the service life of the components.

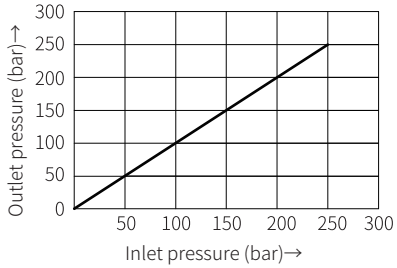
Characteristic curve

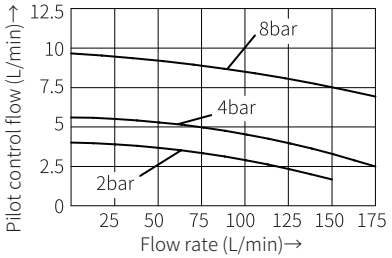
(Measured when using HLP46, ϑ_{oil}=40°C ± 5°C)

LC16DR...









Measured at p_a=50bar

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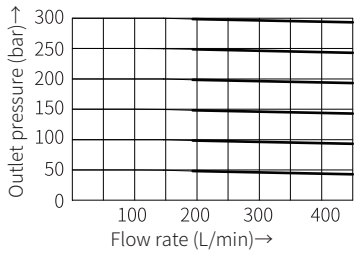
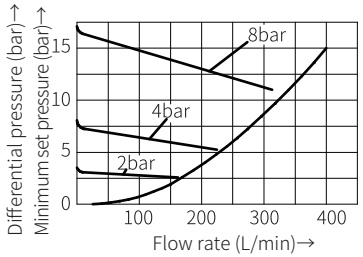
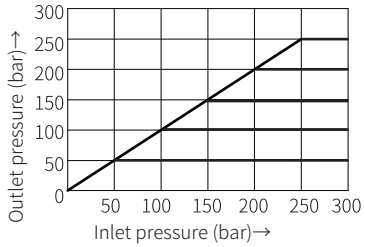
Characteristic curve

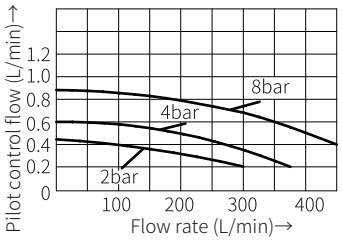
(Measured when using HLP46, ϑ_{oil}=40°C ± 5°C)

LC25DR...



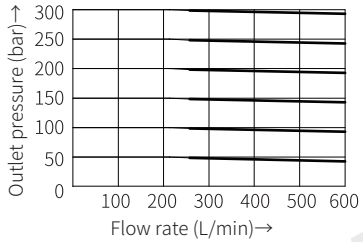


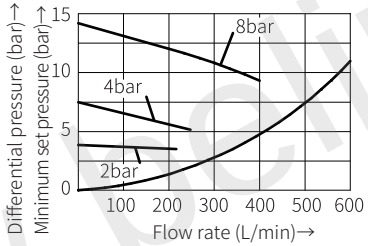


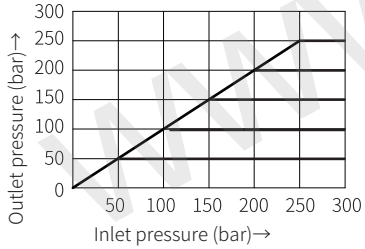


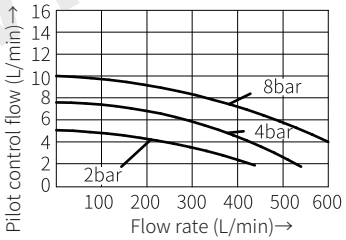
Measured at p_a=50bar

LC32DR...









Measured at p_a=50bar

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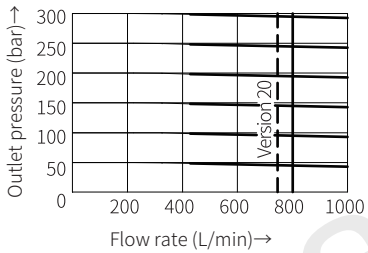
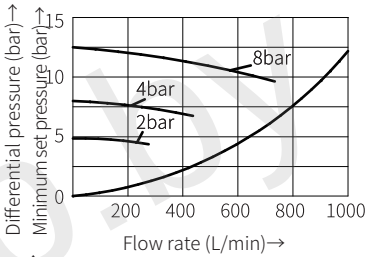
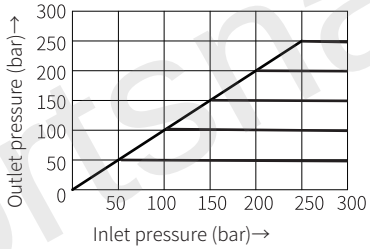
Characteristic curve

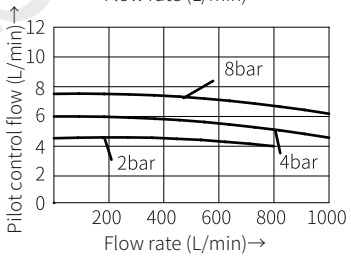
(Measured when using HLP46, ϑ_{oil}=40°C ± 5°C)

LC40DR...



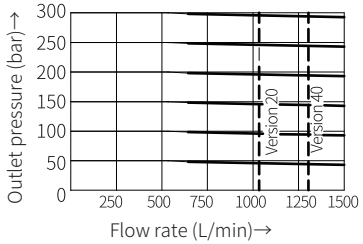


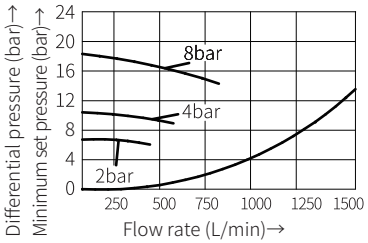


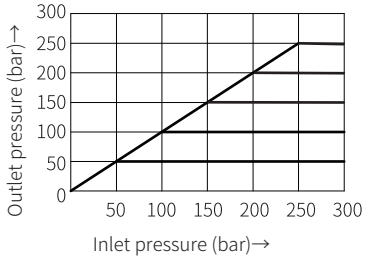


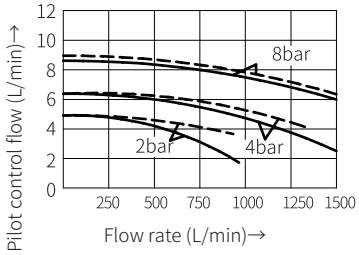
Measured at p_a=50bar

LC50DR...









Measured at p_a=50bar

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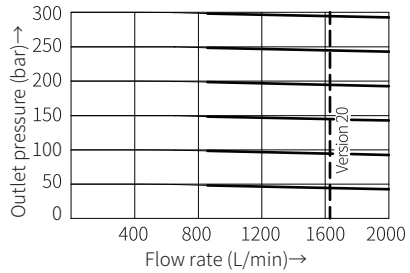
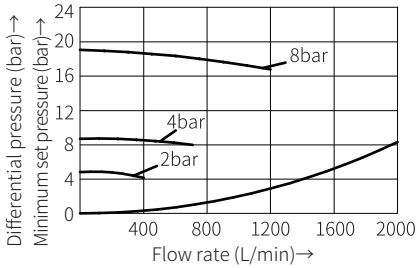
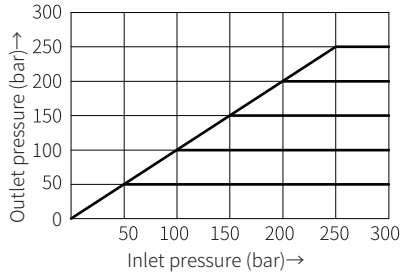
Characteristic curve

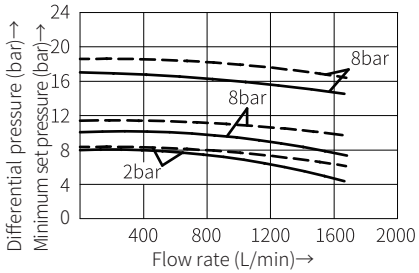
(Measured when using HLP46, ϑ_{oil}=40°C ± 5°C)

LC63DR...



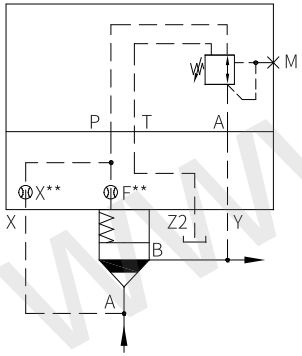






Measured at p_a=50bar

Application example



Attention!

It is composed of 2-way logic cartridge valve LC... DB... and control cover LFA... DR...

pressure reducing function

Normally closed

Example:

Model: LFA.. DR... / LC..DB 40 D...

Technical parameters

Working medium		Mineral oil - for NBR seal or FKM seal					
		Phosphate ester - for FKM seal					
Working medium temperature range	°C	-30 to +80 (NBR seal)					
		-20 to +80 (FKM seal)					
Viscosity range	mm^2/s	2.8 to 380					
Cleanliness of oil		The maximum allowable pollution level of oil is NAS1638 Class 9 and ISO4406 Class 20 / 18 / 15					
Size		16	25	32	40	50	63
Weight	kg	3.1	3.6	5.2	8	11.4	20.8

The oil must meet the cleanliness degree requested by the components in the hydraulic system. Effective oil filtration can prevent failure and increase the service life of the components.

Control cover		
Maximum working pressure at the oil port...		Control cover type L-LFA..DR.—../.. L-LFA..DRW.—../...
... X(basic pressure)		315bar
... Y(secondary pressure = maximum set pressure)		315bar
...Z2	As control pressure	0bar (Maximum 2bar)
	Static	60bar

Valve fixing screw (included in the supply list)

GB/T70.1 10.9 grade			
Size	Quantity	Dimension	Tightening torque (Nm)
16	4	M8×45	32
25		M12×50	110
32		M16×60	270

GB/T70.1 10.9 grade			
Size	Quantity	Dimension	Tightening torque (Nm)
40	4	M20×70	520
50		M20×80	520
63		M30×100	1800

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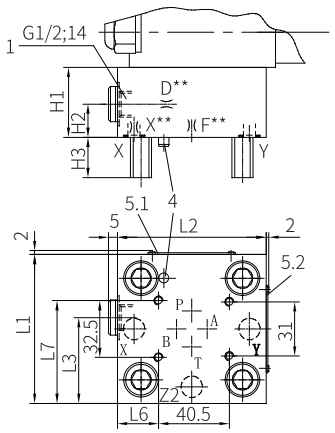
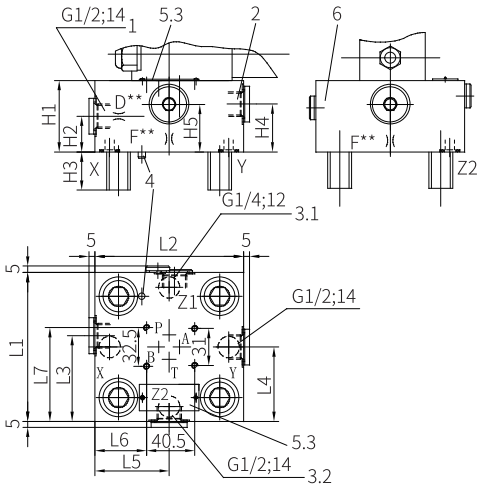
Control cover "DR" and "DRW" component size

Size unit: mm

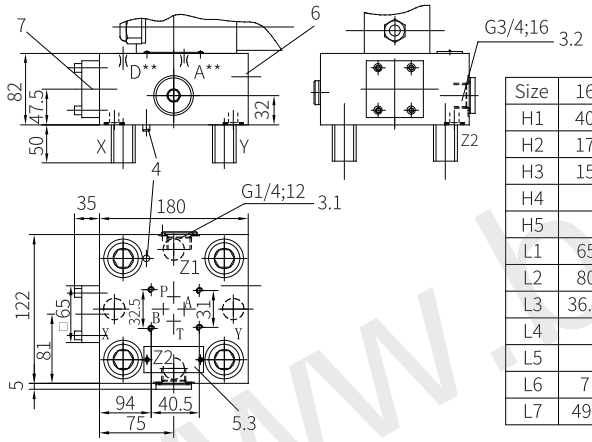
Size 16, 25, 32



Size 40, 50



Size 63



Size	16	25	32	40	50
H1	40	40	50	60	68
H2	17	19	26	30	32
H3	15	24	28	32	34
H4				40	32
H5				40	32
L1	65	85	100	125	140
L2	80	85	100	125	40
L3	36.5	49	56.5	72	80
L4				62.5	68
L5				62.5	70
L6	7	23.5	31	43.5	51
L7	49	59	66.5	79	86.5

1 Optional port X used as threaded hole (for size 16 to 50)
2 Optional port Y used as threaded hole (for size 40 to 50)
3.1 Optional port Z1 used as threaded hole (for size 25 to 63)
3.2 Optional port Z2 used as threaded hole (for size 40 to 63)
4 Locating pin

5.1 Name plate (size 16)
5.2 Name plate (size 25, 32)
5.3 Name plate (size 40, 50 and 63)
6 Check valve (for size 40, 50 and 63)
7 For control cover size 63
2 -way logic cartridge valve size 16

Control cover "DR" with pressure reducing function

.. DR... type (size 16 to 63)

LFA | DR | 7X | /

control cover

size 16 =16
size 25 =25
size 32 =32
size 40 =40
size 50 =50
size 63 =63

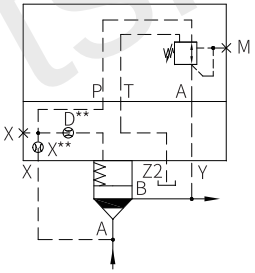
control cover type

adjusting element
rotary knob =1
hexagonal sleeve with protective cap =2
lockable rotary knob with scale =3
rotary knob with scale =4

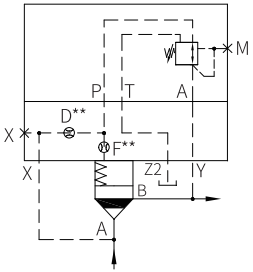
7X= 70 to 79 series
(70 to 79 series installation and connection size unchanged)

025= Maximum secondary pressure is 2.5MPa
075= Maximum secondary pressure is 7.5MPa
150= Maximum secondary pressure is 15MPa
210= Maximum secondary pressure is 21MPa
315= Maximum secondary pressure is 31.5MPa

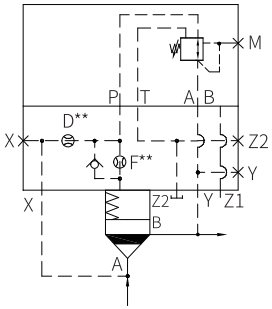
sealing material
No code= NBR seals
V= FKM seals
(consult for other seals)



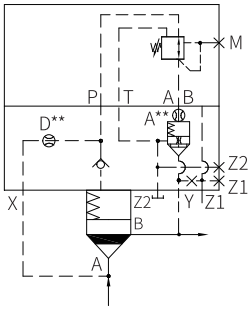
LFA...DR.7X/..
Size 16



LFA...DR.7X/..
Size 25 and 32



LFA...DR.7X/...
Size 40 and 50



LFA...DR.7X/...
Size 63

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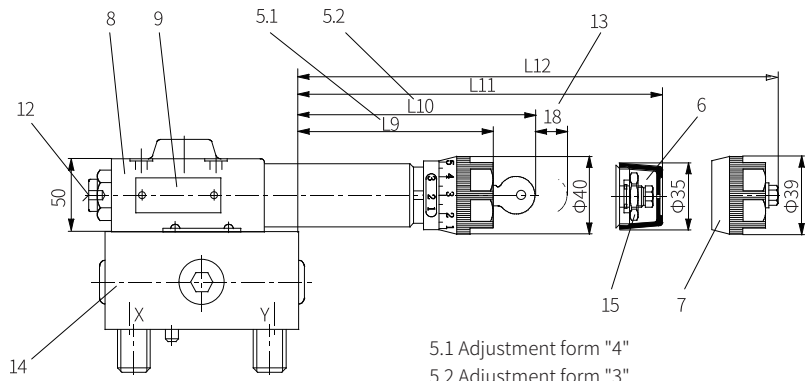
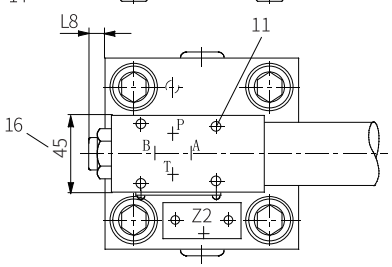
Control cover "DR" with pressure reducing function

.. DR... type (size 16 to 63)





5.1 Adjustment form "4"
5.2 Adjustment form "3"
6 Adjustment form "2"
7 Adjustment form "1"
8 Direct operated pressure valve
(included in the supply list)
9 Name plate of pressure reducing valve
10 Valve fixing screw
GB/T70.1-M5x50 10.9 grade
Tightening torque M_A=8.9Nm
(included in supply list of control cover)
11 Pressure gauge connection G1/4, depth 12
Socket screw 6A/F
12 Space required to remove the key
13 Control cover
14 Locknut 24A/F
15 For model... /315→50mm

Size		16	25	32	40	50	63
L8		23	6				
	.../315	30.5	14	6			
L9		99.5	111	103.5	91	83.5	67.5
	.../315	96.5	108	100.5	88	80.5	64.5
L10		99.5	111	103.5	91	83.5	67.5
	.../315	96.5	108	100.5	88	80.5	64.5
Other size		See page 32/36					

Control cover "DRW" with pressure reducing and isolating function

.. DRW... type (size 16 to 63)

LFA | DRW | 7X | | |

control cover

size 16 =16
size 25 =25
size 32 =32
size 40 =40
size 50 =50
size 63 =63

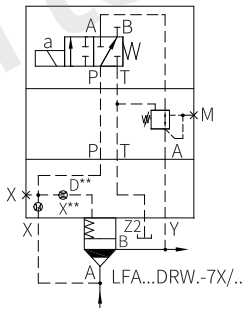
control cover type

adjusting element
rotary knob =1
hexagonal sleeve with protective cap =2
lockable rotary knob with scale =3
rotary knob with scale =4

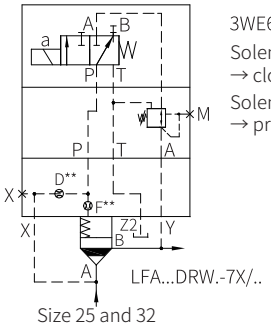
sealing material
No code= NBR seals
V= FKM seals
(consult for other seals)

025= Maximum secondary pressure is 2.5MPa
075= Maximum secondary pressure is 7.5MPa
150= Maximum secondary pressure is 15MPa
210= Maximum secondary pressure is 21MPa
315= Maximum secondary pressure is 31.5MPa

7X= 70 to 79 series
(70 to 79 series installation and connection size unchanged)

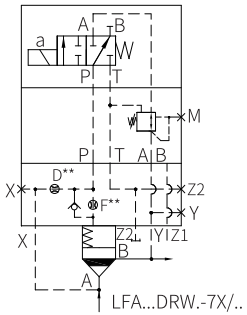


Size 16

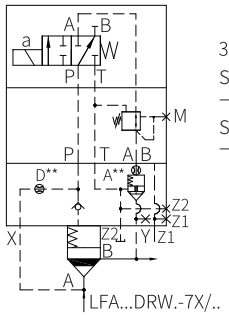


Size 25 and 32

3WE6B9-.../...
Solenoid de-energized
→ closed
Solenoid energized
→ pressure reducing function



Size 40 and 50



Size 63

3WE6B9-.../...
Solenoid de-energized
→ closed
Solenoid energized
→ pressure reducing function

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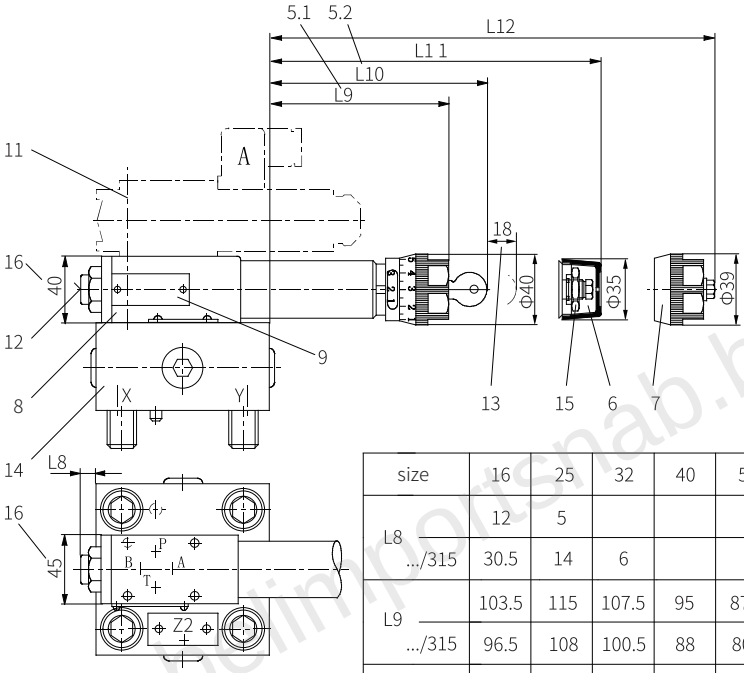
Control cover "DRW" with pressure reducing and isolating function

...DRW...type (size 16 to 63)



size	16	25	32	40	50	63
L8	12	5				
.../315	30.5	14	6			
L9	103.5	115	107.5	95	87.5	71.5
.../315	96.5	108	100.5	88	80.5	64.5
L10	103.5	115	107.5	95	87.5	71.5
.../315	96.5	108	100.5	88	80.5	64.5
other size	see page 32/36					

5.1 Adjustment form "4"
5.2 Adjustment form "3"
6 Adjustment form "2"
7 Adjustment form "1"
8 Direct operated pressure reducing valve (included in the supply list)
9 Name plate of pressure reducing valve
10 Valve fixing screw
M5x50-10.9 grade GB/T70.1-2000 M_A=7.8Nm
(included in the supply list of control cover)

11 Pressure gauge connection G1/4, depth 12
Socket screw 6A/F
13 Space required to remove the key
12 Control cover
13 Locknut 24A/F
14 For model.../315 → 50mm

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