5.2

2-way cartridge valves -pressure control function

Cartridge valves Type L-LC..

Control covers Type L-LFA...

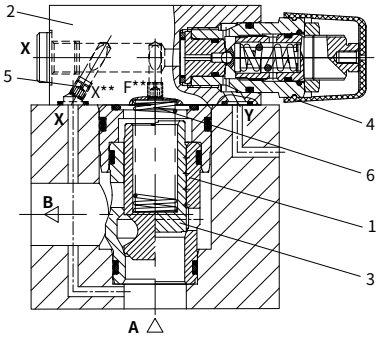
Nominal sizes 16 to 63
Series 7X
Maximum operating pressure 420 bar
Maximum flow-rate 2500 L/min

Contents

Function, section and symbol

· General

The 2-way cartridge valves for pressure control functions are pilot operated poppet or spool valves. The main component designed as a cartridge valve (1) is inserted in a hole bore standardized to DIN ISO 7368 and is sealed by control cover (2).
The pilot valve (4) is integrated into the control cover (2) or mounted onto the control cover as a pilot valve with interface connections to DIN 24 340 (2). Different pressure functions can be realized by combining the cartridge valve with the control covers.

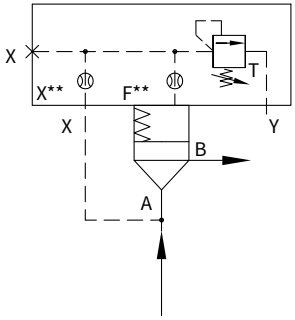


Type L-LC..DB..D... Type L-LC..DB..E...

· Pressure relief function

Control cover type L-LFA..DB...
Cartridge valve type L-LC..DB...

The cartridge valve (1) for the pressure relief function (type L-LC . DB...) is a poppet valve with a area ratio of 1:1(no effective area at port B). The pressure acting at port A is fed via the pilot oil supplying orifice (5) to the main spring chamber (6). At pressures below the setting of pilot valve (4) the forces on spool (3) are balanced and the spool remains closed due to the spring force. On reaching the set pressure, spool (3) opens and limits the pressure at port A in line with the pressure-flow characteristics.



Type L-LFA..DB...
Type L-LC..DB...

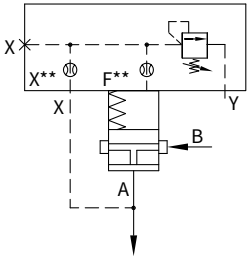
Function, section and symbol

· Pressure reducing function

a) Normally open:

Control cover type L-LFA...DB...
Cartridge valve type L-LC..DR...

The cartridge valve for the pressure reducing function is a poppet valve with a area ratio of 1:1(no effective area at port B), adopting the same types of cover (type LFA ..DB...) used as pilot valves which are used for the pressure relief functions .
The pressure fed via the pilot oil orifice is acting on the main spring chamber. When pressure is below the setting of pilot valve, the forces on spool are balanced and the spool remains open due to the spring force. Consequently, fluid flows port B to port A free. On reaching the set pressure, spool closes and reduces the pressure at port A in line with the pressure-flow characteristics.

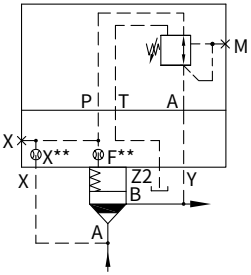


E.g. Type L-LFA..DB...
Type L-LC..DR40...

b) Nomally closed:

Control cover type L-LFA...DR...
Cartridge valve type L-LC..DB...D...

For the pressure reducing function with opening characteristics, a pressure relief valve cartridge (type L-LC.. DB..D...) and a control cover with a pressure reducing valve (type L-LFA..DR...) as the pilot valve are used. The pilot oil is fed from port A via the pilot orifice and the open pressure reducing valve to side B. The main spool opens and allows free flow from port A to port B. On reaching the setting pressure, the main spool closes and reduces the pressure at port B in line with the pressure-flow characteristics. If excess pressure occurs on the pressure reducing side, pressure relieves via the third port of the pilot valve. By fitting a directional valve, an additional isolating function can also be attained (type L-LFA..DRW...).



E.g. Type L-LFA..DR...
Type L-LC..DB40D...

China
+86 400 101 8889

America
+01 630 995 3674

Germany
+49 172 3683463

Japan
+81 03 6809 1696

NO. HL-EN-L-LC.DB... 01/2024

2-way cartridge valves -pressure control function

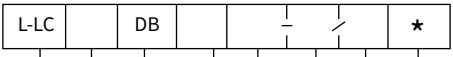
5.2-1(1)

Pressure relief valve function

Cartridge valve Type L-LC.DB...

Ordering code

· Pressure relief cartridge valve (without associated control cover)



Cartridge valves

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

Relief function

Cracking pressure approx. 0bar (without spring) = 00
Cracking pressure approx. 2bar = 20
Cracking pressure approx. 3bar = 30 [1)]
Cracking pressure approx. 4bar = 40
Cracking pressure approx. 5bar = 50 [1)]

Further details in clear text

No code = NBR seals
V = FKM seals
(Other seals, please consult us!)
Caution:
The harmony of seals and fluid must be taken into account.

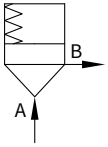
7X = Series 70 to 79
(70 to 79: unchanged installation and connection dimensions)

E = Poppet valve without orifice (standard)
D = Spool poppet valve without damping nose
A = Poppet valve with damping nose
B = Spool poppet valve with damping nose

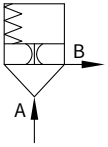
[1)] Only for size 16, 25 and 32.
[2)] Special installation space is required.

Symbols

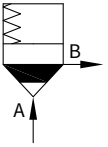
Cartridge valves (for versions see Ordering code)



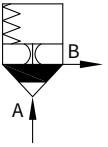
Poppet without damping nose version "E"



Poppet with damping nose version "A"



Spool poppet without damping nose version "D"



Spool poppet without damping nose version "B"

Technical data

Fluid			Mineral oil suitable for NBR and FKM seal					
			Phosphate ester for FKM seal					
Fluid temperature range		°C	-30 to +80 (NBR seal) -20 to +80(FKM seal)					
Viscosity range		mm^2/s	2.8 to 380					
Degree of contamination			Maximum permissible degree of fluid contamination: Class 9. NAS 1638 or 20/18/15, ISO4406 [1)]					
2-way cartridge valve								
Max. operating pressure – Ports A and B		bar	420					
Max. flow-rate (recommendation)	Size		16	25	32	40	50	63
	Poppet valve cartridge "E"and"A"	L/min	300	450	600	1000	1600	2500
	Spool valve cartridge "D"and"B"	L/min	175	300	450	700	1400	1750

[1)] To prevent the problem caused by fluid contamination, fluid cleanliness mentioned above must be met.

For applications outside these parameters, please consult us!

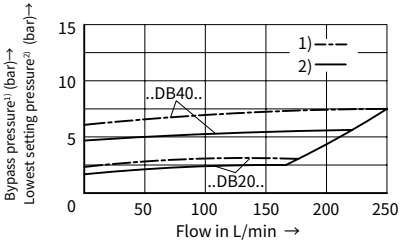
Characteristic curves (Measured at ϑ_{oil}=40°C ±5°C , using HLP46)

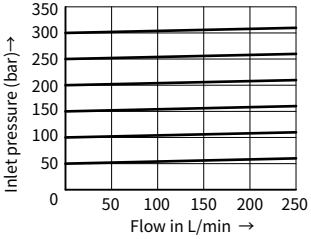
Nominal size 16

The characteristic curves were measured when an external pilot oil drains at zero pressure.
when an internal pilot oil drains, the inlet pressure is increased along with the pressure at port B.

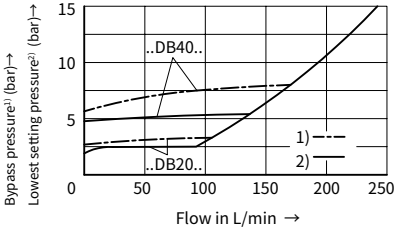
·Manual pressure adjustment: type L-LFA 16 DB... and type L-LFA 16 DBW...

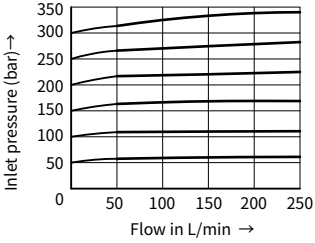
Type L-LC 16 DB..E… (with poppet valve)





Type L-LC 16 DB..D... (with spool poppet valve)





05

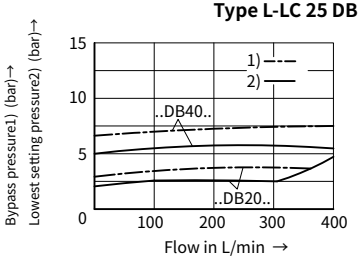
Characteristic curves (Measured at ϑ_{oil}=40°C ±5°C , using HLP46)

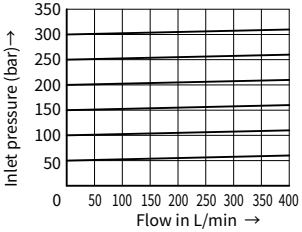
Nominal size 25

The characteristic curves were measured when an external pilot oil drains at zero pressure.
when an internal pilot oil drains, the inlet pressure is increased along with the pressure at port B.

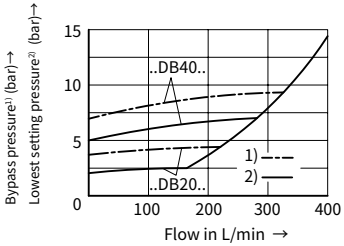
· Manual pressure adjustment: type L-LFA 25 DB... and type L-LFA 25 DBW...

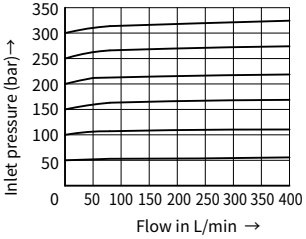
Type L-LC 25 DB..E... (with poppet valve)





Type L-LC 25 DB..D... (with spool poppet valve)





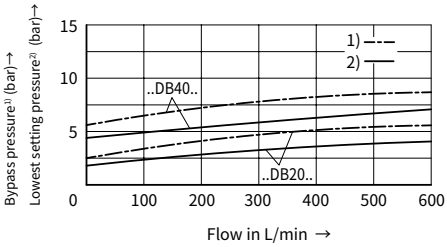
Characteristic curves (Measured at ϑ_{oil}=40°C ±5°C , using HLP46)

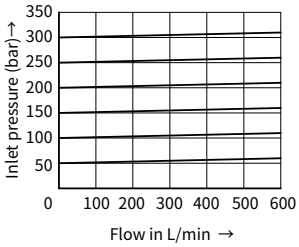
Nominal size 32

The characteristic curves were measured when an external pilot oil drains at zero pressure.
when an internal pilot oil drains, the inlet pressure is increased along with the pressure at port B.

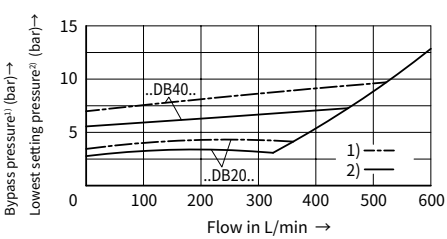
·Manual pressure adjustment: type L-LFA 32 DB...and type L-LFA 32 DBW...

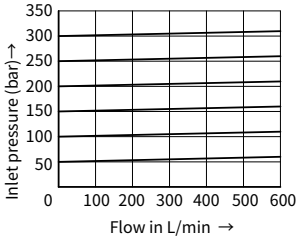
Type L-LC 32 DB..E... (with poppet valve)





Type L-LC 32 DB..D... (with spool poppet valve)





05

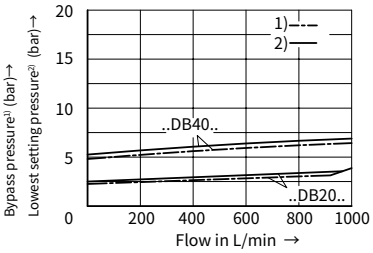
Characteristic curves (Measured at ϑ_{oil}=40°C ±5°C , using HLP46)

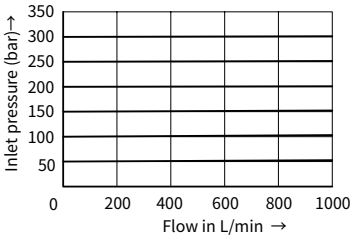
Nominal size 40

The characteristic curves were measured when an external pilot oil drains at zero pressure.
when an internal pilot oil drains, the inlet pressure is increased along with the pressure at port B.

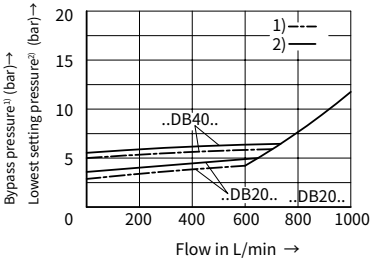
· Manual pressure adjustment: type L-LFA 40 DB... and type L-LFA 40 DBW...

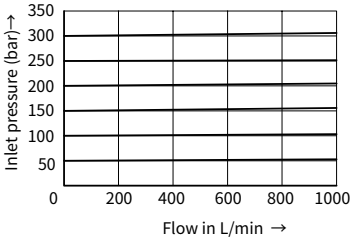
Type L-LC 40 DB..E... (with poppet valve)





Type L-LC 40 DB..D... (with spool poppet valve)





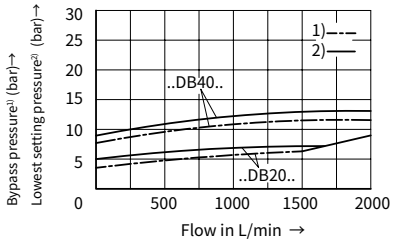
Characteristic curves (Measured at ϑ_{oil}=40°C ±5°C , using HLP46)

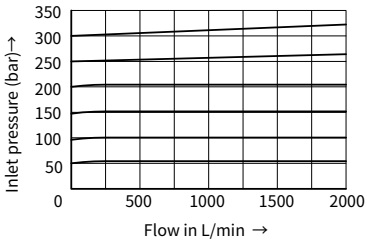
Nominal size 50

The characteristic curves were measured when an external pilot oil drains at zero pressure.
when an internal pilot oil drains, the inlet pressure is increased along with the pressure at port B.

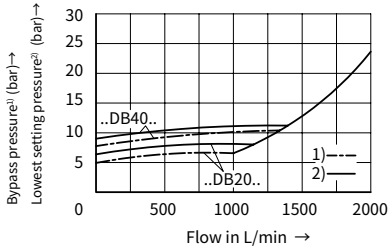
·Manual pressure adjustment: Type L-LFA 50 DB...and Type L-LFA 50 DBW...

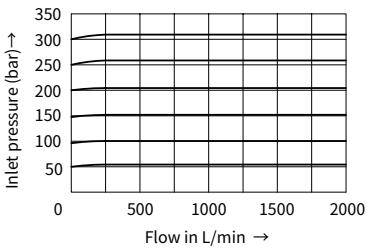
Type L-LC 50 DB..E… (with poppet valve)





Type L-LC 50 DB..D… (with spool poppet valve)





05

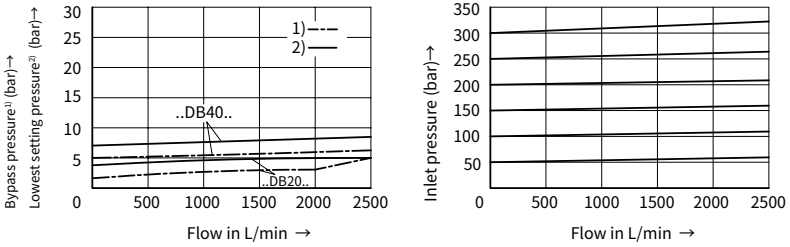
Characteristic curves (Measured at ϑ_{oil}=40°C ±5°C , using HLP46)

Nominal size 63

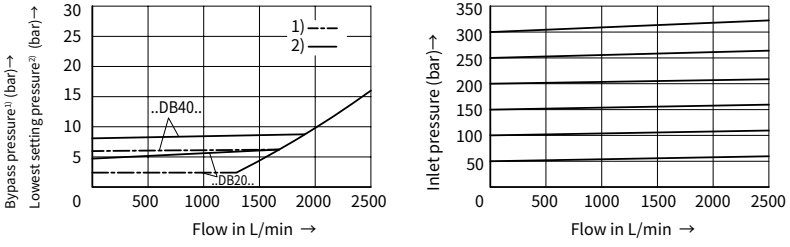
The characteristic curves were measured when an external pilot oil drains at zero pressure.
when an internal pilot oil drains, the inlet pressure is increased along with the pressure at port B.

· Manual pressure adjustment: type L-LFA 63 DB... and type L-LFA 63 DBW...

Type L-LC 63 DB..E... (with poppet valve)

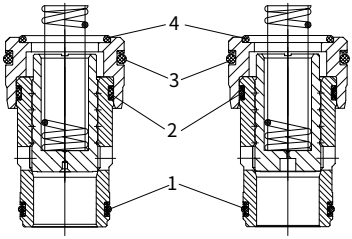


Type L-LC 63 DB..D... (with spool poppet valve)

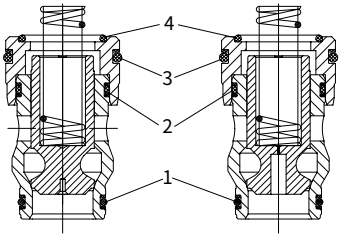


O-rings dimensions for type L-LC

· Nominal sizes 16, 25 and 32



L-LC..DB..E... L-LC..DB..A...

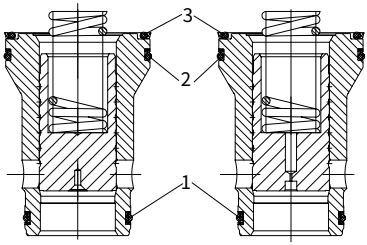


L-LC..DB..D... L-LC..DB..B...

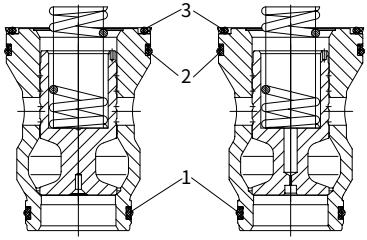
O-rings

No.	Nominal size		
	16	25	32
1	21.2×1.8	28×2.65	40×2.65
2	22.4×2.65	32.5×2.65	43.7×3.55
3	26.5×2.65	38.7×3.55	54.5×3.55
4	20×2.65	30×2.65	37.5×3.55

· Nominal sizes 40, 50 and 63



L-LC..DB..E... L-LC..DB..A...



L-LC..DB..D... L-LC..DB..B...

O-rings

No.	Nominal size		
	40	50	63
1	48.7×3.55	61.5×3.55	80×5.3
2	69×3.55	80×5.3	109×5.3
3	67×3.55	77.5×5.3	106×5.3

NO. HL-EN-L-LFA.DB... 01/2024

2-way cartridge valves -pressure control function

5.2-1(2)

Pressure relief valve function

Control covers Type L-LFA.DB...

Technical data (Max. operating pressure of pilot control valve)

	Control cover		Max. operating pressure Y,T bar			Remark
	Size	Type	X	pressure limitation	Static	
DBD.2K-L20/...[1]	16 to 32	DB,DBW,DBWD, DBU2.,DBBU3D, DBS	420	Zero pressure (about to 2 bar)	315	Supply included
DBD.6K10/...[2]	40 to 63		400		315	
.WE6...			350		21(=); 16(~)	Order seperately

[1] Possible pressure: 25, 50, 100, 200, 315, 400 [2] Possible pressure: 25, 50, 100, 200, 315, 420

Technical data (Type L-LFA.DB..., for applications outside these parameters, please consult us!)

Max.operating pressure	bar	420 Caution: the max. operating pressure Pmax of pilot valve should be taken into account.
Fluid		Mineral oil suitable for NBR and FKM seal
		Phosphate ester for FKM seal
Fluid temperature range	°C	-30 to +80 (NBR seal)
		-20 to +80 (FKM seal)
Viscosity range	mm^2/s	2.8 to 380
Degree of contamination		Maximum permissible degree of fluid contamination: [3] Class 9. NAS 1638 or 20/18/15 , ISO4406

[3] To prevent the problem caused by fluid contamination, fluid cleanliness mentioned above must be met.

O-rings dimensions for ports X, Y (included within the scope of supply)

Size	Dimension mm
16	8×1.8
25	9.25×1.78
32	10.82×1.78

Size	Dimension mm
40	12×2.5
50	
63	18.72×2.62

Mounting screw (included within the scope of supply)

In accordance with GB/T70.1 10.9			
Nominal size	QTY	Dimension	Tightening toque (Nm)
16	4	M8×45	32
25		M12×50	110
32		M16×60	270
40		M20×70	520

In accordance with GB/T70.1 10.9			
Nominal size	QTY	Dimension	Tightening toque (Nm)
50	4	M20×80	520
63		M30×100	1800

Control cover with manual pressure adjustment (Dimensions in mm)

· Types ..DB... (Nominal sizes 16 to 63)

L-LFA | | DB | – 7X / | |

Control cover

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

Control covers version

Rotary knob =1
Hexagon waith protective c =2

Series 70 to 79 =7X
(70 to 79: unchanged installation and connection dimensions)

No code= NBR seals
V = FKM seals
(Other seals, please consult us!)
Caution:
The harmony of seals and fluid must be taken into account.

Pressure ratings

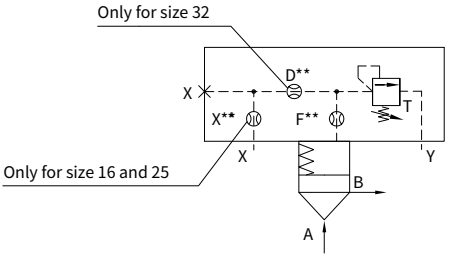
Sizes16, 25 and 32	Sizes 40, 50, 63
025 = 25 bar	025 = 25 bar
050 = 50 bar	050 = 50 bar
100 = 100 bar	100 = 100 bar
200 = 200 bar	200 = 200 bar
315 = 315 bar	315 = 315 bar
420 = 420 bar	400 = 400 bar

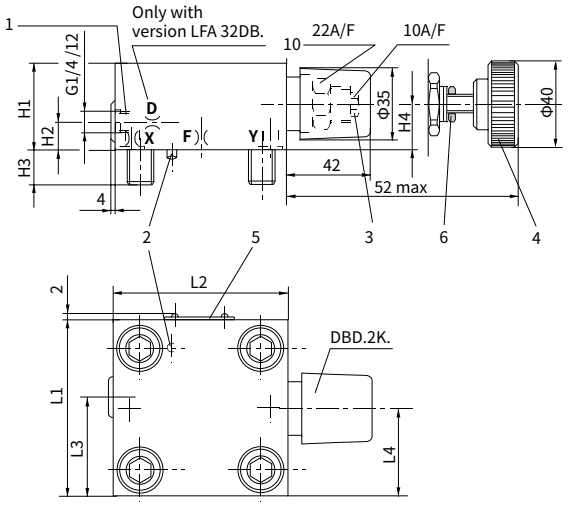
Control cover with manual pressure adjustment

(Dimensions in mm)

· Types ..DB... (Nominal sizes 16, 25 and 32)

L-LFA..DB..- 7X/..
Sizes 16, 25 and 32





NG	16	25	32
H1	40	40	50
H2	17	19	26
H3	15	24	28
H4	19	19	26
L1	65	85	100
L2	80	85	100
L3	36.5	49	56.5
L4	32.5	45.5	53
Weight Kg	1.7	2.1	3.8

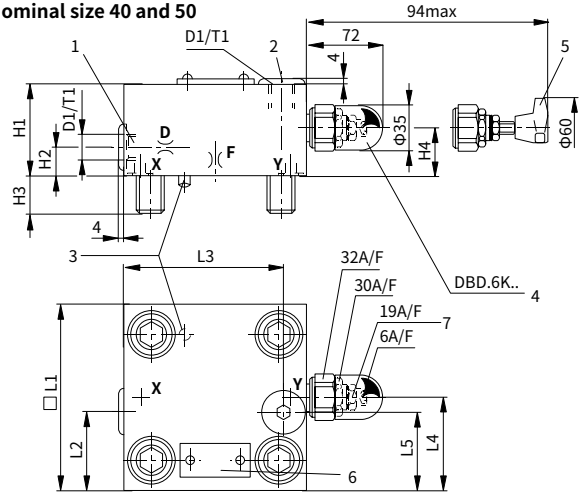
1 Port X optiaonally as threaded port
2 Locating pin
3 Adjustment type "2"
4 Adjustment type "1"
5 Name plate
6 Locknut

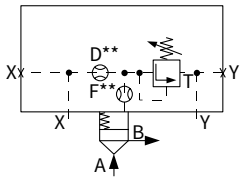
Control cover with manual pressure adjustment

(Dimensions in mm)

· Types ..DB... (Nominal sizes 40, 50 and 63)

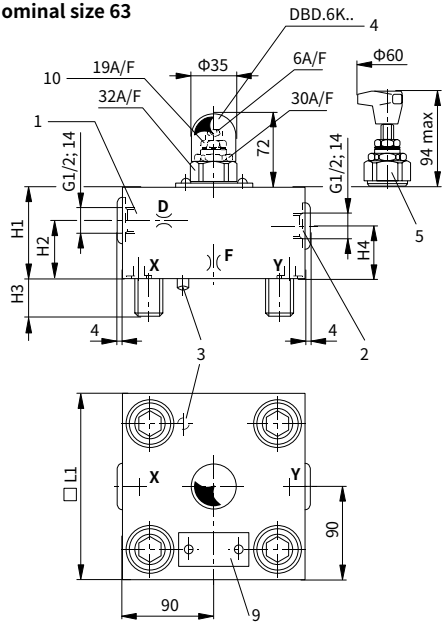
Nominal size 40 and 50





LFA..DB.-7X/..
Sizes 40, 50, 63

Nominal size 63



1 Port X optionally as a threaded port
2 Port Y optionally as a threaded port
3 Locating pin
4 Adjustment "2"
5 Adjustment "1"
6 Name plate
7 Locknut

NG	40	50	63
D1	G1/4	G1/2	
H1	60	68	82
H2	28	19.5	30
H3	32	34	50
H4	27	35	50
□ L1	125	140	180
L2	69	80	
L3	89	105	
L4	76	84	
L5	60	70	
T1	12	14	
Weight Kg	6.8	9.6	18.9

Control cover with manual pressure adjustment, with electrical unloading function

· Types ..DBW...; ..DBS... (Nominal sizes 16 to 63)

L-LFA			– 7X /	

Control cover

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

Control covers version
DBW
DBS (only for sizes 40, 50, 63)

Rotary knob =1
Hexagon waith protective c =2

Series 70 to 79 =7X
(70 to 79: unchanged installation and connection dimensions)

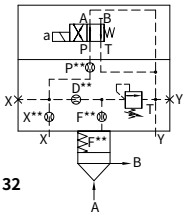
No code= NBR seals
V = FKM seals
(Other seals, please consult us!)
Caution:
The harmony of seals and fluid must be taken into account.

Pressure ratings
(Max. permissible pressure of pilot valve must be taken into account)

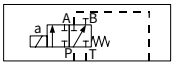
Sizes16, 25 and 32	Sizes 40, 50, 63
025 = 25 bar	025 = 25 bar
050 = 50 bar	050 = 50 bar
100 = 100 bar	100 = 100 bar
200 = 200 bar	200 = 200 bar
315 = 315 bar	315 = 315 bar
420 = 420 bar	400 = 400 bar

05

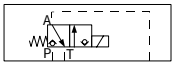
4WE 6D../..



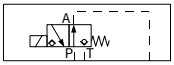
3WE 6B 9-../..



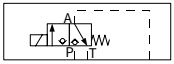
M-3SED 6C ../350



M-3SED 6U ../350
M-3SEW 6U ../420

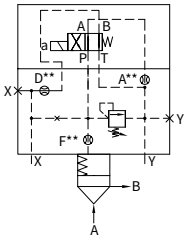


M-3SEW 6C ../420

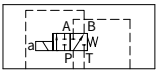


L-LFA...DBW..-7X/..
Nominal sizes 16, 25 and 32

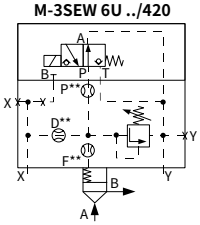
4WE 6D../..



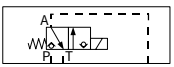
3WE6 B9./..



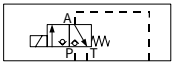
M-3SED 6U ../350
M-3SEW 6U ../420



M-3SED 6C ../350



M-3SEW 6C ../420

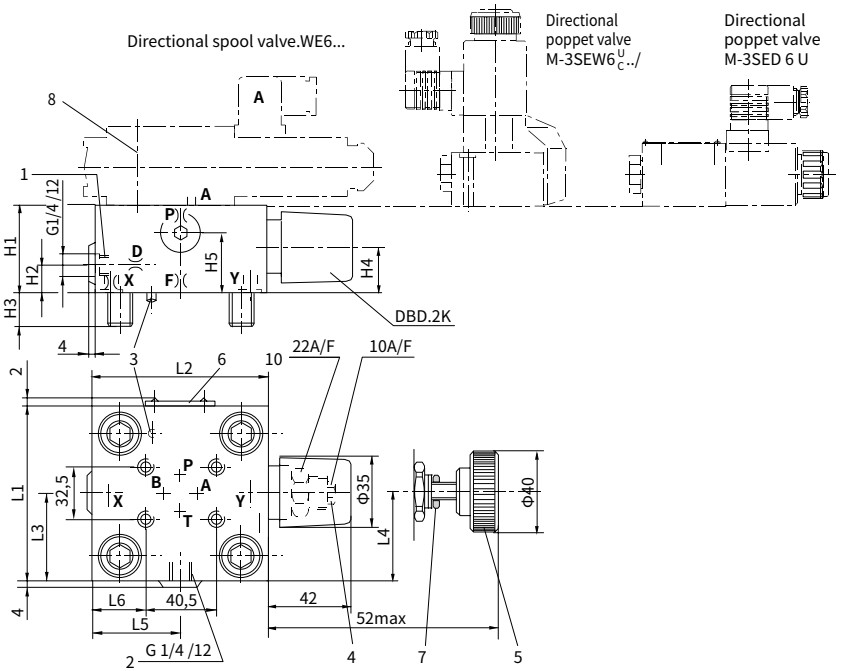


L-LFA...DBW..-7X/..
Nominal sizes 40, 50 and 63

L-LFA..DBS..-7X/...
Nominal sizes 40, 50 and 63

Control cover with manual pressure adjustment, with electrical unloading function

· Types ..DBW... (Nominal sizes 16, 25 and 32)

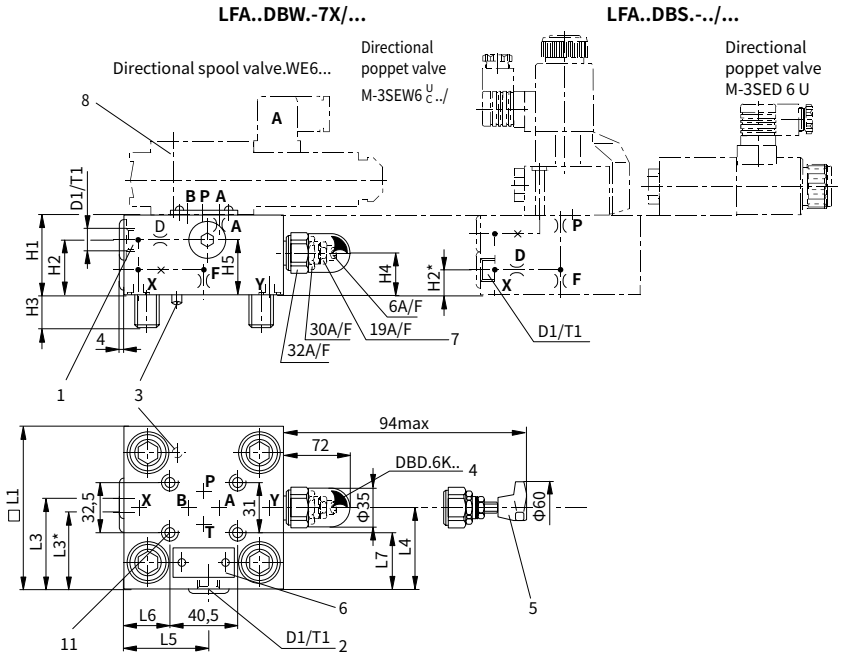


Size	H1	H2	H3	H4	H5	L1	L2	L3	L4	L5	L6	L7	Weight kg
16	40	17	15	19	28	65	80	36.5	32.5	35	7	17	1.7
25	40	19	24	19	28	85	85	49	45.5	36	8	27	2.1
32	50	26	28	26	37	100	100	56.5	53	57	31	34.5	3.8

1 Optional port X used as threaded port
2 Optional port Y used as threaded port
3 Locating pin
4 Version"2" adjustment
5 Version"1" adjustment
6 Nameplate
7 Lock nut
8 Directional valve: .WE6...
Valve fixing screws: GB/T 70.1-M5×50-10.9, must be ordered separately

Control cover with manual pressure adjustment, with electrical unloading function

· Types ..DBW...; ..DBS... (Nominal sizes 40 and 50**)**



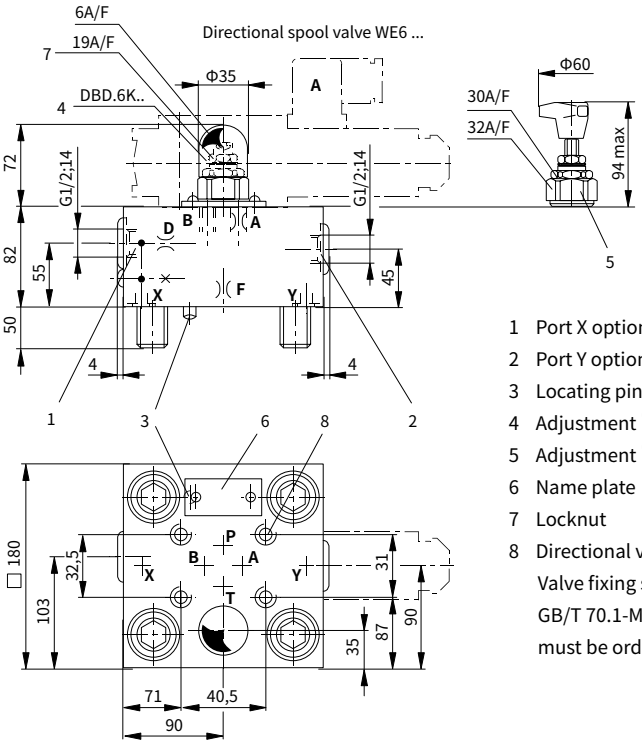
Size	D1	T1	H1	H2	H3	H4	H5	L1	L3	L4	L5	L6	L7	Weight kg
40	G1/4	12	60	46	32	27	40	125	62.5	76	68	43.5	47	6.8
50	G1/2	14	68	51	34	35	50	140	67.5	84	74.5	51	54.5	9.6

* Dimensions for control cover LFA..DBS..
1 Optional port X used as threaded port
2 Optional port Y used as threaded port
3 Locating pin
4 Version"2" adjustment
5 Version"1" adjustment
6 Nameplate
7 Lock nut
8 Directional valve: .WE6...
Valve fixing screws: GB/T 70.1-M5×50-10.9, must be ordered separately

Control cover with manual pressure adjustment, with electrical unloading function

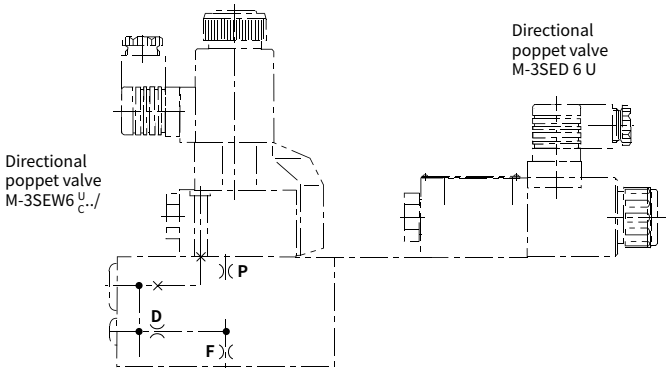
· Types ..DBW...; ..DBS... (Nominal sizes 63)

LFA..DBW.-7X/...



1 Port X optionally as a threaded port
2 Port Y optionally as a threaded port
3 Locating pin
4 Adjustment "2"
5 Adjustment "1"
6 Name plate
7 Locknut
8 Directional valve: .WE6...
Valve fixing screws:
GB/T 70.1-M5×50-10.9,
must be ordered separately

LFA..DBS.-.../...



Control cover with manual pressure adjustment, with isolation function

· Types ..DBWD... (Nominal sizes 16 to 63)

L-LFA		DBWD	– 7X /	

Control cover

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

Control covers version
DBW
DBS (only for sizes 40, 50, 63)

Rotary knob =1
Hexagon waith protective c =2

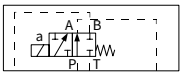
Series 70 to 79 =7X
(70 to 79: unchanged installation and connection dimensions)

No code= NBR seals
V = FKM seals
(Other seals, please consult us!)
Caution:
The harmony of seals and fluid must be taken into account.

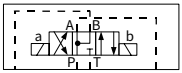
Pressure ratings
(Max. permissible pressure of pilot valve must be taken into account)

Sizes16, 25 and 32	Sizes 40, 50, 63
025 = 25 bar	025 = 25 bar
050 = 50 bar	050 = 50 bar
100 = 100 bar	100 = 100 bar
200 = 200 bar	200 = 200 bar
315 = 315 bar	315 = 315 bar
420 = 420 bar	400 = 400 bar

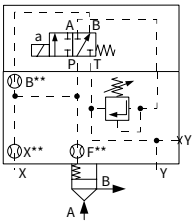
3 WE6 A../...



4 WE 6M../...

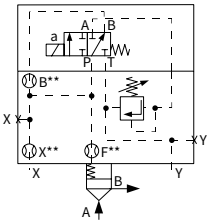


3 WE6 B9-../...



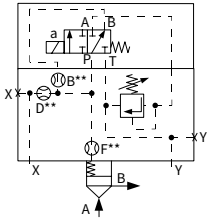
LFA..DBWD.-7X/...
NG 16

3 WE6 B9-../...



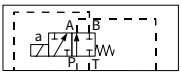
LFA..DBWD.-7X/...
NG 25, 32

3 WE6 B9-../...

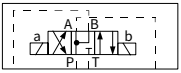


LFA..DBWD.-7X/...
NG 40, 50, 63

3 WE10 A...

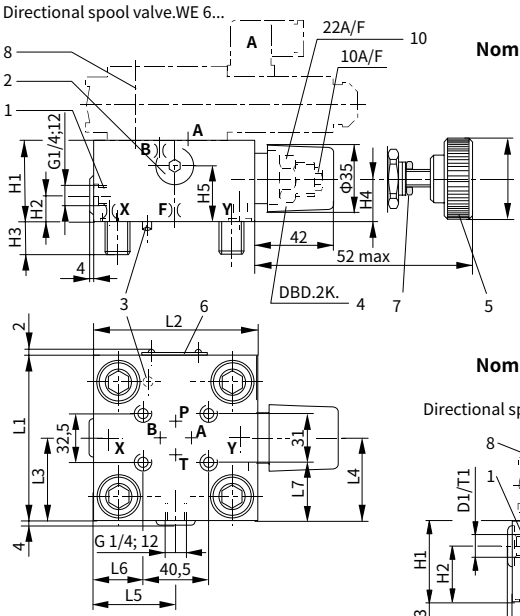


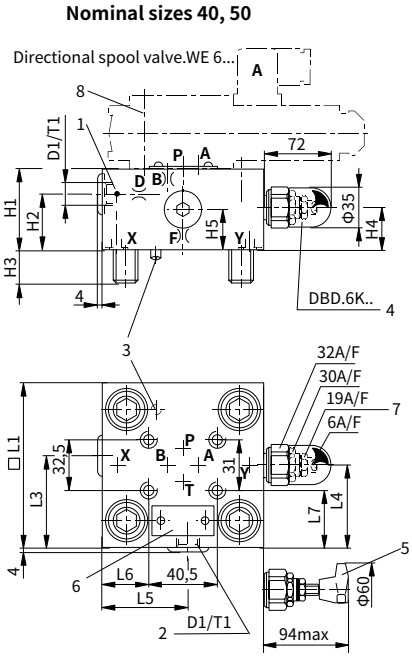
4 WE10 M...



Control cover with manual pressure adjustment, with isolation function

· Types ..DBWD... (Nominal sizes 16, 25, 32, 40 and 50)



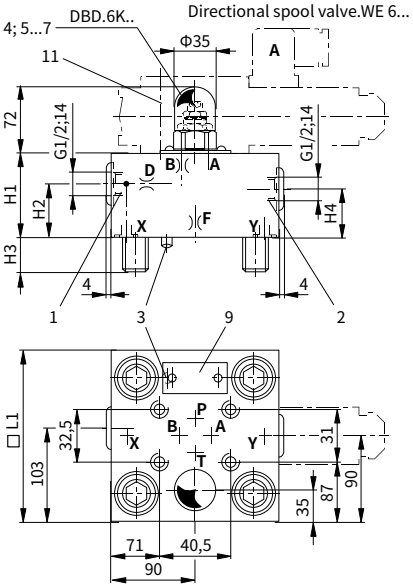


1 Port X optionally as a threaded port
2 Port Y optionally as a threaded port
3 Locating pin
4 Adjustment "2"
5 Adjustment "1"
6 Name plate
7 Locknut
8 Directional valve: .WE6...
Valve fixing screws:
GB/T 70.1-M5×50-10.9,
must be ordered separately

Control cover with manual pressure adjustment, with isolation function

· Types ..DBWD... (Nominal sizes 63)

Nominal size 63



NG	16	25	32	40	50	63
D1				G1/4	G1/2	
H1	40	40	50	60	68	82
H2		19	26	46	50	55
H3	15	24	28	32	34	50
H4	19	19	26	27	35	45
H5	28	28	37	16	20	
L1	65	85	100			
□ L1				125	140	180
L2	80	85	100			
L3		49	56.5	62.5	70	
L4	32.5	45.5	53	76	84	
L5	35	36	57	68	75	
L6	7	8	31	43.5	51	
L7	17	27	34.5	47	54.5	
T1				12	14	
L8						

Control cover with 2 manual pressure adjustments, selected electrically

· Types ..DBU2A...; ..DBU2B... (Nominal sizes 16 to 100)

L-LFA			– 7X /	A...	

Control cover

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

Control covers version
De-energised-DB1 (4 WE.. D)
De-energised-open (4 WE.. H) = DBU2A
De-energised-DB max. (4 WE.. D) = DBU2B
(see symbols)

Rotary knob =1
Hexagon waith protective c =2

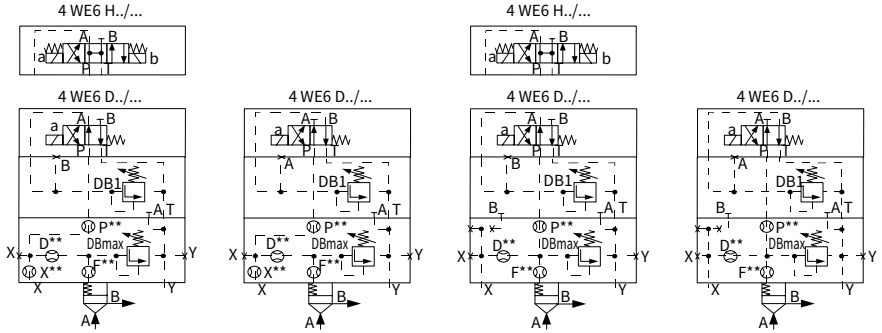
Series 70 to 79 = 7X
(70 to 79: unchanged installation
and connection dimensions)

DBmax DB1

No code= NBR seals
V = FKM seals
(Other seals, please consult us!)
Caution:
The harmony of seals and fluid must be taken into account.

Pressure ratings
(Max. permissible pressure of pilot valve must be taken into account)

Sizes16, 25 and 32	Sizes 40, 50 and 63
025 = 25 bar	025 = 25 bar
050 = 50 bar	050 = 50 bar
100 = 100 bar	100 = 100 bar
200 = 200 bar	200 = 200 bar
315 = 315 bar	315 = 315 bar
420 = 420 bar	400 = 400 bar



LFA..DBU2A.-7X...
NG16, 25, 32
4 WE10H ../...

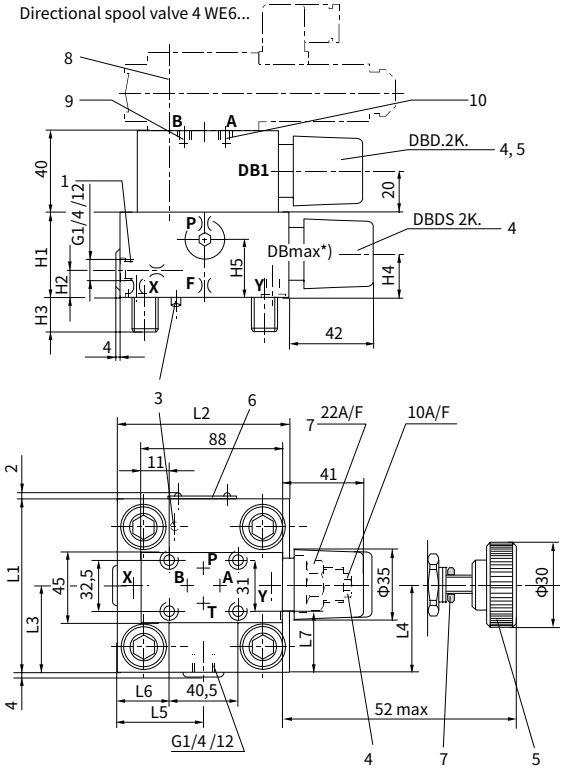
LFA..DBU2B.-7X...
NG16, 25, 32
4 WE10D ../...

LFA..DBU2A.-7X...
NG 40, 50, 63

LFA..DBU2B.-7X...
NG40, 50, 63
4 WE10D ../...

Control cover with 2 manual pressure adjustments, selected electrically

· **Types ..DBU2A...; ..DBU2B... (Nominal sizes** 16, 25 and 32**)**

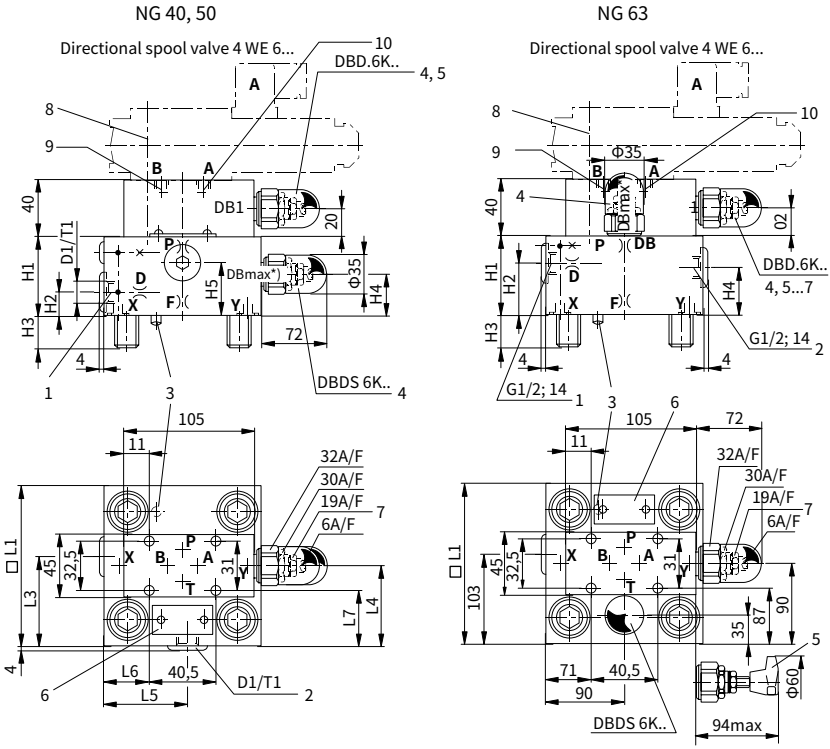


1 Port X optionally as a threaded port
2 Port Y optionally as a threaded port
3 Locating pin
4 Adjustment "2"
5 Adjustment "1"
6 Name plate
7 Locknut
8 Directional valve: .WE6...
Valve fixing screws: GB/T 70.1-M5×90-10.9, must be ordered separately
9 Lopped M6 used for ...DBU 2A...
10 Lopped M6 used for ...DBU 2B...
*) For DB max. only adjustment type "2" is possible

Size	H1	H2	H3	H4	H5	L1	L2	L3	L4	L5	L6	L7	Weight kg
16	40	17	15	19	28	65	80	36.5	32.5	35	7	17	2.8
25	40	19	24	19	28	85	85	49	45.5	36	8	27	3.4
32	50	26	28	26	37	100	100	56.5	53	57	31	34.5	4.8

Control cover with manual pressure adjustment, selected electrically

· Types ..DBU2A...; ..DBU2B... (Nominal sizes 40, 50 and 63)



1 Port X optionally as a threaded port
2 Port Y optionally as a threaded port
3 Locating pin
4 Adjustment "2"
5 Adjustment "1"
6 Name plate
7 Locknut
8 Directional valve: .WE6...
Valve fixing screws:
GB/T 70.1-M5×90-10.9,
must be ordered separately
9 Lopped M6 used for ...DBU 2A...
10 Lopped M6 used for ...DBU 2B...
*) For DB max. only adjustment type "2" is possible

Size	D1	T1	H1	H2	H3	H4	H5	L1	L3	L4	L5	L6	L7	Weight kg
40	G1/4	12	60	17	32	27	40	125	69	76	68	43.5	47	8.2
50	G1/2	14	68	19.5	34	35	50	140	80	84	74.5	51	54.5	11.1
63			82	55	50	45		180						20.4

Control cover with 3 manual pressure adjustments, selected electrically

· Types ..DBU3D... (Nominal sizes 16 to 63)

L-LFA		DBU3D	– 7X /	A...	B...	

Control cover

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

Control covers version

(Only for ..DB1..or ..Db2..) *)
Rotary knob =1
Hexagon with protective cap =2

Series 70 to 79 =7X
(70 to 79: unchanged installation and connection dimensions)

DBmax
DB2
DB1

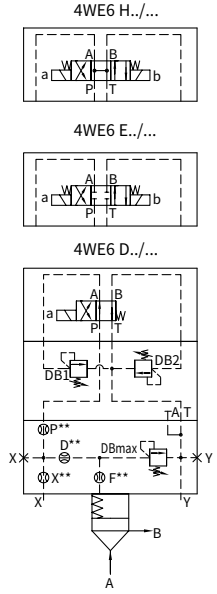
No code = NBR seals
V = FKM seals
(Other seals, please consult us!)
Caution:
The harmony of seals and fluid must be taken into account.

Pressure ratings
(Max. permissible pressure of pilot valve must be taken into account)

Sizes16, 25 and 32	Sizes 40, 50, 63
025 = 25bar	025 = 25bar
050 = 50bar	050 = 50bar
100 =100bar	100 = 100bar
200 = 200bar	200 = 200bar
315 = 315bar	315 = 315bar
420 = 420bar	400 = 400bar

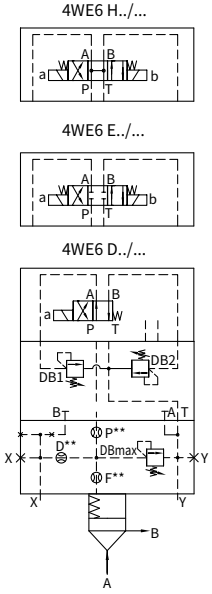
*) For DB1 or DB2, choose the same adjustment type

4WE6 H../...
4WE6 E../...
4WE6 D../...



L-LFA...DBU3D.-7X/...
Nominal sizes 16, 25 and 32

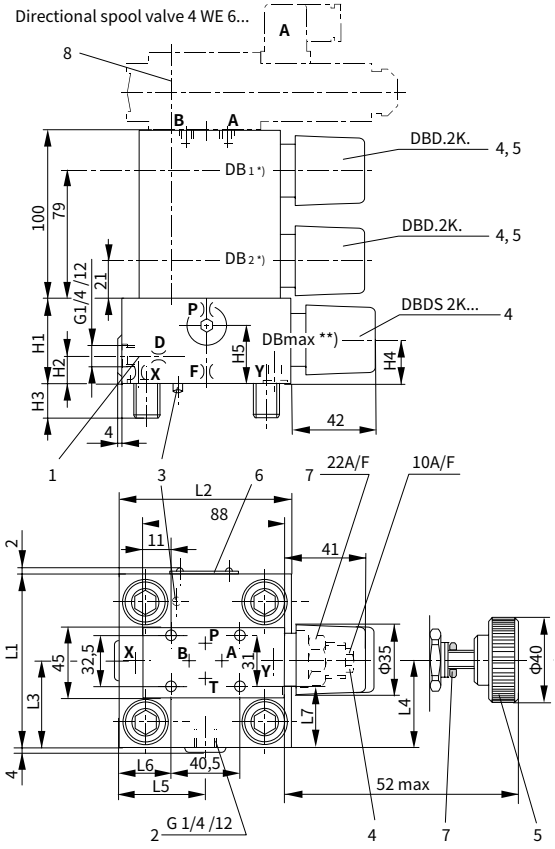
4WE6 H../...
4WE6 E../...
4WE6 D../...



L-LFA...DBU3D.-7X/...
Naominal sizes 40, 50 and 63

Control cover with 3 manual pressure adjustments, selected electrically

· Types ..DBU3D... (Nominal sizes 16, 25 and 32)



1 Port X optionally as a threaded port
2 Port Y optionally as a threaded port
3 Locating pin
4 Adjustment "2"
5 Adjustment "1"
6 Name plate
7 Locknut
8 Directional valve: .WE6...
Valve fixing screws:
GB/T 70.1-M5×150-10.9,
must be ordered separately

Size	H1	H2	H3	H4	H5	L1	L2	L3	L4	L5	L6	L7	Weight kg
16	40	17	15	19	28	65	80	36.5	32.5	35	7	17	4.7
25	40	19	24	19	28	85	85	49	45.5	36	8	27	5.1
32	50	26	28	26	37	100	100	56.5	53	57	31	34.5	6.8

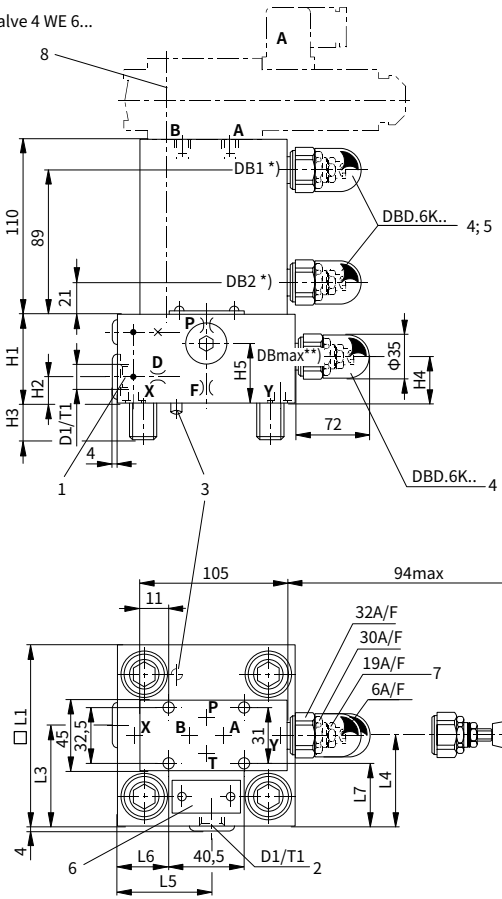
*) Same adjustment for ..DB1..and ..DB2..

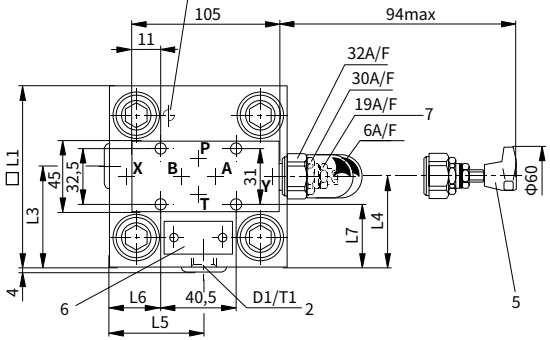
**) For DBmax. only adjustment version "2"is possible

Control cover with 3 manual pressure adjustments, selected electrically

· Types ..DBU3D... (Nominal sizes 40 and 50)

al spool valve 4 WE 6...





1 Port X optionally as a threaded port
2 Port Y optionally as a threaded port
3 Locating pin
4 Adjustment "2"
5 Adjustment "1"
6 Name plate
7 Locknut
8 Directional valve: .WE6... Valve fixing screws: GB/T 70.1-M5×160-10.9, must be ordered separately

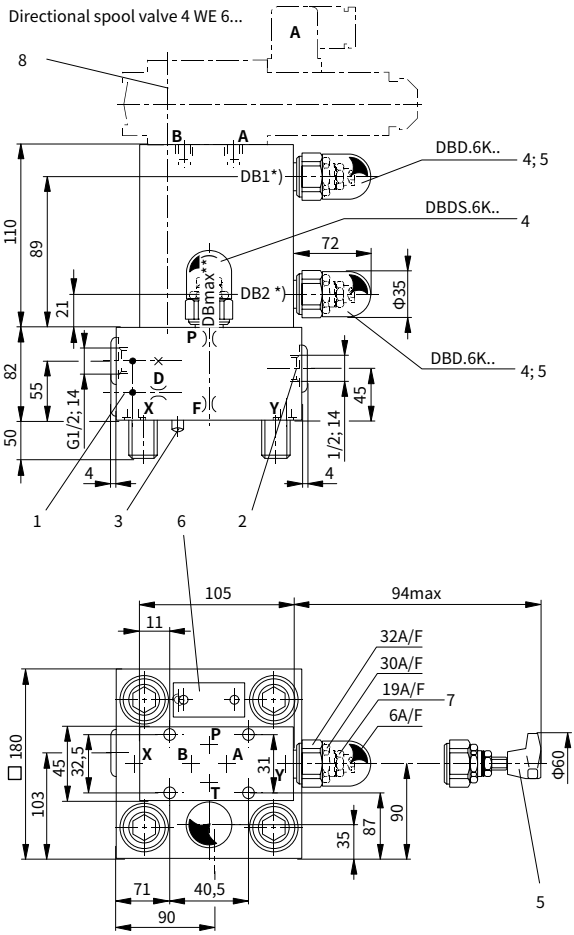
Size	D1	T1	H1	H2	H3	H4	H5	L1	L3	L4	L5	L6	L7	Weight kg
40	G1/4	12	60	17	32	27	40	125	69	76	68	43.5	47	10.7
50	G1/2	14	68	19.5	34	35	50	140	80	84	74.5	51	54.5	13.4

*) Same adjustment for ..DB1..and ..DB2..

**) For DBmax. only adjustment version "2" is possible

Control cover with 3 manual pressure adjustments, selected electrically

· Types ..DBU3D... (Nominal size 63)



1 Port X optionally as a threaded port
2 Port Y optionally as a threaded port
3 Locating pin
4 Adjustment "2"
5 Adjustment "1"
6 Name plate
7 Locknut
8 Directional valve: .WE6...
Valve fixing screws:
GB/T 70.1-M5×160-10.9, must be ordered separately

*) Same adjustment for ..DB1..and ..DB2..
**) For DBmax. only adjustment version "2"is possible

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Japan
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NO. HL-EN-L-LC.DR... 01/2024

2-way cartridge valves -pressure control function

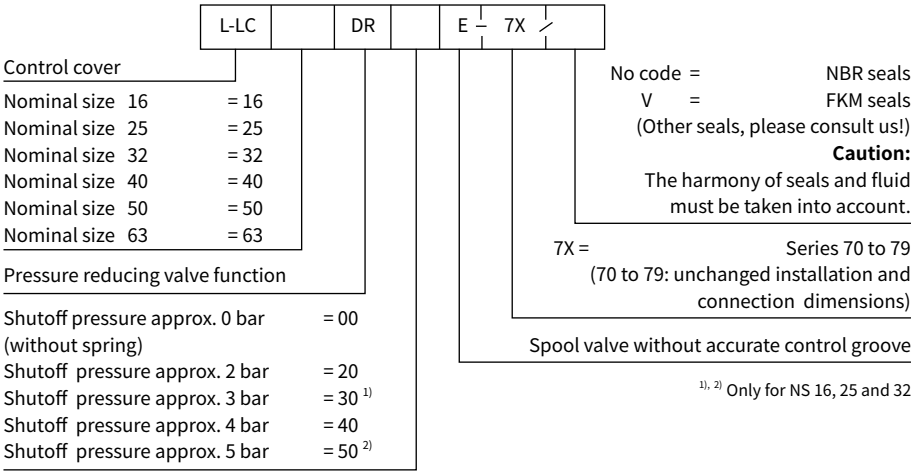
5.2-2(1)

Pressure reducing valve function

Cartridge valve Type L-LC.DR...

Ordering code

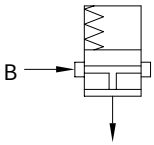
· Pressure reducing cartridge valve (without control cover type L-LFA..DB..)



1), 2) Only for NS 16, 25 and 32

Symbol: Cartridge valve

Type L-LC..DR..



Technical data

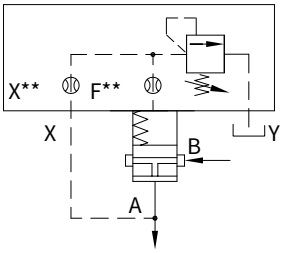
Max. working pressure	Port A and B	bar	315					
Max. flow-rate (reference)	Size		16	25	32	40	50	63
	L-LC..DR20.../..	L/min	100	200	300	750	1000	1600
	L-LC..DR40.../..		150	300	450	1000	1300	2000
Weight		kg	0.25	0.5	1.1	1.9	3.9	7.2
Fluid			Mineral oil suitable for NBR and FKM seal					
			Phosphate ester for FKM seal					
Fluid temperature range		°C	-30 to +80 (NBR seal)					
			-20 to +80 (FKM seal)					
Viscosity range		mm^2/s	2.8 to 380					
Degree of contamination			Maximum permissible degree of fluid contamination: Class 9. NAS 1638 or 20/18/15, ISO4406 [1)]					

For applications outside these parameters, please consult us.

[1)] To prevent the problem caused by fluid contamination, fluid cleanliness mentioned above must be met.

Caution!

It is composed with cartridge valve type L-LC..DR...and control cover type L-LFA..DB..

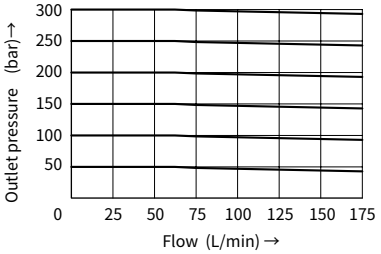


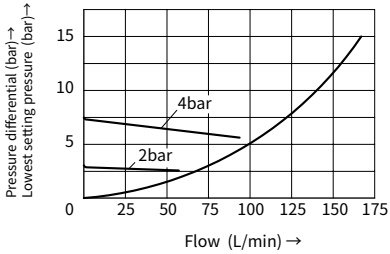
Pressure reducing function Normally open.

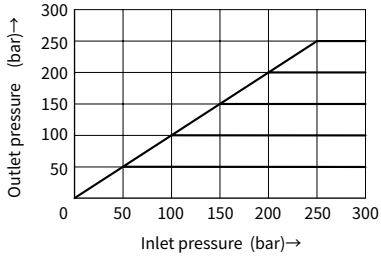
Example: Type L-LFA..DB... / Type L-LC..DR40...

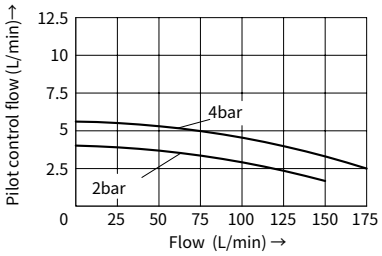
Characteristic curves (Measured at ϑ_{oil}=40°C ±5°C , using HLP46)

L-LC16DR...



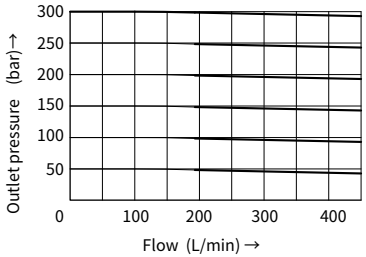


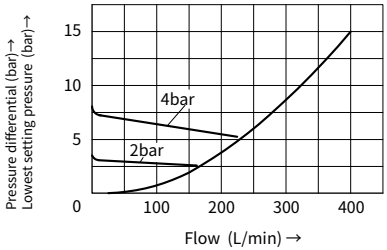


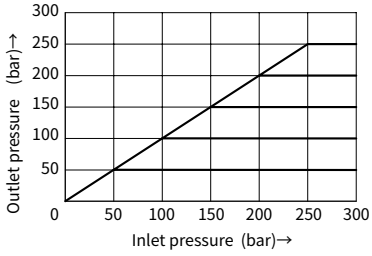


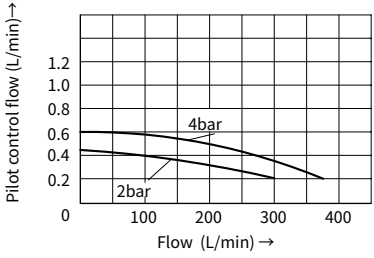
Measured when pa=50bar

L-LC 25 DR...





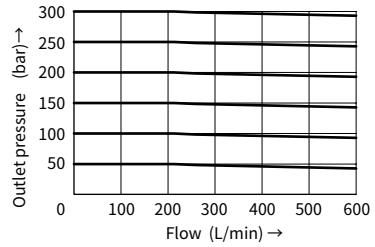


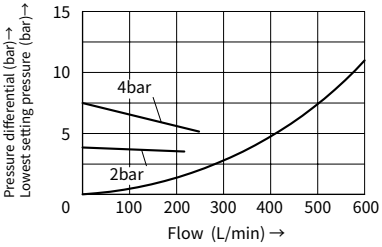


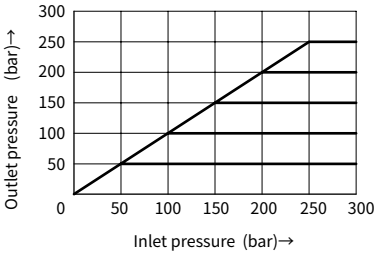
Measured when pa=50bar

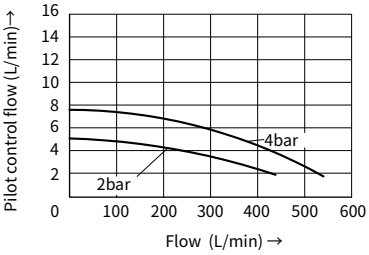
Characteristic curves (Measured at ϑ_{oil}=40°C ±5°C , using HLP46)

L-LC 32 DR...



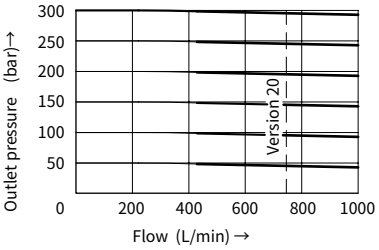


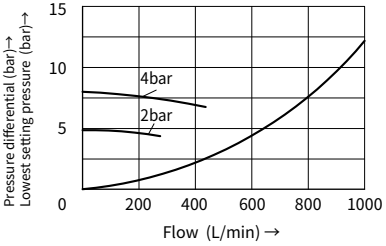


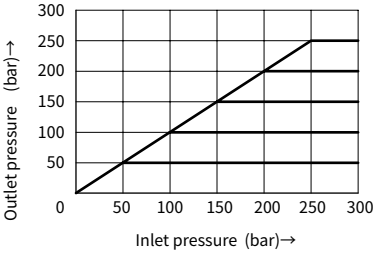


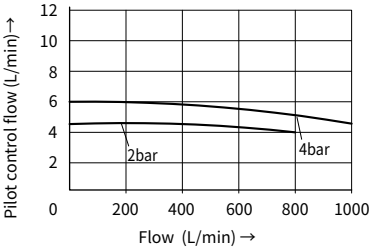
Measured when pa=50bar

L-LC 40 DR...





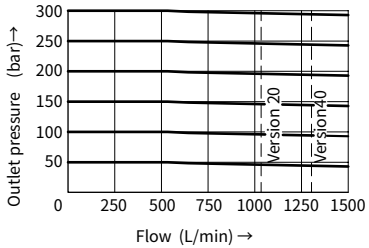


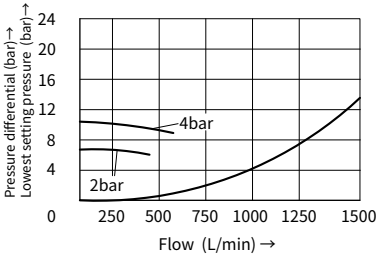


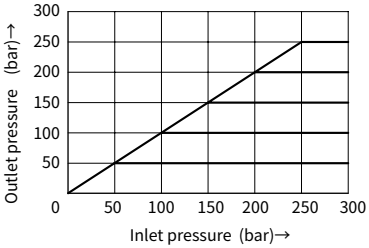
Measured when pa=50bar

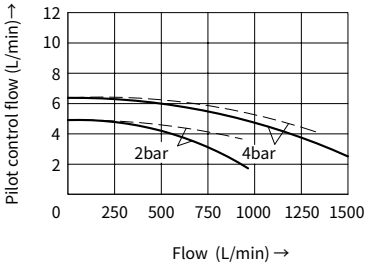
Characteristic curves (Measured at ϑ_{oil}=40°C ±5°C , using HLP46)

L-LC 50 DR...



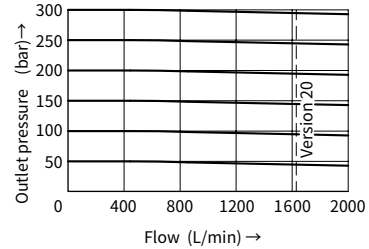


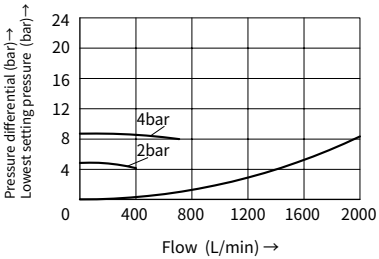


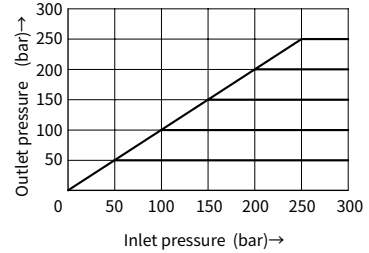


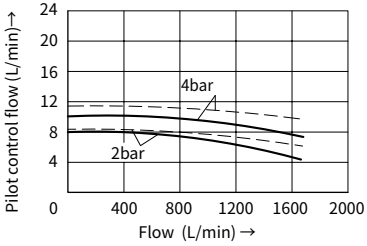
Measured when pa=50bar
—— pe=100bar
- - - pe=350bar

L-LC 63 DR...





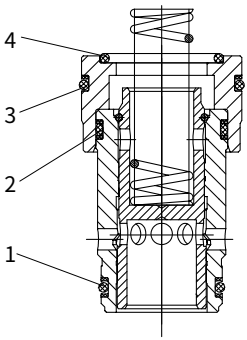




Measured when pa=50bar

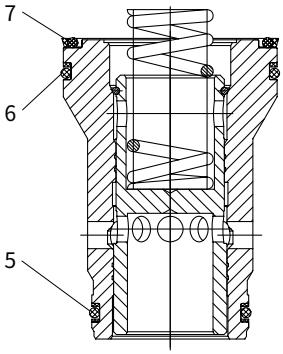
O-rings for cartridge valve type L-LC

Nominal sizes 16, 25 and 32



Type L-LC..DR...

Nominal sizes 40, 50 and 63



Type L-LC..DR...

O-rings

Nominal size			
No.	16	25	32
1	21.2×1.8	28×2.65	40×2.65
2	22.4×2.65	32.5×2.65	43.7×3.55
3	26.5×2.65	38.7×3.55	54.5×3.55
4	20×2.65	30×2.65	37.5×3.55

Nominal size			
No.	40	50	63
5	48.7×3.55	61.5×3.55	80×5.3
6	69×3.55	80×5.3	109×5.3
7	67×3.55	77.5×5.3	106×5.3

NO. HL-EN-L-LFA.DR... 01/2024

2-way cartridge valves -pressure control function

5.2-2(2)

Pressure reducing valve function

Control cover Type L-LFA.DR...

Technical data

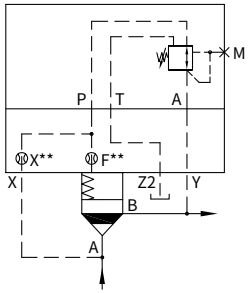
Fluid		Mineral oil suitable for NBR and FKM seal					
		Phosphate ester for FKM seal					
Fluid temperature range	°C	-30 to +80 (NBR seal)					
		-20 to +80 (FKM seal)					
Viscosity range	mm^2/s	2.8 to 380					
Degree of contamination		Maximum permissible degree of fluid contamination: Class 9. NAS 1638 or 20/18/15 , ISO4406 [1)]					
Nominal size		16	25	32	40	50	63
Weight	kg	3.1	3.6	5.2	8	11.4	20.8

(L-LFA.DR (DRW) ...for applications outside these parameters, please consult us)

[1)] To prevent the problem caused by fluid contamination, fluid cleanliness mentioned above must be met.

Control cover with pressure reducing function

Control cover		
Max. working pressure at the port...		Control cover type L-LFA..DR.-../... L-LFA..DRW.-../...
...X (Basic pressure)		315bar
...Y (Secondary pressure = max. remove period setting pressure)		315bar
...Z2	As control pressure	0 pressure (up to 2bar)
	Static	60bar



Caution:
Composed with control cover type L-LFA..DR...and cartridge type L-LC..DB... .

Pressure reducing function
Normally closed

Example: Type L-LFA..DR... / Type L-LC..DB 40 D...

O-rings dimensions for ports X, Y, Z1, Z2 (included within the scope of supply)

Size	Dimension (mm)
16	8×1.8
25	9.25×1.78
32	10.82×1.78

Size	Dimension (mm)
40	12×2.5
50	
63	18.72×2.62

Fixing screw (included within the scope of supply)

In accordance with GB/T70.1 10.9			
Nominal size	Quantity	Dimension	Tightening torque (Nm)
16	4	M8×45	32
25		M12×50	110
32		M16×60	270

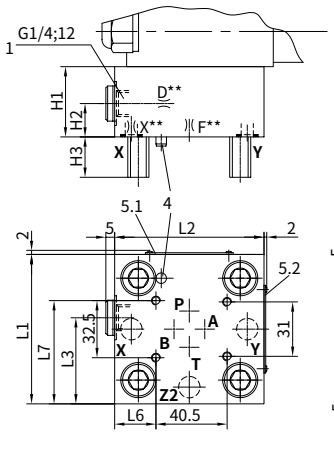
In accordance with GB/T70.1 10.9			
Nominal size	Quantity	Dimension	Tightening torque (Nm)
40	4	M20×70	520
50		M20×80	520
63		M30×100	1800

Control cover with pressure reducing function

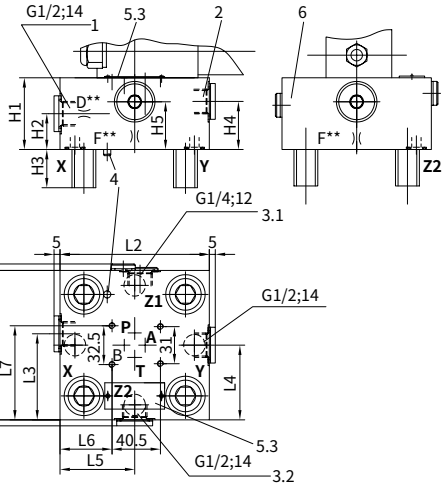
(Dimensions in mm)

Control cover for type DR、DRW

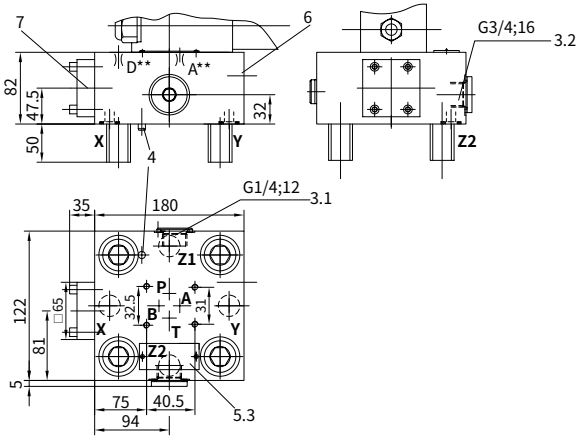
Nominal sizes 16, 25 and 32



Nominal sizes 40 and 50



Nominal 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	140
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 port (For nominal sizes 16 to 50)
2 Optional port Y used as threaded port (For nominal sizes 40 and 50)
3.1 Optional port Z1 used as threaded port (For nominal sizes 25 to 63)
3.2 Optional port Z2 used as threaded port (For nominal sizes 40, 50 and 63)
4 Locating pin
5.1 Nameplate (Size 16)
5.2 Nameplate (Sizes 25 and 32)
5.3 Nameplate (Sizes 40, 50 and 63)
6 Check valve (For sizes 40, 50 and 63)
7 For control cover size 63
Cartridge size 16

Control cover with pressure reducing function

· Types ..DR... (Nominal sizes 16 to 63)

L-LFA | | DR | – 7X / |

Control cover

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

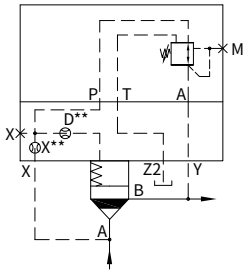
Control covers version

Regulation form:
Rotary knob = 1
Hexagon with protective cap = 2

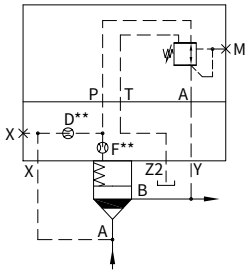
No code = NBR seals
V = FKM seals
(Other seals, please consult us!)
Caution:
The harmony of seals and fluid must be taken into account.

025 = Max. secondary pressure 25 bar
075 = Max. secondary pressure 75 bar
150 = Max. secondary pressure 150 bar
210 = Max. secondary pressure 210 bar
315 = Max. secondary pressure 315 bar

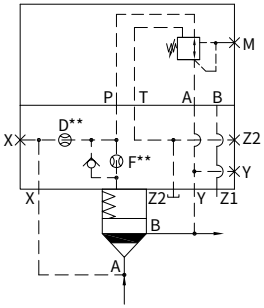
7X = Series 70 to 79
(70 to 79: unchanged installation and connection dimensions)



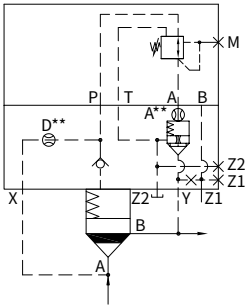
L-LFA...DR.7X/...
Nominal size 16



L-LFA...DR.7X/...
Nominal sizes 25 and 32



L-LFA...DR.7X/...
Nominal sizes 40 and 50

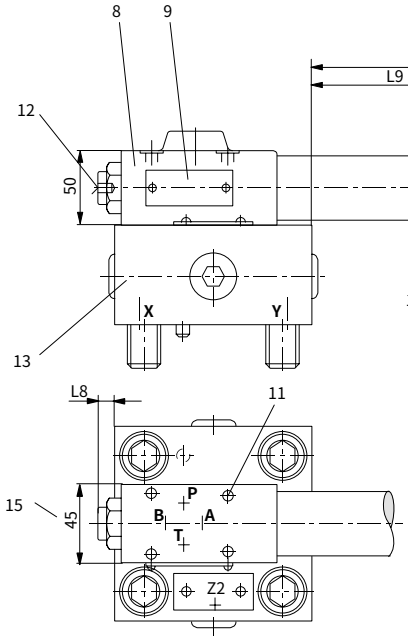


L-LFA...DR.7X/...
Nominal size 63

Control cover with pressure reducing function

(Dimensions in mm)

· Types ..DR... (Nominal sizes 16 to 63)



Nominal		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 dimension		See Page ''41/46''					

6 Adjustment element "2"
7 Adjustment element "1"
8 Direct operated pressure reducing valve (is included within the scope of supply)
9 Name plate for pressure reducing valves
11 Valve fixing screws
M5×50 GB/T 70.1-10.9 M_A = 8.9 Nm
are included within the control cover scope of supply
12 Pressure gauge port G1/4, 12 deep; Socket screw A/F6
13 Control cover
14 Locknut A/F24
15 For type .../315 → 50 mm

Control cover with pressure reducing function

· Types ..DRW... (Nominal sizes 16 to 63)

L-LFA		DRW	– 7X /	

Control cover

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

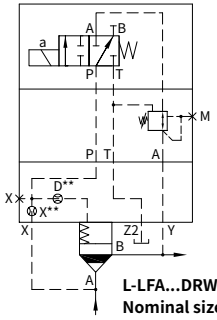
Control covers version

Regulation form:
Rotary knob = 1
Hexagon with protective cap = 2

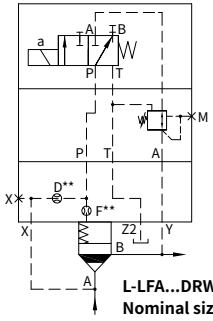
No code = NBR seals
V = FKM seals
(Other seals, please consult us!)
Caution:
The harmony of seals and fluid must be taken into account.

025 = Max. secondary pressure 25 bar
075 = Max. secondary pressure 75 bar
150 = Max. secondary pressure 150 bar
210 = Max. secondary pressure 210 bar
315 = Max. secondary pressure 315 bar

7X = Series 70 to 79
(70 to 79: unchanged installation and connection dimensions)



L-LFA...DRW.-7X/...
Nominal size 16

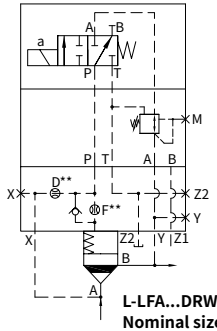


L-LFA...DRW.-7X/...
Nominal sizes 25 and 32

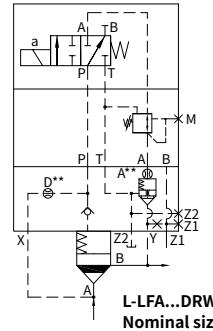
3WE6B9...

Solenoid breakaway → Closed

Solenoid electrified →
Pressure reducing function



L-LFA...DRW.-7X/...
Nominal sizes 40 and 50



L-LFA...DRW.-7X/...
Nominal size 63

3WE6B9...

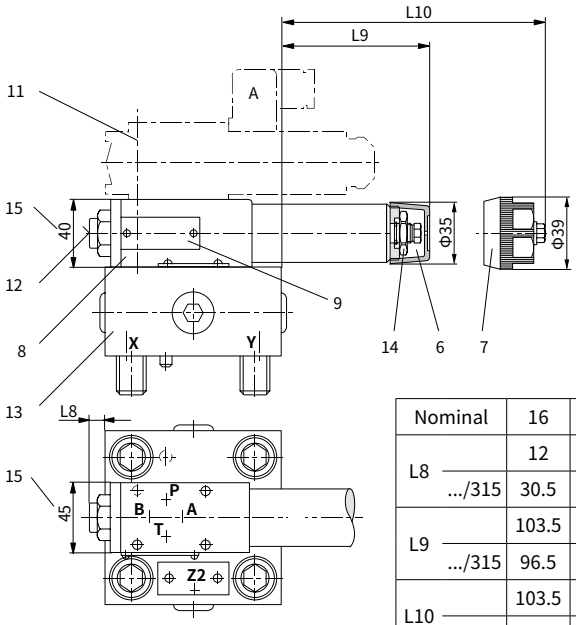
Solenoid breakaway → Closed

Solenoid electrified →
Pressure reducing function

Control cover with pressure reducing function

(Dimensions in mm)

· Types ..DRW... (Nominal sizes 16 to 63)



Nominal		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 dimension		See Page ''41/46''					

6 Adjustment element "2"
7 Adjustment element "1"
8 Direct operated pressure reducing valve (is included within the scope of supply)
9 Pressure reducing valve name plate
11 Valve fixing screws
M5×90 GB/T 70.1-10.9 M_A = 8.9 Nm are included within the control cover scope of supply.
Solenoid directional valve 3WE6B9... must be ordered separately
12 Pressure gauge port G1/4, 12 deep; Socket screw A/F6
13 Control cover
14 Locknut A/F24
15 For type .../315 → 50 mm

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