OEM HYDRAULICS

2–way Cartridge Valve Series

E.1.1–.5.3

Brief

2–way cartridge valves are elements that have been designed for a compact block design. In most cases, the cover is simultaneously the connection from the control side of the power section to the pilot control valves.

By control with respective pilot control valves, the power section can be applied for pressure, directional and throttle functions or a combination of these functions.

Particularly efficient solutions are realized by adjustment of the size to various flows of the individual ways of an actuator.

The power section with connections A and B is installed into the control block in a receiving hole standardized according to ISO 7368 and closed with a cover.

The application of power sections of elements for multiple functions is very cost–effective a hydraulically controlled directional seat valve or a shuttle valve according to the required overall function.

2–way cartridge valves generally consist of control cover and installation kit.

The control cover contains the control bores and optionally a stroke limitation function,

Additionally, electrically operated directional spool or seat valves can be installed at a control cover.

The installation kit consists of a bushing , ring (only up to NG32), valve poppet, optionally with damping nose or without damping nose as well as closing spring .

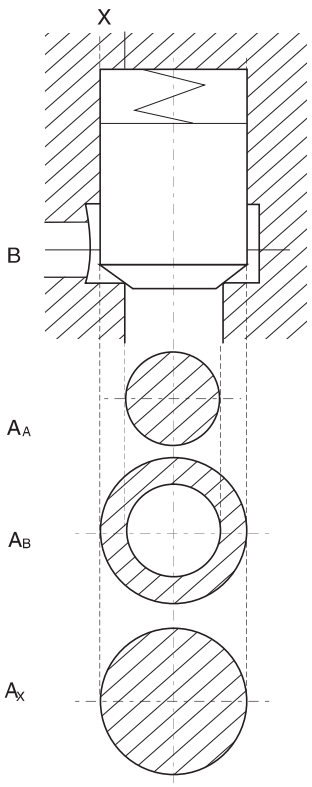
The function of 2–way cartridge valves is pressure–dependent. This way, three crucial pressurized areas A_A, A_B, Ax are realized for the function.

The area at the valve seat A_A is considered as 100%. Depending on the version, the annulus area A_B realized by grading is 7% or 50% of area A_A.

The area ratio A_A : A_B is respectively either 14.3 : 1 or 2 : 1. The area A_X is identical to the sum of areas $A_A + A_B$.

Due to the different area ratios A_A : A_B and the resulting different annulus areas (A_B),

The area A_X is one time 107% and another time 150% of the area A_A at the seat, which is observed as 100%



2–way Cartridge Valve (Direction Function)

Technical data

Sise	16	25	32	40	50	63
Max working pressure(Mpa)	31.5					
Max flow rate (L/min)	160	460	800	1200	1800	2700
Working fluid	Mineral hydraulic oil; phosphate ester hydraulic oil					
Fluid temp (℃)	–20~70					
Fluid viscosity (mm^2/s)	–2.8~500					
Cleanliness	NAS1638 Class 9, recommended filtration precision Min β ≥75.					

HYLC is a high–flow rate and high–pressure logic valve mainly to control the oil on/off, shall work together with the coverplate.

Model description

HYLC – ＊ – ＊ – ＊ – ＊ – ＊ / ＊ ＊

2–way cartridge valve (direction function)

Specification
16 DN16
25 DN25
32 DN32
40 DN40
50 DN50
63 DN63

50 series
A area ratio 2:1 (annular area=50%)
B area ratio 14.3:1 (annular area=7%)
90series
area ratio 3:1 (annular area=33%)

00 Cracking pressure 0 bar (without spring)
05 Cracking pressure approx. 0.05Mpa
10 Cracking pressure approx. 0.1Mpa
20 Cracking pressure approx. 0.2Mpa
40 Cracking pressure approx. 0.4Mpa

E Valve poppet without damping nose
D Valve poppet with damping nose

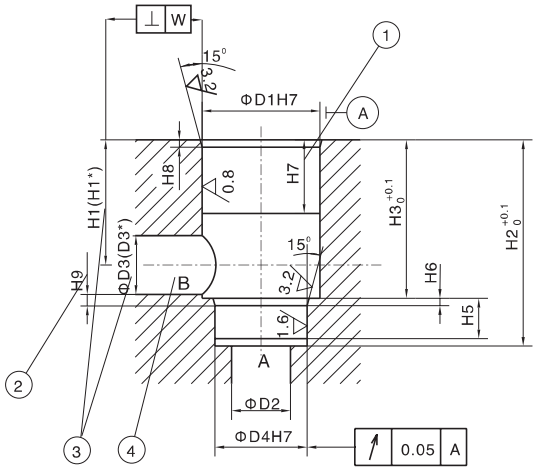
Seal material
omit NBR
V FPM

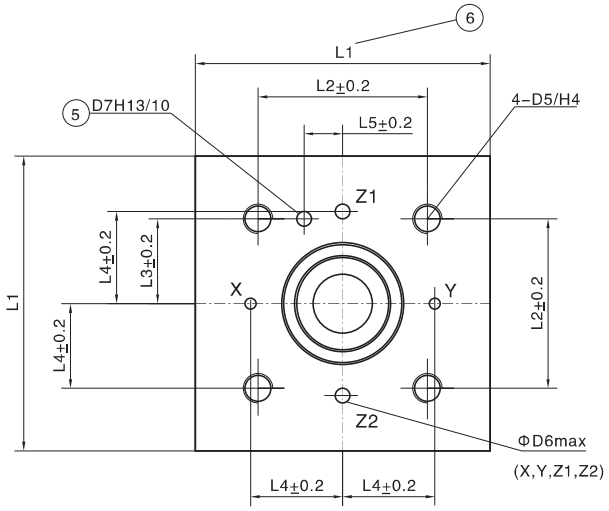
Serial number
5 0
51

Remark

2–way Cartridge Valve (Direction Function)

Dimension





1. depth of fit
2. Reference size
3. Due to the use of a bore with ϕD3*, port B protrudes over the upper limit of the area intended in ISO 7368 This is, however, possible due to the sealing concept and reduces the pressure loss during flow through the valve. Thus, we recommend a bore with ϕD3
4. Port B can be positioned around the central axis of port A.
   However, it must be observed that the mounting bores and the control bores are not damaged
5. Bore for locating pin
6. 80 mm only with control cover for directional valve set–up NG16 (axis X–Y bores)

规格	ΦD1H7	ΦD2H7	ΦD3H7	(ΦD3*)	ΦD4	ΦD5	ΦD6H7	ΦD7	H1	(H1*)	H2	H3
16	32	16	16	25	25	M8	4	4	34	29.5	56	43
25	45	25	25	32	34	M12	6	6	44	40.5	72	58
32	60	32	32	40	45	M16	8	6	52	48	85	70
40	75	40	40	50	55	M20	10	6	64	59	105	87
50	90	50	50	63	68	M20	10	8	72	65.5	122	100
63	120	63	63	80	90	M30	12	8	95	86.5	155	130

规格	H4	H5	H6	H7	H8	H9	L1	L2	L3	L4	L5	W
16	20	11	2	20	2	0.5	65/80	46	23	25	10.5	0.05
25	25	12	2.5	30	2.5	1	85	58	29	33	16	0.05
32	35	13	2.5	30	2.5	1.5	102	70	35	41	17	0.1
40	45	15	3	30	3	2.5	125	85	42.5	50	23	0.1
50	45	17	3	35	4	2.5	140	100	50	58	30	0.1
63	65	20	4	40	4	3	180	125	62.5	75	38	0.2

Coverplate(Direction Function)

Technical data

Sise	16	25	32	40	50	63
Max working pressure (MPa)	31.5					
	Mineral hydraulic oil; phosphate ester hydraulic oil					
Working fluid (℃)	−20~70					
Fluid temp (mm^2/s)	−2.8~500					
Cleanliness	NAS1638 Class 9, recommended filtration precision Min β ≥75.					

HYLFA is controlthe logicvalve on/off. Different coverplates can realize diverse flow rates and direction of the hydraulic fluid.

E.3.1

Model description

HYLFA − ＊ − ＊ − ＊ / 50 ＊

Coverplate (direction function)

Specification
16 DN16
25 DN25
32 DN32
40 DN40
50 DN50
63 DN63

Model
Refer to code details

Seal material
omit NBR
V FPM

Serial number

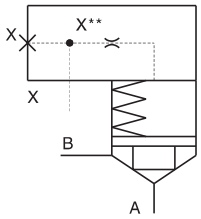
Remark

Control Cover Type Hylfa

Model description

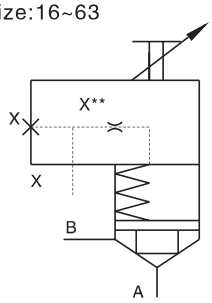
LFA...D.../F

Control cover with remote control port
Size:16~63



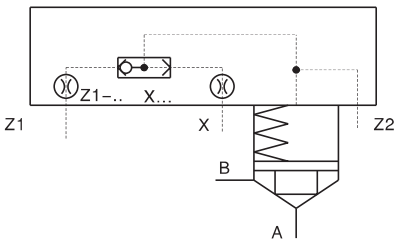
LFA...H2.../F

Control cover with stroke limitation and remote control port
Size:16~63



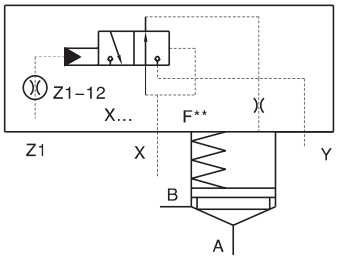
LFA...G.../...

Control cover with integrated shuttle valve
Size:16~63



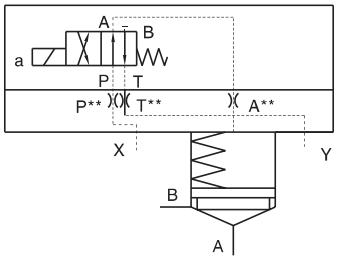
LFA...R.../...

Control cover with integrated pilot operated pilot control valve (directional seat valve)
Size:16~63



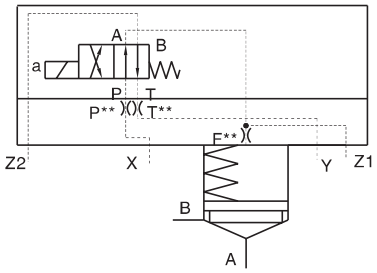
LFA...WEA.../...

Control cover for set-up of a directional valve
Size:16~63



LFA...WEA8-60/...

Control cover for set-up of a directional valve; additional control port
Size:16~63

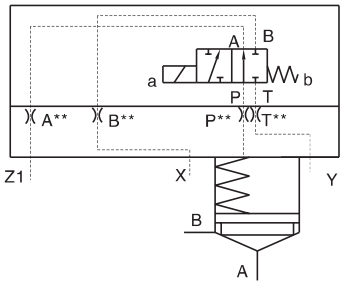


Control Cover Type Hylfa

Model description

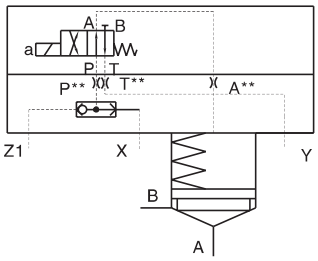
LFA...WEA9–60/...

Control cover for set–up of a directional spool valve as check valve circuit
Size:16~63



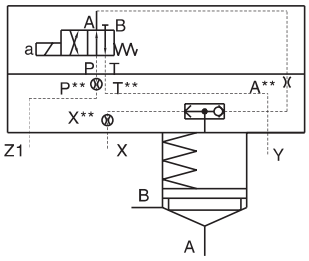
LFA...GWA.../...

Control cover for set–up of a directional spool or seat valve, with integrated shuttle valve
Size:16~63



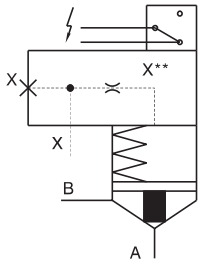
LFA...KWA.../...

Cntrol cover with shuttle valve and for set–up of a directional valve (check valve circuit)
Size:16~63



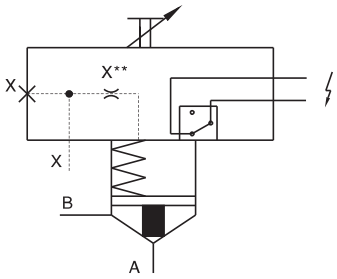
LFA...E60/...DQ.G24F

Control cover with electric close position monitoring, incl. installation kit
Size:16~63



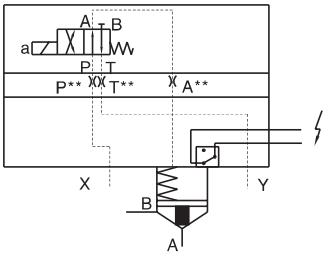
LFA...EH2–60/...DQ.G24F

Control cover with electric close position and stroke limitation monitoring, incl. installation kit
Size:16~63



LFA...EWA60/...DQOG24

Control cover with electric monitoring of the close position, for mounting a directional spool valve
Size:16~63



2–way Cartridge Valve (Pressure Function)

Technical data

Sise	16	25	32	40	50	63
Max working pressure (MPa)	31.5					
Max flow rate (L/min)	250	400	600	1000	2000	2500
Working fluid	Mineral hydraulic oil; phosphate ester hydraulic oil					
Fluid temp (℃)	–20~70					
Fluid viscosity (mm^2/s)	–2.8~500					
Cleanliness	NAS1638 Class 9, recommended filtration precision Min β ≥75.					

HYLCis a high–flow high–pressure logic valve, mainly to control the hydraulic oil on/off shall work together the coverplate

Model description

HYLC – ＊ – DB – ＊– ＊– ＊ / 50 ＊

pressure relief cartridge valve

Specification
16 DN16
25 DN25
32 DN32
40 DN40
50 DN50
63 DN63

00 Opening pressure approx. 0 Mpa (without spring)
20 Opening pressure approx. 0.2 Mpa
40 Opening pressure approx. 0.4 Mpa

E Poppet valve
D Spool poppet valv
A Poppet valve with orifice
B Spool poppet valve with orifice

Seal material
omit NBR
V FPM

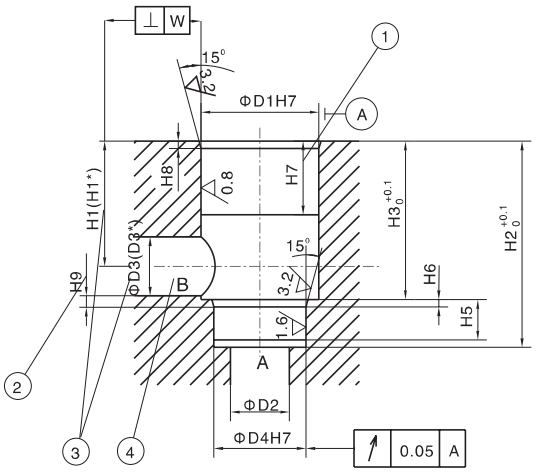
Serial number

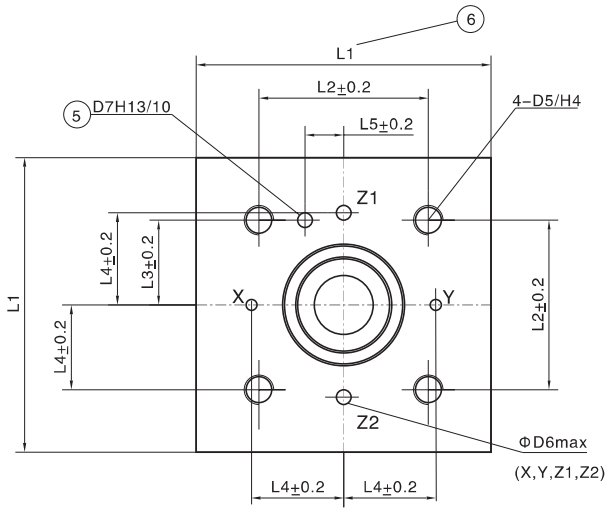
Remark

E.4.1

2–way Cartridge Valve (Pressure Function)

Dimension





1. depth of fit
2. Reference size
3. Due to the use of a bore with ϕD3*, port B protrudes over the upper limit of the area in tended in ISO 7368.This is, however, possible due to the sealing concept and reduces the pressure loss during flow through the valve. Thus, we recommend a bore with ϕD3.
4. Port B can be positioned around the central axis of port A.
   However, it must be observed that the mounting bores and the control bores are not damaged.
5. Bore for locating pin
6. 80 mm only with control cover for directional valve set–up NG16 (axis X–Y bores)

Specification	ΦD1H7	ΦD2H7	ΦD3H7	(ΦD3*)	ΦD4	ΦD5	ΦD6H7	ΦD7	H1	(H1*)	H2	H3
16	32	16	16	25	25	M8	4	4	34	29.5	56	43
25	45	25	25	32	34	M12	6	6	44	40.5	72	58
32	60	32	32	40	45	M16	8	6	52	48	85	70
40	75	40	40	50	55	M20	10	6	64	59	105	87
50	90	50	50	63	68	M20	10	8	72	65.5	122	100
63	120	63	63	80	90	M30	12	8	95	86.5	155	130

规格	H4	H5	H6	H7	H8	H9	L1	L2	L3	L4	L5	W
16	20	11	2	20	2	0.5	65/80	46	23	25	10.5	0.0
25	25	12	2.5	30	2.5	1	85	58	29	33	16	0.05
32	35	13	2.5	30	2.5	1.5	102	70	35	41	17	0.1
40	45	15	3	30	3	2.5	125	85	42.5	50	23	0.1
50	45	17	3	35	4	2.5	140	100	50	58	30	0.1
63	65	20	4	40	4	3	180	125	62.5	75	38	0.2

Coverplate(Pressure Function)

Technical data

Sise	16	25	32	40	50	63
Max working pressure (MPa)	31.5					
Working fluid	Mineral hydraulic oil; phosphate ester hydraulic oil					
Fluid temp (℃)	–20~70					
Fluid viscosity (mm^2/s)	–2.8~500					
Cleanliness	NAS1638 Class 9, recommended filtration precision Min β ⩾75.					

HYLFA is to control the logic valve on/off, different coverplate can realize different fluid pressure.

Ordering code

HYLFA – * – * – * / * *

Coverplate(pressure function)

Remark

Specification
16 DN16
25 DN25
32 DN32
40 DN40
50 DN50
63 DN63

Serial number
50
90

Model
Refer to code details

Seal material
omit NBR
V FPM

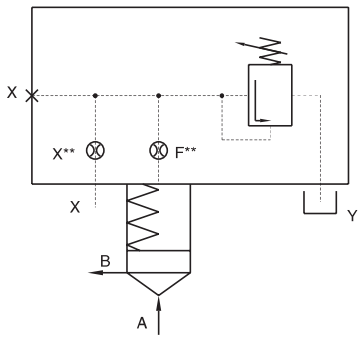
E.5.1

Coverplate(Pressure Function)

Ordering code

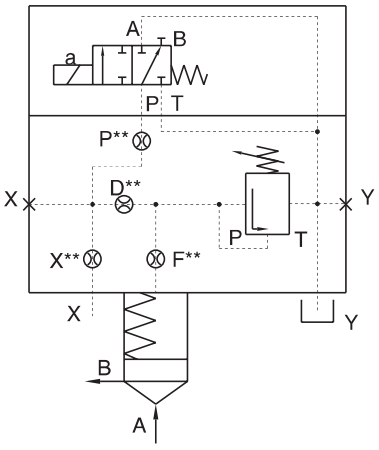
LFA...DB.–/..16...63

Control cover with manual pressure adjustment



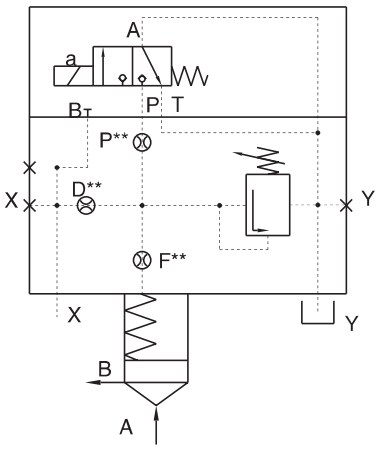
LFA...DBW.–/..16...63

Control cover with manual pressure adjustment, for electrical unloading
For mounting a directional spool or directional poppet valve



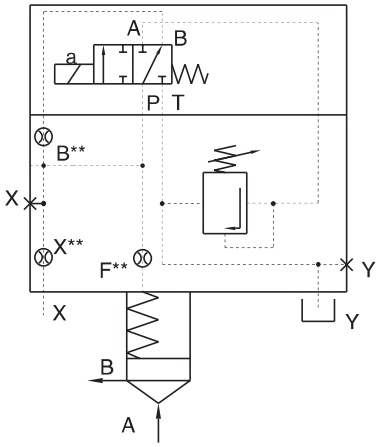
LFA...DBS.–/..16...63

Control cover with manual pressure adjustment, for electrical unloading
For mounting a directional poppet valve



LFA...DBWD.–/..16...63

Control cover with manual pressure adjustment, for isolation functions

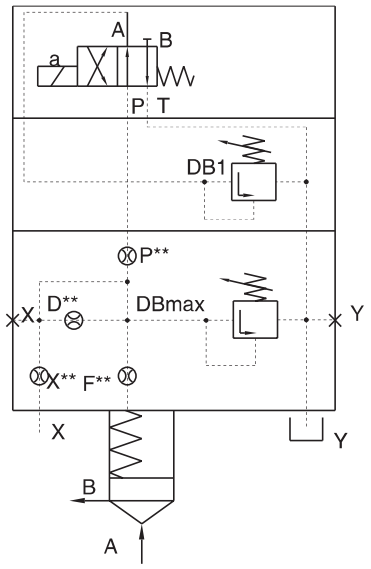


Coverplate (Pressure Function)

Function code

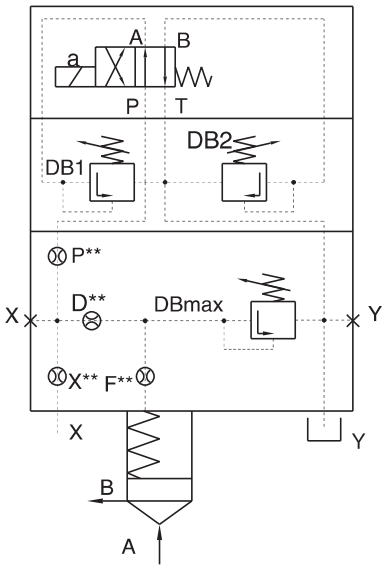
LFA...DBU 2A.–/..16...63

Control cover with 2 manual pressure adjusters, electrically selectable



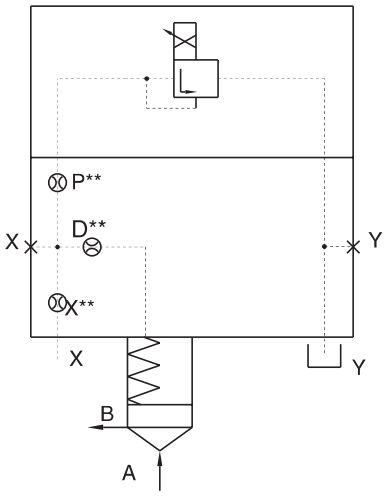
LFA...DBU 3D.–/..16...63

Control cover with 3 manual manual pressure adjusters, electrically selectable



LFA...DBU(TR).–/..16...63

Control cover for electrical–proportional pressure adjustment



LFA...DBEM(TR).–/..16...63

Control cover for electrical–proportional pressure adjustment, with maximum pressure limitation