2-way cartridge valves, directional functions

Type LC (cartridge valves)
Type LFA (control cover)

RE 21010
Edition: 2017-05
Replaces: 2014-09



H8030...8033

- Standard series
- Size 16 ... 160
- Component series 2X; 6X; 7X
- Maximum operating pressure 420 bar
- Maximum flow 25,000 l/min

Features

- Valve poppet with or without damping nose
- 2 area ratios
- 6 different cracking pressures
- 4 stroke limitations
- Control cover with integrated seat valve
- Control cover with integrated shuttle valve
- Control cover for set-up of directional spool valves with or without installed shuttle valve

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Ordering code: Control cover type LFA...

01	02	03		04		05	06	07	08	09	10	11	12	13	14	15
LFA			**–**		**/**											

01	Control cover	**LFA**

02	Size 16	**16**
	Size 25	**25**
	Size 32	**32**
	Size 40	**40**
	Size 50	**50**
	Size 63	**63**
	Size 80	**80**
	Size 100	**100**
	Size 125	**125**
	Size 160	**160**

Control cover types

03	Control cover with remote control port (NG16 ... 160)	**D**
	Control cover with stroke limitation (hand wheel) and remote control port (NG16 ... 63)	**H1**
	Control cover with stroke limitation (internal hexagon) and remote control port (NG16 ... 160)	**H2**
	Control cover with stroke limitation (rotary knob, lockable) and remote control port (NG16 ... 40)	**H3**
	Control cover with stroke limitation (rotary knob) and remote control port (NG16 ... 100)	**H4**
	Control cover with integrated shuttle valve (NG16 ... 100)	**G**
	Control cover with integrated pilot operated pilot control valve (directional seat valve) (NG25 ... 100)	**R**
	Control cover with integrated pilot operated pilot control valve (directional seat valve) (NG25 ... 100)	**RF**
	Control cover for set-up of a directional valve (NG16 ... 160)	**WEA**
	Control cover for set-up of a directional valve (NG16 ... 160)	**WEB**
	Control cover for set-up of a directional valve; additional control port (NG16 ... 125)	**WEMA**
	Control cover for set-up of a directional valve; additional control port (preferably "WEMA") (NG16 ... 100)	**WEMB**
	Control cover for set-up of a directional valve (check valve circuit) (NG16 ... 100)	**WECA**
	Control cover with shuttle valve and for set-up of a directional valve (NG16 ... 100)	**GWA**
	Control cover with shuttle valve and for set-up of a directional valve (preferably "GWA") (NG16 ... 100)	**GWB**
	Control cover with shuttle valve and for set-up of a directional valve; additional control port (NG16 ... 100)	**GWMA**
	Control cover with two check valves and for set-up of a directional valve; additional control port (NG16 ... 100) [1]	**GWMA20**
	Control cover with shuttle valve and for set-up of a directional valve (check valve circuit) (NG16 ... 100) [1]	**KWA**
	Control cover with shuttle valve and for set-up of a directional valve (check valve circuit) (NG16 ... 100) [1]	**KWB**
	Control cover with shuttle valve and for set-up of a directional valve; additional control port (NG16 ... 100)	**KWMA**
	Control cover for set-up of a directional valve with stroke limitation (NG16 ... 63) [1]	**HWMA**
	Control cover for set-up of a directional valve with stroke limitation (NG16 ... 63) [1]	**HWMB**

04	Component series 70 ... 79 (70 ... 79: unchanged installation and connection dimensions) (NG16 ... 63)	**7X**
	Component series 60 ... 69 (60 ... 69: unchanged installation and connection dimensions) (NG80 ... 100)	**6X**
	Component series 20 ... 29 (20 ... 29: unchanged installation and connection dimensions) (NG125 ... 160)	**2X**

Remote control port

05	For more detailed information, please refer to the pages of the individual control cover variants	

Orifices

06 ... 12	For more detailed information, please refer to the pages of the individual control cover variants and to page 95 (orifice characteristic curves).	

[1] Other sizes upon request

Ordering code: Control cover type LFA...

01	02	03		04		05	06	07	08	09	10	11	12	13	14	15
LFA			**–**		**/**											

Corrosion resistance

13	None	**no code**
	Improved corrosion protection (240 h salt spray test according to EN ISO 9227)	**J3**

Seal material

14	NBR seals	**no code**
	FKM seals	**V**
	Observe compatibility of seals with hydraulic fluid used. (Other seals upon request)	

Connections, mounting and plug screws

15	Mounting screws, metric; connections inch thread	**no code**
	Mounting screws UNC; connections UNF	**/12**

☞ **Notice:**
Additional functions with special numbers see from page 97.

Orifice symbol		Symbol in ordering code		
A**		**A****		This orifice is designed as screw-type orifice. If an orifice is to be installed, the respective code letter with the orifice Ø in 1/10mm has to be entered in the type designation. Example: **A12 =** orifice with Ø1.2 mm in channel A.
Ø1.2				This orifice is designed as bore. No specifications are made in the type designation. (Orifice Ø in mm)
Z12				This orifice is designed as screw-type orifice. This is a standard orifice. No specifications are made in the type designation. (Orifice Ø in 1/10 mm)

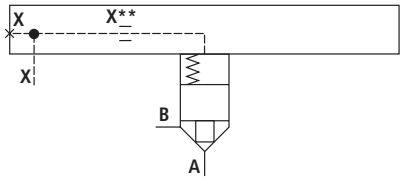
Pilot control valve (separate order)

Control cover		Pilot control valve	
Size	**Design**	**Size**	**Description**
16 ... 50	WE., WEM., WECA, GW., KW.	6	4/3-, 4/2-, 3/2-directional spool valve, direct operated (subplate mounting) 2/2-, 3/2-, 4/2 directional seat valve, direct operated (subplate mounting)
63 ... 100	WE., WEM., WECA, GW., KW.	10	
125	WE., WEMA, KW.	10, 16	
160	WE.	25	

☞ **Notice:**
- By combination of a 2-way cartridge valve with a pilot control valve, various valve functions can be realized. Possible pilot control valves according to ISO 4401 see selection table above.
- Mounting screws for pilot control valves are not included in the scope of delivery.

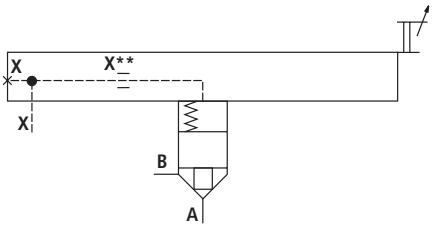
Symbols

Version "D" (NG16 ... 160)
Control cover with remote control port



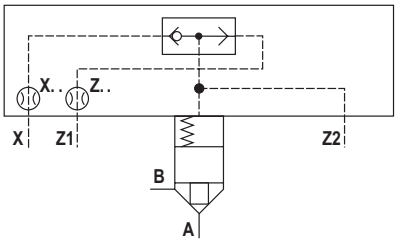
See page 18 and 19

Version "H." (NG16 ... 160)
Control cover with stroke limitation and remote control port



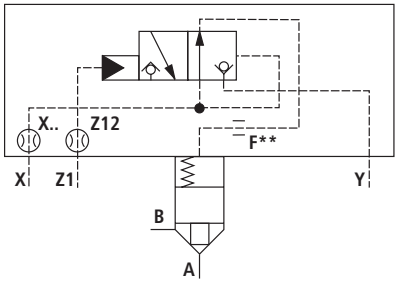
See page 20 ... 25

Version "G" (NG16 ... 100)
Control cover with integrated shuttle valve



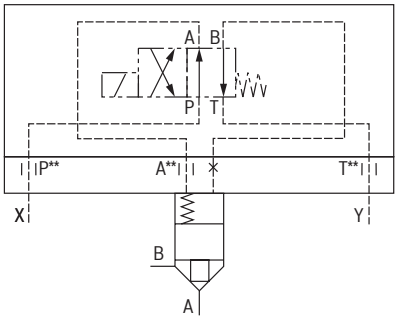
See page 26 ... 29

Version "R" (NG25 ... 100)
Control cover with integrated pilot operated pilot control valve (directional seat valve)



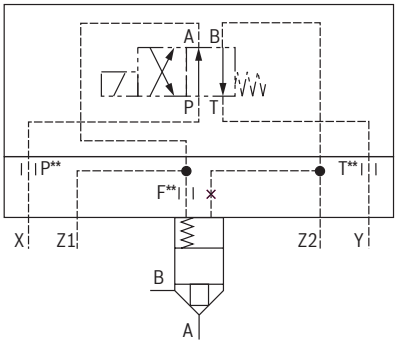
See page 30 ... 33

Version "WEA", **"WEB"** (NG16 ... 160)
Control cover for set-up of a directional valve



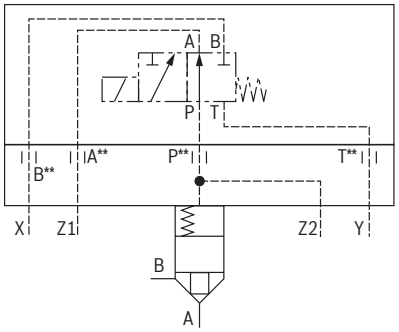
See page 34 ... 41

Version "WEMA", **"WEMB"** (NG16 ... 125)
Control cover for set-up of a directional valve; additional control port (preferably "WEMA")



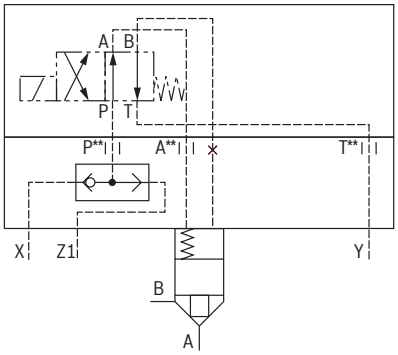
See page 42 ... 49

Version "WECA" (NG16 ... 100)
Control cover for set-up of a directional spool valve as check valve circuit



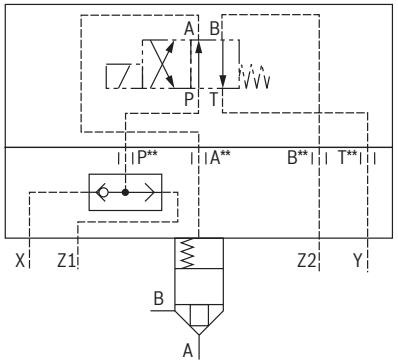
See page 50 ... 55

Version "GWA", "GWB" (NG16 ... 100)
Control cover for set-up of a directional spool or seat valve, with integrated shuttle valve



See page 56 ... 61

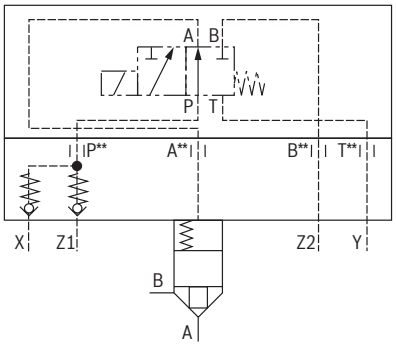
Version "GWMA" (NG16 ... 100)
Control cover with shuttle valve and for set-up of a directional valve; additional control port



See page 62 ... 69

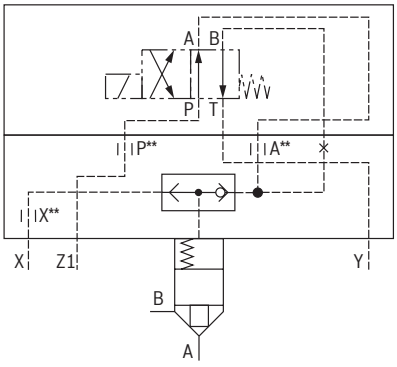
Symbols

Version "GWMA20" (NG16 ... 100)
Control cover with two check valves and for set-up of a directional valve; additional control port



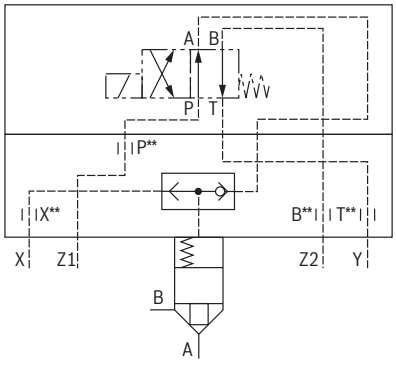
See page 70 ... 77

Version "KWA", **"KWB"** (NG16 ... 100)
Control cover with shuttle valve and for set-up of a directional valve (check valve circuit)



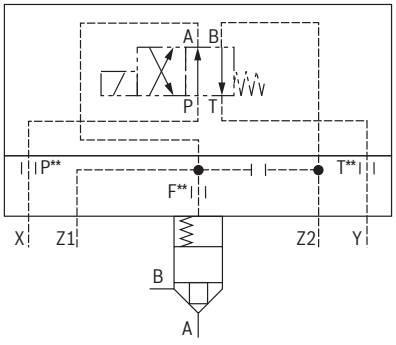
See page 78 ... 83

Version "KWMA" (NG16 ... 125)
Control cover with shuttle valve and for set-up of a directional valve; additional control port



See page 84 ... 89

Version "HWMA", "HWMB" (NG16 ... 63)
Control cover for set-up of a directional valve with stroke limitation



See page 90 ... 93

☞ **Notice:**
Basic symbols:
- ▶ Binding symbols in the following type descriptions
- ▶ Pilot control valves, see page 15, freely selectable

Control cover "D" with remote control port: NG16 ... 63 (dimensions in mm)

01	02	03		04		05	06	07	08	09	10	11	12	13	14	15
LFA		**D**	**–**	**7X**	**/**	**F**								**1)**	**1)**	**1)**

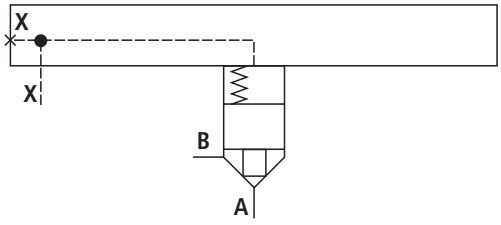
02						10
Size						**Orifice in the channel** (Ø in 1/10 mm)
16	**25**	**32**	**40**	**50**	**63**	**X**** ◿

05	With remote control port	**F**

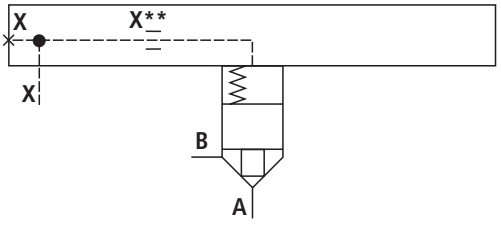
◿ Orifice possible, if required, specifications have to be made

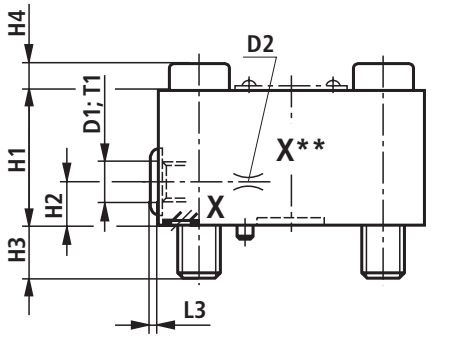
1) See "Ordering code for control cover type LFA..." page 14.

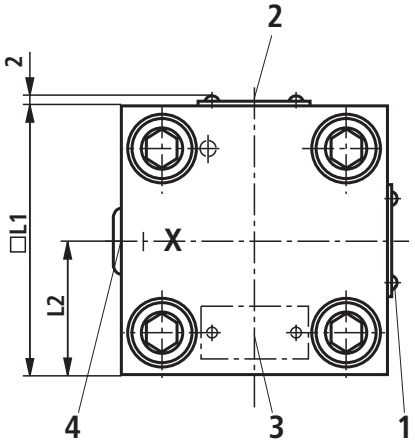
Type LFA . D.../F



Type LFA . D.../FX**







NG	16	25	32	40	50	63
D1	G1/8	G1/4	G1/4	G1/2	G1/2	G3/4
D2 2)	M6	M6	M6	M8 x 1	M8 x 1	G3/8
H1	27	30	35	60	68	82
H2	12	16	16	30	32	40
H3	15	24	28	32	34	50
H4	8	12	16	–	–	–
□ L1	65	85	100	125	140	180
L2	32.5	42.5	50	72	80	90
L3	4	5	5	5	5	5
T1	8	12	12	14	14	16

2) For ordering code of orifices, see page 95.

Mounting screws included within the scope of delivery (see also page 95).

1 Name plate at NG16, 25
2 Name plate at NG32
3 Name plate at NG40, 50, 63
4 Port X optionally as threaded port

☞ **Notice:**
The dimensions are nominal dimensions which are subject to tolerances.

Control cover "D" with remote control port: NG80 ... 160 (dimensions in mm)

01	02	03		04		05	06	07	08	09	10	11	12	13	14	15
LFA		**D**	**–**		**/**	**F**								**1)**	**1)**	**1)**

02				10
Size				**Orifice in the channel** (Ø in 1/10 mm)
80	**100**	**125**	**160**	**X**** ◿

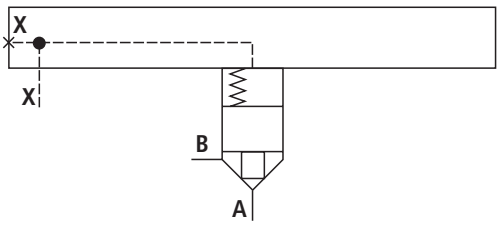
04	Component series 60 ... 69 (60 ... 69: unchanged installation and connection dimensions) (NG80 ... 100)	**6X**
	Component series 20 ... 29 (20 ... 29: unchanged installation and connection dimensions) (NG125 ... 160)	**2X**

05	With remote control port	**F**

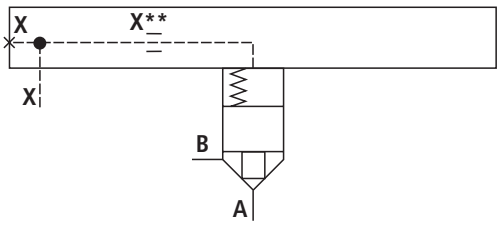
◿ Orifice possible, if required, specifications have to be made

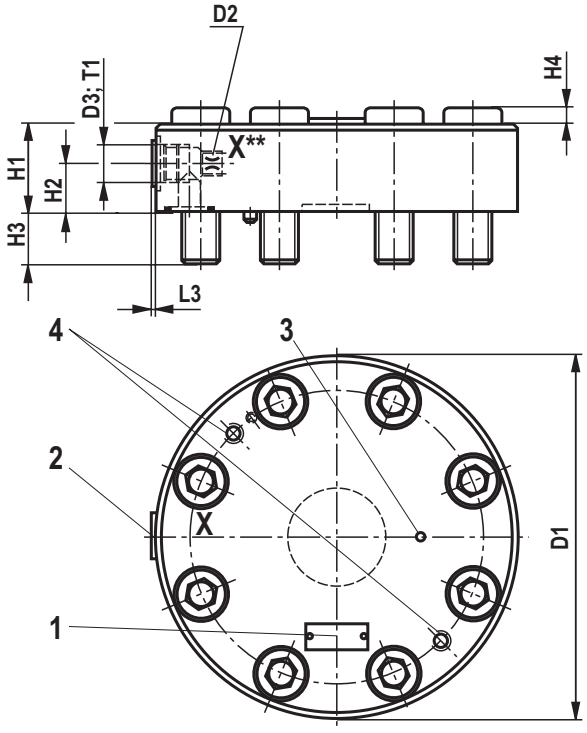
1) See "Ordering code for control cover type LFA..." page 14.

Type LFA . D.../F



Type LFA . D.../FX**





NG	80	100	125	160
D1	250	300	380	480
D2 2)	G3/8	G1/2	G1	G1
D3	G3/4	G1	G1 1/4	G1 1/4
H1	70	75	105	147
H2	35	40	50	70
H3	45	52.5	61	74
H4	–	24	31	42
L3	3	3	4	4
T1	16	18	20	20

2) For ordering code of orifices, see page 95.

Mounting screws included within the scope of delivery (see also page 95).

1 Name plate
2 Port X optionally as threaded port
3 Unloading bore from NG125
4 Disassembly and handling thread

☞ **Notice:**
The dimensions are nominal dimensions which are subject to tolerances.

Control cover "H." with stroke limitation and remote control port: NG16 ... 40

01	02	03	04		05	06	07	08	09	10	11	12	13	14	15
LFA			**–**	**7X**	**/**	**F**							**1)**	**1)**	**1)**

02				03	10
Size				**Type**	**Orifice in the channel** (Ø in 1/10 mm)
16	**25**	**32**	**40**	**H1**	**X****
				H2	
				H3	
				H4	

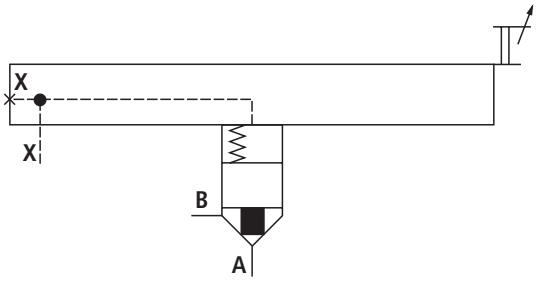
05	With remote control port	**F**

◿ Orientation possible, if required, specifications have to be made

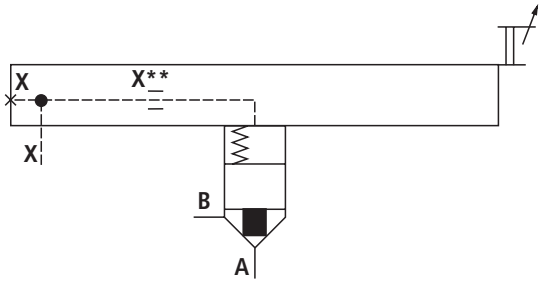
1) See "Ordering code for control cover type LFA..." page 14.

☞ **Notice:**
Up to NG32, control cover "H" can also be combined with pressure logic inserts type LC_DB_7X. From NG40, special covers type LFA...H.../FDR can be used (see page 97).

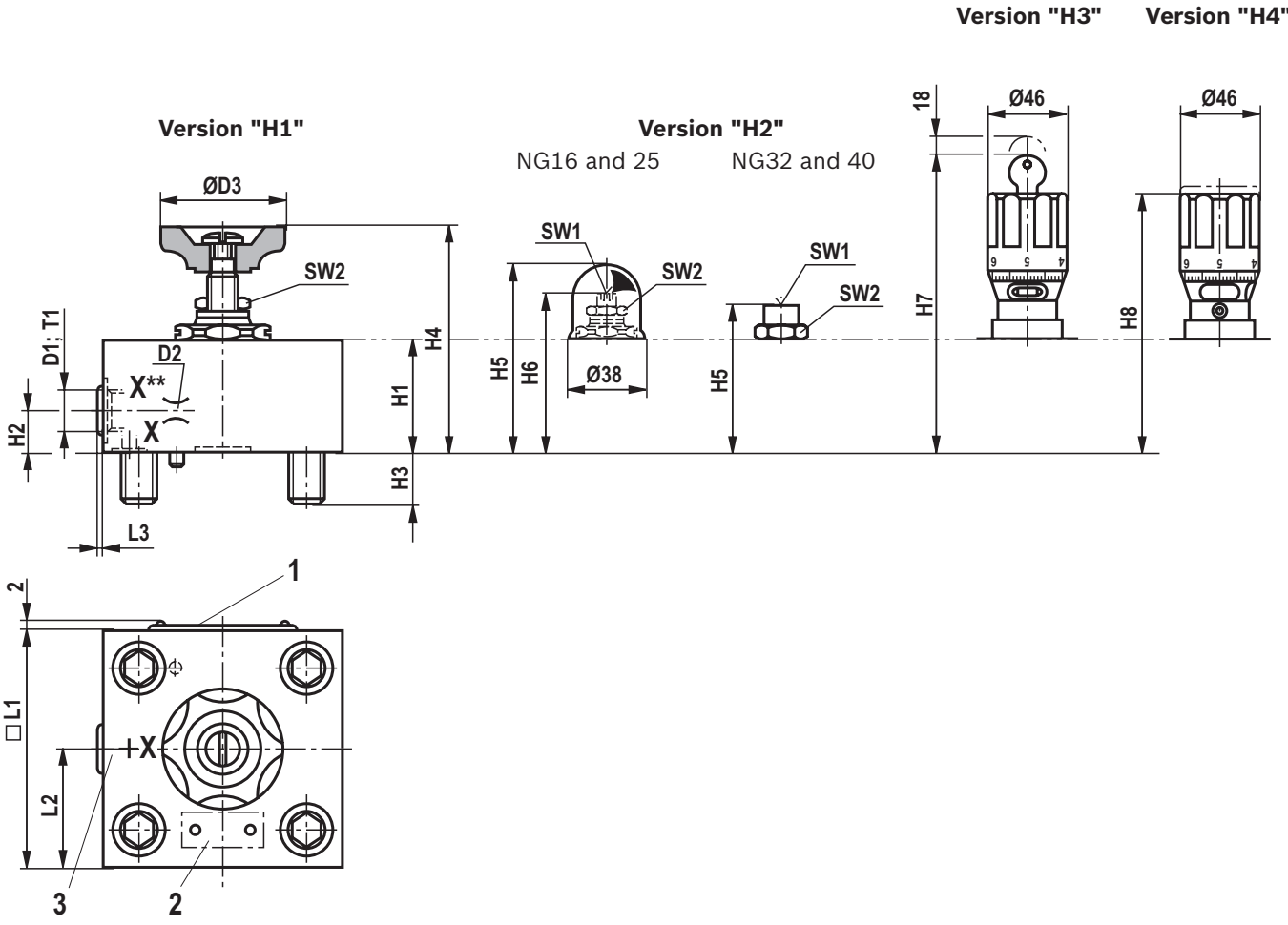
Type LFA . H.../F



Type LFA . H.../FX**



Control cover "H." with stroke limitation and remote control port: NG16 ... 40 (dimensions in mm)



1 Name plate at NG16, 25, 32

2 Name plate at NG40

3 Port X optionally as threaded port

NG	16	25	32	40
D1	G1/8	G1/4	G1/4	G1/2
D2 [2]	M6	M6	M6	M8 x 1
ØD3	52	80	80	100
H1	35	40	75 (60 [4])	95 (100 [4])
H2	12	16	16	30
H3	15	24	28	32
H4 max	90	95	120	160
H5 max	76	80	100	146
H6 max	45	45	–	–
H7 max	155	160	180	234
H8 max	130	135	155	209
□ L1	65	85	100	125
L2	32.5	42.5	50	72
L3	4	5	5	5
T1	8	12	12	14
SW1 [3]	6	6	10	17
SW2	21	22	27	46

Mounting screws included within the scope of delivery (see also page 95).

☞ **Notice:**
The dimensions are nominal dimensions which are subject to tolerances.

[2] For ordering code of orifices, see page 95.

[3] Internal hexagon

[4] Dimensions () only apply to version "H3" and "H4"

Control cover "WEA" and "WEB" for set-up of a directional valve: NG16 ... 50

01	02	03		04		05	06	07	08	09	10	11	12	13	14	15
LFA			**–**	**7X**	**/**									**1)**	**1)**	**1)**

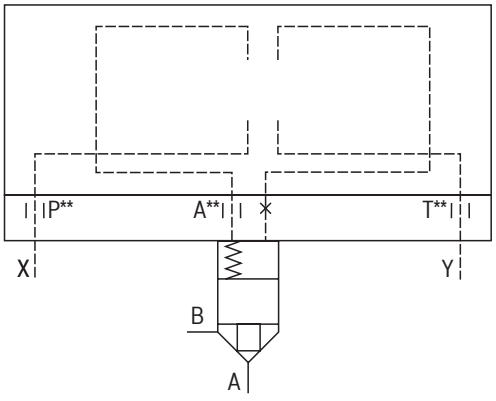
02					03	06	07	08	09
Size					**Type**	**Orifice in the channel** (Ø in 1/10 mm)			
						A	**B**	**P**	**T**
16	**25**	**32**	**40**	**50**	**WEA**	A** ◿		P** ◿	T** ◿
					WEB		B** ◿	P** ◿	T** ◿

◿ Orifice possible, if required, specifications have to be made

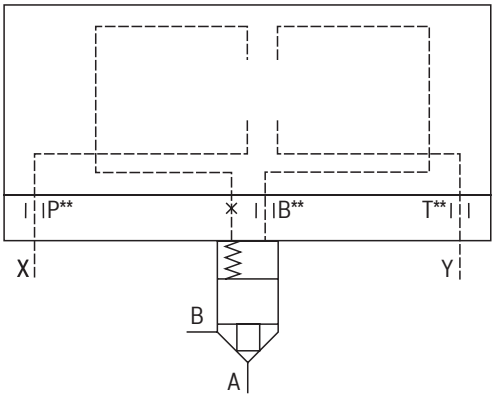
1) See "Ordering code for control cover type LFA..." page 14.

For ordering code of orifices, see page 95.

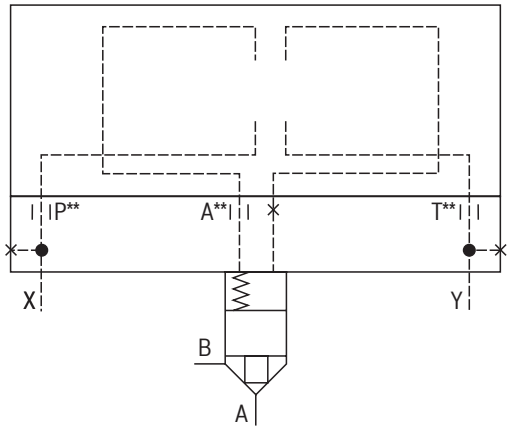
LFA . WEA... (NG16 ... 32)



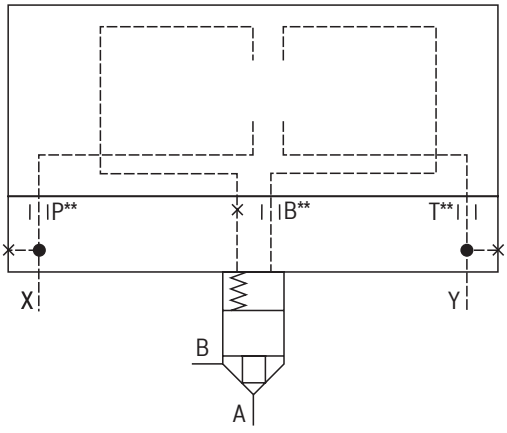
LFA . WEB... (NG16 ... 32)



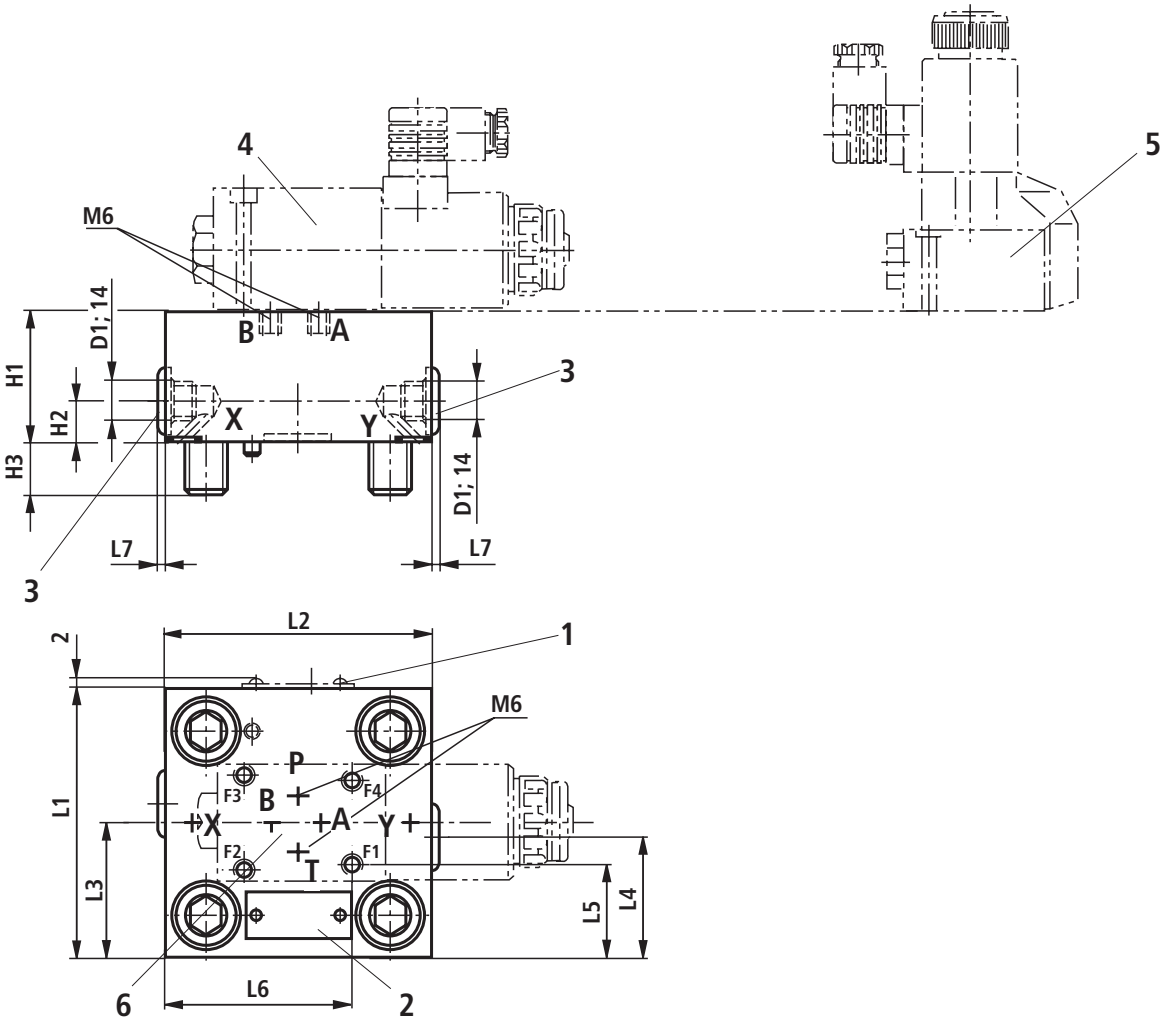
LFA . WEA... (NG40 and 50)



LFA . WEB... NG40 and 50



Control cover "WEA" and "WEB" for set-up of a directional valve: NG16 ... 50
(dimensions in mm)



1 Name plate at NG16, 25, 32

2 Name plate at NG40 and 50

3 Port X and Y optionally as threaded ports at NG40 and 50

4 Directional spool valve type 4WE 6 D... (pilot control valve), separate order, see page 15

5 Directional seat valve type M-3SEW 6 ... (pilot control valve), separate order, see page 15

6 Porting pattern according to ISO 4401-03-02-0-05 (mounting thread for version "/12" see data sheet 08936)

NG	16	25	32	40	50
D1	–	–	–	G1/2	G1/2
H1	40	40	50	60	68
H2	–	–	–	30	32
H3	15	24	28	32	34
L1	65	85	100	125	140
L2	80	85	100	125	140
L3	–	–	–	72	80
L4	–	–	–	53	60
L5	17	27	34.5	47	54.5
L6	47.5	64	71.5	84	91.5
L7	4	4	4	6	6

☞ **Notice:**
The dimensions are nominal dimensions which are subject to tolerances.

Mounting screws control cover LFA (included in the scope of delivery)

Hexagon socket head cap screws ISO 4762 - 10.9-flZn/nc/480h/C [1)]

Size	Quantity	Tightening torque M_A in Nm ±10%
16	4	30
25	4	100
32	4	240
40	4	480
50	4	480
63	4	1600
80	8	800
100	8	1600
125	8	3100
160	12	5000

☞ **Notice:**
- The tightening torques stated are guidelines when using screws with the specified friction coefficients and when using a manual torque wrench (tolerance ± 10%).
- The specified tightening torques were calculated with total friction coefficient μ = 0.09 ... 0.14; adjust in case of modified surfaces.
- Supplied mounting screws are only suitable for direct assembly on a block. If an intermediate cover is used, mounting screws have to be designed accordingly longer (see page 94).

1) Hexagon socket head cap screws UNC, see data sheet 089366

Characteristic curves for selecting orifices

