

LUDV control block of sandwich plate design

RE 64132/05.09
Replaces: 12.02

1/14

Type SX 10

Nominal size 10
 Series 1X
 Maximum pressure, pump side 250 bar
 Maximum pressure, actuator side 300 bar
 Inlet flow 80 l/mn
 Flow at each directional valve element 50 l/mn



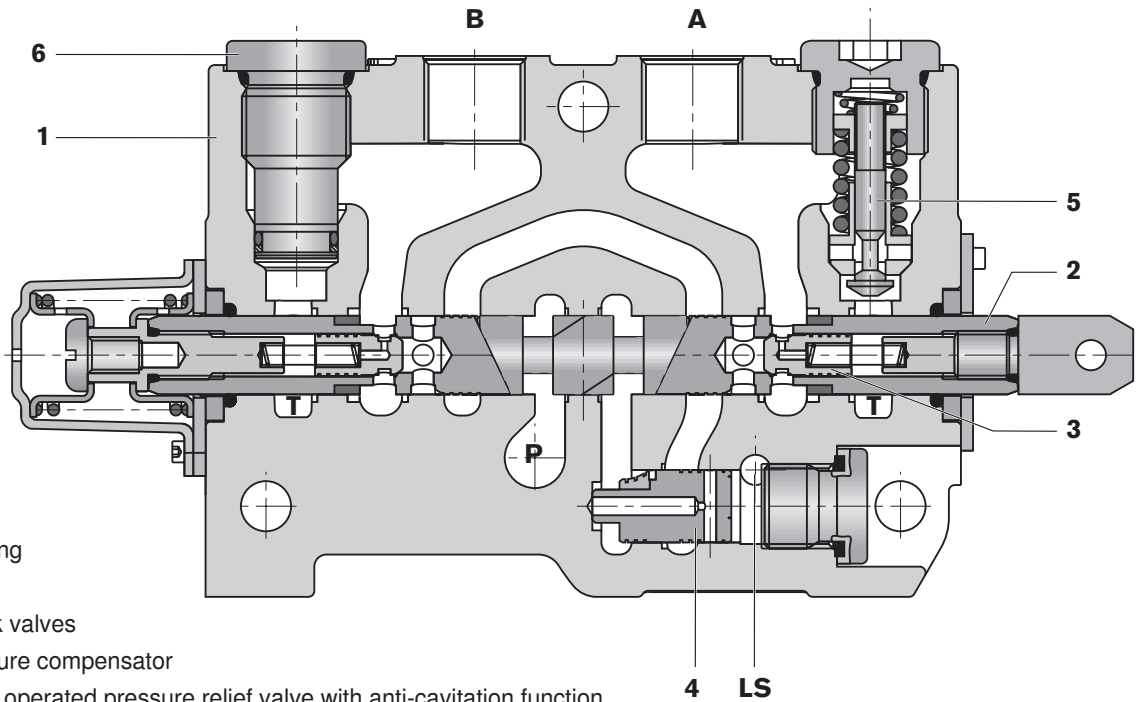
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Special features

- Distributes the flow between the directional valve elements according to the requirements, independently of the pressure and available flow.
- Compact sandwich plate design, can be combined so that the control block can meet the requirements of differing machines.
- No shuttle valves.
- Limitation of system maximum pressure via LS pressure relief valve.
- System protection via LS and secondary pressure relief valves.

Functional description, Section



- 1 Housing
- 2 Spool
- 3 Check valves
- 4 Pressure compensator
- 5 Direct operated pressure relief valve with anti-cavitation function
- 6 Plug

The SX 10 directional control block basically consists of one inlet element, a number of directional valve elements and one final element.

The inlet element contains one fixing point and the pipe connection ports P, T, LS, M.

This element also contains all the components required for the system function, namely: a flow control valve for the controlled unloading of the LS line, a LS relief valve for the limitation of the maximum pressure in the system and a pressure compensator.

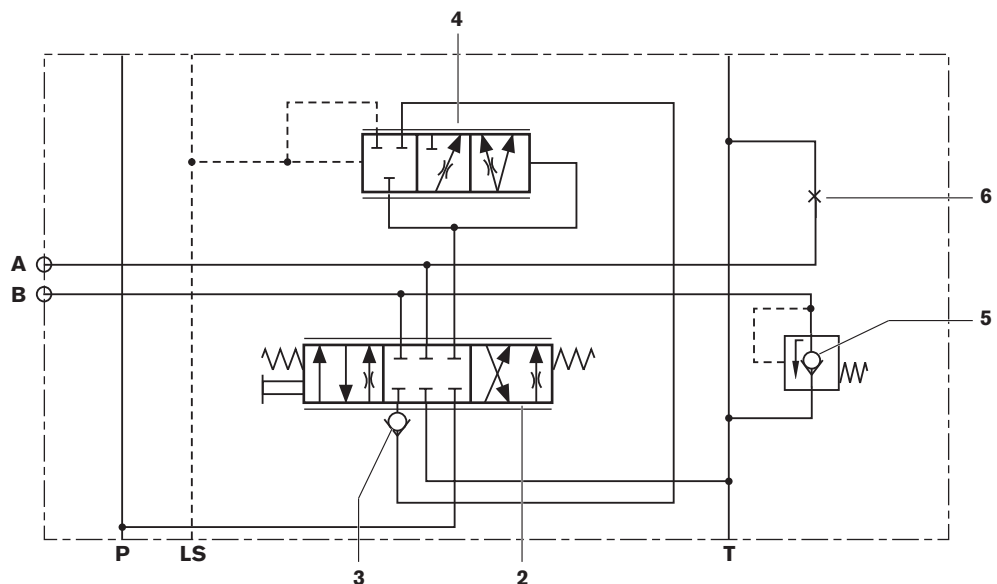
Each SX directional valve element is composed of a housing (1), a spool (2), two load holding check valves (3) placed inside the spool, a pressure compensator (4), cavities for direct operated pressure relief valves with anti-cavitation function (5), and anti-cavitation check valves or plugs (6).

The final element has two fixing points.

Hydraulic Symbol

Orifices

- P Pump
- A, B Actuator
- T Tank
- LS Load Sensing



Technical data (For applications outside these parameters, please consult us!)

General

Design	flangeable (up to 10 directional valve elements)
Description	flow distribution between the directional valve elements proportional to the requirements, independently of the pressure and available flow
Type	SX 10
Installation	optional
Nominal size	10

Hydraulic

Max. permissible flow	port P	l/min	80
	port A, B	l/min	50
Standard leakage oil flow on load holding (at 100 bar, 36 mm ² /s)		cm ³ /min	15 maxi
Max. operating pressure per connection	P, M, LS	bar	250
	A, B	bar	300
	T	bar	20
	for applications at higher pressure: please consult us.		
Secondary valves setting pressure tolerances (at 5 l/min)	bar	setting	tolerance
		101 - 170	-5 / +10
		171 - 230	-7 / +13
		231 - 300	-10 / +15
Max. control pressure per connection	a, b	bar	35
	we recommend the use of control curve 6 to 25 bar, and inlet pressure (30 bar mini)		
Pressure fluid	mineral oils (HL, HLP) to DIN 51524 ¹⁾ . HEES fluids to VDMA 24568 as well as fluids to Rexroth catalogue sheet RE 90221: please consult us.		
¹⁾ suitable for NBR seals			
Pressure fluid temperature range	°C	-20 to +100 inside the block	
Viscosity range	mm ² /s	10 to 380	
Maximum permissible degree of contamination authorised for hydraulic fluid, purity degree according to ISO 4406 (c)	Class 20/18/15, therefore we recommend a filter with a minimum retention rate of $\beta_{10} \geq 75$		

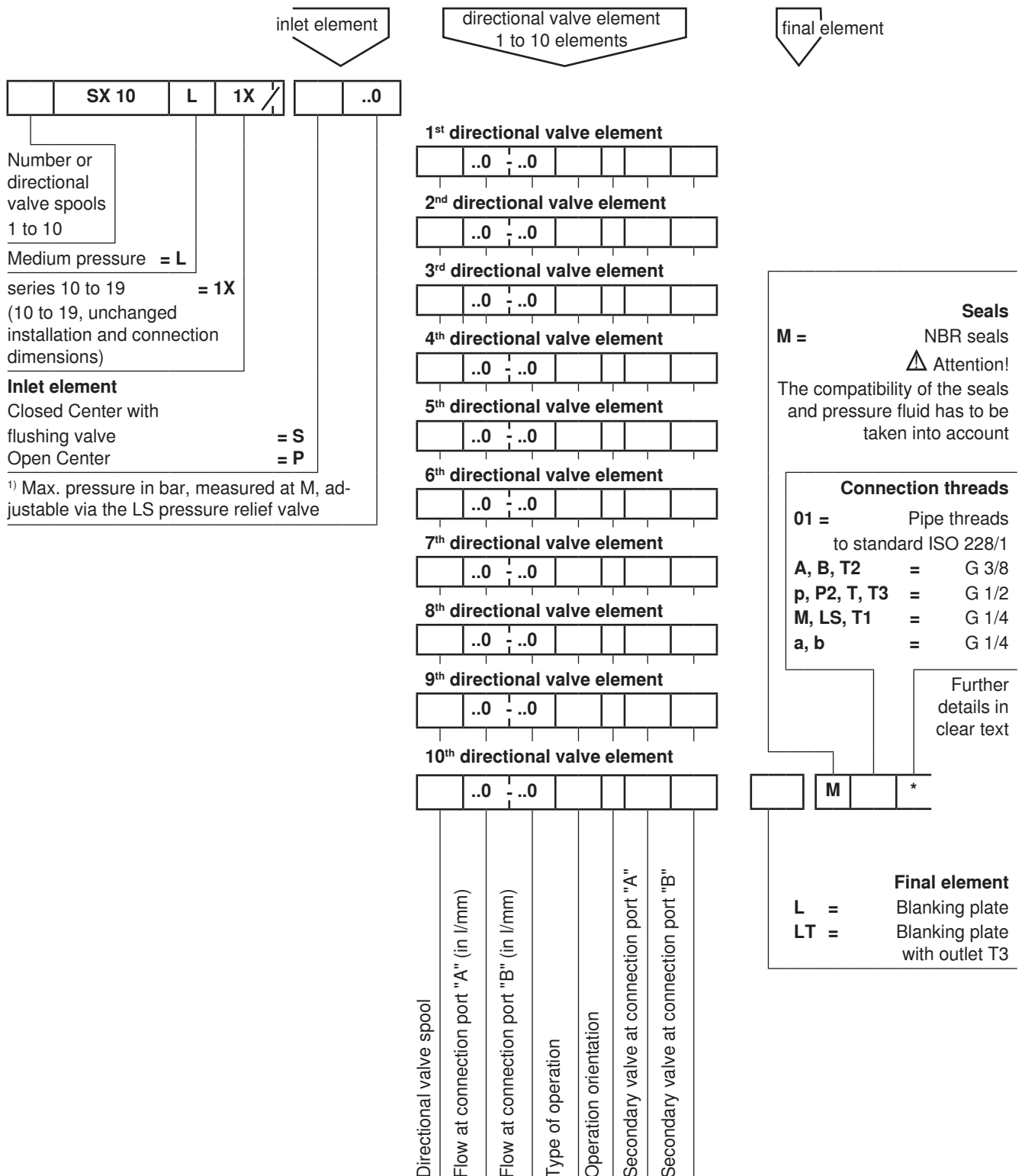
Technical data (For applications outside these parameters, please consult us!)**Mechanical**

Weight		
Inlet element	kg	5
Directional valve element	kg	2.1
Blanking plate	kg	2
Spool return force	N	55 to 95 (with standard spring)
Max. permissible actuation force on the spool (for 1 million cycles)		
- axial	N	1000 during 20% of total cycles then 500
- radial	N	16
Storage temperature	°C	-40 to +60

Installation guidelines

		Pipe connections				
		P, P2	T, T3	M, LS, T1	A, B, T2	a, b
Tightening torque for the pipe connections	Nm	50	50	20	30	20
Recommended fixing		at 3 locations				
Flatness of the mounting surface	mm	0.5				
Setting of system pressure The hydraulic circuit may not generate any un- controlled leak flow in the LS line		via the LS pressure relief valve				
Do not direct the jet of a pressure washing unit directly at the unit						

Ordering details: SX 10 directional control block



Ordering details: see page 6

¹⁾ set with a Δp of 15 bar between M and LS

Ordering details: separate element

Inlet element

SX 10		1X /		..0	M		*
-------	--	------	--	-----	---	--	---

see ordering details page 5

see ordering details of inlet element page 5

Directional valve element

SX 10		1X /		..0	..0					M		*
-------	--	------	--	-----	-----	--	--	--	--	---	--	---

see ordering details pages 5 and 6

see ordering details of directional valve element pages 5 and 6

Final element

SX 10		1X /		M		*
-------	--	------	--	---	--	---

see ordering details page 5

see ordering details of final element page 5

Ordering example - complete block SX10

Desired execution:

3 directional valve elements

Inlet element:

Open Center,
Max. pressure = 200 bar

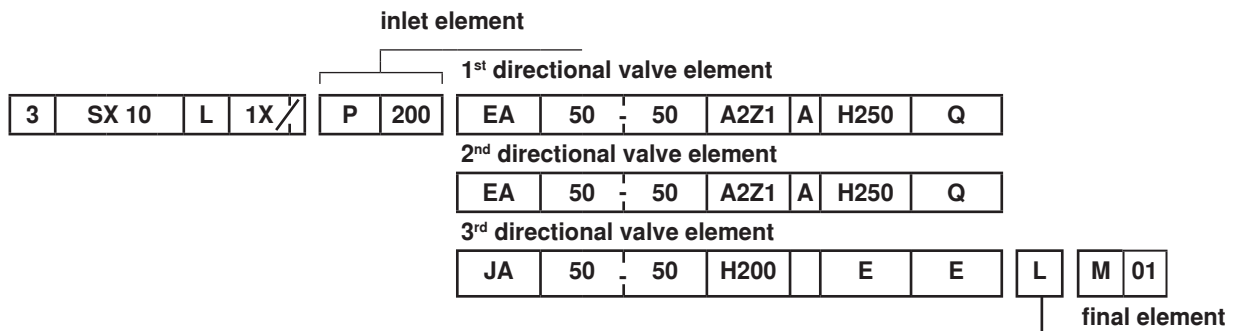
3 directional valve elements:

- 1st and 2nd elements:
 - Spool symbol = EA
 - Flow in A = 50 l/min, Flow in B = 50 l/min
 - Mechanical operator with tongue on connection side A, spool return via a spring
 - Secondary valve in A = direct operated pressure relief valve with anti-cavitation function set at 250 bar
 - Secondary valve in B = plug
- 3rd element:
 - Spool symbol = JA
 - Flow in A = 50 l/min, Flow in B = 50 l/min
 - Hydraulic operator, spool return via a spring
 - Secondary valves in A and B = anti-cavitation check valve

Final element:

Blanking plat

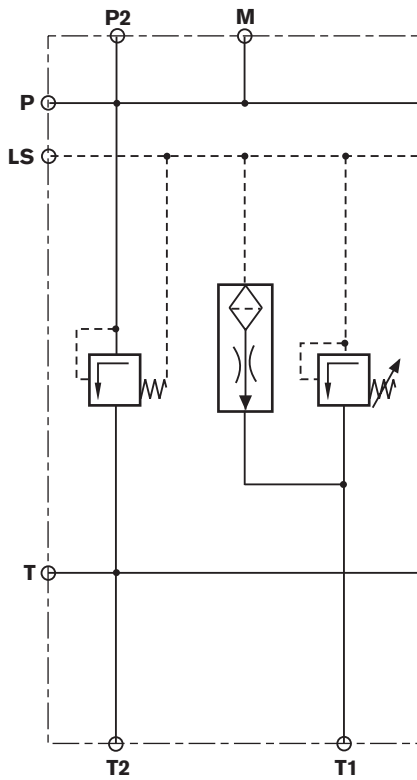
Ordering details:



Inlet element

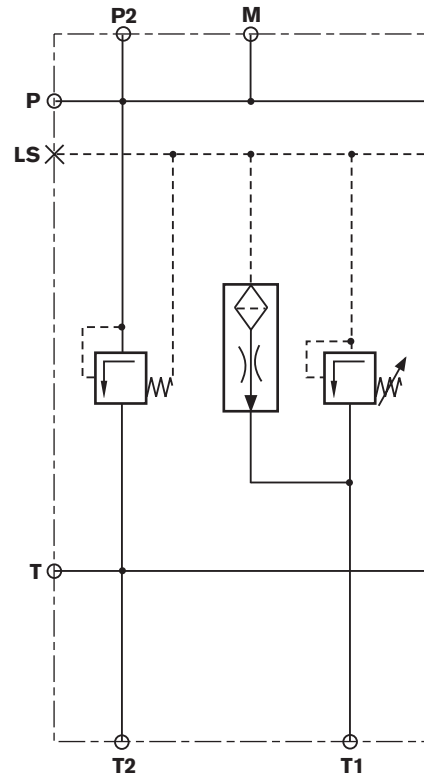
Closed center with flushing valve

Ordering detail
S



Open center

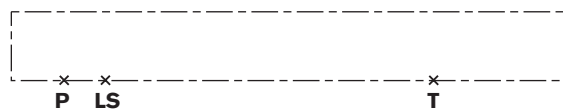
Ordering detail
P



Final element

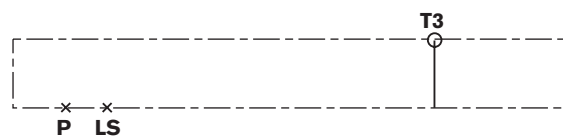
Blanking plate

Ordering detail
L



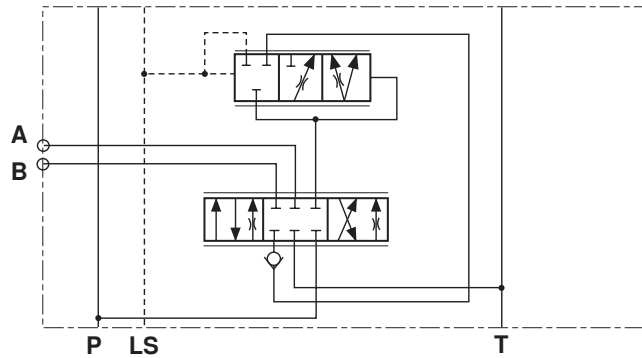
Blanking plate with outlet T3

Ordering detail
LT



Directional valve element

Representation of the SX directional valve element
Simplified symbol used to illustrate SX directional control circuits



Spool variations

Ordering detail

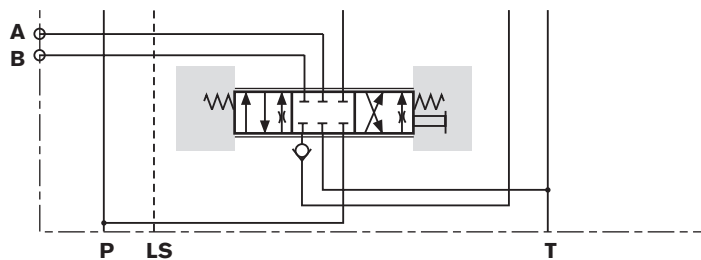
EA...-...:	Symbol EA	
JA...-...:	Symbol JA	
QA...-...:	Symbol QA	
WA...-...:	Symbol WA	

Type of operator

Mechanical operator with tongue on connection side A, spool return via a spring 3 positions

Ordering detail

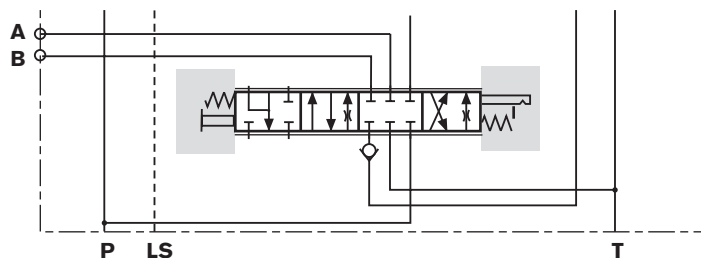
A2Z1A



Mechanical operator with tongue on connection side B, spool return via a spring 4 positions

Codification

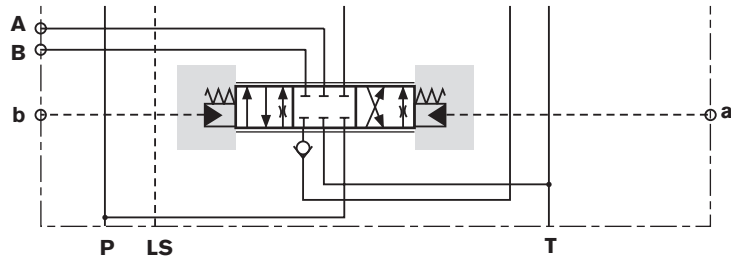
E2Z1B



Directional valve element

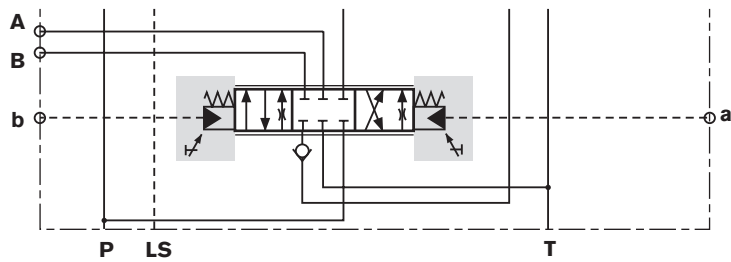
Hydraulic operator, spool return via a spring

Ordering detail
H200



Hydraulic operator with adjustable stop pins, spool return via a spring

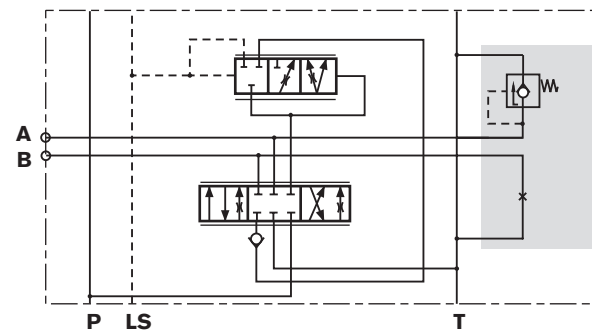
Ordering detail
H230



Secondary valves

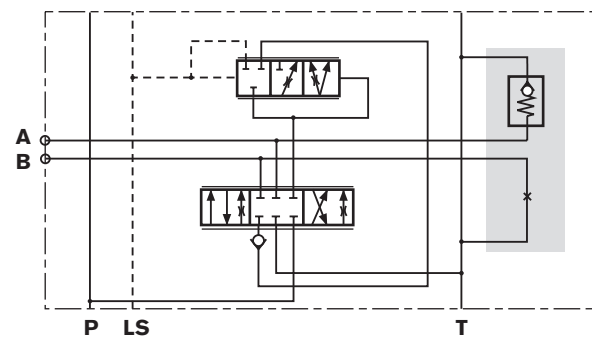
Direct operated pressure relief valve with anti-cavitation function (on connection side A); plug (on connection side B)

Ordering detail
H...Q

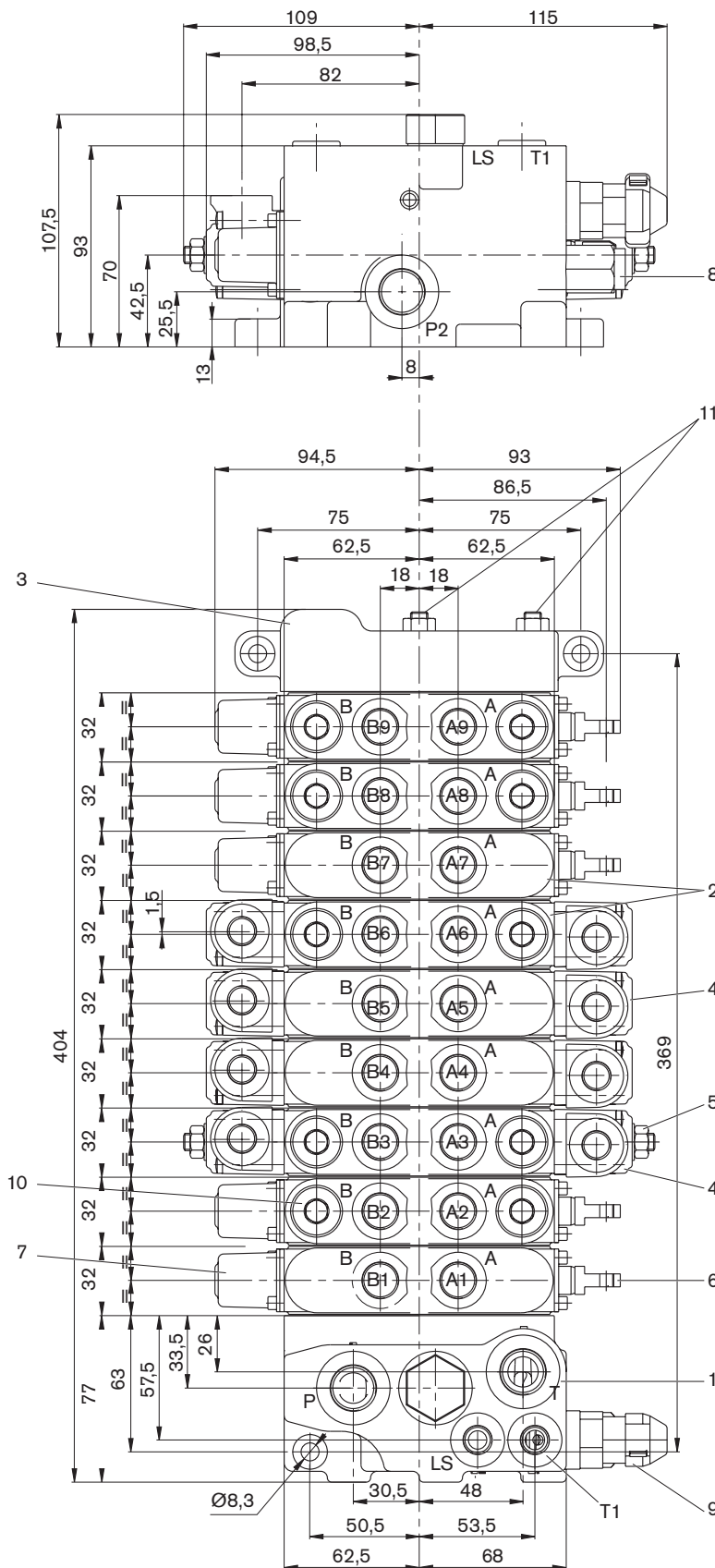


Anti-cavitation check valve (on connection side A); plug (on connection side B)

Ordering detail
EQ



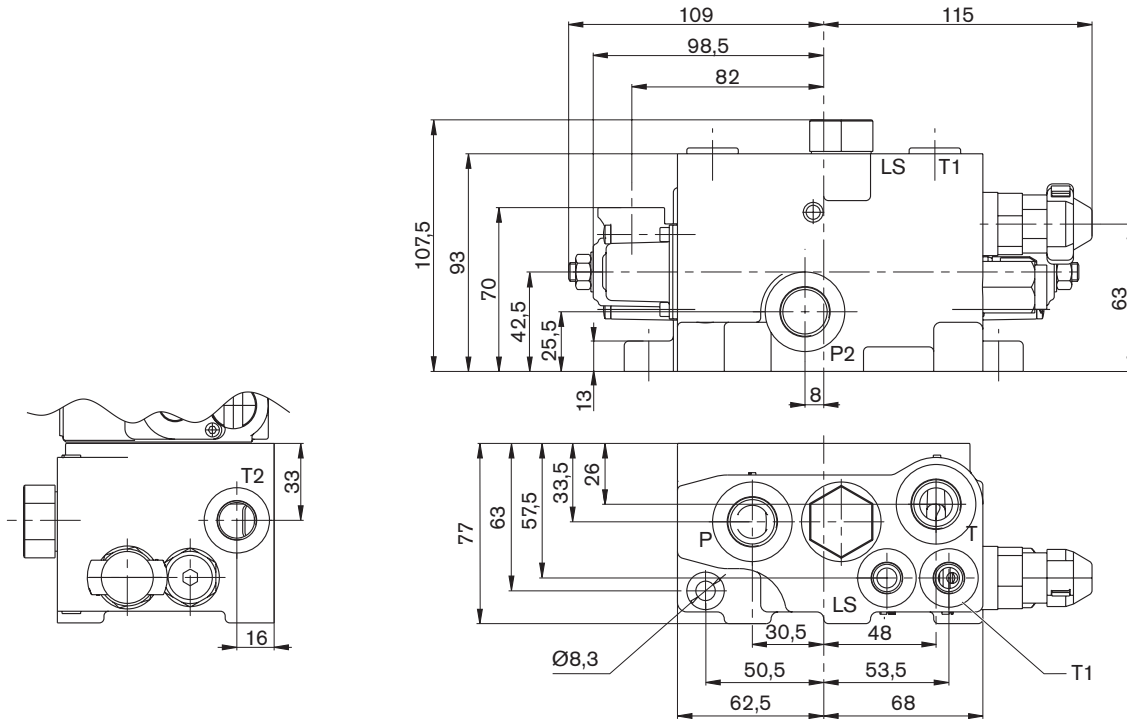
Unit dimensions (in mm)



- 1 Inlet element
- 2 Directional valve element
- 3 Blanking plate
- 4 Cover for hydraulic operator
- 5 Stroke limitation and hydraulic connection
- 6 Mechanical operator with tongue
- 7 Cover for spring return arrangement
- 8 LS flow control valve
(tightening torque = $20 \pm 10\%$ Nm)
- 9 LS pressure relief valve
(tightening torque = $45 \pm 10\%$ Nm)
- 10 Secondary pressure relief valve
(tightening torque = 30 to 35 Nm)
- 11 3 tie rods (nuts tightening torque = $20 \pm 10\%$ Nm)

Unit dimensions (in mm)

Inlet element



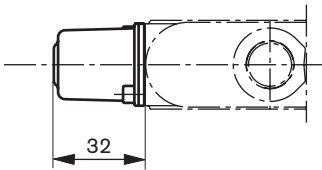
Mechanical or manual operators, spool return via a spring

Spool return via a spring

3 positions

Ordering detail

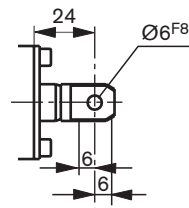
A2



Manual operators

Ordering detail

Z1

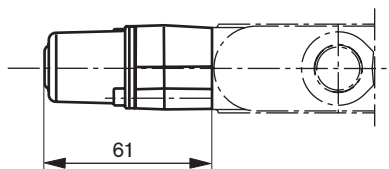


Tongue thickness
6 mm

4 positions

Ordering detail

E2

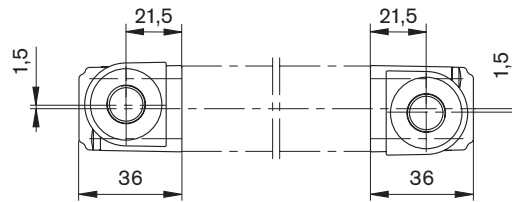


Unit dimensions (in mm)

Hydraulic operator, spool return via a spring

Ordering detail

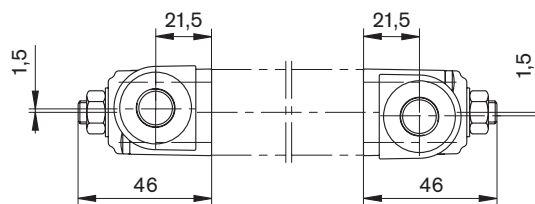
H200



Hydraulic operator with adjustable stop pin, spool return via a spring

Ordering detail

H230

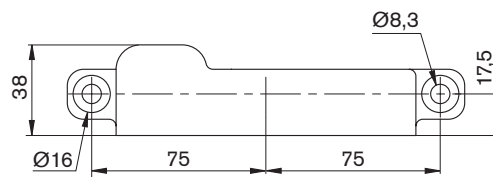


Final element

Blanking plate

Ordering detail

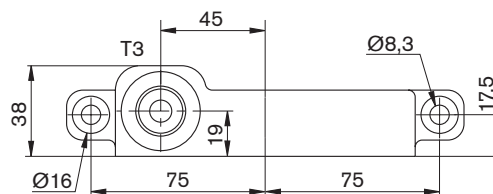
L



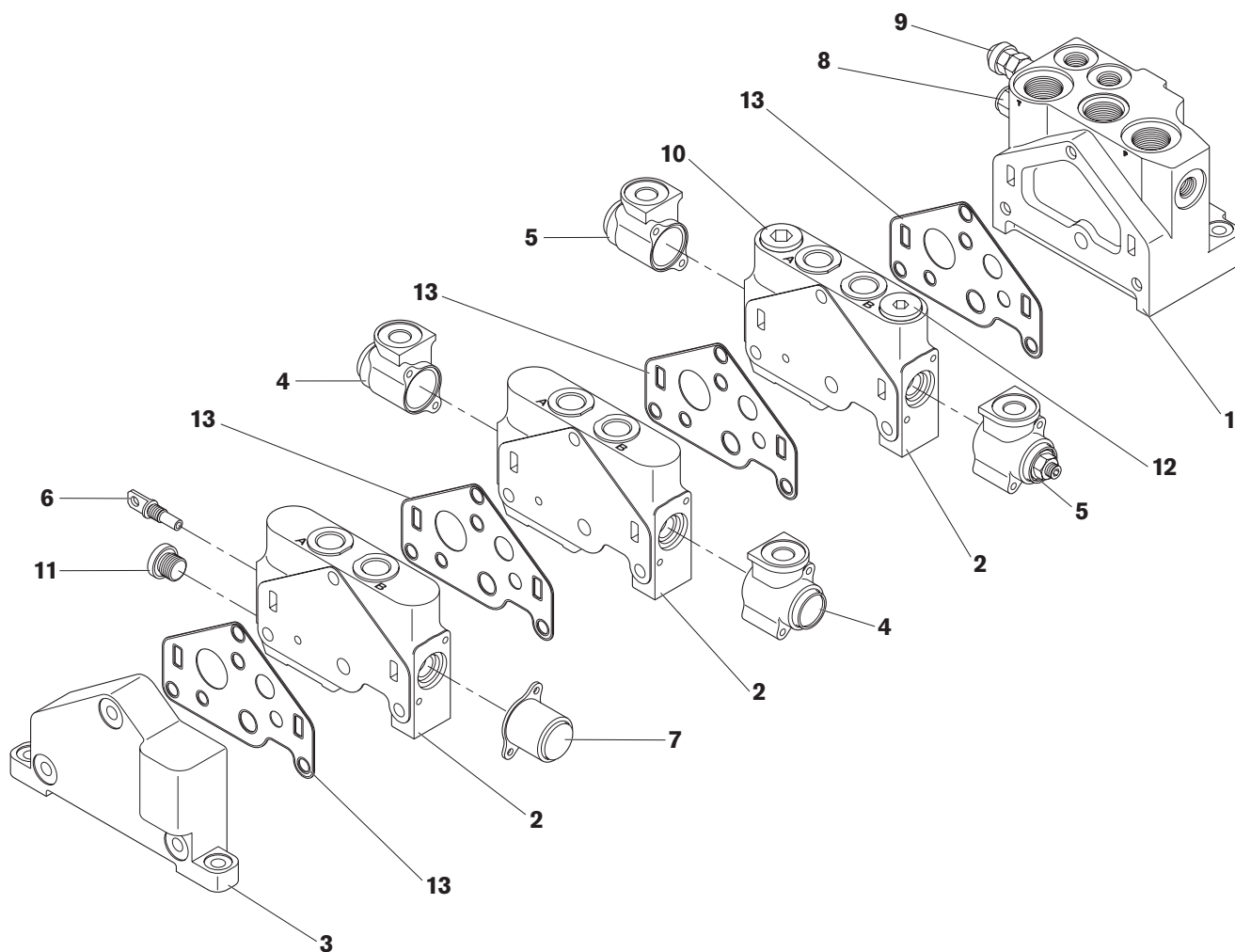
Blanking plate with outlet T3

Ordering detail

LT

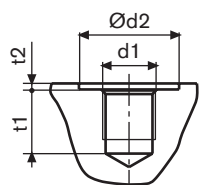


Assembly possibilities



- | | | | |
|---|---|----|--|
| 1 | Inlet element | 8 | LS flow control valve |
| 2 | Directional valve element | 9 | LS pressure relief valve |
| 3 | Blanking plate L | 10 | Secondary pressure relief valve |
| 4 | Cover for hydraulic operator H200 | 11 | Plug for individual pressure compensator |
| 5 | Cover for hydraulic operator H230 | 12 | Plug |
| 6 | Mechanical operator with tongue type Z1 | 13 | Seals plate |
| 7 | Spring return arrangement type A2 | | |

Pipe connections



01				
ports	d1	Ød2	t1	t2
A, B, T2	G 3/8	-	14	1
P, P2, T, T3	G 1/2	34	14	1
M, LS, T1, a, b	G 1/4	25	12	1

Notes

Bosch Rexroth AG
Hydraulics
Zum Eisengießer 1
97816 Lohr am Main, Germany
Phone +49 (0) 93 52 / 18-0
Fax +49 (0) 93 52 / 18-23 58
info.brm-mc@boschrexroth.de
www.boschrexroth.com

Bosch Rexroth DSI S.A.S.
BP 101
91, bd Irène Joliot-Curie
69634 Vénissieux Cedex, France
Telefon +33 (0) 4 78 78 52 52
Telefax +33 (0) 4 78 78 52 26
www.boschrexroth.fr

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Subject to revision.

Notes

Bosch Rexroth AG
Hydraulics
Zum Eisengießer 1
97816 Lohr am Main, Germany
Phone +49 (0) 93 52 / 18-0
Fax +49 (0) 93 52 / 18-23 58
info.brm-mc@boschrexroth.de
www.boschrexroth.com

Bosch Rexroth DSI S.A.S.
BP 101
91, bd Irène Joliot-Curie
69634 Vénissieux Cedex, France
Telefon +33 (0) 4 78 78 52 52
Telefax +33 (0) 4 78 78 52 26
www.boschrexroth.fr

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