Directional spool valves

2.1 Directional spool valve type SG and SP

Directional spool valves are a type of directional valve. They control the direction of movement and the velocity of single and double-acting hydraulic consumers.
The directional spool valve type SG is available as a single valve for pipe connection. Type SP is available as a valve for manifold mounting. Due to the robust design the directional spool valve type SG and SP reaches operating pressures up to 400 bar. It is of versatile use due to different types of actuation.
Intended applications include mobile hydraulics, in particular in special vehicles, in municipal trucks and in shipbuilding.

Features and benefits:

- Sturdy design
- Suited for maritime applications
- Various actuation variants

Intended applications:

- Mining machinery
- Cranes and lifting equipment
- Ship building
- Road vehicle

Nomen-clature:	**Directional spool valve**
Design:	**Single valve for pipe connection** **Individual valve for manifold mounting**
Actuation:	**Solenoid** **Manual** ▪ **With automatic spring return** ▪ **With detent** **Mechanical** ▪ **Roller head** ▪ **Pin head** **Pressure-actuated** ▪ **(Individual and combined with manual operation)** ▪ **Hydraulic** ▪ **Pneumatic**
p_{max}:	**400 bar**
Q_{max}:	**100 l/min**

Design and order coding example

SP 1 SG 3	D E	3E	- A - MD 3/24	- 120

Pressure setting pressure limiting valve [bar]

Actuation mode

Pressure limiting valve

Function

- Parallel- or series connection
- Directional spool valves either with positive (blocked between switching positions) or negative (slightly floating position) overlap
- SP 1 with/without check valve insert

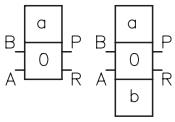
Basic type and size

Directional spool valve SG 0 to 5, SP 1, SP 3, SP 5
Directional spool valves type SP for manifold mounting, sizes 1, 3, 5

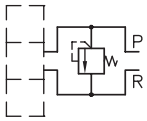
Function

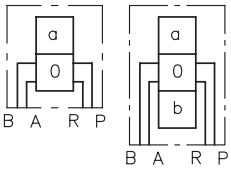
Basic symbol

SG	SP
Individual valve for pipe connection	Individual valve for manifold mounting

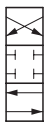
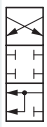
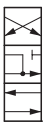
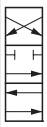
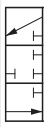


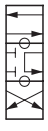
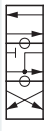
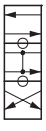
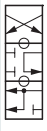
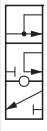
With pressure-limiting valve





Circuit symbol

G	C	D	E	N	W	R	V	Z	U
									

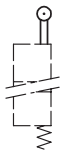
L	F	H	Y	S	X
					

- Circuit symbol Z, U, X: only for size 2, 3 and 5

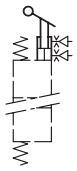
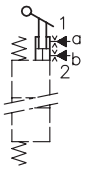
Actuations:

Manual		Solenoid	
A, AK	**C, CK**	**ME, MD**	**MU**
Return spring	Detent		
			
		Solenoid voltage: 12V DC, 24V DC, 110V AC, 230V AC	

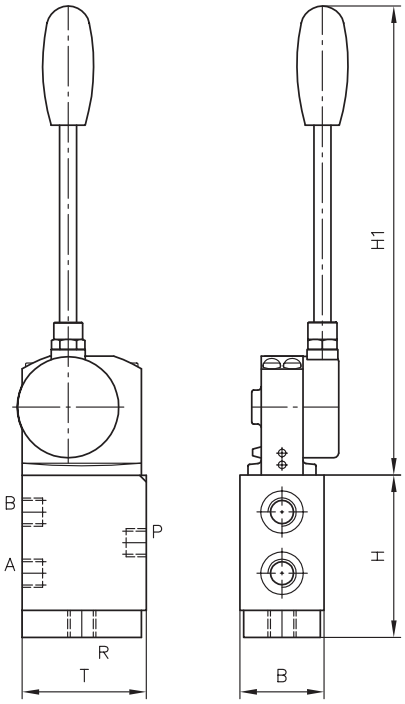
Actuations:

Mechanical		Pressure		
RE, RD	**BE, BD**	**NE, ND**	**NU**	**NM**
Roller head	Pin head	Pneumatic		Hydraulic
				
Actuation forces: 90 - 280 N (according to size)		Control pressures: pneumatic 5 - 10 bar hydraulic 12 - 20 bar		

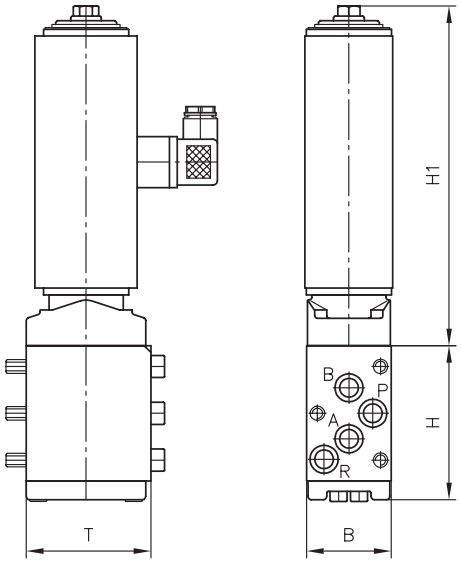
Actuations:

Double acting	
KD	**KM**
Pneumatic / manual	Hydraulic / manual
	
Control pressure: Pneumatic 5 ... 10 bar Hydraulic 12 ... 20 bar	

SG with manual actuation



SP with solenoid actuation



	Q_{max} [lpm]	Operating pressure p_{max} [bar] for actuation			Ports	Dimensions [mm]				m_{max} [kg]
		Solenoid	Mechanical	Manual/ pressure		H	H1	B	T	
SG 0	12	200	400	400	G 1/4, G 3/8	59.5	151	39.5	51	0.8 ... 1.0
SG 1	20	200	400	400	G 3/8	59.5	151	39.5	51	0.8 ... 1.0
SG 2	30	315	400	400	G 3/8	100.5	342	49.5	73	2.5 ... 5.7
SG 3	50	315	400	400	G 1/2	100.5	342	49.5	73	2.5 ... 5.7
SG 5	100	200	315	400	G 1	110	342	50	80	2.9 ... 6.1
SP 1	20	200	400	400	-	59.5	151	40	51	0.8 ... 1,0
SP 3	50	315	400	400	-	94.5	342	49.5	73	2.5 ... 5.7

Associated technical data sheets:

- Directional spool valve type SG and SP: D 5650/1
- Actuations:
  - Manual operation for directional spool valves, type S: D 6511/1
  - Electrical operation for directional spool valves type S: D 7055
  - Mechanical operation for directional spool valves, type S: D 5870
  - Pressure actuation for directional spool valves: D 6250

Male connectors:

- Line connector type MSD and others: D 7163
- With economy circuit: D 7813, D 7833

Directional spool valve

2.1 Directional spool valve bank type DL

Throttling directional spool valves are a type of directional valve. They continuously and manually meter the flow rate in hydraulic systems with single and double-acting consumers. The throttling directional spool valve type DL influences the speed of the consumer by throttling the pump circulation via a parallel circuit (bypass control). The close fit of the spool in the throttling directional spool valve means that the leakage is limited to a minimum for lifting functions.
The throttling directional spool valve type DL is suitable for applications in material handling and for lifting equipment.

Features and benefits:

- Compact design with up to 10 segments
- Various actuation variants for manual actuation
- Simple pressure reductions in downstream sections using intermediate plates
- Combinations possible for controlling lifting devices

Intended applications:

- Material handling (industrial trucks, etc.)
- Machines for agricultural and forestry purposes
- Construction and construction materials machinery
- Road vehicle

Nomen-clature:	Throttling directional spool valve
Design:	Valve bank design with integrated bypass pump circulation control
Actuation:	Manual ▪ Return spring, detent
p_{max}:	315
Q_{max}:	90

Design and order coding example

DL3	1	- 3	- GGD	- B/E1	- 2	- 210

Pressure specification [bar]

End plate

Actuation, mounting

Valve sections
- Directional spool valve
- Valve section options:
  - Intermediate plate with pressure-limiting valve for all downstream valve sections
  - Additional functions on the consumer side in the ancillary block (e.g. double check valves, shock valves, load-holding valves etc.) (size 3)

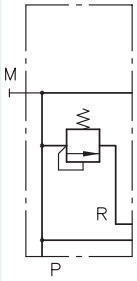
Port size G 1/4, G 3/8, G 1/2 (BSPP)

Connection block
- With/without pressure limiting valve
- With shock valve

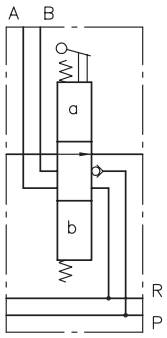
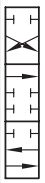
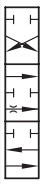
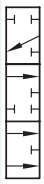
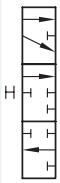
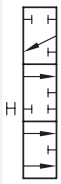
Basic type, size Type DL, sizes 1 to 4

Function

Connection blocks:

DL .5	DL .1
	
Without pressure-limiting valve	With pressure-limiting valve

Valve sections:

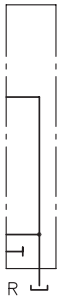
Basic symbol	Symbol						
	G and B	D	E	N	R	A	P
							

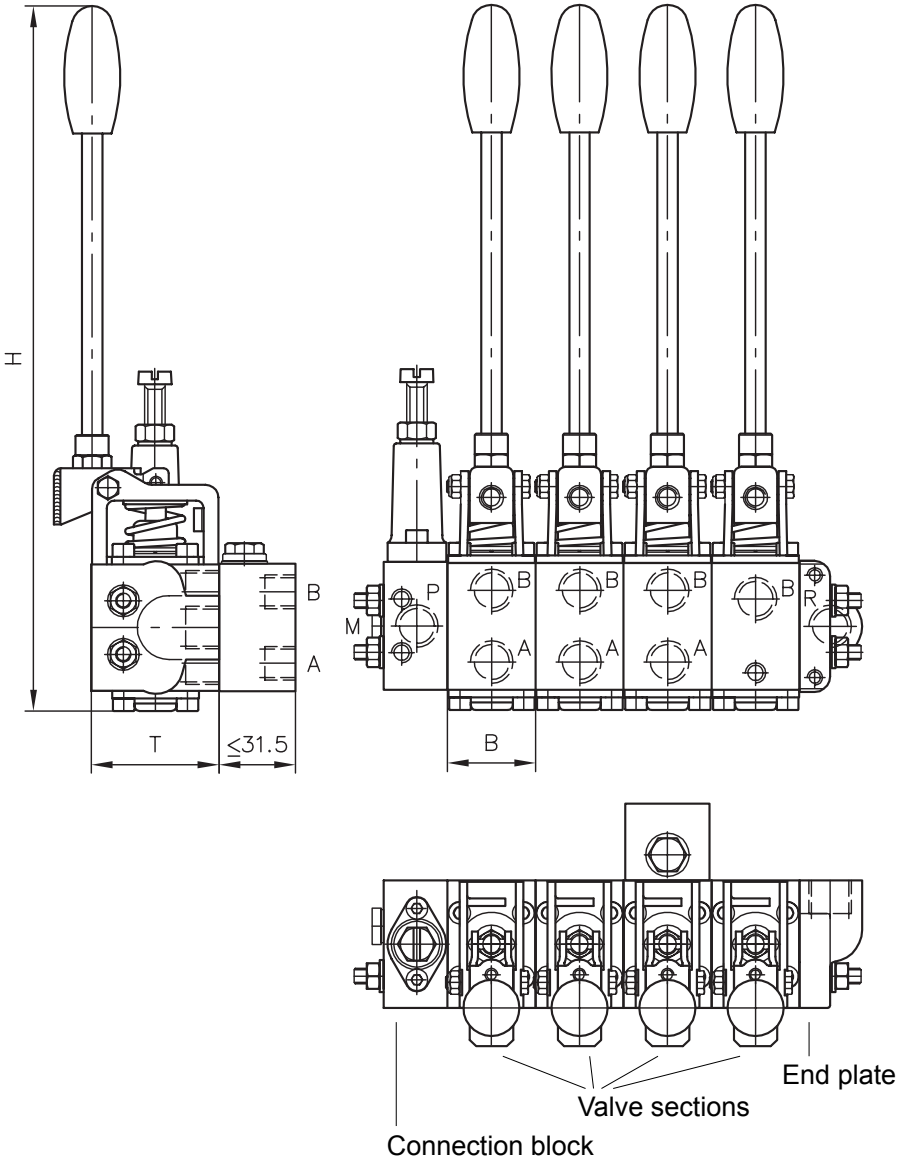
Reduced internal leakage due to reduced spool valve play

Versions of valve sections:

- Additional function on the pump side (orifice, 2-way flow control valve)
- Valve sections for size 3 with consumer-side additional functions in ancillary block (e.g. double check valves, shock valves, load-holding valves etc.)
- Manual operation with return spring for switching position “a” and detent for switching position “b”
- Manual operation with detent in both switching positions
- Manual operation with combinations of contact switch, switch cam and switch carrier
- Manual operation with different mounting directions

End plates:

2	3
	
Standard end plate with port R	End plate for subsequent connection of a DL



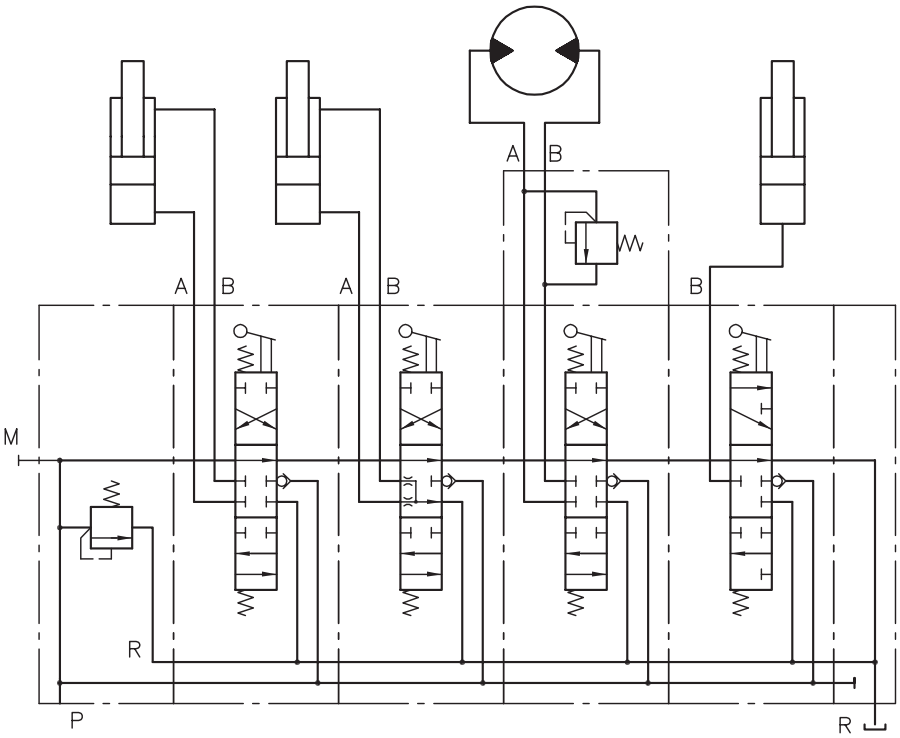
1 Connection block
2 Valve section
3 End plate

	Q_{max} [lpm]	p_{max} [bar]	Ports			Dimensions [mm]			m [kg]
			Characteristic value	A, B	H, P, R	H	B	T	
DL 1	12 ... 16	315	1	G 1/4	G 1/4	192	31,5	45	0,5
DL 2	20 ... 30	315	1	G 1/4	G 3/8	278	34,5	50	0,85
			2	G 3/8	G 3/8				
DL 3	30 ... 60	250	2	G 3/8	G 1/2	351	39,5	60	1,4
			3	G 1/2	G 1/2				
DL 4	90	250	3	G 1/2	G 3/4	368	39,5	70	1,8

Circuit example:

DL 21-2-G D G71 N-B/E1-2-180

Directional spool valve DL, size 2 with pressure-limiting valve (set to 180 bar),
port size 2 with G 3/8 threaded connections, circuit symbols G, D, G, N; circuit symbol G with pressure-limiting valve in port A (coding 71),
valve sections with manual operation B (series with hand lever) and mounting type E1 (ports A, B are directed towards the front,
valve spool is pushed into the housing for switching position “a”), valve bank with end plate 2 (coding 2)



Associated technical data sheets:

- Directional spool valve bank type DL: D 7260
- Directional spool valve bank type DL 4: D 7510

Directional spool valves

2.1 Proportional directional spool valves type PSL and PSV

Proportional directional spool valves are a type of directional valve. They control the direction of movement and the velocity of individual or multiple hydraulic consumers actuated simultaneously. Control is independent of the load and continuous.
The proportional directional spool valve type PSL is suitable for constant pump systems and type PSV for variable pump systems with a pressure/flow controller. The volumetric flows and load pressures for the individual consumers can be individually adjusted. The proportional directional spool valve type PSL and PSV can be adapted to various control tasks, e.g. for safety functions. All sizes can be combined with each other.
The proportional directional spool valve type PSL and PSV is used in mobile hydraulics, in particular in crane and lifting equipment, construction and mining machinery, drilling equipment as well as in offshore and marine technology.

Features and benefits:

- One product for various control functions and volume quantities
- Energy-saving Closed-Center systems
- Compact and lightweight design
- Modular system with wide range of design variants

Intended applications:

- Construction/construction material machinery
- Mining machinery (incl. oil production)
- Cranes and lifting equipment
- Machines for forestry and agricultural purposes
- Municipal machinery

Nomenclature:	**Prop. directional spool valves as per load-sensing principle**
Version:	**Valve bank in series connection**
Actuation:	**Manual** ▪ **Return spring** ▪ **Detent** **Electro-hydraulic, pressure-actuated** ▪ **Hydraulic** ▪ **Pneumatic**
p_{max}:	**400 bar**
$Q_{max.\ consumer}$:	**240 l/min**
$Q_{pu\ max}$:	**300 lpm**

Design and order coding example

PSL41F | **/380** | **- 3** | **- A2J40/40/EA/3** | **- E4** | **- G24**

Solenoid voltage 12V DC, 24V DC
- Actuated via prop. amplifier or PLVC
- Solenoids with various plug versions
- Explosion proof solenoids

End plates

Valve sections with actuation

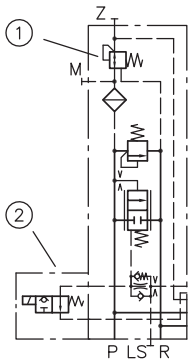
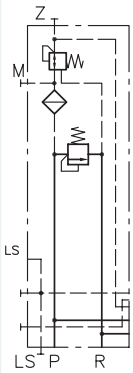
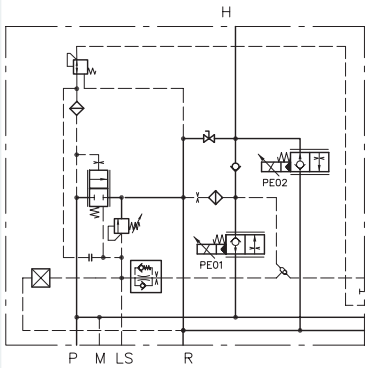
Size

Connection block
- Various connection threads
- Pressure limiting valve (piloted main pressure limiting valve)
- Suited for both constant and variable displacement pump systems (type PSM)

Basic type
Type PSL (hydraulic oil supply by constant pump), sizes 2, 3 and 5
Type PSV (hydraulic oil supply by variable pump), sizes 2, 3 and 5
Type HMPL (hydraulic oil supply by constant pump) for industrial trucks, sizes 2 and 3
Type HMPV (hydraulic oil supply by variable pump) for industrial trucks, sizes 2 and 3

Function

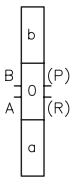
Connection blocks:

PSL	PSV	HMPL (HMPV)
		
1 Pilot pressure regulating valve **2** 2/2-way solenoid valve		
Connection block for constant pump systems with integrated 3-way controller, pressure-limiting valve and LS shutdown	Connection block for variable pump systems with or without pressure-limiting valve	Connection block for constant delivery pump with incorporated proportional seated valve for lifting and lowering

Additional versions of connection blocks:

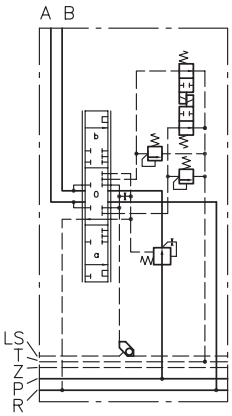
- 2/2-way solenoid valve for randomly switching the pump direction
- Additional damping option of the 3-way/pump controller
- Additional isolation valve to minimise the pump direction resistance
- Version with additional shut-off valve for the pump line, can be switched randomly
- Proportionally adjustable pressure limitation

Valve sections:

Basic symbols	Circuit symbol								
	L	M	F	H	J	B	R	O	G
									

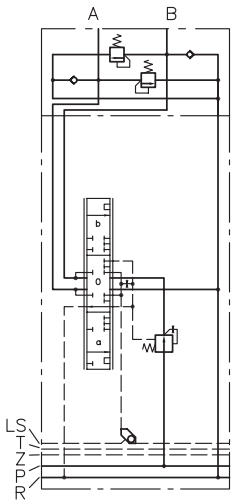
Versions of valve sections:

- Load pressure signal outputs at A, B; A and B together
- 3/3 directional spool valve with 2-way input and output controller
- Version with and without 2-way inflow controller
- Function deactivation feature
- Secondary pressure-limiting valves (can be selected for A and/or B)
- Prop. Pressure limitation of individual functions
- Version with ancillary blocks
- Intermediate plates for various additional functions
- Combination of various sizes possible in one valve bank
- Version with EX solenoid for use in potentially explosive areas
- Version with explosion-proof, intrinsically safe magnets for mining applications
- Version with CAN actuation



Additional functions in the ancillary block:

- Shock and servo-suction valves
- Load-holding valves
- Differential circuits
- Check valves with release, zero-leakage
- Floating and block functions can be switched
- Proportional seated valves in accordance with D 7490/1 for lifting and lowering functions with plunger cylinders



Characteristic values for max. volumetric flows:

	$Q_{A, B}$							
Size 2	3	6	10	16	25	40		
Size 3	3	6	10	16	25	40	63	80
Size 5	16	25	40	63	80	120	160	

- Characteristic value corresponds to the max. volumetric flow [lpm] of inflow controller versions at the consumer ports A and/or B
- Volumetric flows for A and/or B can be selected separately
- Increasing the control pressure enables 60 lpm (size 2), 120 lpm (size 3) and 240 lpm (size 5) per consumer port side.
- Version with 2-way inflow controller and check valve function, or damping elements

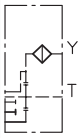
Actuations:

Basic type	Brief description	Circuit symbol (example)
A	Manual actuation	 Combination of electro-hydraulic and manual actuation
C	Detent (continuous)	
E **EA**	Electro-hydraulic actuation in combination with manual operation	
EI CAN **EA CAN**	CAN: Actuation variant with CAN control in combination with manual operation	
H, P **HA, PA**	Hydraulic and pneumatic actuation in combination with manual operation	
HEA	Combination of H, E and A actuation	

Intermediate plates:

- Electrically or hydraulically actuated shut-off valve for all downstream consumers
- With pressure-limiting valve to limit the operation pressure of all downstream valves
- For random switchable reduction of the volumetric flow of all downstream consumers
- Priority module, size 3

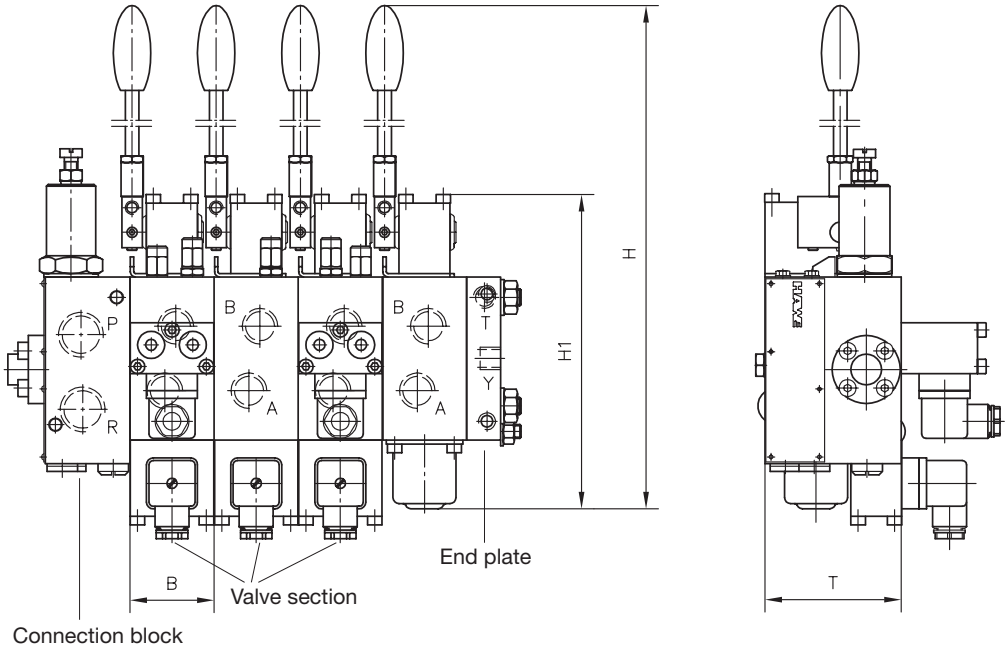
End plates:

E1	E2
	
Standard end plate	With additional Y-port for LS-input signal

Additional versions of end plates:

- End plate with internal leakage oil routing (no T gallery)
- End plates with additional P and R gallery
- Adapter plate to combine size 5 and 3 (coding ZPL 53), size 5 and 2 (coding ZPL 52) and size 3 and 2 (coding ZPL 32)
- End plate with integrated connection block function for dual-pump/dual-circuit systems

General parameters and dimensions



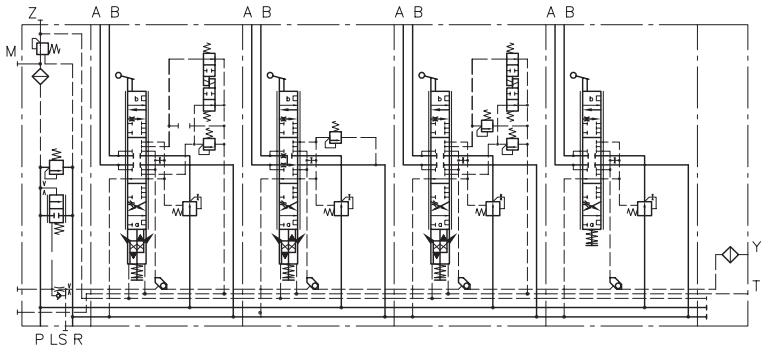
1 Connection block
2 Valve section
3 End plate

	Flow [lpm]		Oper. pressure [bar]	Ports		Dimensions [mm]				m [kg]
	Q_{max}	$Q_{pu\ max}$	p_{max}	P, R	A, B	H	H1	B	T	Per valve section[1)]
PSL/PSV 2	3 ... 54	80	420	G 1/2, 3/4-16 UNF-2B	G 3/8, 3/4-16 UNF-2B	272	150	40	60	1.8 ... 2.9
PSL/PSV 3	3 ... 120	200	420	G 1/2, G 3/4, G 1, 1 1/16-12 UNF-2B	G 1/2, G 3/4, 7/8-14 UNF-2B	364	195	50	80	3.3 ... 4.1
PSL/PSV 5	16 ... 240	300	400	G 1, G 1 1/4, 1 5/8-12 UN-2B	G 1, 5/16-12 UNF-2B	400	224	62.5	100	3.7 ... 4.5

1) Dep. on actuation and additional functions

Circuit example:

PSL 41/350 - 3	-32 J 25/16 A300 F1/EA -42 O 80/63 C250/EA -42 J 63/63 A100 B120 F3/EA -31 L 40/16/A	- E2 - G24
Type PSL valve bank for constant pump systems Connection block: – Coding for thread size (here 4 = G 3/4) – Coding for pilot pressure-reducing valve (here 1) – Coding for set pressure at pressure-limiting valve (here 350 bar) Size: 3	1. Valve section: (exemplary for all subsequent valve sections): – Directional spool valve block with coding for consumer connection size (here 3 = G 1/2) – Coding for the type of directional spool valve block (here 2) – Circuit symbol (here J) – Coding for max. consumer volumetric flow to ports A and B (here 25 and 16 lpm) – Coding of additional functions (here A 300; secondary pressure-limiting valve at port A set to 300 bar, function deactivated for port A (here F1)) – Coding for actuation type (here EA)	End plate: – Coding for end plate (here E2) – Coding for 24V DC solenoid voltage (here G24)



Products suitable for combination:

- Load-holding valves type LHT, LHDV: Page 198
- Joystick: Proportional pressure-reducing valve type KFB 01: D 6600-01

Additional electrical components:

- Proportional amplifier:Page 272
- Programmable logic valve control type PLVC: Page 276
- CAN node type CAN-IO: Page 276
- Other electronic accessories See "Electronics"

Associated technical data sheets:

- Proportional directional spool valve, type PSL and PSV size 2: D 7700-2
- Proportional directional spool valve, type PSL, PSM and PSV size 3: D 7700-3
- Proportional directional spool valve, type PSL, PSM and PSV size 5: D 7700-5
- Actuation for proportional directional spool valves type PSL/PSV: D 7700 CAN

Associated technical data sheets:

- Connection block type HMPL and HMPV for proportional directional spool valve: D 7700 H
- Proportional directional spool valve type EDL: D 8086

Directional spool valve

2.1 Proportional directional spool valve type PSLF, PSLV and SLF

Proportional directional spool valves are a type of directional valve. They control the direction of movement and the velocity of individual or multiple hydraulic consumers actuated simultaneously. Control is independent of the load and continuous.
The proportional directional spool valve type PSLF is suitable for constant pump systems and type PSVF for variable pump systems with a pressure/flow controller. The proportional directional spool valve type PSLF and PSVF is available as an individual manifold mounting valve or in the valve bank. The volumetric flows and load pressures for the individual consumers can be individually adjusted. The directional spool valve can be adapted to different control tasks. Connections on the rear permit easy access to the valve for servicing, even in tight installation spaces. All sizes can be combined with each other.
The proportional directional spool valve type PSLF and PSVF is used in mobile hydraulics, in particular in crane and lifting equipment, construction and mining machinery, drilling equipment as well as in offshore and marine technology.

Nomen-clature:	Prop. directional spool valve acc. to the Load-Sensing principle
Design:	Individual manifold mounting valve Valve bank via individual manifold mounting valves
Actuation:	Manual ▪ Return spring ▪ Detent Electro-hydraulic Pressure ▪ Hydraulic ▪ Pneumatic
p_{max}:	400 bar
$Q_{max.\ consumer}$:	400 l/min
$Q_{pu\ max}$:	1000 lpm

Features and benefits:

- Max. flow 1000 lpm at 420 bar
- Rear side ports for easy access to valves, even in small installation spaces
- Flange design can be combined across all sizes with fast valve replacement
- Simultaneous operation of several functions at full speed

Intended applications:

- Construction machinery and machines for building materials
- Cranes and lifting equipment
- Offshore and marine technology
- Mining machinery

Design and order coding example

PSLF	A1/380/4	- 3	- A2J40/40/EA/3	- E2	- G24

Solenoid voltage 12V DC, 24V DC
- Operated using a proportional amplifier or PLVC
- Magnets with different plug versions
- Explosion-proof magnets

End plates

Valve sections with actuation

Size

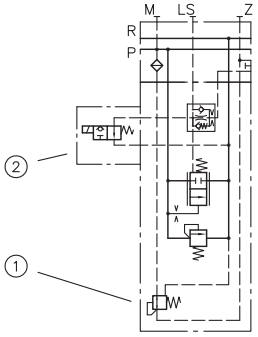
Connection block
- Various connection threads
- Pressure-limiting valve (pilot-controlled main pressure-limiting valve) in connection block

Basic type Type PSLF (supply via constant pump),
Type PSVF (supply via variable displacement pump),
size 3, 5 and 7

Function

Connection blocks:

PSLF

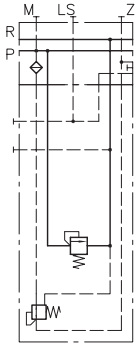


1 Pilot pressure valve

2 2/2-way solenoid valve

Connection block for constant pump systems with integrated 3-way controller, pressure-limiting valve and LS shutdown

PSVF

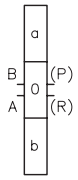


Connection block for variable pump systems with and without pressure-limiting valve

Additional versions of connection blocks:

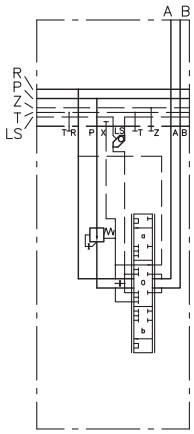
- 2/2-way solenoid actuated directional valve for arbitrary idle pump circulation
- Additional damping of the 3-way flow controller or pump controller
- Proportional adjustable pressure limitation

Valve sections:

Basic symbol	Circuit symbol								
	L	M	F	H	J	B	R	O	G
									

Versions of valve sections:

- Load-signal outlets at A, B; A and B together
- Version with and without 2-way inflow controller
- Function deactivation
- Secondary pressure-limiting valves (can be individually selected for A and/or B)
- Proportional pressure limitation of the individual functions
- Sub-plates with different additional functions
- Sub-plates for ancillary blocks
- Sub-plates for combining various sizes
- Combination of various sizes in one valve bank possible
- Version with EX solenoid for use in potentially explosive areas
- Version with explosion-proof, intrinsically safe solenoids for mining applications

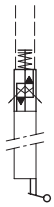


Key figures for max. flow rates:

	$Q_{A, B}$							
Size 3	3	6	10	16	25	40	63	80
Size 5	16	25	40	63	80	120	160	
Size 7	120	160	250	320	400			

- Key figure represents the max. flow rate (lpm) at consumer ports A or B for version with inflow controller
- Flow rates for A and/or B can be selected individually
- Increasing the control pressure means that 60 lpm (size 2), 120 lpm (size 3), 240 lpm (size 5) and 500 lpm (size 7) is possible per consumer port side.
- Versions with 2-way inflow controller and check valve function

Actuations:

Basic type	Brief description	Circuit symbol (example)
A	Manual operation	 Combination of electro-hydraulic and manual operation
C	Detent (stepless)	
E **EA**	Electro-hydraulic actuation in combination with manual operation	
EI CAN **EA CAN**	CAN: Actuation variant with CAN control in combination with manual operation	
H, P **HA, PA**	Hydraulic and pneumatic actuation in combination with manual operation	
HEA	Combination of H, E and A actuation	

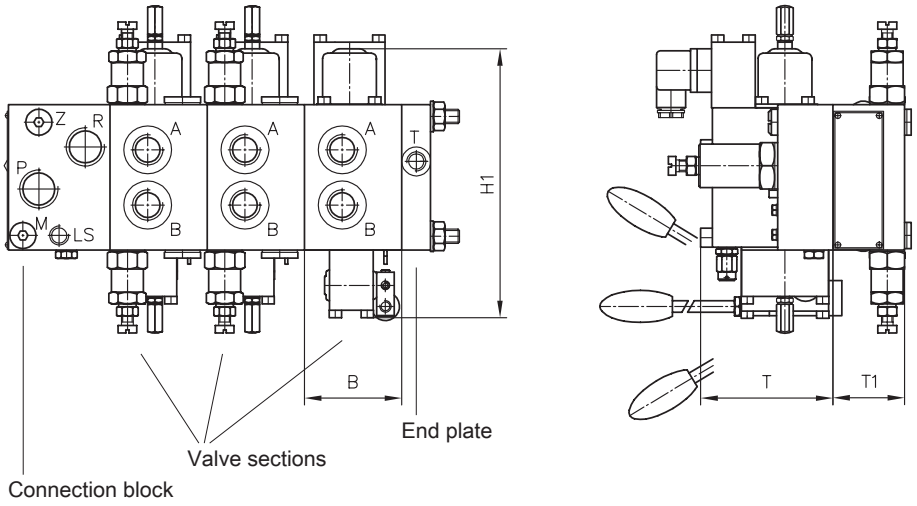
End plates:

E1	E2
 Standard end plate	 Additional Y-input for LS control signal

Additional versions of end plates:

- End plate with internal leakage oil routing (no tank connection)
- End plates with additional R port
- Adapter plate for combining size 5 and 3 (coding ZPL 53)

General parameters and dimensions



1 Connection block
2 Valve sections
3 End plate

	Flow [lpm]		Oper. pressure [bar]	Ports		Dimensions [mm]				m [kg]	
	Q_{max}	$Q_{PU\ max}$	p_{max}	P, R	A, B	H1	B	T	T1	1)	2)
PSLF/PSVF 3	3 - 120	200	420	G 3/4, 1 1/16-12 UN-2B	G 1/2, G 3/4, 7/8-14 UNF-2B	195	50	80	50	3.3 ... 4.1	6.6 ... 7.6
PSLF/PSVF 5	16 - 210	350	400	G 1, G 1 1/4, SAE 1 1/2"	G 1, SAE 1"	224	62.5	100	100	3.7 ... 4.5	10.9 ... 16.3
PSLF/PSVF 7	120 - 500	1000	400	G 1 1/2, SAE 1 1/2"	G 1 1/4, SAE 1 1/4"	305	106	101	95	13	23

1) Per valve section depending on actuation and additional functions
2) Per valve section complete with sub-plate

Products suitable for combination:

- Load-holding valves type LHT, LHDV: Page 198
- Joystick: Proportional pressure-reducing valve type KFB 01: D 6600-01

Additional electrical components:

- Proportional amplifier:Page 272
- Programmable logic valve control type PLVC: Page 276
- CAN node type CAN-IO: Page 276
- Other electronic accessories See "Electronics"

Associated technical data sheets:

- Proportional directional spool valve type PSLF, PSVF and SLF: D 7700-F
- Proportional directional spool valve banks type PSLF and PSVF size 7: D 7700-7F
- Actuation for proportional directional spool valves type PSL/PSV: D 7700 CAN

Directional seated valves

2.2 Directional seated valve type VH, VHR, and VHP

Directional seated valves are a type of directional valve. As ball valves they have zero leakage in the closed state.

A hand lever operates the eccentric shaft that controls the plunger for opening or closing the valve seats. The actuation is undertaken via the hand lever with automatic centring in the neutral position or with a notch. The directional seated valve type VH is suitable for pipe connection. The directional seated valve bank type VHR comprises several valves of type VH that have been clamped together connected in parallel via a tension rod to form a valve bank. The directional seated valve type VHP is available as a manifold mounting valve.

Features and benefits:

- Pressures up to 700 bar manually switchable
- Actuation using hand lever with automatic centring in zero position or with notch
- Different arrangements in valve bank possible
- Leakage-free seated valve technology

Intended applications:

- Construction and construction materials machinery
- Offshore and marine technology
- Process engineering systems
- Oil hydraulics and pneumatics

Nomen-clature:	Directional seated valve, zero leakage
Design:	Individual valve for pipe connection Individual valve, manifold mounting, bankable
Actuation:	Manual
p_{max}:	700 bar
Q_{max}:	25 l/min

Design and order coding example

VH 1 VHR 1	H1 G1/N1/E2

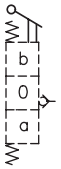
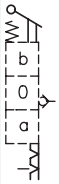
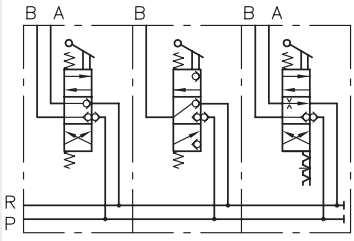
Function/valve sections with actuation Hand lever with automatic return (1) or detent (2)

Additional versions:

- Actuation with contact switch for neutral position monitoring (K), optionally for single valves and valve banks

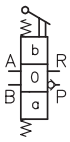
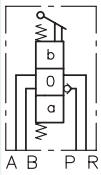
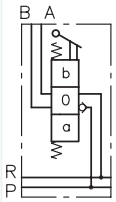
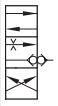
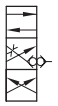
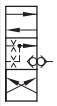
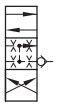
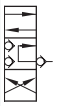
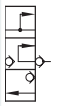
Basic type, size Type VH (Individual valve for pipe connection)
Type VHP (Individual valve, manifold mounting)
Type VHR (Valve bank)
Size 1 and 2

Actuation:

Return spring	Detent	
		Symbol type VHR.. 

- Return spring : automatic return to neutral position only up to approx. 50 bar. At pressures over 50 ... 700 bar the lever must be reset manually.

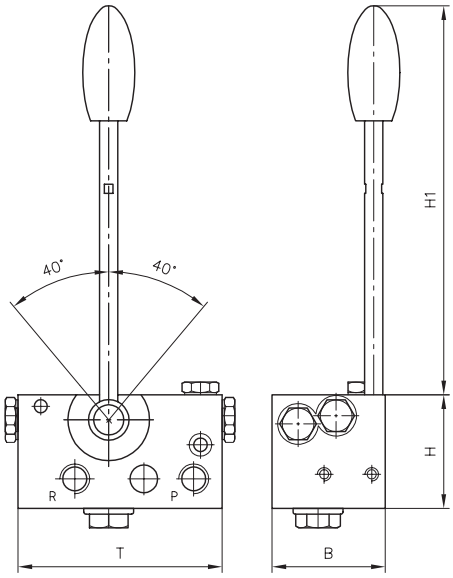
Function

Basic symbols			Symbol							
VH	VHP	VHR	G	E	M	N	D	H	L	S
										

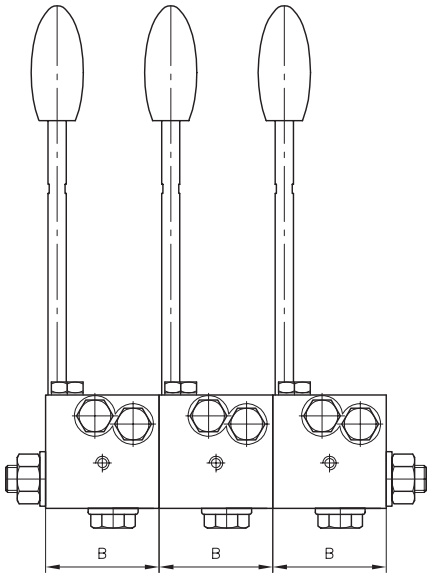
- On type VHR max. 7 or 5 valves (size 1 or 2) can be combined
- Type H, L and S only as single valve, not for type VHR

General parameters and dimensions

Individual valve **VH..**



Valve bank **VHR..**



	Q_{max} [lpm]	p_{max} [bar]	Ports	Dimensions [mm]				m [kg]
				H	H1	B	T	Valve section
VH 1, VHP 1, VHR 1	12	700	G 1/4	50	172	50	90	1.6
VH 2, VHR 2	25	500	G 3/8	60	162	60	120	3

Associated technical data sheets:

- Directional seated valve type VH, VHP and VHR: D 7647

Similar products:

- Directional seated valve type NBVP 16: D 7765 N

2.3 Proportional pressure-reducing valve type KFB and FB

Proportional pressure-reducing valves are a type of pressure control valve. They manually and continuously operate hydraulic actuators at a distance.
The proportional pressure-reducing valve type FB is available as a single valve for pipe connection. Type KFB is a valve bank and combines several valves.
The proportional pressure-reducing valve type FB and KFB is primarily used for remote control of the directional spool valve type PSL or PSV.

Features and benefits:
- Sturdy design
- Precise control

Intended applications:
- For control oil supply in pilot circuits

Additional versions:
- With UNF thread

Nomen-clature:	Proportional pressure-reducing valve Hydraulic joystick
Design:	Single valve / Valve bank in pipe connection
p_{max}:	30 bar
Q_{max}:	2 l/min

Design and order coding example

KFB01 | A | /19 | /F | 1

Additional elements for actuation — Without labelling - with hand lever
1 - Without hand lever
005 - with hand lever bent at an angle of 5°
015 - With hand lever bent at an angle of 15°
025 - With hand lever bent at an angle of 25°
030 - With hand lever bent at an angle of 30°

Manual operation — F - manual operation with return spring
FC - detent

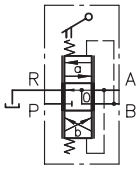
Pressure range of prop. pressure-reducing valve — Pressure ranges
4; 5.5; 7; 9; 11; 14; 19; 30

Valve sections — A - Front section
M - Middle section
E - End section

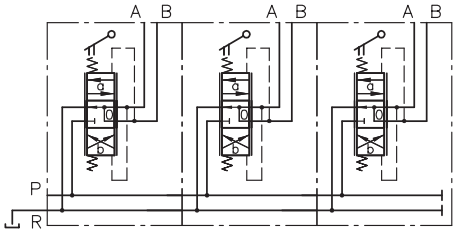
Basic type, size — Type KFB (valve bank)
Type FB (single valve)

Function

Single valve

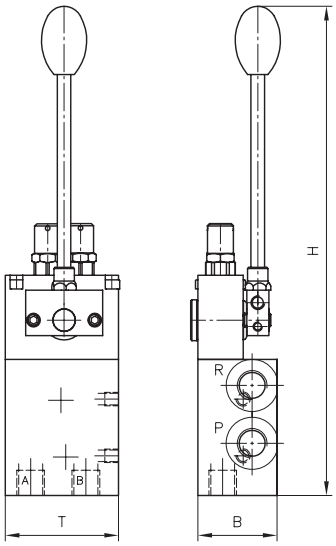


Valve bank

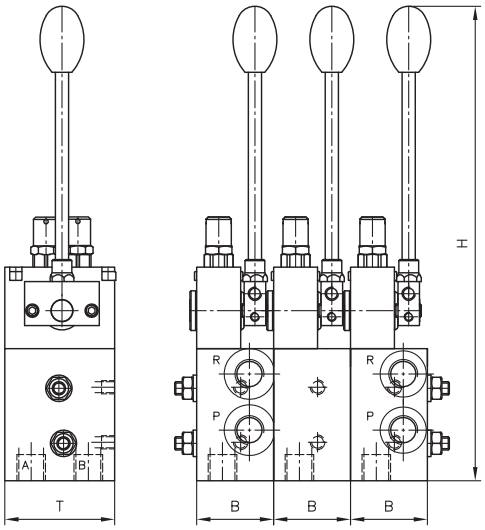


General parameters and dimensions

FB 01



KFB 01



	Q_{max} [lpm]	Pressure range p_{max} [bar]	Ports	Dimensions [mm]		
				H	B	T
FB 01	2	30	G 1/4	215	35	50
KFB 01	2	30	G 1/4	215	35	50

Associated technical data sheets:

- Proportional pressure-reducing valve type KFB 01: D 6600-01