

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.

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:

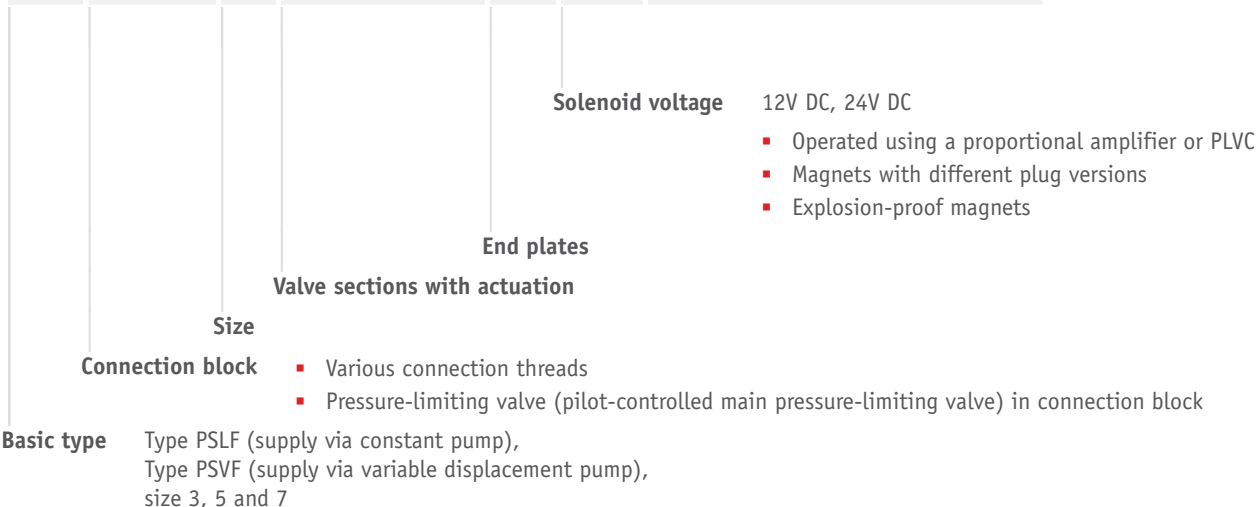
- Construction machinery and machines for building materials
- Cranes and lifting equipment
- Offshore and marine technology
- Mining machinery



Nomenclature:	Prop. directional spool valve acc. to the Load-Sensing principle
Design:	Individual manifold mounting valve Valve bank via individual manifold mounting valves
Actuation:	Manual <ul style="list-style-type: none"> ▪ Return spring ▪ Detent Electro-hydraulic Pressure <ul style="list-style-type: none"> ▪ Hydraulic ▪ Pneumatic
p_{max}:	400 bar
Q_{max, consumer}:	400 l/min
Q_{pu max}:	1000 lpm

Design and order coding example

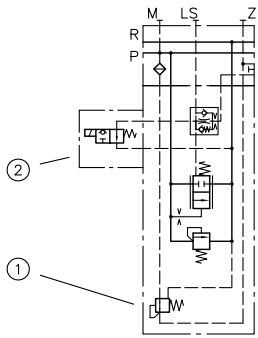
PSLF A1/380/4 - 3 - A2J40/40/EA/3 - E2 - G24



Function

Connection blocks:

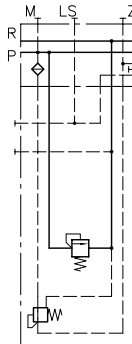
PSLF



- 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



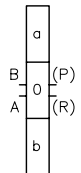
Connection block for variable pump systems with and without pressure-limiting valve

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

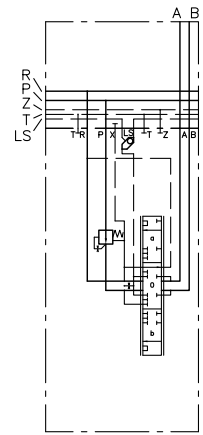


Circuit symbol

	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:

Size	Q _{A, B}							
	3	6	10	16	25	40	63	80
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			

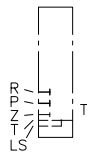
- Key figure represents the max. flow rate (lpm) at consumer ports A or B for version with inflow controller
- Flow rates for A and/or B can be selected individually
- Increasing the control pressure means that 60 lpm (size 2), 120 lpm (size 3), 240 lpm (size 5) and 500 lpm (size 7) is possible per consumer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

Actuations:

Basic type	Brief description	Circuit symbol (example)
A	Manual operation	<p>Combination of electro-hydraulic and manual operation</p>
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



Standard end plate

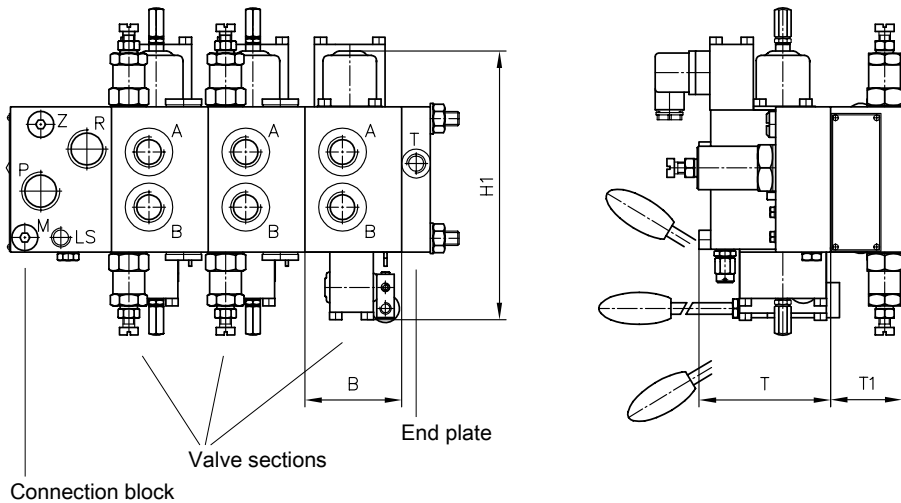
E2



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/PSVF: D 7700 CAN](#)

Directional spool valve

2.1 Clamping module type NSMD

Clamping modules combine a directional spool valve, pressure reducing valve and pressure switch.

The clamping module type NSMD has the standard connection pattern nominal size NG 6. It controls power-driven clamping devices, e.g. hydraulically-driven hollow and solid clamping cylinders for automatic lathes. It regulates the clamping pressure and monitors it. The clamping pressure is adjusted at the downstream pressure switch using a manual, mechanical or electrically-proportional adjustment device. A special safety circuit monitors the switching position of the valve.

Throttling options in the spool end position and/or rapid and creeping movements are possible as an additional function for one or both consumer ports. The clamping module type NSMD can be combined with other valves as a valve bank type BA to form a valve block.

Features and benefits:

- Directional valve, pressure-reducing valve and pressure switch in one device
- Adjustment of pressure-reducing valve and pressure switch with an adjustment device (manual or electro-proportional)
- The controlled pressure is picked up directly at the consumer port
- Valve with connection pattern in accordance with DIN 24340-A6

Intended applications:

- Machine tools (cutting)
- Machine tools (non-cutting) - forming and cutting
- Handling and mounting technology (industrial robots, etc.)



Nomenclature:	Valve combination consisting of: <ul style="list-style-type: none"> ▪ Directional spool valve (4/3-, 4/2-way function) ▪ Pressure reducing valve with tracked pressure switch
Design:	Individual valve for manifold mounting (Valve banks with sub-plates type BA are available)
Actuation:	Solenoid
p_{max}:	120 bar
Q_{max}:	25 l/min

Design and order coding example

NSMD 2 D1 /MDA /GRK - G24

Solenoid voltage 12V DC, 24V DC, 110V AC, 230V AC
Solenoids with various plug versions

Clamping pressure adjustment, pressure range, switching flow rate

- Slotted head screw + hexagon nut
- Wing screw + wing nut
- Lockable turning handle
- Electro-proportional adjustment with/without additional function monitoring

Actuation

- Function**
- With pressure switch
 - With orifice (flow limitation in accumulator mode)

Basic type, size Type NSMD size 2 with connection hole pattern conf. NG 6