

**Directional spool valves**  
**hand lever operated type WMM6**  
**rotary knob operated type WMD6**  
**roller operated type WMR6**  
**hydraulically operated type WH6**

**NS6** | **up to 31,5 MPa** | **up to 80 dm<sup>3</sup>/min**

11.2015

**DATA SHEET - OPERATION MANUAL**

**APPLICATION**

Directional spool valves are intended for change in direction of fluid flow in a hydraulic system and thus it allows to change direction of movement of a receiver - mostly piston rod of a cylinder or hydraulic motor as well to use functions: *on* and *off*.

Directional spool valves can be made in differently operated design versions:

- hand lever operated type **WMM6**
- rotary knob operated type **WMD6/WMDA6**
- roller operated type **WMR6/WMU6**
- hydraulically operated type **WH6**

These directional valves are intended for subplate mounting in any position in hydraulic system.



**DESCRIPTION OF OPERATION**

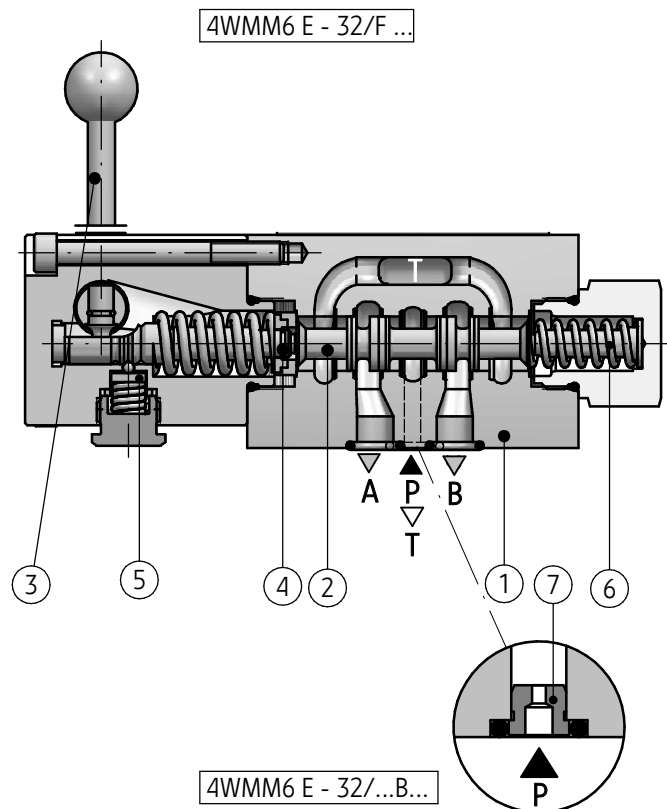
**General information**

Main bore and annular ports **P**, **T**, **A**, **B** are made in the housing (1) and are connected to its subplate connection.

Directional valve is switched by shifting the spool (2) into one end position. Various control functions are dependent on shape of the spool (2), which affects the change in configuration of connections among ports **P**, **T**, **A**, **B** in the housing (1).

**Directional spool valve - hand lever operated type WMM6**

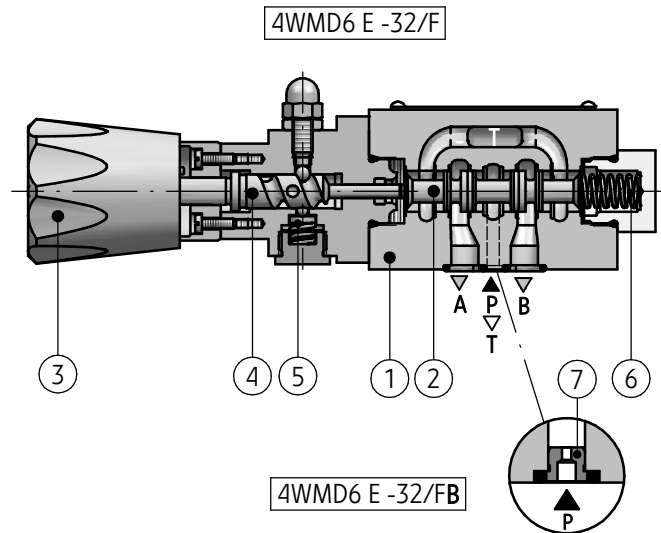
The spool (2) is shifted as a result of changing position of the hand lever (3), by means of pin (4). The spool return (2) to its rest is secured by springs (6) - version ...WMM6.../... or the spool (2) is positioned by means of the detent (5) - versions ...WMM6.../F. Directional spool valve may be equipped with throttle insert (7) placed in port **P** - version WMM6.../...B.



## DESCRIPTION OF OPERATION

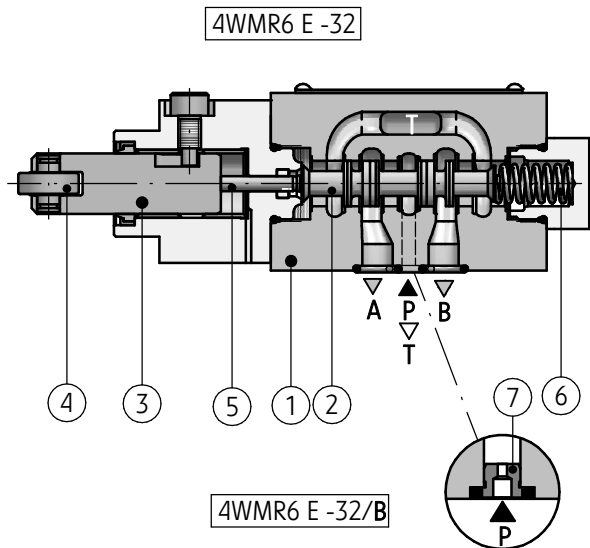
### Directional spool valve - rotary knob operated type WMD6, WMDA6

The spool (2) is shifted by means of rotary knob (3) through the spindle (4) and by means of the spring (6). The spool is positioned by means of detent (5). Directional spool valve may be provided with orifice (7) placed in port P - version ...WMD6.../FB.



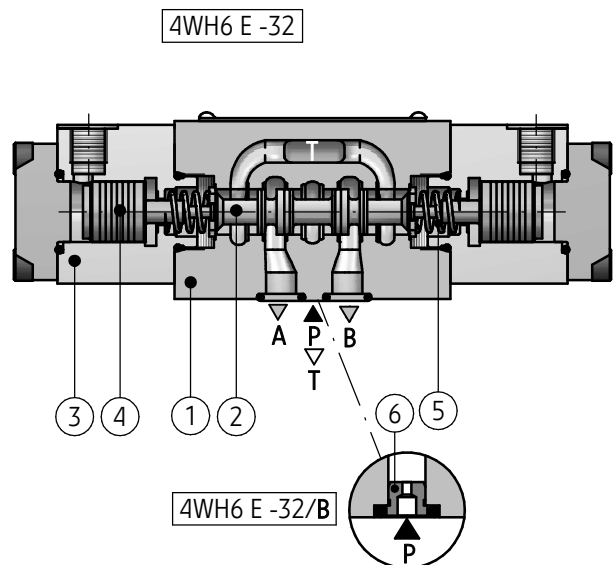
### Directional spool valve - roller operated type WMR6/WMU6

The spool (2) is shifted by means of the pin (3) with the roller (4) at the end of pin, through the plunger (5). Spool return (2) to its rest position is secured by the spring (6). Directional spool valve may be provided with orifice (7) placed in port P - version ...WMR.../B.



### Directional spool valve -hydraulically operated type WH6

The spool (2) is shifted by means of the pressure supplied to connections of the caps (3) and thus it allows to move spools (4). Spool return (2) and its centering in neutral position (3-position directional valves) or fixing end positions (2-position directional valves) is secured by the springs (5) - version ...WH6...-12/...; hydraulically (with oil pressure) - version ...WH6.../O... or by means of detent - version ...WH6.../OF.... In versions: ...WH6.../O... and ...WH6.../OF... the spool position (4) is not fixed in case of the lack of supply. Directional spool valve may be provided with orifice (6) placed in port P - version ...WH6.../...B.



## TECHNICAL DATA

Hydraulic fluid	mineral oil							
Required fluid cleanliness class	ISO 4406 class 20/18/15							
Nominal fluid viscosity	37 mm <sup>2</sup> /s at temperature 55 °C							
Viscosity range	2,8 up to 380 mm <sup>2</sup> /s							
Fluid temperature range (in a tank)	recommended	40°C up to 55°C						
	max	-20°C up to +70°C						
Ambient temperature range	- 20°C up to +70°C							
Features	type WMM6		type WMD6/WMDA6		type WMR6/WMU6		type WH6	
Max operating pressure	ports		ports		ports		ports	
	P, A, B	T	P, A, B	T	P, A, B	T	P, A, B	T
	31,5 MPa	16 MPa	31,5 MPa	16 MPa	31,5 MPa	6 MPa	31,5 MPa	16 MPa
Control pressure	—		—		—		min 0,6 - 1 MPa	
							max 20 MPa	
Switching force	pressure in port T				100 - 200 N			
	0 MPa	15 MPa	—				—	
	~ 20 N	~ 30 N						
Tightening torque of rotary knob	—		150 Ncm		—		—	
Max angle of control cam	—		—		30°		—	
Weight	1,4 kg		1,4 kg		1,4 kg		version with 2 control ports 1,8 kg	
							version with 1 control port 1,3 kg	
Flow section in $\theta$ (central) position	spool Q - 6 % nominal section spool W - 3 % nominal section							

## INSTALLATION AND OPERATION REQUIREMENTS

- |   |   |
|---|---|
| <ol style="list-style-type: none"> <li>1. Only fully functional and operational valve must be used.</li> <li>2. During the period of operation must be kept fluid viscosity acc. to requirements defined in this Data Sheet - Operation Manual</li> <li>3. In order to ensure failure free and safe operation the following must be checked: <ul style="list-style-type: none"> <li>• proper working of the valve</li> <li>• cleanliness of the hydraulic fluid</li> </ul> </li> <li>4. Due to heating of valve body to high temp., the valve shall be placed in such way to eliminate the risk of</li> </ol> | <ol style="list-style-type: none"> <li>5. In order to ensure tightness of the directional valve block, one should take care of dimension of sealing rings and valve operation parameters given in this Data Sheet - Operation Manual</li> <li>6. A person that operates the valve must be thoroughly familiar with this Data Sheet - Operation Manual.</li> </ol> <p>accidental contact with the valve body during operation or to apply suitable covers acc. to PN - EN ISO 13732 - 1 and PN - EN 4413</p> |
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