

## Solenoid operated spool valve for the temperature range -60 °C

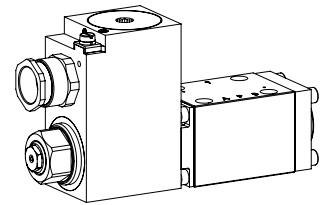
### Flange construction

- ◆ 4/2-way impulse valve
- ◆ 4/3-way with spring centred mid position
- ◆ 4/2-way with spring reset
- ◆  $Q_{max} = 50 \text{ l/min}$
- ◆  $p_{max} = 350 \text{ bar}$

### NG6

#### ISO 4401-03

- ⊕ II 2 G Ex db IIC
- ⊕ II 2 D Ex tD A21 IP65
- ⊕ I M2 Ex db I Mb



## DESCRIPTION

Direct operated solenoid spool valve with 4 connections in 5 chamber design. With the solenoids deenergised, the spool is held in the center position by the spring (4/3), or switched back to the offset position (4/2). With the impulse spool (4/2), the spool is held in the switching position by the detent. The pressure tight encapsulated Ex-protection solenoid coil prevents an explosion on the inside penetrating to the outside as well as an ignitable surface temperature.

## APPLICATION

These valves are suitable for applications in explosion-hazard areas, open cast and also in mines. Spool valves are mainly used for controlling direction of movement and stopping of hydraulic cylinders and motors. The direction of movement is determined by the position of the spool and its symbol.

## CERTIFICATES

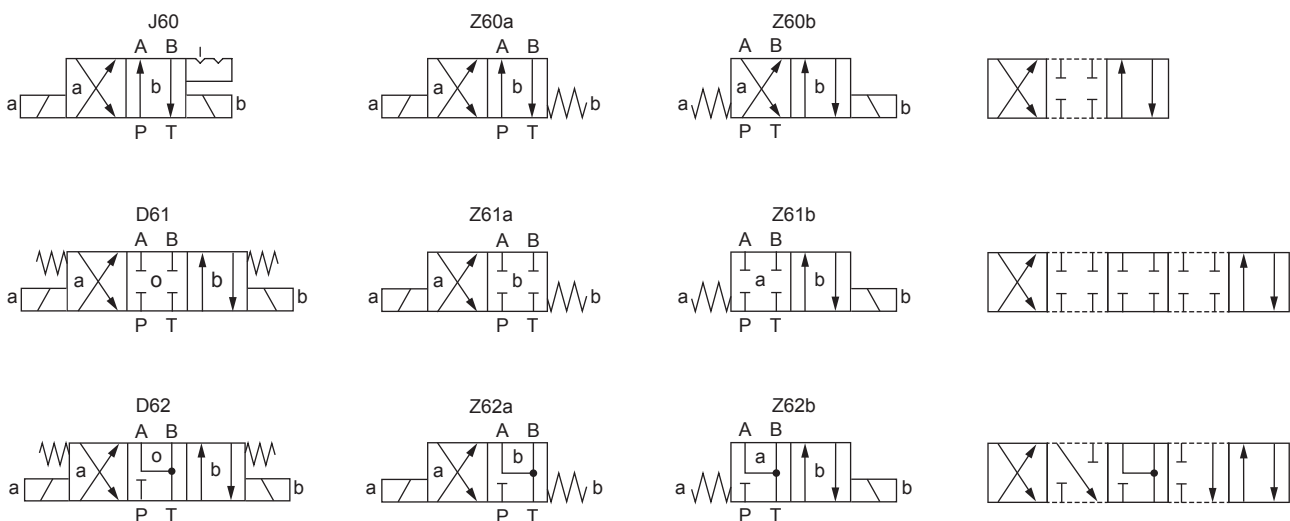
	Surface	Mining	Z591 -60 °C to...
ATEX	x	x	x
IECEX	x	x	x
EAC	x	x	x
Inmetro	x	x	x
Nepsi	x		x

The certificates can be found on [www.wandfluh.com](http://www.wandfluh.com)

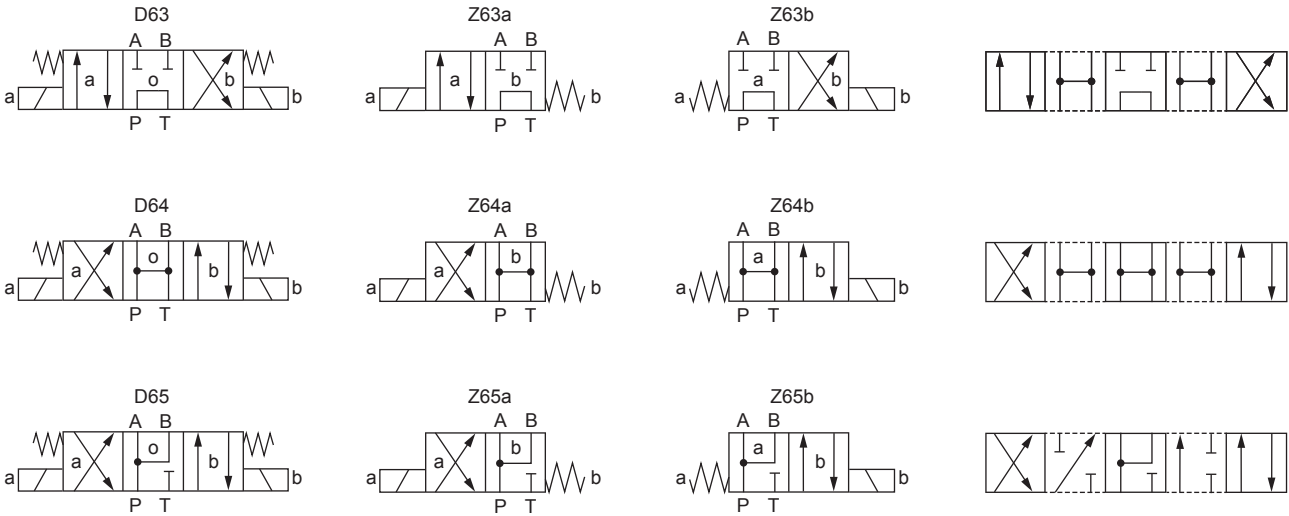
## ACTUATION

Actuation	Switching solenoid, wet pin push type, pressure tight
Execution	MKY45 / 18x60 (Data sheet 1.1-183)
Connection	Cable gland for cable Ø 6,5... 14 mm

## SYMBOL



**SYMBOL**



**TYPE CODE**

		A		EXd	4	-	Y	-	/	L15	/	-	Z591	#	
International standard interface ISO															
Explosion-proof execution, Ex d															
Number of control ports															
Designation of symbols acc. to table															
Spool clearance															
Nominal voltage $U_N$	12 VDC	<input type="checkbox"/> G12	115 VAC	<input type="checkbox"/> R115											
	24 VDC	<input type="checkbox"/> G24	230 VAC	<input type="checkbox"/> R230											
Nominal power $P_N$	15 W														
Certification	ATEX, IECEx, EAC		<input type="checkbox"/>	Inmetro		<input type="checkbox"/> IM	Nepsi		<input type="checkbox"/> NP						
Sealing material / Temperature range	-60 ... +70 °C														
Design index (subject to change)															

1.3-33

**GENERAL SPECIFICATIONS**

Designation	4/2-, 4/3-spool valve
Construction	Direct operated
Mounting	Flange construction
Nominal size	NG6 according to ISO 4401-03
Actuation	Ex-protection switching solenoid
Ambient temperature	<b>Execution L15</b> -60...+70 °C (operation as T1...T4 / T130 °C)
Weight	2,8 kg (1 solenoid) 4,6 kg (2 solenoids)
MTTFd	150 years

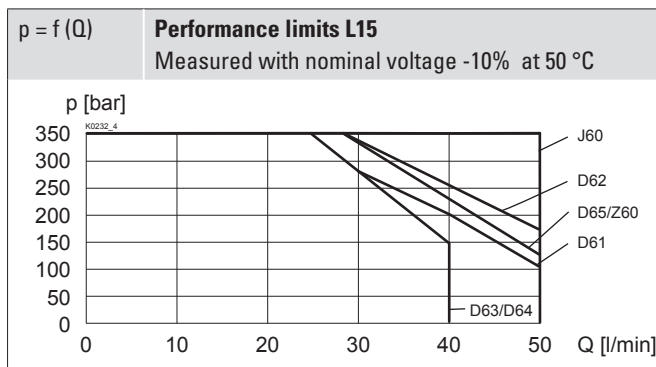
**ELECTRICAL SPECIFICATIONS**

Protection class	IP67
Relative duty factor	100 % DF
Switching frequency	12'000 / h
Voltage tolerance	± 10 % with regard to nominal voltage
Standard nominal voltage	12 VDC, 24VDC, 115 VAC, 230 VAC AC = 50 to 60 Hz ± 2 %, with built-in two-way rectifier
Standard nominal power	15 W
Temperature class	Nominal power 15 W: T1...T4

**Note!** Other electrical specifications see data sheet 1.1-183


**PERFORMANCE SPECIFICATIONS**

Oil viscosity  $\nu = 30 \text{ mm}^2/\text{s}$



**Note!** With the L15 execution for ambient temperatures up to 70 °C, the performance specifications have been evaluated with an ambient temperature of 50 °C.


**HYDRAULIC SPECIFICATIONS**

Working pressure	$p_{\text{max}} = 350 \text{ bar}$
Tank pressure	$p_{\text{Tmax}} = 100 \text{ bar}$
Maximum volume flow	$Q_{\text{max}} = 50 \text{ l/min}$ , see characteristics
Leakage oil	On demand
Fluid	Mineral oil, other fluid on request
Viscosity range	12 mm <sup>2</sup> /s...320 mm <sup>2</sup> /s
Temperature range fluid	<b>Execution L15</b> -60...+70 °C (operation as T1...T4 / T130 °C)
Contamination efficiency	Class 20 / 18 / 14
Filtration	Required filtration grade $\beta_{10...16} \geq 75$ , see data sheet 1.0-50

**MANUAL OVERRIDE**

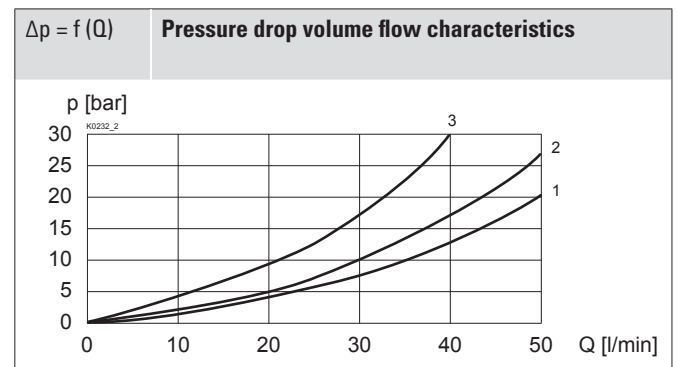
HB4,5-Z591 for „-60...+70 °C“

**SURFACE TREATMENT**

- ◆ The valve body, the covers and the socket head screws are made of stainless steel
- ◆ The armature tube is zinc coated

**COMMISSIONING**

**Attention!** The solenoid coil must only be put into operation, if the requirements of the operating instructions supplied are observed to their full extent. In case of non-observance, no liability can be assumed.

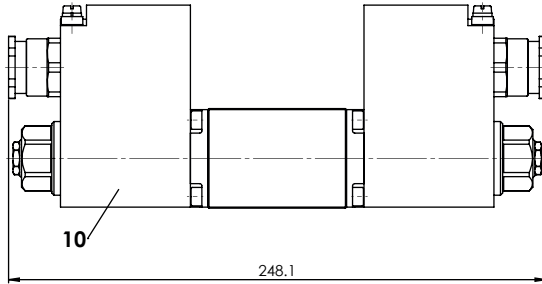


Symbol	Flow direction				
	P - A	P - B	P - T	A - T	B - T
Z60 / J60	2	2	-	2	2
D61 / Z61	2	2	-	2	2
D62 / Z62	2	2	-	2	2
D63 / Z63	2	2	3	2	2
D64 / Z64	1	1	-	1	1
D65 / Z65	1	1	-	2	2

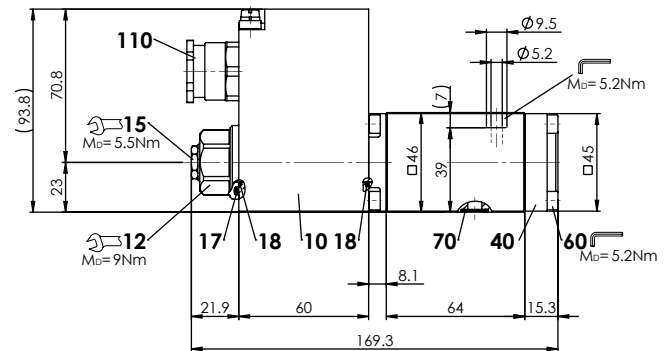
## DIMENSIONS

4/3-way spool valve (spring centring)

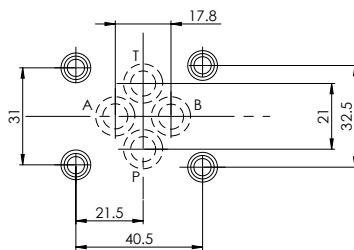
4/2-way spool valve (impulse)



4/2-way spool valve (spring reset)



## HYDRAULIC CONNECTION



## SEALING MATERIAL

NBR as standard

## ACCESSORIES

Fixing screws	Data sheet 1.0-60
Threaded subplates	Data sheet 2.9-05
Multi-station subplates	Data sheet 2.9-45
Horizontal mounting blocks	Data sheet 2.9-85
Technical explanations	Data sheet 1.0-100
Hydraulic fluids	Data sheet 1.0-50
Filtration	Data sheet 1.0-50
Relative duty factor	Data sheet 1.1-430

## STANDARDS

Explosion protection	Directive 2014 / 34 / EU (ATEX)
Flameproof enclosure	EN / IEC / UL 60079-1, 31
Cable entry	EN 60079-0, 1, 7, 15, 31
Mounting interface	ISO 4401-03
Protection class	EN 60 529
Contamination efficiency	ISO 4406

## PARTS LIST

Position	Article	Description
10	263.64.. 263.68..	Solenoid coil MK.45 / 18 x 60-... / L15-M238
12	154.2603	Knurled nut Ex M18 x 1,5 x 18
15	253.8024	HB4,5-Z591
17	160.2251	O-ring ID 25,07 x 2,62 (NBR)
18	160.0171	O-ring ID 17,17 x 1,78 (polyurethan)
40	058.4108	Cover K9
60	246.2516	Socket head screw M5 x 16 A4 DIN 912
70	160.0091	O-ring ID 9,25 x 1,78 (polyurethan)
110	111.1080	Cable gland M20 x 1,5

## INSTALLATION NOTES

Mounting type	Flange mounting 4 fixing holes for socket head screws M5 x 45
Mounting position	Any, preferably horizontal
Tightening torque	Fixing screws $M_D = 5,2 \text{ Nm}$ (screw quality 8.8, zinc coated) $M_D = 9 \text{ Nm}$ knurled nut

### Note!



The length of the fixing screw depends on the base material of the connection element. For valves for the temperature range „-60 °C to...“ (Z591), screws of the quality A4 have to be used.

### Attention!



For stack assembly please observe the remarks in the operating instructions