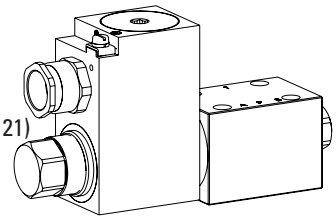
Solenoid operated spool valve stainless

Flange construction

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

NG6

ISO 4401-03



Ex db IIC T6, T4 Gb (Zone 1)
Ex tb III C T80 °C, T130 °C Db (Zone 21)
Ex db I Mb
Ⓔx II 2 G Ex db IIC T6, T4
Ⓔx II 2 D Ex tb III C T80 °C, T130 °C
Ⓔx I M2 Ex db I Mb
Class I, Division 1, Group A, B, C, D T4
Class II & III, Division I, Group E, F, G T4

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. The stainless execution is especially suitable for the use in wet and salty environment. Spool valves are mainly used for controlling direction of movement and stopping of hydraulic cylinders and motors.

CERTIFICATES

	Surface	Mining	Standard -25 °C to…	Z604 -40 °C to…
ATEX / UKEX	x	x	x	x
IECEx	x	x	x	x
CCC	x	x	x	x
EAC	x	x	x	x
Australia	x	x	x	x
MA		x	x	
USA / Canada	x		x	x
PESO	x		x	x

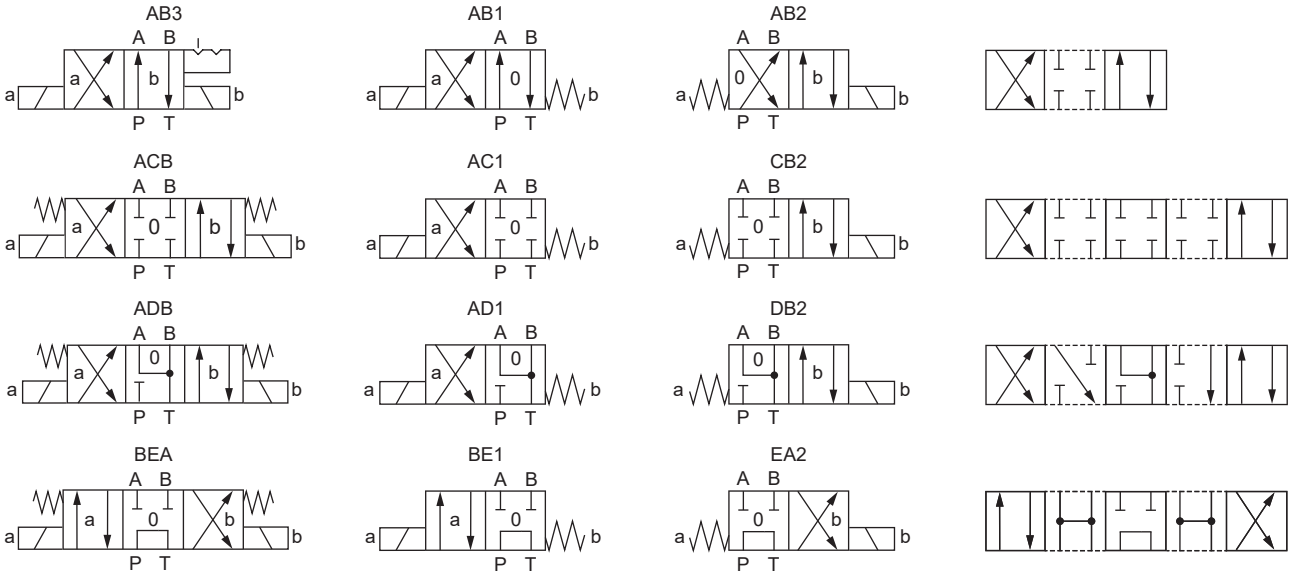
The certificates can be found on www.wandfluh.com

ACTUATION

Actuation	Switching solenoid, wet pin push type, pressure tight
Execution	MKY45 / 18x60 (data sheet 1.1-183) MKY45 / 18x60 K9 (data sheet 1.1-183S)
Connection	Cable gland for cable Ø 6,5…14 mm

Attention! The UC execution is always supplied without cable gland

SYMBOL



TYPE CODE

WD Y F A06 - [ ] - [ ] / [ ] / [ ] - [ ] [ ] # [ ]

Spool valve direct operated

Explosion proof execution Ex d

Flange construction

International standard interface ISO, NG6

Designation of symbols acc. to table

Nominal voltage U_N

12 VDC	G12	115 VAC	R115
24 VDC	G24	230 VAC	R230

Nominal power P_N

		Ambient temperature up to:
9 W	L9	40 °C or 90 °C
15 W	L15	70 °C

Certification

ATEX, UKEX, IECEx, CCC, EAC			
Australia	AU	USA / Canada	UC-M187
MA	MA	India	PE

Sealing material

NBR		
FKM (Viton)	D1	
NBR 872	y-Z604	(only with 15 W)

Stainless

with K8 coil	K9	
with K9 coil	K10	(not for UC execution)

Design index (subject to change)

1.3-34S

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	**Operation as T6** -25…+40 °C (L9) **Operation as T4** -25…+90 °C (L9) -25…+70 °C (L15) -40…+70 °C (L15)
Weight	2,8 kg (1 solenoid) 4,6 kg (2 solenoids)
MTTFd	150 years

HYDRAULIC SPECIFICATIONS

Working pressure	p_{max} = 350 bar
Tank pressure	$p_{T\,max}$ = 200 bar
Maximum volume flow	Q_{max} = 50 l/min, see characteristics
Leakage oil	See characteristics
Fluid	Mineral oil, other fluid on request
Viscosity range	12 mm²/s…320 mm²/s
Temperature range fluid	**Operation as T6** NBR -25…+40 °C (L9) FKM -20…+40 °C (L9) **Operation as T4** NBR -25…+70 °C (L9 or L15) FKM -20…+70 °C (L9 or L15) NBR 872 -40…+70 °C (L15)
Contamination efficiency	Class 20 / 18 / 14
Filtration	Required filtration grade ß 10…16 ≥ 75, see data sheet 1.0-50

ELECTRICAL SPECIFICATIONS

Protection class	IP65 / 66 / 67
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	9 W, 15 W
Temperature class	Nominal power 9 W: T1…T6 Nominal power 15 W: T1…T4

Note! Other electrical specifications see data sheet 1.1-183, 1.1-183S

SURFACE TREATMENT

-The valve body, the cover and the socket head screws are made of stainless steel

-The slip-on coil and the armature tube are zinc nickel coated

Optionally K10:

-The coil is made of stainless steel

SEALING MATERIAL

NBR or FKM (Viton) as standard, choice in the type code

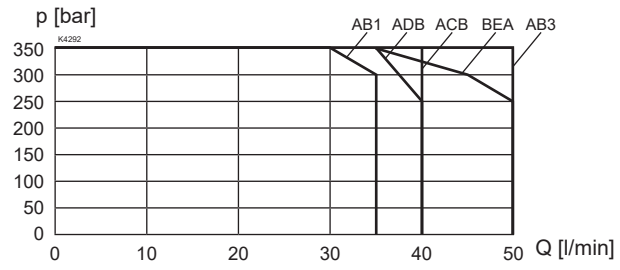
COMMISSIONING

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.

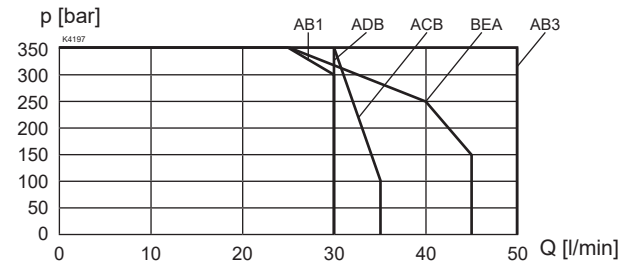
PERFORMANCE SPECIFICATIONS

Oil viscosity υ = 30 mm²/s

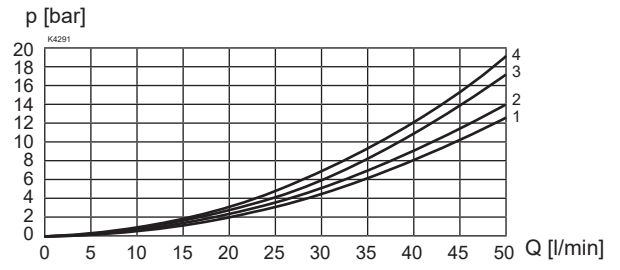
p = f (Q) **Performance limits L15**
Measured with nominal voltage -10%
at 50 °C (steady-state temperature)



p = f (Q) **Performance limits L9**
Measured with nominal voltage -10%
at 40 °C (steady-state temperature)
Execution L9 90 °C on request

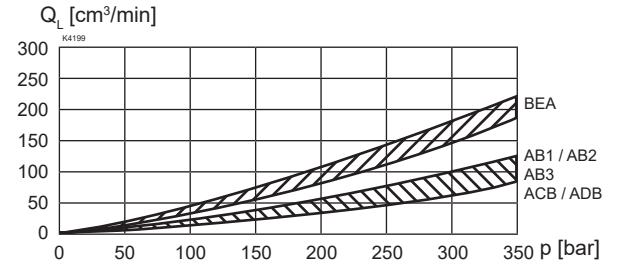


Δp = f (Q) **Pressure drop volume flow characteristic**
per control edge



	Volume flow direction				
Symbol	P-A	P-B	P-T	A-T	B-T
AB1 / AB3	2	2	-	3	3
ACB	1	1	-	2	2
ADB	1	1	-	1	1
BEA	1	1	4	2	2

Q_L = f (Q) **Leakage volume flow characteristics**
P → T

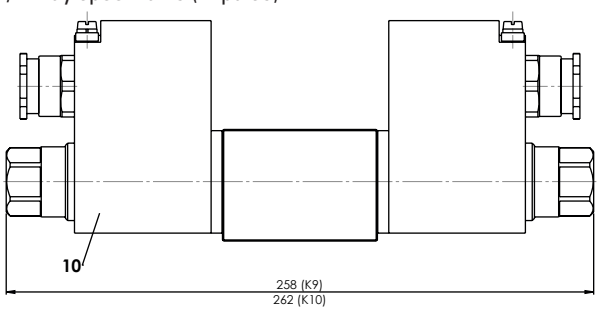


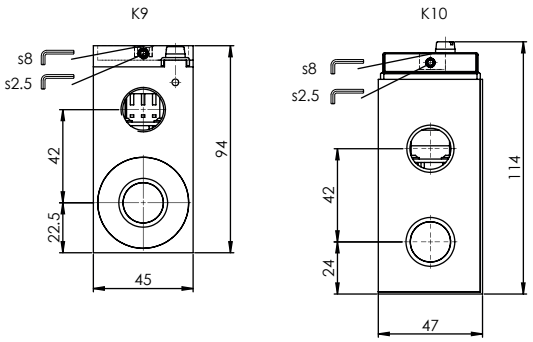
Note! With the L15 execution for ambient temperatures up to 70 °C, the performance specifications have been evaluated with an ambient temperature of 50 °C

Attention! For valves for the temperature ranges „-40 °C to…" (Z604) the leakage volume flow can be up to eight times higher.

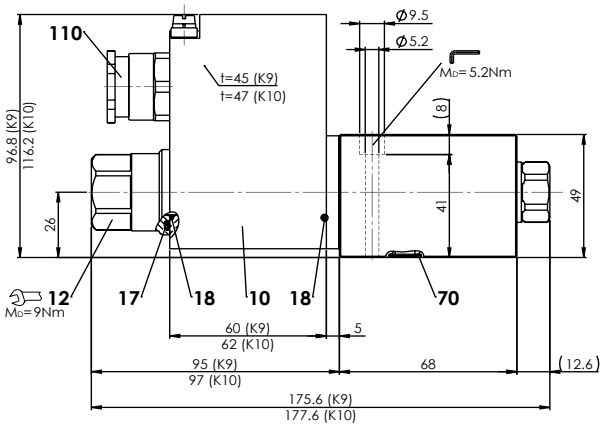
DIMENSIONS

4/3-way spool valve (spring centring)
4/2-way spool valve (impulse)



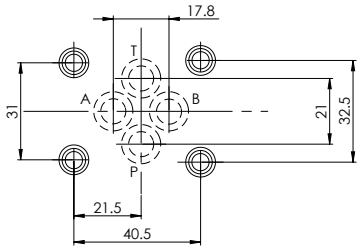


4/2-way spool valve (spring reset)



Dimensions of the solenoid coil, refer to data sheet 1.1-183, 1.1-183S

HYDRAULIC CONNECTION



PARTS LIST

Position	Article	Description
10	263.6...	Solenoid coil MK.45 / 18 x 60
12	154.220.	Knurled nut Ex M18 x 1,5 x 30-K..
110	111.1080	Cable gland M20 x 1,5
	251.2218	Seal kit WDYFA

Seal kit consisting of:

17	O-ring	ID 25,07 x 2,62
18	O-ring	ID 17,17 x 1,78
70	O-ring	ID 9,25 x 1,78

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

ACCESSORIES

Technical explanations	Data sheet 1.0-100
Filtration	Data sheet 1.0-50
Relative duty factor	Data sheet 1.1-430

INSTALLATION NOTES

Mounting type	Flange mounting 4 fixing holes for socket head screws M5 x 50
Mounting position	Any, preferably horizontal
Tightening torque	Fixing screws M_D = 5,1 Nm (screw quality A4) M_D = 9 Nm knurled nut

Note! The length of the fixing screw depends on the base material of the connection element.

Attention! For stack assembly please observe the remarks in the operating instructions