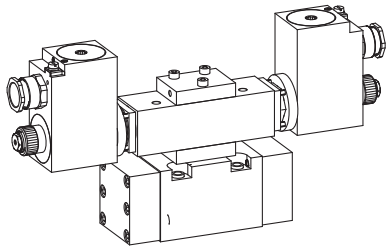
Proportional directional valve
- **pilot operated**
- **not pressure compensated**
- **Q_{max} = 220 l/min**
- **Q_N = 80 l/min**
- **p_{max} = 315 bar**

NG10
ISO 4401-05

II 2 G Ex d II C
II 2 D Ex tD A21 IP65



DESCRIPTION
Pilot controlled spool valve, in five chamber design actuated by explosion proof proportional solenoid.
The solenoid coil is certified in accordance with:
ATEX (directive 94/9/EC)
IEC Ex
Gost Ex
The solenoid coil is encapsulated pressure-proof and designed for applications in the zones 1+2 (gas) as well as 21+22 (dust). In doing so, it fulfils the requirements of the gas group IIC and can be utilised up to the temperature class T6. The zinc-/nickel coating serves as an excellent corrosion protection. Details of the solenoid coil: refer to data sheet 1.1-183.
Type test certification:
ATEX: PTB 07 ATEX 1023
IEC Ex: 010.0020
Gost Ex: CH.HO06.B00365

FUNCTION
Depending on selected spool, the valve controls flow symmetrically or in meter-in or in meter-out mode. The spool is piloted by proportional pressure relief valves. Set-up, function and interaction of main and pilot stage are shown with the hydraulic diagram. To control the valve Wandfluh proportional amplifiers are available (see register 1.13).

APPLICATION
High flow capacity and stiffness of the pilot system make this valve an ideal device for fast acceleration and deceleration, high speed, and sensitive adjustment of motion of an actuator. Application: Tooling machines, lifting and haulage systems, textile and plactic industry, mobile applications.

TYPE CODE

A EXd VPW ☐ 4 ☐ - 80 - ☐ - G24/ ☐ # ☐

International interface ISO
Pilot operated valve:
Explosion proof solenoid
Pilot operated proportional spool valve
Control mode:
Symmetrical S
Meter-in V
Meter-out R
(see control mode on page 2)
No. of control ports
Type charts/Symbols acc. to table 1.10-50503/2
Nominal flow at 10 bar pressure drop over 2 metering edges
Q_N = 80 l/min
Pilot pressure supply and drain:
Pressure supply (x) and drain (y) internal ti
Pressure supply (x) and drain (y) external te
Pressure supply (x) internal drain (y) external pi
Pressure supply (x) external drain (y) internal pe
Standard nominal voltage U_N: 24 VDC
Nominal power P_N

		Ambient temp by:
9 W	L9	40° C or 90° C
15W	L15	70°C

Design-Index (Subject to change)

GENERAL SPECIFICATIONS

Nominal size	NG10 acc. to ISO 4401-05
Designation	4/2-, 4/3-way proportional-control valve
Construction	Pilot operated spool valve
Mounting	Flange, 4 fixing holes for socket head cap screws M6x65
Fastening torque	M_D = 9,5 Nm (screw quality 8.8)
Pipe connection	Connection plates, Multi-station flange subplate, Longitudinal stacking system
Mounting position	any, preferably horizontal
Admissible ambient temp.:	-20…+40 °C (operation as T1…T6/T80 °C)
	-20…+90 °C (operation as T1…T4/T130 °C)
Weight: 4/2-way	m = 6,6 kg
4/3-way	m = 8,5 kg

HYDRAULIC SPECIFICATIONS

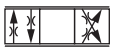
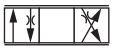
Fluid	Mineral oil, other fluid on request
Contamination efficiency	ISO 4406:1999, class 18/16/13 (Required filtration grade ß 6…10≥75) refer to data sheet 1.0-50/2
Viscosity range	12 mm²/s…320 mm²/s
Admissible fluid temp.:	-20…+40 °C (operation as T1…T6/T80 °C)
	-20…+70 °C (operation as T1…T4/T130 °C)
Working pressure	p_{max} = 315 bar (connection P, A, B)
Tank pressure in T	p_{max} = 160 bar (te,pi) p_{max} = 5 bar (ti,pe)
Nominal volume flow	Q_N = 80 l/min (Q_{max} = 220 l/min) at 10 bar pressure drop over 2 metering edges
Pilot pressure	p_V = 25…315 bar
Leakage volume flow	on request
Hysteresis	on request

ELECTRICAL SPECIFICATIONS

Construction	Proportional solenoid, wet pin push type, pressure tight
Standard nominal voltage	U_N = 24 VDC
Limiting current	
Execution L9:	I_G = 300 mA
Execution L15:	I_G = 450 mA
Voltage tolerance	+10 % of rated voltage
Relative duty factor	100 % DF
Protection class	IP65 / IP67 acc. to EN 60 529
Connection/Power supply	Through cable entry for cable diameter 6,5…14 mm
Temperature class:	(acc. to EN 60079-0)
Execution L9:	T1…T6
Execution L15:	T1…T4
Nominal power:	
Execution L9	9 W
Execution L15	15 W

For further electrical characteristics, refer to the data sheet of the solenoid coil: 1.1-183

CONTROL MODE

Symmetrical	S	
Meter-in	V	
Meter-out	R	

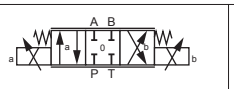
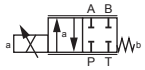
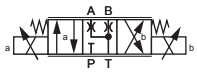
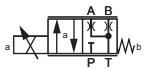
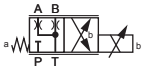
OPERATION SECURITY

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.

INSTALLATION

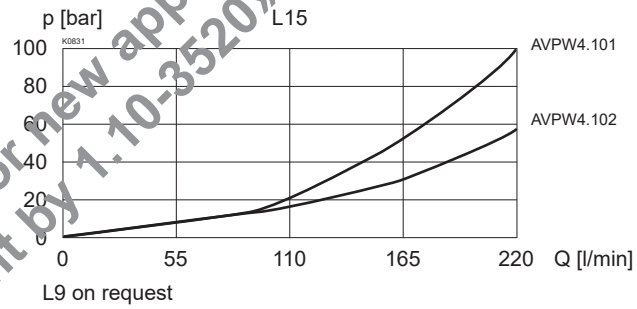
Tightening torque of the coil fixing nut M_D = 5 Nm. For stack assembly please observe the remarks in the operating instructions.

TYPE CHARTS / DESIGNATIONS OF SYMBOLS

	S V R .D101
	S V R .Z101a
	S V R .Z101b
	V .D102
	V .Z102a
	V .Z102b

CHARACTERISTICS

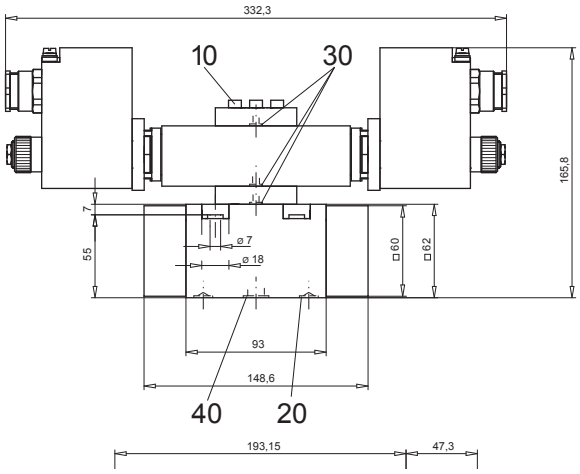
Oil viscosity υ = 30 mm²/s
$\Delta p = f(Q)$ Pressure loss/flow-characteristic over 2 metering edges



L9 on request

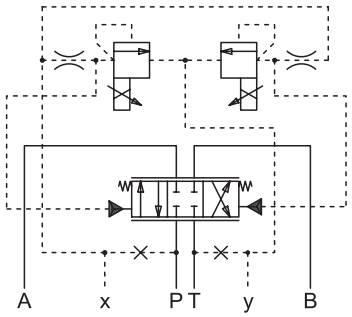
DIMENSIONS

4/3-way valve

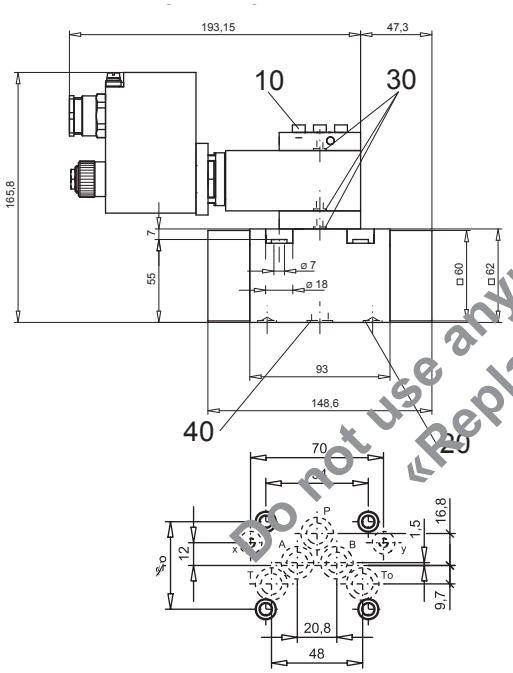


HYDRAULIC DIAGRAM

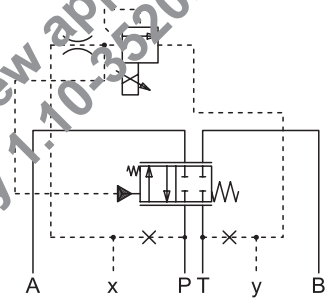
4/3-way valve



4/2-way valve



4/2-way valve



PARTS LIST

Position	Article	Description
10	246.2156	Cyl. screw M5x55 DIN 912
20	160.2093	O-ring ID 9,25x1,78
30	160.2052	O-ring ID 5,28x1,78
40	160.2140	O-ring ID 14,00x1,78

Mounting instruction

To screw the main valve body (M_D = 9,5 Nm, quality 8.8) to the base plate the pilot valve (M_D = 5,5 Nm, quality 8.8). must be taken off.

ACCESSORIES

Sub-plates	Register 1.9
Proportional-amplifier	Register 1.13

Technical explanation see data sheet 1.0-100E