

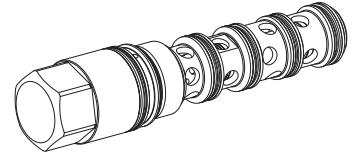
Proportional spool valve

Screw-in cartridge type

- ◆ pilot operated
- ◆ $Q_{max} = 150$ l/min
- ◆ 1 volume flow level
- ◆ $Q_{Nmax} = 90$ l/min
- ◆ $p_{max} = 350$ bar

M33 x 2

Wandfluh standard



DESCRIPTION

Pilot operated proportional spool valve in screw-in cartridge construction. Precise spool fit, low leakage, long service life time. Spool made of hardened steel. The valve is controlled externally through a pilot pressure via the x and y connections. Without control, the piston is held in the central position by a spring. Proportional to the pilot pressure, the spool opening and the valve volume flow increase. Thanks to the optimum spool form, sensitive movement processes are possible. For the control, Wandfluh proportional pressure valves (see register 2.3) and Wandfluh proportional amplifiers (see register 1.13) are available.

APPLICATION

Proportional spool valves are perfectly suitable for demanding tasks due to the high resolution, large volume flow and low hysteresis. The applications are in the industry as well as in the mobile hydraulics for the smooth control of hydraulic actuators. Some examples: rotor blades control of wind generators, forestry and earth moving machines, machine tools and paper production machines with simple position control, robotics and fan control.

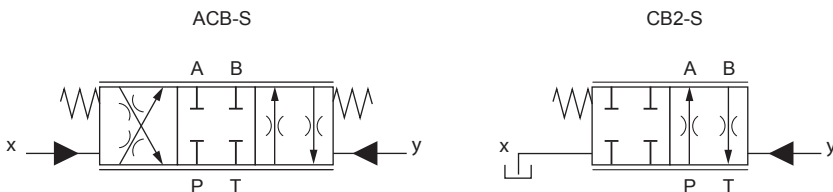
TYPE CODE

Spool valve	W	V	P	PM33	-		-		-	90	#	
Directly operated												
Proportional												
Screw-in cartridge M33 x 2												
Designation of symbols acc. to table												
Nominal volume flow rate Q_N										90	l/min	
Design index (subject to change)												

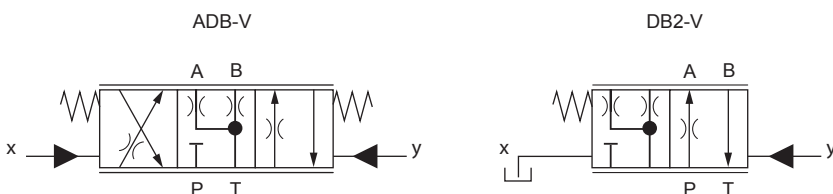
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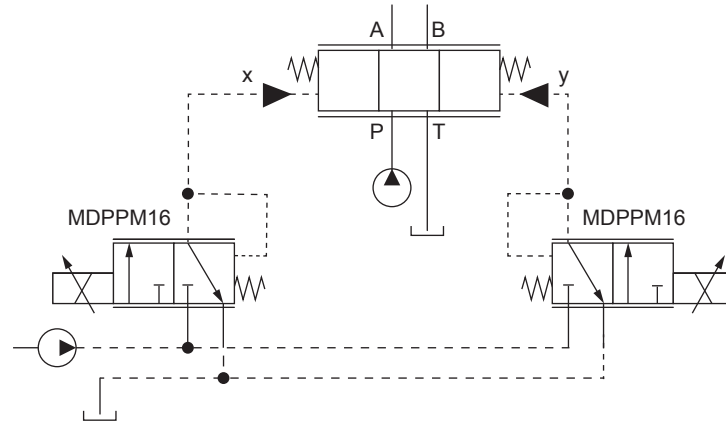
SYMBOL

Symmetrical control



Meter-in control



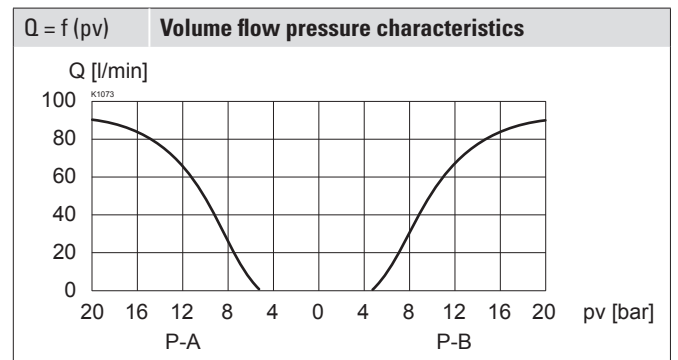
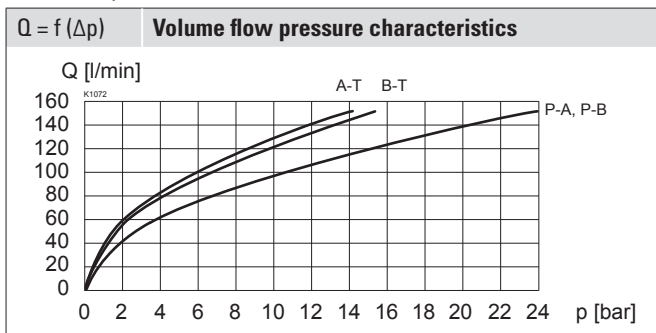
Connection example

GENERAL SPECIFICATIONS

Designation	Proportional spool valve
Construction	Pilot operated
Mounting	Screw-in cartridge type
Nominal size	M33 x 2 according to Wandfluh standard
Actuation	Pilot valve
Ambient temperature	-30...+90 °C
Weight	0,79 kg
MTTFd	150 years

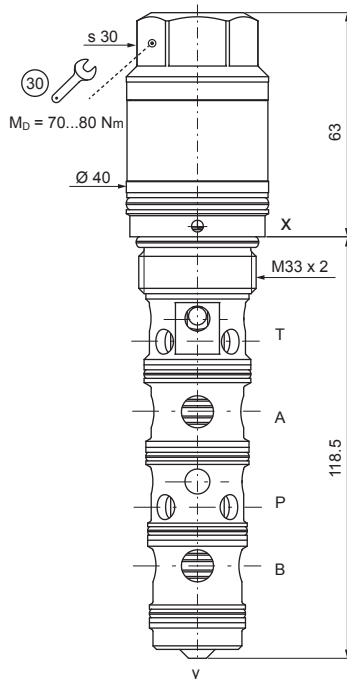
HYDRAULIC SPECIFICATIONS

Working pressure	$p_{max} = 350$ bar
Maximum volume flow	$Q_{max} = 150$ l/min, see characteristics
Nominal volume flow	$Q_N = 90$ l/min
Leakage volume flow	P → T (at 200 bar): < 0,4 l/min
Fluid	Mineral oil, other fluid on request
Viscosity range	12 mm ² /s...320 mm ² /s
Temperature range	-20...+70 °C
Contamination efficiency	Class 18 / 16 / 13
Filtration	Required filtration grade $\beta_{6...10} \geq 75$, see data sheet 1.0-50

PERFORMANCE SPECIFICATIONS

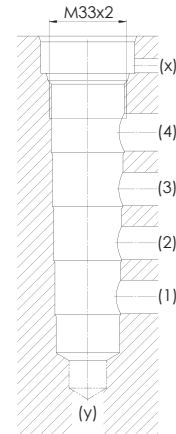
 Oil viscosity $\nu = 30$ mm²/s


DIMENSIONS



HYDRAULIC CONNECTION

Cavity drawing according to Wandfluh standard



Note!



For detailed cavity drawing and cavity tools see data sheet 2.13-1053

ACCESSORIES

Proportional pressure valves	Register 2.3
Proportional amplifier	Register 1.13
Technical explanations	Data sheet 1.0-100
Hydraulic fluids	Data sheet 1.0-50
Filtration	Data sheet 1.0-50

INSTALLATION NOTES

Mounting type	Screw-in cartridge M33 x 2
Mounting position	Any, preferably horizontal
Tightening torque	$M_D = 70 \dots 80 \text{ Nm}$ Screw-in cartridge

STANDARDS

Mounting interface	Wandfluh standard
Contamination efficiency	ISO 4406

ACTUATION

Actuation	Pilot control
Minimum pilot pressure	4,5 bar
Maximum pilot pressure	30 bar

SURFACE TREATMENT

The external parts of the cartridge body are zinc / nickel coated

SEALING MATERIAL

NBR as standard