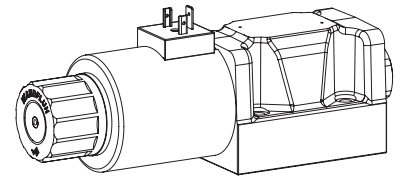


Proportional spool valve

Flange construction

- ◆ $Q_{max} = 100 \text{ l/min}$
- ◆ $Q_{Nmax} = 65 \text{ l/min}$
- ◆ $p_{max} = 350 \text{ bar}$

NG10
ISO 4401-05



DESCRIPTION

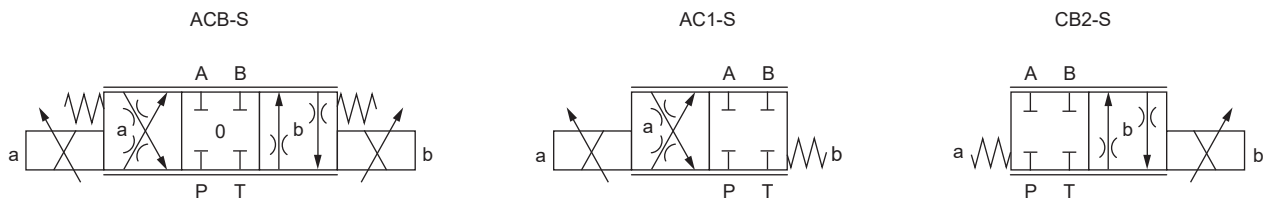
Direct operated proportional spool valve with 4 connections in 5-chamber system. Precise spool fit, low leakage, long service life time. The volume flow adjustment takes place by a Wandfluh proportional solenoid. Proportional to the solenoid current, the spool stroke, the spool opening and the valve volume flow increase. For the control, Wandfluh proportional amplifiers are available (see register 1.13).

APPLICATION

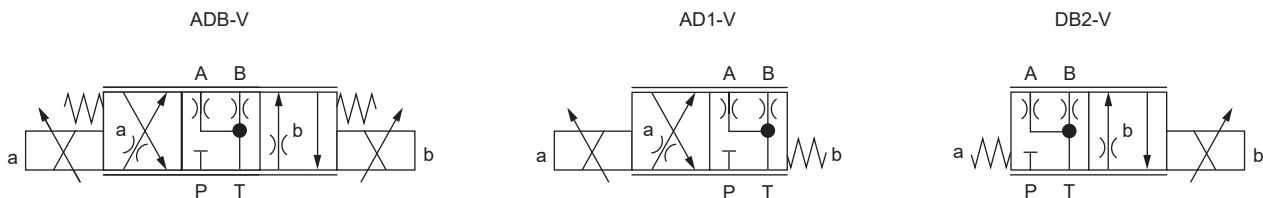
Proportional spool valves are perfectly suitable for demanding tasks due to the high resolution, large volume flow and low hysteresis. The applications are in the industry as well as in the mobile hydraulics for the smooth control of hydraulic actuators. Some examples: control of the rotor blades of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

SYMBOL

Symmetrical control



Meter-in control



GENERAL SPECIFICATIONS

Designation	Proportional spool valve
Construction	Direct operated
Mounting	Flange construction
Nominal size	NG10 according to ISO 4401-05
Actuation	Proportional solenoid
Ambient temperature	-25...+70 °C if >50 °C, I_G is only conditionally achievable
Weight	3,9 kg (1 solenoid) 5,4 kg (2 solenoids)

HYDRAULIC SPECIFICATIONS

Working pressure	$p_{max} = 350 \text{ bar}$
Tank pressure	$p_{Tmax} = 160 \text{ bar}$
Maximum volume flow	$Q_{max} = 100 \text{ l/min}$, see characteristics
Nominal volume flow	$Q_{Nmax} = 65 \text{ l/min}$
Leakage oil	see characteristics
Hysteresis	≤ 7 % at optimal dither signal
Fluid	Mineral oil, other fluid on request
Viscosity range	12 mm ² /s...320 mm ² /s
Temperature range fluid	-25...+70 °C (NBR) -20...+70 °C (FKM)
Contamination efficiency	Class 18 / 16 / 13
Filtration	Required filtration grade $\beta_{6...10} \geq 75$, see data sheet 1.0-50

TYPE CODE

		W D P F A10 - <input type="text"/> - <input type="text"/> - 65 - <input type="text"/> / <input type="text"/> <input type="text"/> - <input type="text"/> <input type="text"/> # <input type="text"/>
Spool valve		
Directly operated		
Proportional		
Flange construction		
International standard interface ISO, NG10		
Designation of symbols acc. to table		
Nominal volume flow rate Q_N	65 l/min	
Nominal voltage U_N	12 VDC <input type="checkbox"/> G12 24 VDC <input type="checkbox"/> G24 without coil <input type="checkbox"/> X5	
Slip-on coil	Metal housing, round <input type="checkbox"/> W Metal housing, square <input type="checkbox"/> M	
Connection execution	Connector socket EN 175301-803 / ISO 4400 <input type="checkbox"/> D Connector socket AMP Junior-Timer <input type="checkbox"/> J Connector Deutsch DT04-2P <input type="checkbox"/> G	
Sealing material	NBR <input type="checkbox"/> FKM (Viton) <input type="checkbox"/> D1	
Manual override	Integrated <input type="checkbox"/> Push-button <input type="checkbox"/> HF1 Spindle <input type="checkbox"/> HS1	

Design index (subject to change)

1.10-3400

ELECTRICAL SPECIFICATIONS

Protection class	Connection execution D: IP65 Connection execution J: IP66 Connection execution G: IP67 and IP69K
Relative duty factor	100 % DF
Standard nominal voltage	12 VDC, 24 VDC
Limiting current at 50 °C	$I_G = 2255 \text{ mA}$ ($U_N = 12\text{VDC}$) $I_G = 1105 \text{ mA}$ ($U_N = 24\text{VDC}$)

Note! Other electrical specifications see data sheet 1.1-190 (slip-on coil W) and 1.1-193 (slip-on coil M)


STANDARDS

Mounting interface	ISO 4401-05
Solenoids	DIN VDE 0580
Connection execution D	EN 175301 – 803
Protection class	EN 60 529
Contamination efficiency	ISO 4406

INSTALLATION NOTES

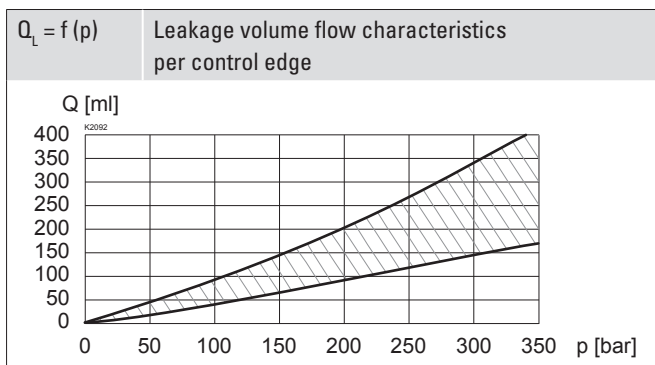
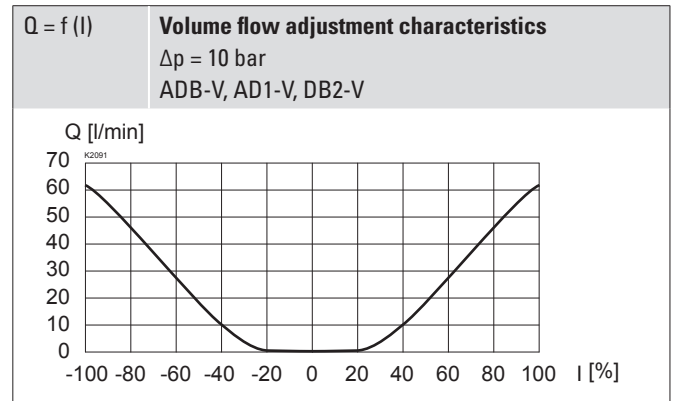
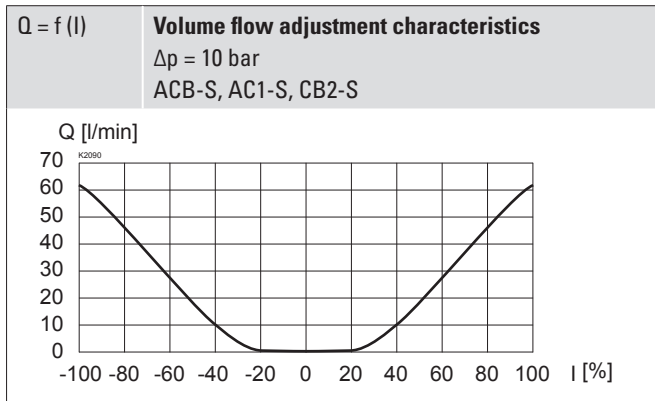
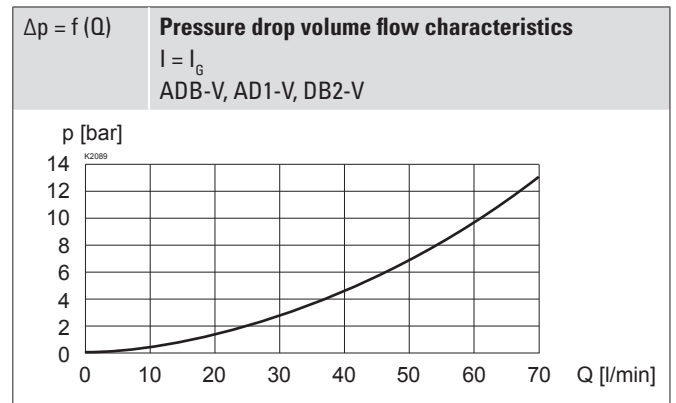
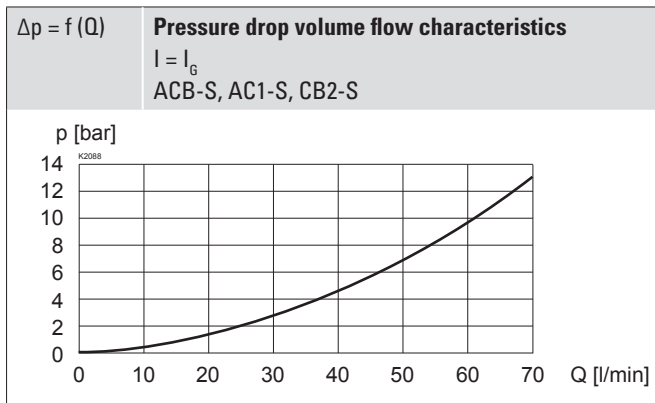
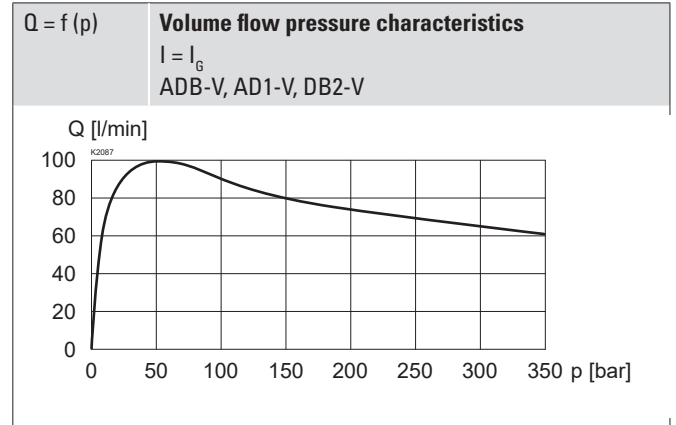
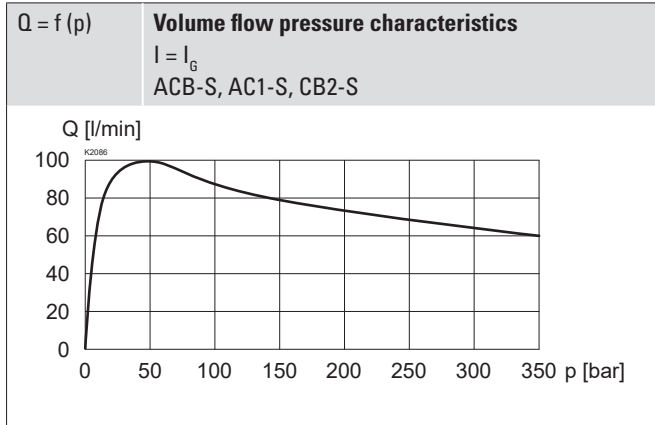
Mounting type	Flange mounting 4 fixing holes for socket head screws M6 x 40
Mounting position	Any, preferably horizontal
Tightening torque	Fixing screw $M_D = 10,5 \text{ Nm} \pm 10 \%$ (screw quality 8.8, zinc coated) max. tank pressure 80 bar $M_D = 13,5 \text{ Nm} \pm 10 \%$ (screw quality 10.9, zinc coated) Knurled nut $M_D = 5 \text{ Nm}$

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


ACTUATION

Actuation	Switching solenoid, wet pin push type, pressure tight
Execution	W.E64 / 31 x 72 (Data sheet 1.1-190) M.A60 / 31 x 72 (Data sheet 1.1-193)
Connection	Connector socket EN 175301 – 803 Connector socket AMP Junior-Timer Connector Deutsch DT04 – 2P

PERFORMANCE SPECIFICATIONS

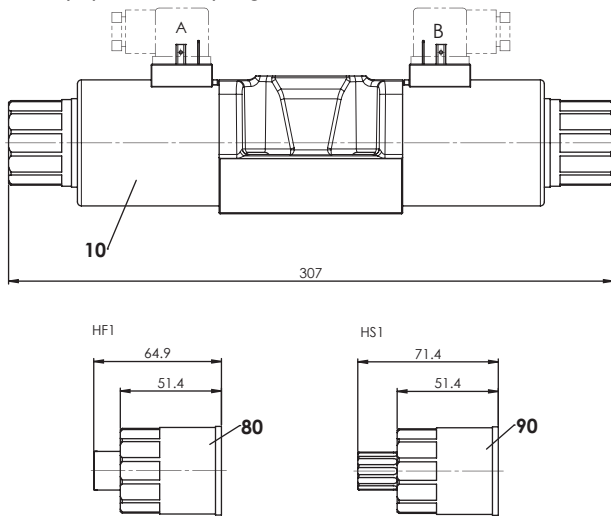
 Oil viscosity $\nu = 30 \text{ mm}^2/\text{s}$


Note! All values were measured over two control edges. The connections A and B were short-circuited.

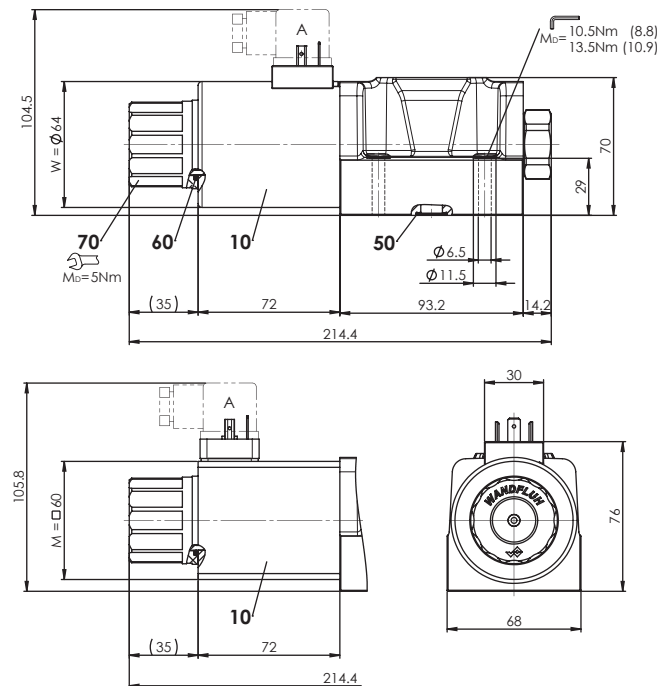


DIMENSIONS

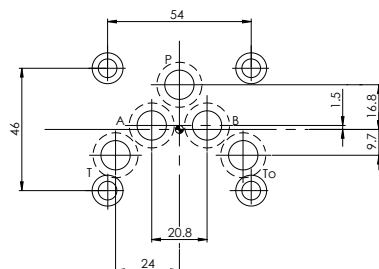
4/3-way spool valve (spring centred)



4/2-way spool valve



HYDRAULIC CONNECTION



PARTS LIST

Position	Article	Description
10	206.3... 260.9...	W.E64 / 31 x 72 M.A60 / 31 x 72
50	160.2120 160.8124	O-ring ID 12,42 x 1,78 (NBR) O-ring ID 12,42 x 1,78 (FKM)
60	160.2282	O-ring ID 28.24 x 2.62 (NBR)
70	154.2706	Knurled nut
80	253.7006	HF1-M24
90	253.7005	HS1-M24

SURFACE TREATMENT

- ◆ The valve body is painted with a two component paint
- ◆ The armature tube, the slip-on coil and the plug screw are zinc-nickel coated

MANUAL OVERRIDE

- ◆ Integrated (-) Actuation pin integrated in the armature tube. Actuation by pressing the pin
- ◆ Push-button (HF1) Integrated in the knurled nut. Actuation by pressing the push-button
- ◆ Spindle (HS1) Integrated in the knurled nut. Actuation by turning the spindle (continuously variable valve actuation)

Attention! The actuation of the manual override is possible up to a tank pressure of:

- 20 bar Integrated (-)
- 20 bar Push-button (HF1)
- 80 bar Spindle (HS1)

ACCESSORIES

Proportional amplifier	Register 1.13
Mating connector grey (A)	Article no. 219.2001
Mating connector black (B)	Article no. 219.2002
Threaded subplates	Data sheet 2.9-40
Multi-station subplates	Data sheet 2.9-70
Horizontal mounting blocks	Data sheet 2.9-110
Technical explanations	Data sheet 1.0-100
Filtration	Data sheet 1.0-50
Relative duty factor	Data sheet 1.1-430

SEALING MATERIAL

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

Wandfluh AG Postfach CH-3714 Frutigen
 Tel. +41 33 672 72 72 Fax +41 33 672 72 12 sales@wandfluh.com