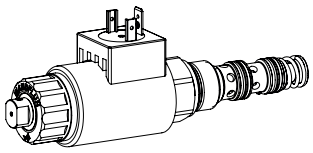
Proportional 2-way flow control poppet cartridge

- pilot operated
- Q_{max} = 35 l/min
- $Q_{N\,max}$ = 25 l/min
- p_{max} = 350 bar

7/8"-14 UNF



DESCRIPTION

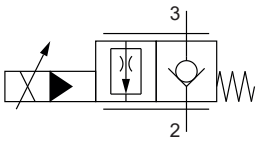
Pilot operated, load-compensated proportional flow control poppet valve as screw-in cartridge for UNF cavity. When the solenoid is deenergised, the control spool closes practically leakage-free. With increasing solenoid current the flow from inlet port (3) to the regulated outlet port (2) increases independently of the load pressure. For the control, Wandfluh proportional amplifiers are available (see register 1.13).

APPLICATION

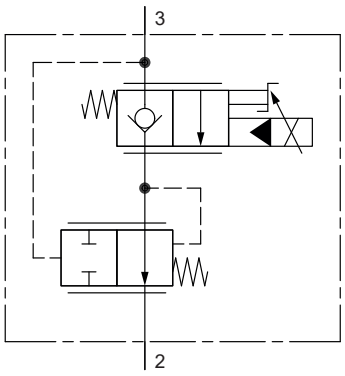
These valves are used in hydraulic systems, in which the positioning of loads and the simultaneous controlling of the lowering of these loads are demanded. The insensitivity to load changes and the very small leakage are a great advantage for this purpose. They are ideally used in the bypass to the pump. The screw-in cartridge is perfectly suitable for installation in control blocks. For machining the cartridge cavity in steel and aluminum blocks, cavity tools are available for purchase. Please refer to the data sheets in register 2.13.

SYMBOL

Simplified



Detailed



ACTUATION

Actuation	Proportional solenoid, wet pin pull type, pressure tight.
Execution	V.E37 / 19 x 50 (Data sheet 1.1-168) N.S35 / 19 x 50 (Data sheet 1.1-175)
Connection	Connector socket DIN EN 175301 – 803 Connector Deutsch DT04 – 2P Connector socket AMP Junior-Timer axial Connector socket AMP Junior-Timer radial

GENERAL SPECIFICATIONS

Designation	Proportional 2-way flow control poppet valve
Construction	Pilot operated
Mounting	Screw-in cartridge construction
Nominal size	7/8"-14 UNF
Actuation	Proportional solenoid
Ambient temperature	-25…+70 °C
Weight	0,52 kg
MTTFd	150 years

ELECTRICAL SPECIFICATIONS

Protection class	Connection execution D: IP65 Connection execution G: IP67 and IP69K Connection execution I/ J: IP66
Relative duty factor	100 % DF
Voltage tolerance	± 10 % with regard to nominal voltage
Standard nominal voltage	12 VDC, 24 VDC
Limiting current at 50 °C	I_G = 1260 mA (U_N = 12 VDC) I_G = 620 mA (U_N = 24 VDC)

Note! Other electrical specifications see data sheet 1.1-168 (slip-on coil V) and 1.1-175 (slip-on coil N)

TYPE CODE

Q S P PU10 - 25 - [ ] / [ ] [ ] - [ ] [ ] # [ ]

Flow control valve			
Normally closed			
Proportional			
Screw-in cartridge 7/8“ - 14 UNF			
Nominal volume flow rate Q_N	25 l/min		
Nominal voltage U_N	12 VDC	G12	
	24 VDC	G24	
	without coil	X5	
Slip-on coil	Metal housing round		V
	Metal housing square		N
Connection execution	Connector socket EN 175301-803 / ISO 4400		D
	Connector socket AMP Junior-Timer		J
	Connector Deutsch DT04-2P		G
Sealing material	NBR		
	FKM (Viton)	D1	
Manual override	without		HB0
	with		HZ
Design index (subject to change)			

2.6-638

HYDRAULIC SPECIFICATIONS

Working pressure	p_{max} = 350 bar
Maximum volume flow	Q_{max} = 35 l/min
Minimum volume flow	Q_{min} = 0,5 l/min
Volume flow direction	3 → 2
Leakage oil	Poppet type, max. 0,5 ml / min (approx. 10 drop / min) at 30 cSt (below 30 bar approx. 4 ml / min)
Nominal volume flow range	Q_N = 25 l/min
Hysteresis	≤ 10 % at optimal dither signal
Repeatability	≤ 2 % at optimal dither signal
Fluid	Mineral oil, other fluid on request
Viscosity range	12 mm²/s…320 mm²/s
Temperature range fluid	-25…+70 °C (NBR) -20…+70 °C (FKM)
Contamination efficiency	Class 18 / 16 / 13
Filtration	Required filtration grade ß 6…10 ≥ 75, see data sheet 1.0-50

INSTALLATION NOTES

Mounting type	Screw-in cartridge 7/8"-14 UNF
Mounting position	Any, preferably horizontal
Tightening torque	M_D = 60 Nm Screw-in cartridge M_D = 5 Nm knurled nut M_D = 5,5 Nm HZ M_D = 9,5 Nm HB0

ACCESSORIES

Proportional amplifier	Register 1.13
Mating connector black (B)	Articel no. 219.2002
Technical explanations	Data sheet 1.0-100
Filtration	Data sheet 1.0-50

MANUAL OVERRIDE

Screw plug (HB0), no actuation possible.
Optionally: HZ (pull)

Attention! The manual override HZ cannot be retrofitted.



SURFACE TREATMENT

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

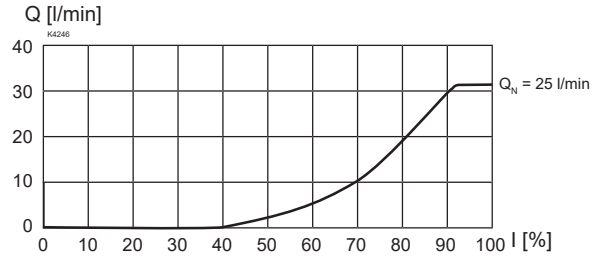
SEALING MATERIAL

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

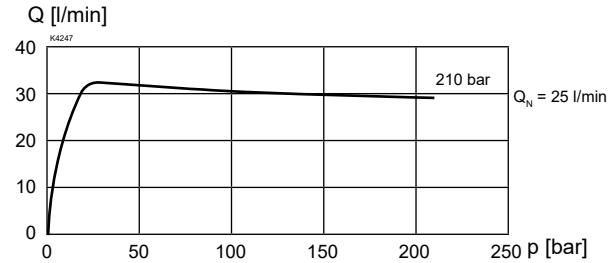
PERFORMANCE SPECIFICATIONS

Oil viscosity υ = 30 mm²/s

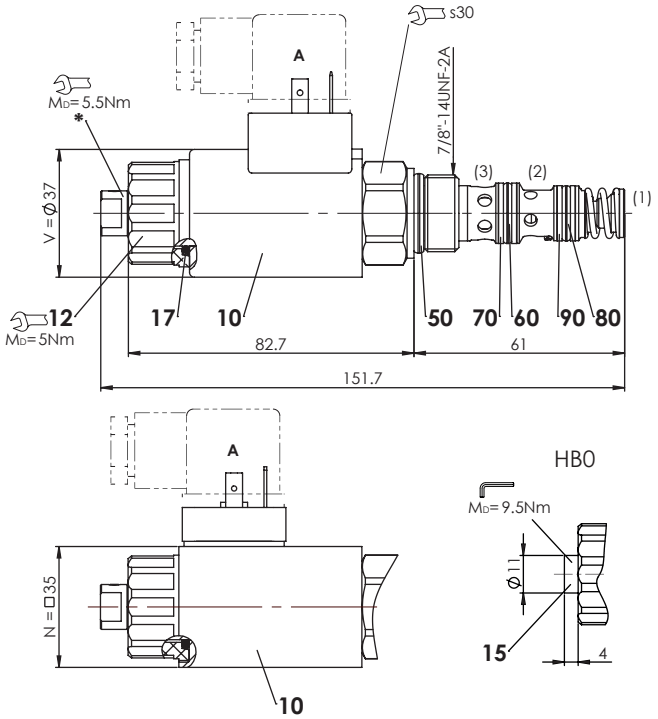
Q = f (I)	**Volume flow signal characteristics** Measured at p = 150 bar



Q = f (p)	**Volume flow pressure characteristics** $I = I_G$



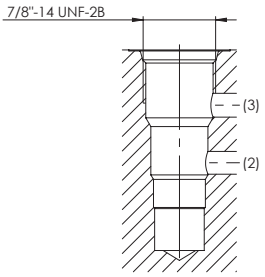
DIMENSIONS



*After loosening, open further only by hand (without tools).

HYDRAULIC CONNECTION

Cavity drawing according to UNF



Attention! For detailed cavity drawing and cavity tools see data sheet 2.13-1058

STANDARDS

Cartridge cavity	Wandfluh standard
Solenoids	DIN VDE 0580
Connection execution D	DIN EN 175301 – 803
Protection class	EN 60 529
Contamination efficiency	ISO 4406

PARTS LIST

Position	Article	Description
10	206.2... 260.5...	V.E37 / 19 x 50 N.S35 / 19 x 50
12	154.2700	Knurled nut
15	239.2033	Screw plug HB0 (incl. seal)
17	160.2187	O-ring ID 18,72 x 2,62 (NBR)
50	160.2188 160.8188	O-ring ID 18,77 x 1,78 (NBR) O-ring ID 18,77 x 1,78 (FKM)
60	160.2140 160.8140	O-ring ID 14,00 x 1,78 (NBR) O-ring ID 14,00 x 1,78 (FKM)
70	160.2120 160.8124	O-ring ID 12,42 x 1,78 (NBR) O-ring ID 12,42 x 1,78 (FKM)
80	049.8177	Back-up ring PTSM rd 12,4 x 15,3 x 1,4
90	049.8166	Backup ring PTSM rd 10,8 x 13,7 x 1,4