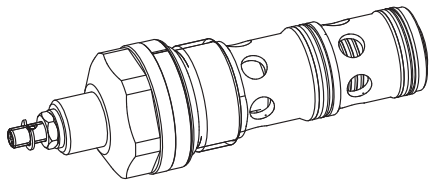
3-way flow control valve
With fixed pressure compensator and adjustable orifice,
Screw-in cartridge construction

- **Q_{max} = 120 l/min**
- **$Q_{N\ max}$ = 100 l/min**
- **p_{max} = 350 bar**

M33x2
ISO 7789



DESCRIPTION

3-way flow control valve as screw-in cartridge with thread M33x2 for cavity in accordance with ISO 7789. The valve can be supplied in 2 different setting versions: Key setting «S» and turning knob setting «D». Key adjustment «S» is also available with cover, see data sheet 2.0.50. Available as standard are 2 nominal flow steps.
The two-part cartridge body is made of steel. External parts are zinc coated and as a result rust protected. The colourlessly anodised aluminium rotary knob gives this quality product a clean design.

FUNCTION

The 3-way flow control valve is designed to keep the oil flow to any actuator constant irrespective of the load. Surplus volume flow will be diverted to the tank line thus saving energy and preventing an overheating of the hydraulic system. By turning the knob of the variable restrictor the volume flow can be adjusted. In case of pressure fluctuations, the through flow cross-section in the pressure balance spool changes in such a manner, that the pressure difference in the measuring orifice is kept constant.

APPLICATION

For use in all hydraulic systems where the supply volume flow needs to be kept constant even when the load fluctuates. Installation of the screw-in cartridge in control blocks as well as in the Wandfluh sandwich plates (vertical stakked systems) and flange valves. (Please note the separate data sheets in register 2.5). Cavity tools are available for machining cavities (hire or purchase). Please refer to the data sheets in register 2.13.

CONTENT

TYPE CODE

QD ☐ PM33 - ☐ # ☐

- Flow control valve 3-way
- Setting versions: Screw [S], Turning knob [D], Cover [A] (see data sheet 2.0-50)
- Screw-in cartridge M33x2
- Standard nominal flow rates: Q_N = 50 l/min [50], Q_N = 100 l/min [100]
- Design-Inedx (Subject to change)

GENERAL SPECIFICATIONS

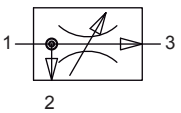
Denomination	3-way flow control valve
Construction	Screw-in cartridge for cavity acc. to ISO 7789
Mounting	Screw-in thread M33x2
Ambient temperature	-20…50 °C
Mounting position	any
Fastening torque	M_D = 80 Nm
Weight	m = 0,48 kg (screw) m = 0,49 kg (knob)
Volume flow direction	1 → 3 adjustable flow

HYDRAULIC SPECIFICATIONS

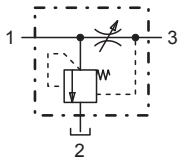
Fluid	Mineral oil, other fluid on request ISO 4406:1999, class 18/16/13
Contamination efficiency	Required filtration grade (ß 6...10 ≥ 75) refer to data sheet 1.0-50/2
Viscosity range	12 mm²/s…320 mm²/s
Fluid temperature	-20…+70 °C
Peak pressure	p_{max} = 350 bar
Nominal volume flow rates:	Q_N = 50 l/min, 100 l/min
Min. volume flow	Q_{min} = 0,2 l/min (at ν = 30 mm²/s)
Max. volume flow	Q_{max} = 120 l/min
Max. feed flow	140 l/min
Control accuracy	≤ 1%

SYMBOLS

simplified



detailed



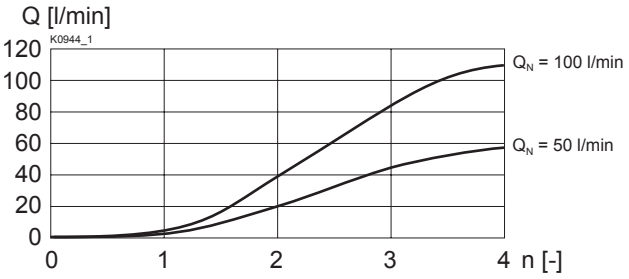
MECHANICAL ACTUATION

Mechanical types of operation in 2 different versions:

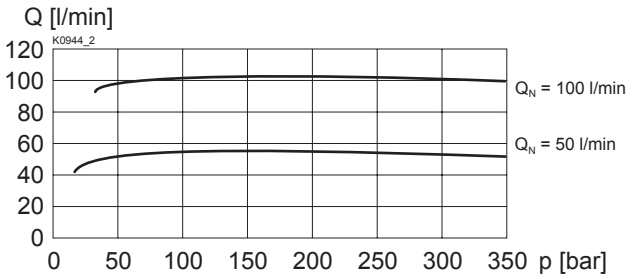
S	= Screw adjustment with fork wrench and Allen key
D	= knob
Control stroke S_b	= 4 mm
Control angle α_b	= 1440° (4 turns)

CHARACTERISTICS Oil viscosity ν = 30 mm²/s

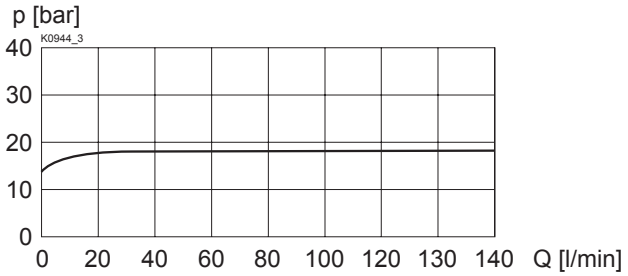
Q = f (n) Volume flow adjustment characteristics (at p = 350 bar)



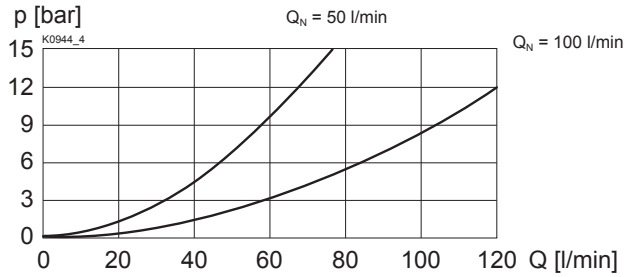
Q = f (p) Volume flow pressure characteristic



Δp = f (Q) Pressure drop volume flow characteristic 1→2

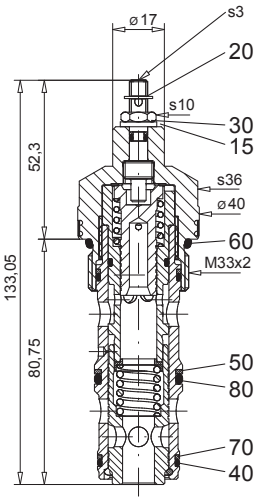


Δp = f (Q) Pressure drop volume flow characteristic 1→3

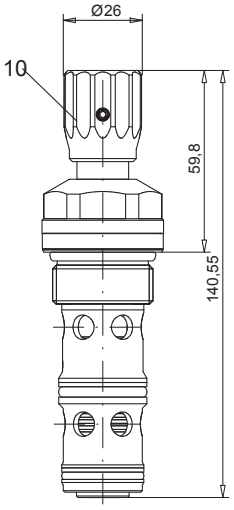


DIMENSIONS / SECTIONAL DRAWING

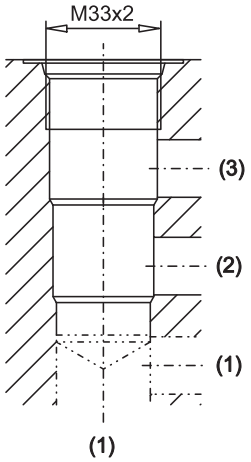
Screw adjustment «S»



Knob adjustment «D»



Cavity drawing acc. to
ISO 7789–33–04–0–98



For cavity details and cavity tools, see data sheet 2.13-1040

PARTS LIST

Position	Artikcle	Description
10	114.2299	Knob
15	234.1060	Plate
20	193.1040	Safety plate RD4 DIN 6799
30	153.1302	Hexagonal nut 0,5D M6x3,2
40	160.2236	O-ring ID 23,52x1,78
50	160.2238	O-ring ID 23,81x2,62
60	160.2298	O-ring ID 29,82x2,62
70	049.3276	Back-up ring RD 24,1x27x1,4
80	049.3297	Back-up ring RD 24,5x29x1,4

ACCESSORIES

Cartridge built-in flange- or sandwich plates
Flange body / sandwich plate register 2.5

Technical explanation see data sheet 1.0-100E