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2 – WAY FLOW CONTROL VALVE

Rotary knob control – plate mounting
Nominal pressure up to 450 bar
Nominal Flow Range up to 16 l/min

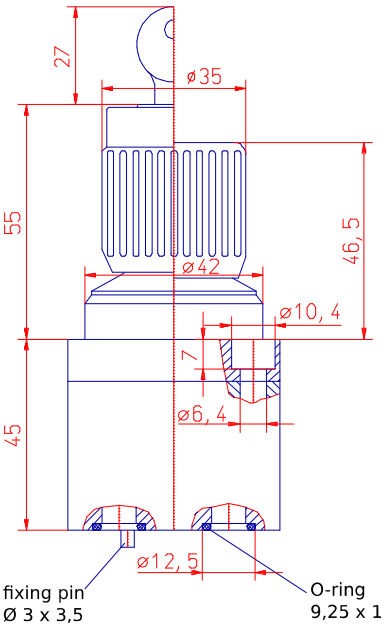
TYPE

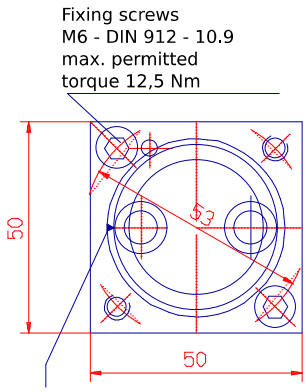
20 D

2-way flow control valves are flow valves (throttle valves) with integrated pressure compensation. These valves control an adjustable volume flow independently of pressure changes in the inlet or outlet line.They can be mounted in the inlet or outlet side of the consumer. Due to the design of the orifice, the valve 20 D works almost independent of fluid viscosity.

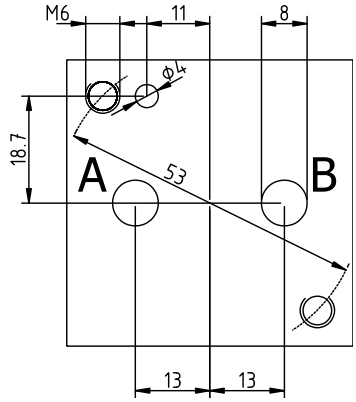
FEATURES

- hole pattern according to Schiedrum-standard
- 13 nominal volume flow ranges up to 16 l/min
- scaled rotary knob control, setting angle 150°
- control knob can be locked optionally – VW locking E 10
- with by-pass check valve
- standard sealing material Buna N/NBR, other materials possible
- for volume flow control in both flow directions, volume flow rectifier plate type 71 can be delivered





hole pattern



ORDER INFORMATION

The scope of delivery includes the O-rings as sealings of the connection holes, two mounting screws M6x45 DIN 912 – 10.9. When ordering knob with lock (S), one safety key will be delivered.

NAME	2-way flow control valve	20	D	R	S	16	H	M..

type series

series code letter

by-pass check valve (standard attached)

actuation knob without lock = **no code**
knob with lock = **with S**

nom. volume flow in cm³/min: **63; 100; 160; 250; 400; 630**
in l/min: **1; 1.6; 2.5; 4; 6.3; 10; 16**

pressure stage **N** = up to 100 bar; **H** = up to 210 bar
3H = up to 315 bar; **4H** = up to 450 bar

supplementary details for special modification
e.g. - special sealings Viton (FKM) = **M15**
- without by-pass check valve = **M40**

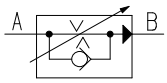
ACCESSORY

can be ordered seperately

connection plate:	see datasheet	9-74-020-0059
flow rectifier plate type 71 BZ:	see datasheet	9-74-071-0017

CHARACTERISTICS

1. GENERAL

Symbol	
Design	adjusting orifice: flat slider with triangular notch pressure compensator: in downstream of the orifice
Weigth	approx. 1 kg
Mounting position	any
Direction of volume flow	A to B controlled, B to A unthrottled return flow
Ambient temperature	-25 °C to +80 °C

2. HYDRAULIC CHARACTERISTICS

Nominal/max. pressure stage	N = 100 bar, H = 210 bar, 3H = 315 bar, 4H = 450 bar
Hydraulic fluid	hydraulic oil according to DIN 51 524 (1,2)
Hydraulic fluid temperatur range	-20 °C to +70 °C
Range of viscosity	5 – 350 mm²/s
Nominal volume flow	63 – 100 – 160 – 250 – 400 – 630 cm³/min 1,0 – 1,6 – 2,5 – 4,0 – 6,3 – 10 – 16 l/min
Min. controllable volume flow	10 cm³/min
Max. return flow via check valve	30 l/min
Contamination level/filtering	class 18/15 according to ISO 4406 or 9 according to NAS 1638 (recommended filter: minimum retaining rate $\beta_{10\text{-}15} \geq 75$)

3. TYPE OF ACTUATION

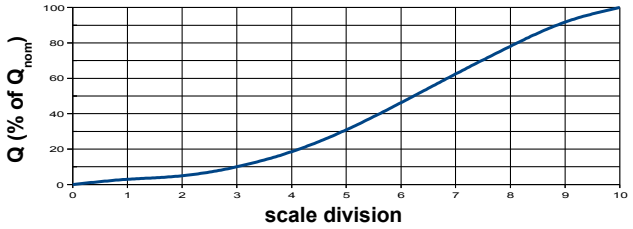
manual: control knob

Adjustment angle	150°
Controlling torque	approx. 100 Ncm

CHARACTERISTIC CURVES

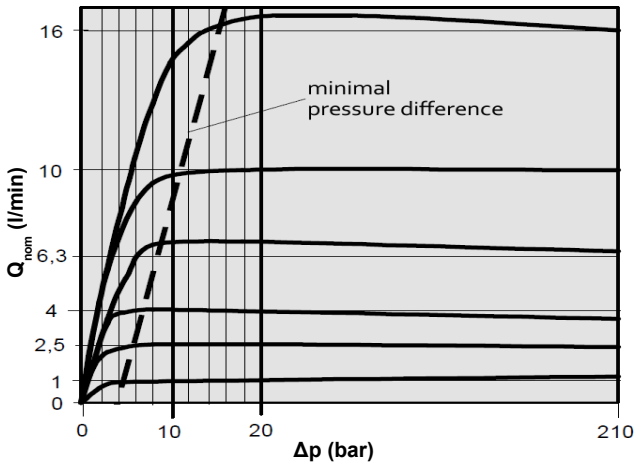
Q-S characteristic; Q = f(scale)

Typical dependency of the volume flow as a function of the adjustment angle or scale division of the rotary knob (scaling is linear).



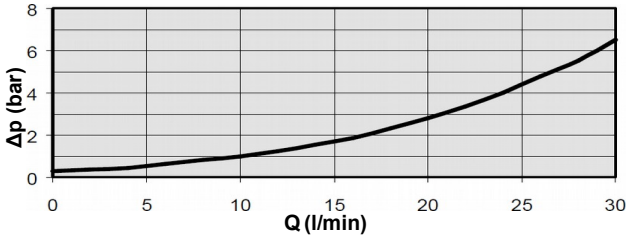
Q-Δp characteristic; Q = f(Δp)

Control behaviour of the valve for the volume flow direction A to B for several nominal volume flows as well as the minimal pressure difference required for the valves functionality.



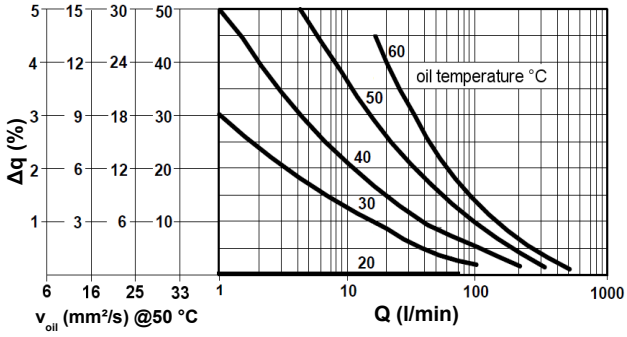
Δp-Q characteristic; Δp = f(Q)

Pressure loss of the valve for the volume flow direction B to A via by-pass check valve at closed adjustment orifice.



Δq-Q characteristic; Δq = f(Q)

Volume flow deviation Δq in relation to the oil temperature of 4 different oil viscosities. Δq is the percentage deviation of the adjusted volume flow at 20 °C oil temperature. For medium and large volume flows the temperature sensitivity is not noticeable. For small volume flows and large temperature differences the usage of low viscosity oils result in least volume flow differences.

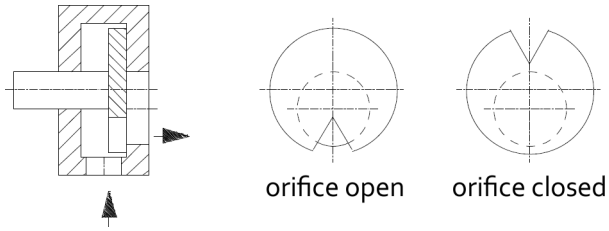


DESCRIPTION

1. VALVE

The valves automatically control an adjustable volume flow at constant level independent of pressure oscillations in the feed and outlet line. For proper functionality a minimal pressure difference for the orifice is needed.
Depending on the design, control can be on the forward or return side of the consumer. The volume flow is setted continuously via a control knob with a scale graduation of 0 to 10.
The adjustable orifice for the volume flow is insensitive to viscosity and dirt cover a large area of application, due to the design of the throttle to be like an aperture. Because of the scissor-cut principle, the setting orifice adjusts a defined volume flow without leakage oil, which allows setting up very small volume flows.
The pressure independency of the volume flow is reached by the pressure compensator. The pressure compensator provides a constant pressure difference at the orifice and is setted up downstream as a secondary regulator.
Due to the very compact design, the valve reacts to pressure oscillations within few milliseconds.

The pressure compensator is opened in rest position, which may lead to a starting jump, if it is switched on. The valves for feed regulation can be delivered with a modified control connection, which allows to close the pressure compensator, to prevent starting jumps (see additional information 9-74-020-0026).
The volume flow will be regulated in one flow direction. The type plate shows which direction is regulated. A by-pass check valve is installed for the opposite direction, to allow an unthrottled return flow with low pressure loss. It is designed as a spring-loaded ball seat valve.



2. MATERIAL

The valve parts are basically made of engineering steel. The external parts are burnished or galvanized. All wear parts are hardened. The control knob is made of different materials (Al, St, plastic material).

For applications outside of the given specifications, please contact Schiedrum Hydraulik.

All given specifications are partially based on long-term experience and laboratory measurements. The data are typical for the valve, but can deviate in series. All measurements were performed on a test bench with a oil viscosity of 36 mm²/s and with a filter mesh < 10 µm. All given data should be used as description of the product only and are not to understand as warranty in the sense of law.