Throttle Valve

Valve regulation with proportional solenoid
Subplate mounting NG 6 – mounting surface according to DIN 24 340 -G 6
210 bar – up to 30 l/min

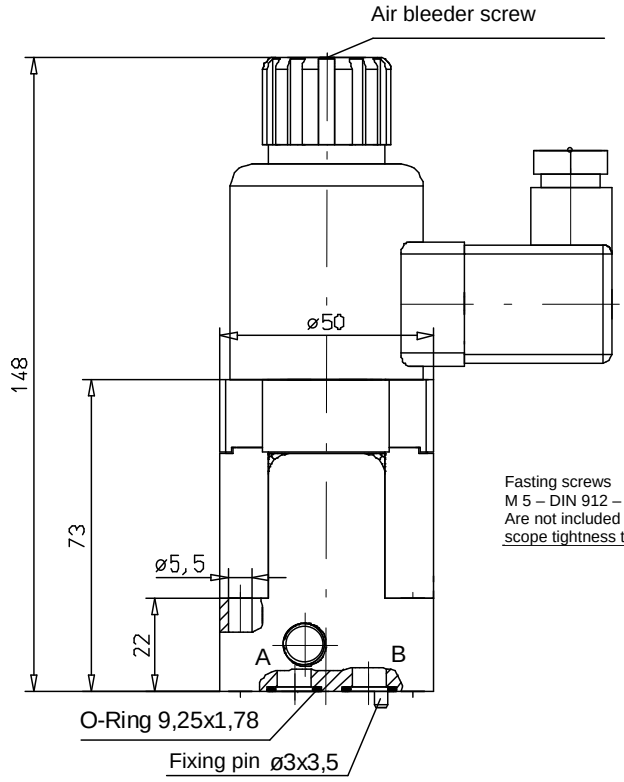
Type

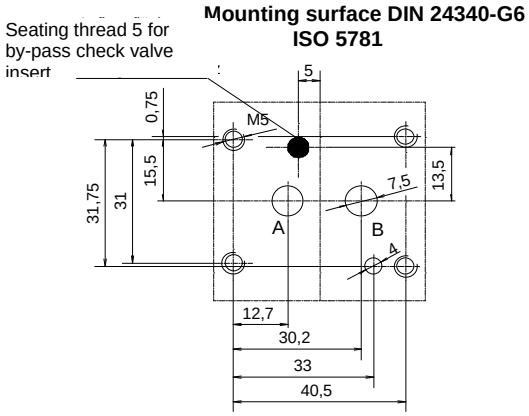
108 LP

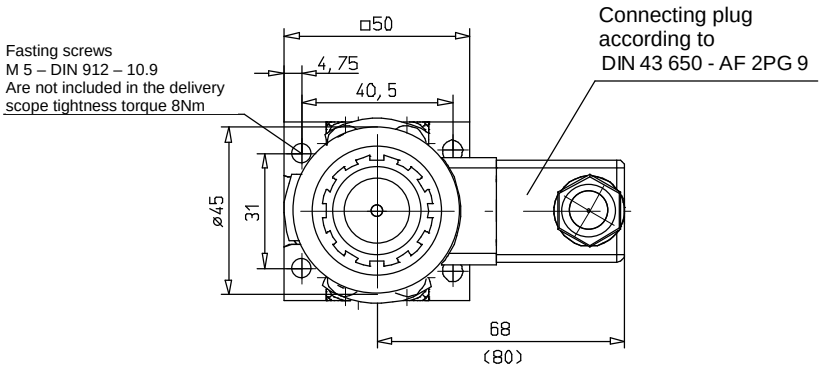
Throttle valves are flow valves in which the volume flow depends on the throttle valve cross section and differential pressure. The control valve can be adjusted by means of orifice to ensure that, as far as possible, the equipment's efficiency by viscosity.

FEATURES

- Solenoid systems: power-controlled; pressure resistant.
  Coil can be replaced without opening the hydraulic system
- Flow signal function: linear
- Remote control, programmable
- Valve static: closed
- Setting time approx. 50-100 msec.
- 6 orifice size to set
- Volume flow signal function: linear
- Assembly on connection plates with pipe connections or control block
- With or without by-pass check valve
- Standard sealing material Buna N/NBR







ORDER INFORMATION

The scope of the flow control valves includes the O-rings for sealing the holes and the connecting plug.

Name ——— **Throttle valve** | **108** | **L** | **P** | **2** | **R** | **M15**

Type series
Series code letter
Valve operating mode P = proportional solenoid
Orifice size 2 to 7 (see Fig. 3 to 8)
check valve:
R = with; **without** = without Code
Supplementary data for special models
e.g. special sealings from Viton (FKM) = **M 15**

ACCESSORY

Control amplifier type STA03-ES-1	see dimension sheet 9-74-003-3011
Valve fixing screw set	Order no.: 44-020-00078 (4 pces. Socket head screws M6 x 30 DIN 912 – 10.9)
Connecting plates	see dimension sheet 9-74-030-2002

CHARACTERISTICS

1.General

Symbol	
Design	Adjustment throttle: hollow piston with rectangular opening check valve: spring-loaded ball valve
Weight	1,1 kg
Mounting position	any, preferably vertical
Direction of volume flow	A to B controlled; B to A unthrottled return flow with check valve
Ambient temperature	-10℃ to +50℃

2. Hydraulic characteristics

Rated pressure / max. pressure	210 bar for all connections
max. permitted pressure	110 bar; limit see Fig. 3 to 8
max. permitted flow from A to B	30 l/min; limit see Fig. 3 to 8
Volume flow signal function	See Fig. 3 to 8
Orifice size	6 orifice size to set
Max. permissible volume flow via the check valve	40 l/min
Leak volume flow	approx. 200 cm^3/min (Δ p100 bar, rated valve 0 Volt, oil viscosity 36 mm^2/sec)
Hydraulic fluid	Hydraulic oil according to DIN 51 524 (1,2)
Hydraulic fluid temperature range	-20℃ to +70℃
Viscosity range	5 - 350 mm^2/sec.
Contamination level / filtering	General permit table class 16/13 according to ISO 4406 or 7 according to NAS 1638 (recommended filter: minimum retaining rate $\beta_{5-10} \geq 75$)

3. Betätigungsart

electrical – proportional solenoid

3.1 Solenoid

Design	Single solenoid - pressing, pressure sealed
Type of voltage	D.C. voltage
Rated voltage	12 V
Rated current	1,6 A
Limit current	1,9 A
Min. current (basic current)	approx. 400 mA
Rated resitance	R_{20} = 5,7 Ohm
Rated power	14,6 W
On period	100%
Type of connection	Device plug and socket connecting according to DIN 43 650 - AF 2
Type of protection	IP 54 according to DIN 40 050 (with installed mating connector)

4. Response characteristics

(definition according to DIN 24 311)

Sensitivity	< 1%	from nominal signal on Δ p 10 bar
Repeatability	< 1%	
Range of inversion	< 1%	
Hysteresis	< 4%	
Volume flow signal function	see Fig. 3 to 8	
Time response	see Fig. 1	

CHARACTERISTIC

Time response
Fig. 1 measure with orifice size 4
Δ p 40 bar (constant). The response function will change under different operating conditions.

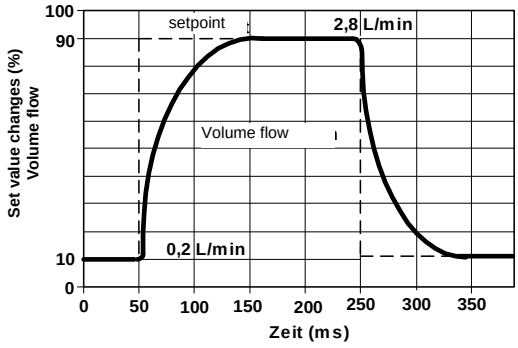


Fig. 1

Δ p-Q-characteristic linie; Δ p = f (Q)
Fig. 2 shows the pressure loss of the valve for the volume flow direction B to A through the by-pass return with the setting screen closed.

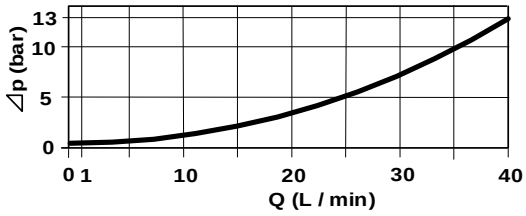


Fig. 2

Volume flow signal function characteristics; Q = f (U; Δ p = const.)
The curve with the highest figure confined the operational area with max. volume flow and max. permitted pressure for named orifice size.
By the curves with the small figures the valve is already with a smaller desired value limited (= 100% valve throw) during the same current attitude on the control amplifier since with smaller differential pressures the flow forces reduce (strength-regulated system).

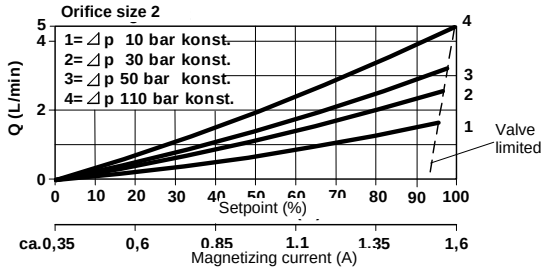


Fig. 3

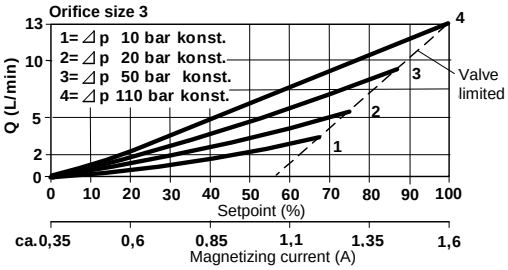


Fig. 4

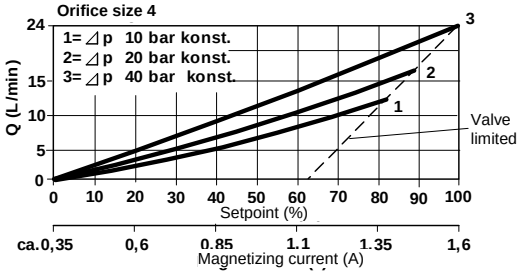


Fig. 5

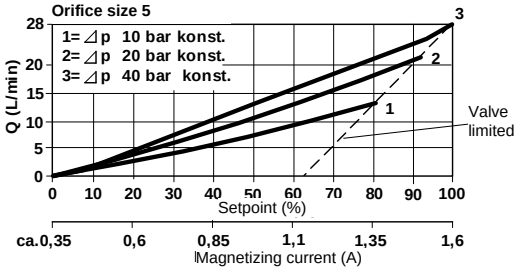


Fig. 6

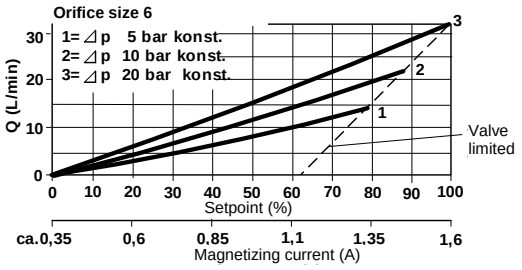


Fig. 7

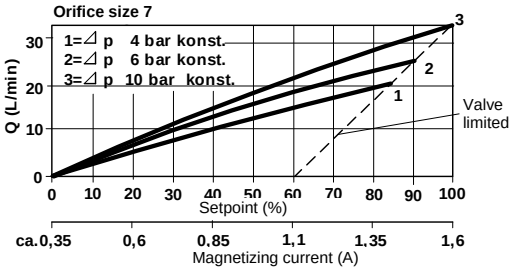


Fig. 8

1. Valve

The flow valve can be used to adjust the throttle section progressively. It can be installed either at the input or output of the system. The flow adjustment is by means of a proportional solenoid that is powered by an electric amplifier proportionally to a specified electric nominal valve signal.
The proportional solenoid is an electro-mechanical transducer. Its initial force is proportional to the magnetic current. The magnetic force operates via a slidegate valve piston with the throttle opening against an opposing force pressure spring in such a way that the system operated with a controlled force. Since the throttle cross section becomes larger over the magnet stroke linear, also a linear connection between magnet stream and flow rate exists. The flow rate depends on the size of the throttle cross section and the difference of pressure at this. If the difference of pressure is constant, then also the flow rate is constant.

The throttling is by means of an orifice sharp-edged and is thus not affected, in general, by the viscosity of the pressure medium. The direction of flow for the throttle is from connection A to B. In reverse flow direction, optionally a by-pass check valve is integrated which allows for an unrestricted return flow at low pressure loss. It is designed as spring loaded ball seat valve. The solenoid coil can be changed without opening the hydraulic system. The solenoid coil turned around 360°, the solenoid can use in any direction.

Attention ! We recommend to air bleed the valve before starting operation. The air bleed screw you will find on the front side of the solenoid (shown on the drawing).

2. Materials

The valve components are made of structural steel. All the components likely to wear are hardened. The magnet components in contact with the pressure medium are of steel, iron, and brass. The exterior of the coil is zinc plated and the coil holder is black-burnished.

For applications in excess of the given specification, please contact Schiedrum.
All specified parameters are partially based on long user's experience and partly on measurements made in laboratories. The data are typical of the valve and can deviate in series. All measurements were carried out on a test stand with an oil viscosity of 36mm²/sec and a filter mesh of < 10 µm. All data given here should be used as description of the product only and they are not to understand as warranty in the sense of law.