TWO - WAY FLOW CONTROL VALVE

Stepping Motor actuation - analogue control
Plate configuration NG8 - 210 bar to approx. 16 l/min

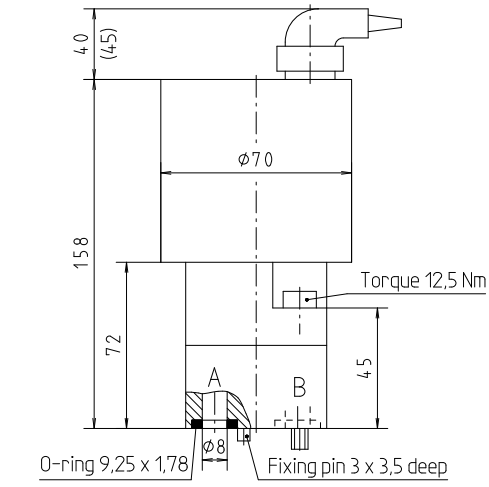
Typ

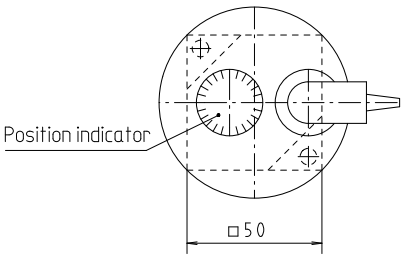
26 G A

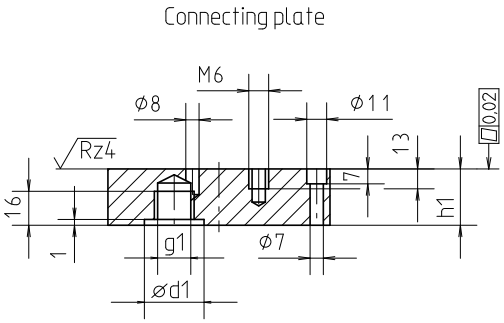
The two-way flow control valves are flow valves (throttle valves) with integrated pressure regulator. The valves automatically control an adjustable volume flow independently of pressure variations in the supply or discharge line to make it constant. They can be mounted on the inlet or outlet side of the consumer.

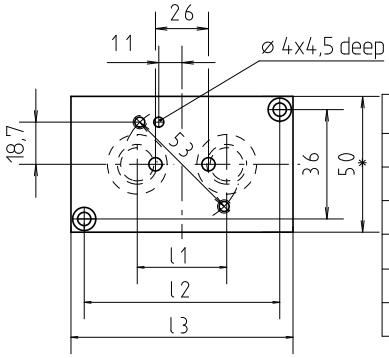
FEATURES

- Remote-controllable, programmable
- Analogue control means: the stepping motor control is realised using our control unit via an analogue input signal (0-10V; 0-20mA)
- Stepping motor position is monitored using a feedback potentiometer
- Fail safe characteristic: the valve keeps its last position in case of a power supply failure
- No electrical temperature drift
- Minimum actuating time: 1.5 sec
- Resolutional prox. 0.25%
- Volume flow signal function: linear
- 7 rated setting volume flow ranges
- Hold pattern according to internal Schiedrum standard
- Assembly on connection plates with pipe joints or control block
- With by-pass check valve
- Standard sealing material Buna N (NBR), other materials possible
- For the volume-flow control in both flow directions, volume flow rectifier intermediate plate valve type 71 are available upon request









Dimensions in mm			
g1	G 1/4	G 3/8	G 1/2
ø d1	19	23	27
h1	20	25	25
l1	26	36	41
l2	66	80	80
l3	80	95	95

* DIN / ISO / 228 / 1

ORDER INFORMATION

The scope of delivery of the flow-control valve includes O - rings for sealing the connecting holes, 2 mounting screws M 6 x 55 DIN 912-10.9 and approx. 2m cable with connecting plug.

Name	two-way flow control valve	26	G	A	R	1	L	15	

Type
Series (letter)
Control method: A= analogue
Series equipped check valve
Rated volume flow: 1; 1,6; 2,5; 4; 6,3; 10; 16 L/min
Volume flow signal function: linear
Min. actuating time: 1.5 sec.(x10)
Supplementary data for special models
e.g. special Viton sealings (FKM)= **M15**

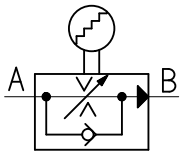
ACCESSORY

Connecting plate - Order - No.:	44-020-10019 for G 1/4; 44-020-10020 for G 3/8; 44-020-10021 for G 1/2
Stepping motor control unit	StA 01 – DAS (dimension sheet – 9-74-001-1012)
Flow rectifier plate	type 71 see dimension sheet 9-74-071-1004

SCHIEDRUM HYDRAULIK
Schiedrum Hydraulik GmbH
www.Schiedrum.com

CHARACTERISTICS

1. General

Symbol	
Type designation	Setting throttle: slot orifice Differential pressure valve: switched in series with the setting throttle Check valve: spring-loaded ball valve
Weight	1,9 kg
Mounting position	Random, preferable vertical
Direction of volume flow	A to B controlled, B to A unthrottled return flow
Ambient temperature	- 25 °C to + 50 °C

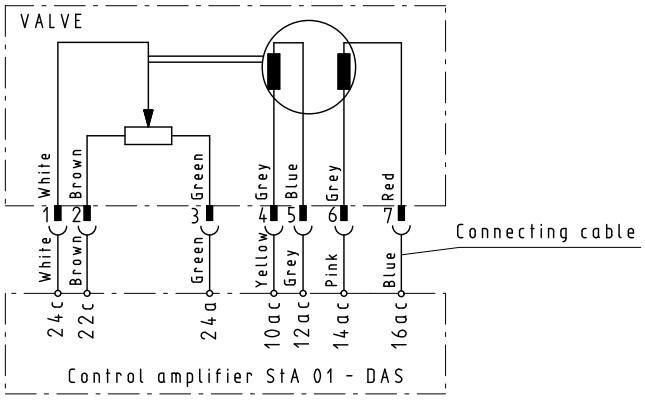
2.HYDRAULIC CHARACTERISTICS

Nominal pressure ≙ Max. pressure	210 bar for all connections
Hydraulic fluid	Hydraulic oil according to DIN 51 524 (1.2)
Hydraulic fluid temperature range	-20 °C to + 60 °C
Viscosity range	5 to 350 mm²/sec
Rated volume flow range	1; 1.6; 2.5; 4; 6.3; 10; 16 L/min
Min. adjustable and controllable Volume flow	Approx. 10 to 20 cm³/min, recommended control range 1:100 with reference to the rated volume flow
Contamination level/filtering	General permittable class 18/15 according to ISO 4406 or 9 according NAS 1638 (recommended filter: min.retaining rate $\beta_{10\text{-}15} \geq 75$)
Volume flow check valve	Max. permissible 30 L/min
Type of actuation	electrically

3.1 Motor

Type designation	Synchronous motor
Rated voltage/frequency	24V-10/+10%/50 Hz
Power consumption	3,5 VA
Rated current	150 mA
Speed	250 U/min
Required phase condenser	8,2 µF (not integrated, not required in case of stepping motor operation)
Resistance per coil	140 Ω
When operated as stepping motor:	
Step number per revolution	48 full step
Max. operating frequency	200 Hz
Recommended max. operating frequency	160 Hz

Circuit Diagram



3.2 POTENTIOMETER

Type	Rotary potentiometer with wire-wrapped resistance element
Permissible load	1,5 W at 40 °C
Independent linearity	≤1 %
Resistance value	1 k Ω ± 20 %
Max. operating voltage	300 V
Max. loop current	1 mA
Voltage fluctuation	< 0,5 %

3.3 PROTECTIVE SYSTEM (according to DIN 40 050)	IP 40
3.4 CONNECTING PLUG	Device plug identical to 3477 000 by Amphenol Tuchel Cable box included in the scope of delivery.
3.5 RELATED CONTROL UNIT	StA 01 - DAS

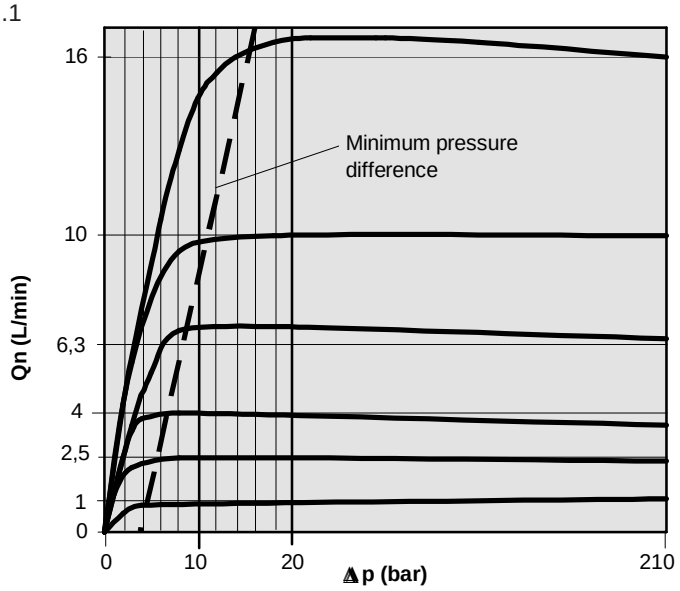
4. RESPONSE CHARACTERISTICS

Responsiveness	0,5 %	of the set volume flow range measured at Δp 50 bar
Repeatability	0,5 %	
Hysteresis	< 3 %	
Range of inversion	< 1 %	
Actuating time	Q min to Q max approx. 1.5 sec. In combination with our standard control unit StA 01 - DAS, the actuating time can be increased to approx. 6 sec by reducing the step frequency.	

CHARACTERISTICS

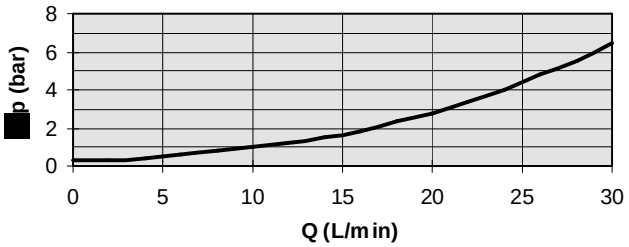
Q-Δp-characteristic; Q = f (Δp)
Fig.1 shows the control characteristics of the valve for the volume flow A to B for various rated volume flow ranges, as well as the minimum pressure difference necessary for the function.

Fig.1



Δp-Q-characteristic; Δp = f (Q)
Fig. 2 shows the pressure loss of the valve for the volume flow direction B to A to the by-pass check valve with the setting orifice fully closed.

Fig.2



Volume flow signal function characteristic: Q = f (U, Volt)
Fig. 3 and 4 shows the dependence here over the different rated volume flows as a function of the input signal.

Fig.3

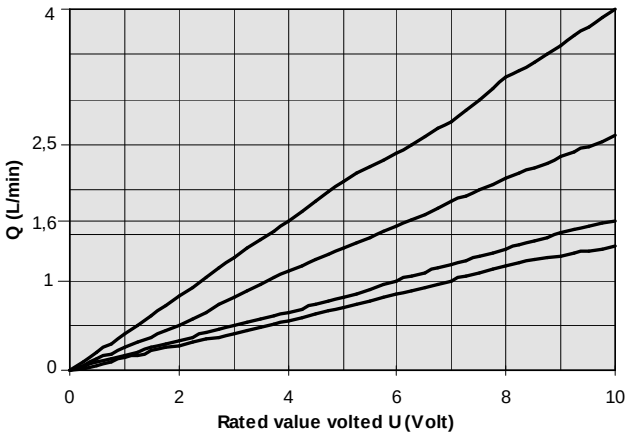
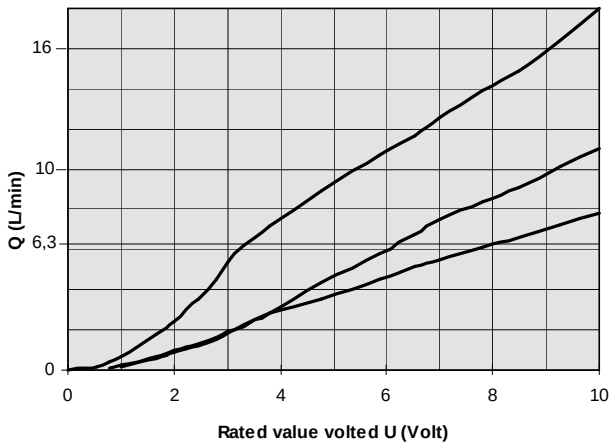


Fig.4



VALVE DESCRIPTION

1. Valve

The valve keeps constant on the adjustable outlet flow independent from pressure variations in the inlet and outlet line within their functional limits (a minimum pressure difference between supplying discharged side of the valve must be present (see fig.1). They can be integrated at the supply or discharge side of the consumer. The volume flow adjustment is realised using a motor drive unit coupled to an actual value potentiometer feeding back the position of the setting throttle to the motor control unit. Mechanical limits stops are integrated into the potentiometer which must not be contacted during the normal operation. The motor revolution is converted into a linear movement via threaded spindle drive unit thus adjusting the setting throttle. No motor switch-off device is integrated into the valves, i.e. this must be realized via the motor control unit.
We deliver a control amplifier using motor is operated as stepping motor (see catalogue seat St01). The advantage of the pulse motor control lies in the high precision and repeatability of the set values.

Furthermore, the valve position is kept even in case of a power failure. Upon special request, the valve can also be delivered with an emergency manual actuation. The volume flow is made independent of the pressure by means of the differential pressure valve (pressure balance). It provides a constant pressure difference at the setting orifice and is arranged downstream of the orifice (secondary control). Due to the very compact design, the volume flow can be adjusted within msec in case of pressure changes. The pressure balance is open in its normal position. Thus, there may be a starting step-change when switching on the valve. Optionally, a modified valve design with a control part which allows closing depressure balance in its normal position (see sublimentary information 9-74-020-0026).
The volume flow is controlled in one direction of flow only. The direction of the control is indicated by the symbol on the name plate. In the opposite direction of flow, there will be a bypass check valve for an unthrottled return flow at a very low loss of pressure. It is designed as a spring-loaded ball seated valve.

2. Material

The valve parts are made from engineering steel, the external parts are black - finished, wear parts are surface- hardened. The housing of the actuating drive is made from aluminium, black anodized. The other parts of actuator drive are made from various materials and they are corrosion protected.

For applications in excess of the given specifications, 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 36 mm²/sec and a filter mesh of < 10 µm as well as control electronics set to optimum values. All data given here should be used as description for the product only and they are not to understand as warranty (*zugesicherte Eigenschaft*) in the sense of law.