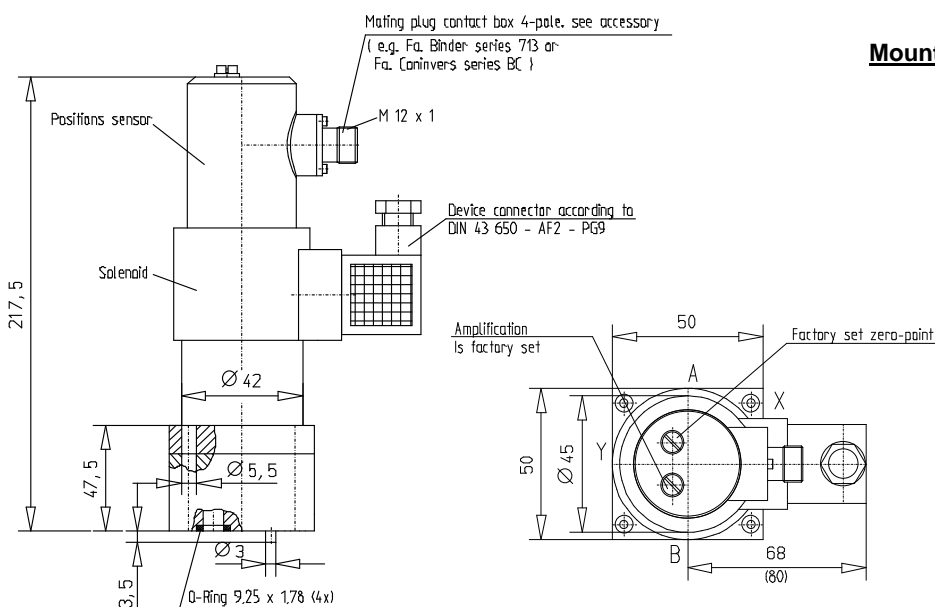


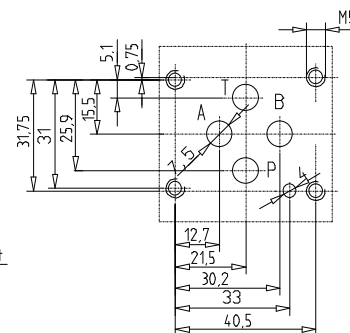
Pressure control valves control an infinitely adjustable pressure in the outlet flow to a system switched in series largely independently of primary pressure and volume flow. 2-way pressure control valves do not dispose of a secondary pressure balance, i.e. a pressure increase on the consumer side is not compensated for.

FEATURES

- 4 set pressure ranges
- Minimum set pressure for setting ranges < 7 bar
- With control port for remote control (must be locked, if the function is not required)
- Standard sealing material Viton (FKM)
- Assembly on sub plates with pipe connections or control block
- Solenoid system: path-controlled, pressure resistant
Coil is exchangeable without open the hydraulic systems
- Path measuring system: pressure resistant, inductive with integrated carrier frequency measure amplifier in an enclosed metal housing
- EMV - the regulations by law concerning electro-magnetic compatibility of devices (EMVG) are fulfilling in case of proper installation
- remote control, programmable
- Neutral position of the valve: connection A to B open
- Floating time approx. 70 msec.



Mounting surface DIN 24 340 – C6 – 1



ATTENTION! The port assignment and identification does not correspond to the recommended standards.
Standard connection codes:
P = B; T = A; A = Y; B = X

ORDER INFORMATION

The O rings for sealing the connection holes, four fastening bolts M 5 x 55 DIN 912 - 12.9, tightening torque 9,5 Nm and the device plug and socket connection are part of the scope of supply.

Name **2- way pressure control valve 683 C R 70 M...**

Type series

Series code letter

Valve operating mode **R** = proportional solenoid

Rated setting pressure in bar: **70; 140; 210; 315**

Supplementary data for special models = **M...**

ACCESSORY

Must be order separately.

Connection plates

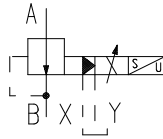
Control amplifier type StRA03-ES-8
Mating connector position sensor

see dimension sheet 9-74-603-1004
see dimension sheet 9-74-003-0026
Suitable for an installation according to the EMVG regulations
Order.-No.: 44-028-00536

CHARACTERISTICS

1. General

Symbol



Design

Pilot-operated: pilot control = seat valve
Main control = piston-type valve

Mounting position

any, preferably horizontal, connection Y upwards

Direction of volume flow

A to B

Ambient temperature range

-10°C to +50°C

2. Hydraulic characteristics

Rated pressure / max. pressure

Connection A, B and X = 315 bar
Connection Y = 10 bar reference: In function pressure less to the Tank

Setting pressure range

7-70 bar; 7-140 bar; 7-210 bar; 7-315 bar

Rated volume flow

30 l/min

Hydraulic fluid

Hydraulic oil according to DIN 51 524 (1,2)

Temperature range of hydraulic fluid

-20°C to +70° C

Viscosity range

15 - 350 mm²/sec

Control oil flow

approx. 350 cm³/min

Contamination level / filtering

Class 16/13 according to ISO 4406 or 7 according to NAS 1638
(recommended filter: min. retaining rate $\beta_{5-10} \geq 75$)

3. Type of actuation

Electrically – proportional solenoid position sensor

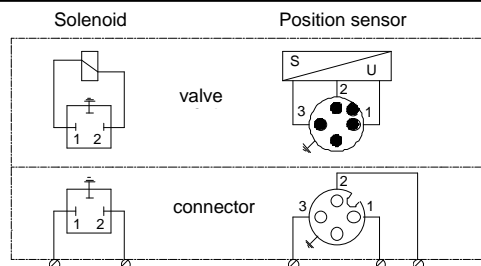
3.1 Solenoid

Type	Simple solenoid - pressing, pressure resistant
Type of voltage / Rated voltage	D.C. voltage / 12V
Rated current	1,6 A
Limit current	1,9 A
Rated resistance	$R_{20} = 5,7 \text{ Ohm}$
Rated power	14,6 W
ON period	100%
Type of connection	Device plug according to DIN 43 050 – AF 2
Type of protection	IP 65 according to DIN 40 050 (with installed mating connector)

3.2 Position sensor

Type	pressure tight
Measuring system	inductive; principle – differential transformer
Supply voltage	24 V DC +/- 20%, polarized
Permissible ripple	$U_{SS} \leq 5\%$
Power consumption	$\leq 40 \text{ mA}$
Output voltage	approx. 7,5 – 11 V; ripple $\leq 20 \text{ mV}_{SS}$, valve-specific-compensation
Max. output voltage load	$> 10 \text{ K Ohm}$
Sensitivity, adjustable	1,5 V/mm +/- 15%
Zero shift, electrically	+/- 1 mm
Type of connection	Device plug-and-socket connection M 12 x 1 – 4 pole
Type of protection	IP 65 according to DIN 40 050 (with installed mating connector)

Terminal assignment



Terminal assignment Position sensor	
PIN	
1	Output voltage
2	Supply voltage
3	0 V

4. Response characteristics

(definition according to DIN 24 311)

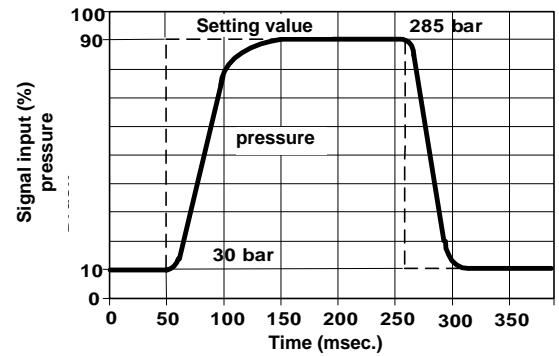
Sensitivity	< 1%	} from nominal signal
Repeatability	< 1%	
Range of inversion	< 1%	
Hysteresis	< 1%	
Temperature drift (position sensor)		
Without viscosity influence	<0,1% $\Delta p/^\circ\text{C}$	
Time response	see Fig. 2	
Pressure signal function	see Fig. 3	

CHARACTERISTICS

Time response

Fig. 1 shows the step-function response of the pressure signal to a setting value jump of 10% to 90% and vice versa. Measured at a volume flow of 20 l/min. The values are extremely system-dependent.

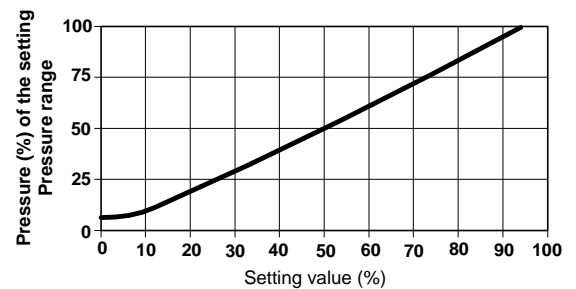
Fig. 1



Characteristic of the pressure signal function

Fig. 2 shows the characteristic typical of the valve for the function pressure setting value. It gives information on the linearity.

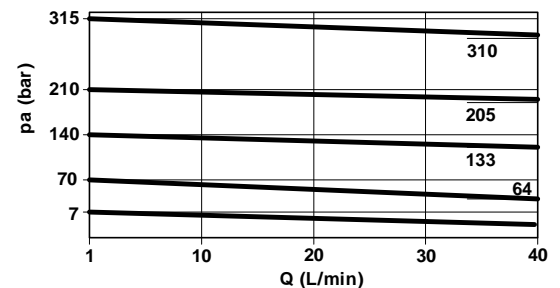
Fig. 2



pa-Q-characteristic; $p_a = f(Q, p_e = \text{const.})$

Fig. 3 shows the dependency of the volume flow for the outlet flow as well as the lowest set flow. Measured at an inlet flow of 20 bar above the outlet flow, control oil return to the tank in depressurized state.

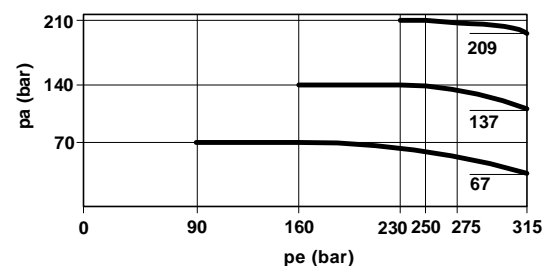
Fig. 3



pa-pe-characteristic; $p_a = f(p_e, Q = \text{const.})$

Fig. 4 shows the control characteristic for the outlet flow depending on the inlet flow given a volume flow of 30 l/min, control oil returns to the tank in depressurized state.

Fig. 4



Description of the valve

1. Valve

These valves are double-stage valves, consisting mainly of the main control part which is controlled by a pilot valve with the proportional actuating solenoid. Due to the pilot control, the pressure is controlled or limited almost independent of the volume flow. The volume flow adjustment is infinitely variable through the proportional solenoid which is controlled by an electronic control amplifier. The solenoid is linked to the valve via a central thread. The proportional solenoid is an electric-mechanical transducer. Its output quantity force is proportional to the current. To increase the setting accuracy and to reduce the influence of disturbances, the proportional solenoid is coupled to a path measuring system. In this way, the solenoid of the piston can be switched with the orifice opening in accordance with the given nominal value via the electronic control system in the position circuit and therefore be positioned precisely. This measure for instance eliminates large Hysteresis errors among others. As the orifice section increases linearly of the solenoid stroke and as the path sensor supply a linear output signal there is also a linear relation between nominal value and volume flow. Path sensor and solenoid together form an inseparable and rigid unit. Solenoid and sensor coil can be replaced without opening the hydraulic system. The coils can be rotated by 360° so that the plug connections can be brought into virtually any position. The path sensor converts the solenoid stroke in a proportional electrical output voltage. The operating principle is based on the principle of a differential transformer consisting of a primary and two secondary coils. The electronic protective circuit is integrated in an enclosed metal housing in the sensor. Zero point and amplification can be adjusted by means of potentiometers at the sensor.

The sensor design complies with the regulations by law concerning the electromagnetic compatibility of devices (EMVG) (see installation regulation 9-84-028-0049).

The magnetic force acts via a pressure spring valve cone upon the anticipatory control valve seat, against the hydraulic force of the hydraulic liquid in the control circuit. The resulting pressure is stamped on the control piston in the main valve as reference pressure. The control piston is used as a pressure maintaining valve which controls the pressure in the control circuit to the pilot pressure.

The valve is equipped with four ports, the main ports A and B for inlet and outlet plus the control ports X and Y. Via port Y, the pilot oil is drained. In order to avoid valve vibrations we recommend to make the control oil return to the tank separately in a depressurized state and without interference. Port X allows for the external valve relief on the one hand and for remote control on the other hand: **The port must be closed if these function are not required.**

Yet, we recommend to provide this port in control blocks or sub plates, because the dampening characteristics of the valve can be changed via this port in case of system vibrations.

Attention!

The valve must not be driven by the electronic, when the hydraulic is shut down. Internal valve damages cannot be excluded. For this case the proportional amplifier StRA03-ES enable signal (connector Pin Z6) or the supply voltage should be disabled.

2. Material

The valve parts are made of engineering steel. All wear parts are surface-hardened. The external valve parts are burnished, the solenoid and sensor coil is galvanized and chromized.

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.