3-WAY PRESSURE CONTROL VALVE

With integrated control electric

Subplate mounting NG 6 – mounting surface to DIN 24 340 - C6 - 1

Pilot operated - 315 bar – up to 40 l/min

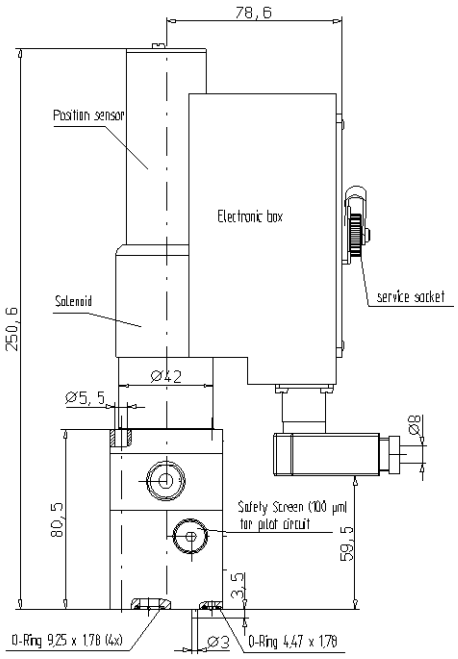
Type

686 BD

3-way pressure control valves control and limit a steppless adjustable pressure in the outlet stream. These valves are equipped with an integrated control solenoid. In connection with a pressure transducer suitable for the fast and precise regulation of the secondary pressure.

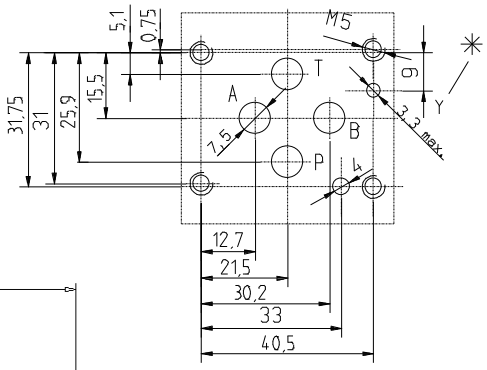
FEATURES

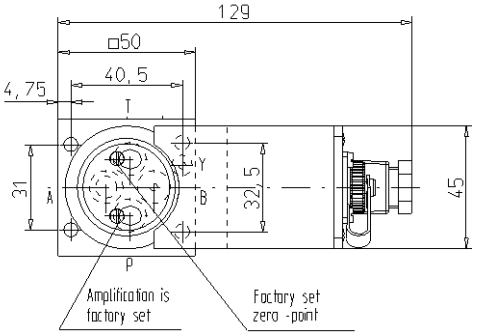
- with integrated control electric
- service socket (must be ordered separately)
- Minimum set pressure for setting range < 1bar
- With secondary pressure protection
- With control port for remote control or pressure unloading of port A (must be locked, if the function is not required)
- If desired, with external control oil drain (mounting surface to DIN 24 340 - A6 - 1)
- Standard sealing material Viton (FPM)
- Assembly on sub plates with pipe connections or control block
- Neutral position of the valve: connection A to T; P locked
- Floating time approx. 50 msec



Mounting surface DIN 24 340 – C6 – 1

*according to DIN 24 340 – A6 – 1 for valve type „Y“





ORDER INFORMATION

The O rings for sealing the connection holes, four fastening bolts M 5 x 90 DIN 912 - 12.9, tightening torque 9,5 Nm and the device plug.

Name	3-way pressure control valve	686	B	D	PS	70	Y	B	1A	M...

Type series
Series code letter
Control method: digital control **= D**
Programmable: with service socket **= PS**
without service socket **= without Code**
Rated setting pressure in bar: **70; 140; 210; 300**
Valve variant control oil drain (see symbol)
Control oil drain, internal **= without** Code
***Control oil drain, external** **= Y**
Set value input 0 to 10 V **= A ;** 0 to 20 mA **= B;** 4 to 20 mA **= C**
2. control cycle without **= 0**; with **= 1A** to 0 - 10V; **1B** to 0 - 20 mA ; **1C** to 4-20mA
Supplementary data for special models = **M...**

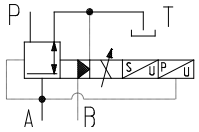
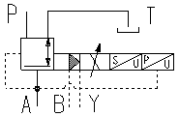
ACCESSORY

Must be ordered Separately

Connection plates		see dimension sheet 9-74-030-2002
* in case of valve type **Y**		see dimension sheet 9-74-686-0007
hand-held terminal		order Nr. : 44-006-0001

CHARACTERISTICS

1. General

Symbol			
Type	686 BD... 1A		686 BD ... Y . 1A
Design	two stages;	pilot control	= seat valve
		Main control	= piston-type valve
Weight	3,5 kg		
Mounting position	any, preferably vertical		
Direction of volume flow	P to A or. A to T		
Ambient temperature range	-10°C to +50°C		

2. Hydraulic Characteristics

Rated pressure / max. pressure	Connection P, A and B	= 315 bar
	Connection T	= 70 bar in case of external control oil drain
	Connection T	= in case of internal control oil drain, depressurized and separately to the tank
	Connection Y	= depressurized and separately to the tank
Min. pressure difference P to A	15 bar	
Setting pressure range	70 bar; 140 bar; 210 bar; 300 bar	
Min. setting pressure	< 1 bar	
Rated volume flow	30 l/min	
Pressure volume flow function	see Fig. 3	
Hydraulic fluid	Hydraulik oil according to DIN 51 524 (1,2)	
Temperature range of hydraulic fluid	-20°C to +70°C	
Viscosity range	15 - 350 mm^2/s	
Control volume flow	approx. 400 cm^3/min	
Contamination level / filtering	Class 16/13 according to ISO 4406 or 7 according to NAS 1638 (recommended filter: min. retaining rate $\beta_{5\text{-}10} \geq 75$)	

3. Type of actuation

Electrically – proportional magnet position sensor

3.1 Solenoid

Type	Simple solenoid - pressing, pressure resistant
Type of voltage	D.C. voltage
Rated voltage	12 V
Rated current	1.6 A
Limit cu	1.9 A
Rated r	R_{20} = 5.7 Ohm
Rated power	14.6 W

3.2 Position sensor

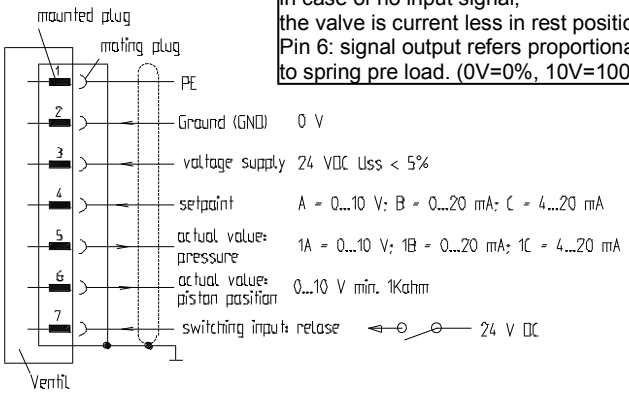
Type	pressure resistant
Measuring system	inductive; principle: differential transformer
Sensitivity, adjustable	1.5 V/mm +/- 15%
Zero shift, electrically	+/- 1 mm

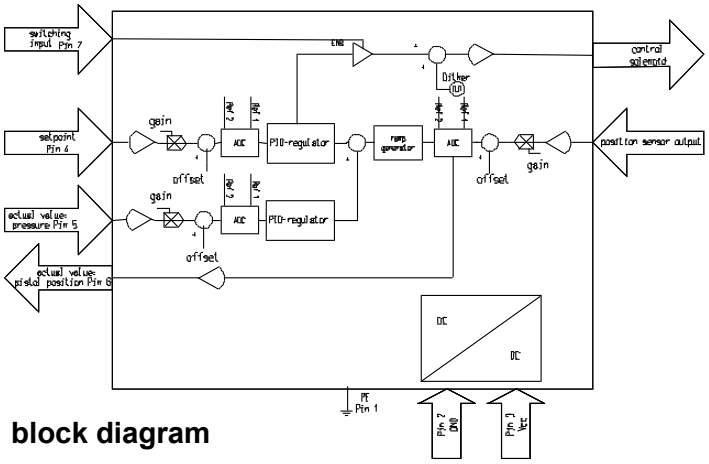
3.3 Connection Type plug connection (Amphenol)

3.4 Type of protection (according to DIN 40 050) IP 65

pin configuration

Pin 7: ready at 24 VDC.
in case of no input signal,
the valve is current less in rest position.
Pin 6: signal output refers proportional
to spring pre load. (0V=0%, 10V=100%)





block diagram

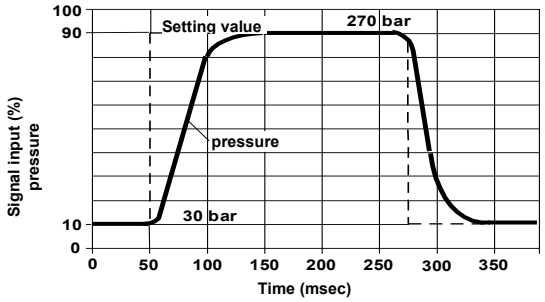
4. Response characteristics (Definition according to DIN 24 311)

Sensitivity	± 0.5 %	from setting pressure value
Repeatability	± 0.5 %	
Range of inversion	± 0.5 %	
Hysteresis	± 0.5 %	
Volume flow signal function	see Fig. 2	
Time response	see Fig. 1	

CHARACTERISTICS

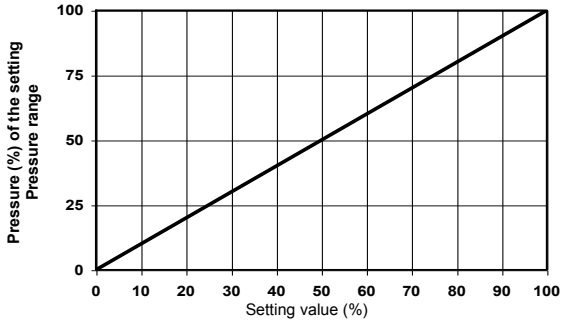
Time response
Fig. 1shows the step-function response of the pressure signal to a setting value jump of 10% to 90% and vice versa. Measured at a volume flow of 20 l/min. The values are extremely system-dependent.

Fig. 1



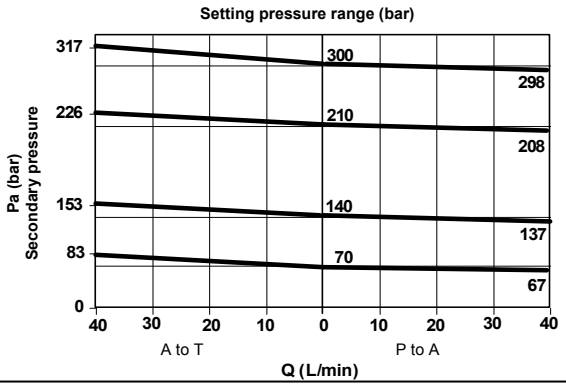
Characteristic of the pressure signal function
Fig. 2 shows the characteristic typical of the valve for the function
pressure setting value. It given information on the linearity and the hysteresis.

Fig. 2



pa-Q-characteristic
Fig.3 shows the control response of the valve for the secondary
pressure at the different setting pressure ranges, dependent on the variable volume flow, at a primary pressure of 20 bar each above the setting pressure.

Fig. 3



Description of the valve

These valves, type 686 BD are double stage valves, consisting mainly of the main control part which is controlled by a pilot valve with the proportional actuating solenoid. The position of the solenoid inductor will seized by an integrated position indicator and controlled by the electronic to minimize hysteresis. This closed loop positioning system is controlled by a pressure control circle.
The valve is equipped with four or five ports, the main ports **P** and **A** for in- and outlet, port **T** to protection of the secondary circuit, port **B** and if desired **Y** for the separate control oil drain. For the valve type **internal control oil drain**, the control oil is let via **T.**

In order to prevent valve oscillations, we recommend - according to the chosen control oil outlet - to conduct the corresponding line depressurized and trouble free, separately to the tank. We recommend the valve type with external contro oil drain since it is the best guarantee for a trouble free function.
Via port **B**, the valve can be unloaded and operated by externa remote control; **it must locked if the function is not required** Yet, we recommend to provide this port in control blocks o sub plates, because the dampening characteristics of the valve can be changed via this port in case of system vibrations.

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.