PRESSURE RELIEF VALVE

Stepping motor actuation – analogue control
Plate configuration NG 6 – mounting surfaceaccording to DIN 24 340-C6-2
Pilot operated - 315 bar – up to 40 l/min

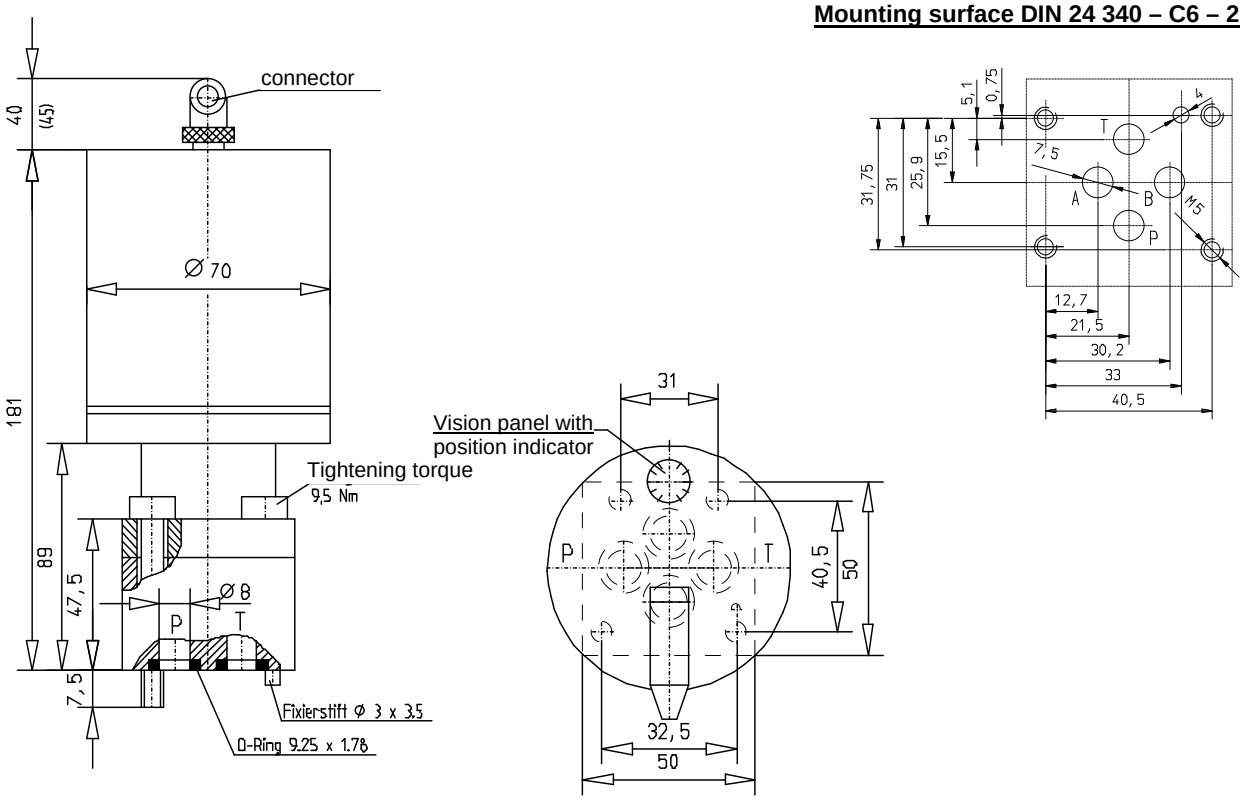
Type
66 CA

This valve limits a stepless adjustable pressure in the inlet stream.

FEATURE

- remote-control, programmable
- analogue control means: the stepping motor control is realised by our control unit via an analogue input signal (0-10 V; 0-20 mA)
- stepping motor position is monitored via a feedback potentiometer
- fail safe characteristics: the valve keeps its last position in case of a power failure
- no electrical temperature drift
- minimum actuating time 1.5 sec.
- resolution approx. 0.25%
- 4 set pressure ranges
- minimum set pressure for all pressure setting ranges 7 bar
- with control oil connection for remote control or pressure release (must be sealed if the function is not used)
- Standard sealing material Viton (FKM)
- assembly on connection plates with pipe connections or control block

Mounting surface DIN 24 340 – C6 – 2



ORDER INFORMATION

The scope includes the o-rings to sealing the connection holes, four fastening screws M 5 x 55 DIN 912 – 12.9 Tightening torque 9.5 Nm. And 2m cable with connector.

Name	Pressure relief valve	66	C	A	315	Y	M..

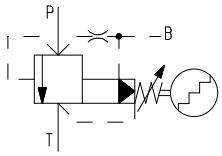
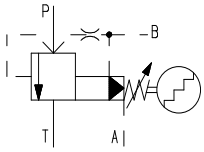
Types
Series code letter
actuation: **A** = analogue
rated setting pressure in bar: **70; 140; 210; 315**
Variant control oil drain (see symbol)
Intern Control oil drain = **without code**
External control oil drain = **Y**
Supplementary data for special models

ACCESSORY

Connecting plates	see dimension sheet 9-74-060-2003
Stepping motor control unit	StA 01 – DAS (dimension sheet 9-74-001-1012)

CHARACTERISTICS

1. General

Symbol			
Types	66 CA ..		66 CA - Y
Design	two stage,	pilot control	= seat valve
		Main control	= piston-type valve
Weight	2.1 kg		
Mounting position	any, preferably vertical		
Direction of volume flow	P to T		
Ambient temperature range	-25℃ to +50℃		

2. Hydraulic Characteristics

Rated pressure ≙ max pressure	connection P; B = 315 bar connection T = 315 bar at external control oil drain connection T = 70 bar at internal control oil drain connection A = 70 bar
setting pressure range	7 - 70 bar; 7 - 140 bar; 7 - 210 bar; 7 - 315 bar
rated volume flow	30 l/min.
pressure volume flow function	see fig. 1 and 2
pressure signal function	see fig. 3
Hydraulic fluid	Hydraulic oil according to DIN 51 524 (1,2)
Hydraulic fluid temperature range	-20℃ to +60℃
Range of viscosity	5 – 350 mm²/sec
Control oil flow	approx. 350 cm³/min
Contamination level/filtering	general permittable class 18/15 according to ISO 4406 or 9 according to NAS 1638 (recommended filter: minimum retaining rate $\beta_{10\text{-}15} \geq 75$)

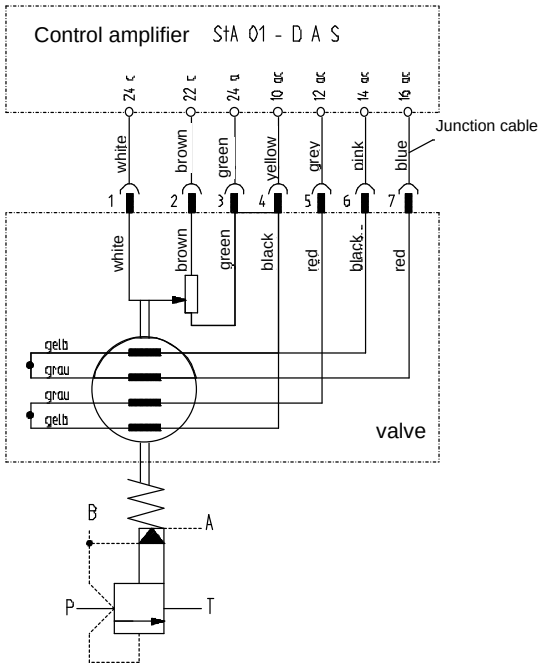
3. Type of actuation

electrically

3.1 solenoid

Design	permanent magnet - stepping motor
Operation mode	bipolar
Coil number of the stator	2
Pole number of the motor	24
Step number per rotation	48
Max. Operating frequency	200 Hz / recommended operating frequency 160 Hz
Resistance per coil	34 Ohm
Inductivity per coil	180 mH
Rated current per coil	325 mA

CIRCUIT DIAGRAM



3.2 Potentiometer	
Load capacity	1,5 W at 40℃
Independent linearity	≤ 1%
Resistance	1 K Ohm +/- 20%
Max. wiper current	1 mA
Voltage smoothness	< 0,5 %
3.3 Protective system (according to DIN 40 050)	IP 40
3.4 Electrical connection	device plug identical to 3477 000 Fa. Amphenol Tuchel The cable box is part of the scope
3.5 Related control unit	StA 01 – DAS

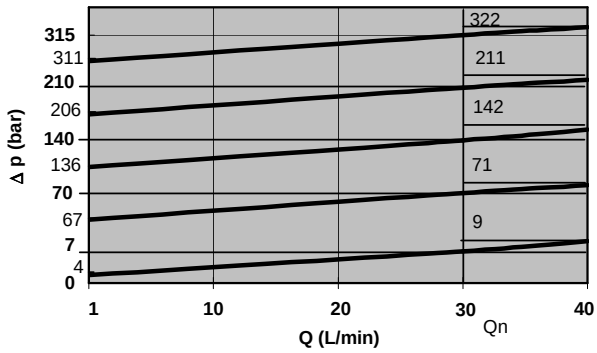
4. Response characteristic

Response sensitivity	< 1%	Of setting pressure range
Repetitive accuracy	< 1%	
Hysteresis	< 1%	
Range of reversal	< 1%	
Actuating time	p min. to p 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

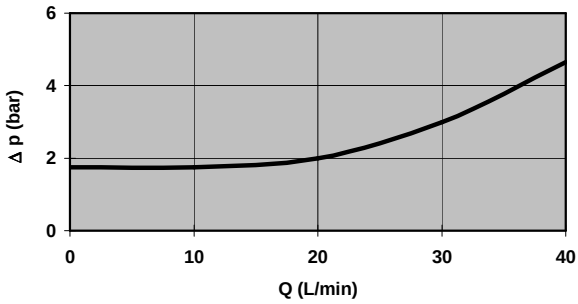
Pressure-volume flow-function
Δp-Q-characteristic
Fig. 1 shows the dependency of the volume flow at the different set pressure ranges and the minimum adjustment pressure. The control oil drain is external und pressure less to the tank, by using internal control oil drain increase the adjustment pressure by the pressure of connection T.

fig. 1



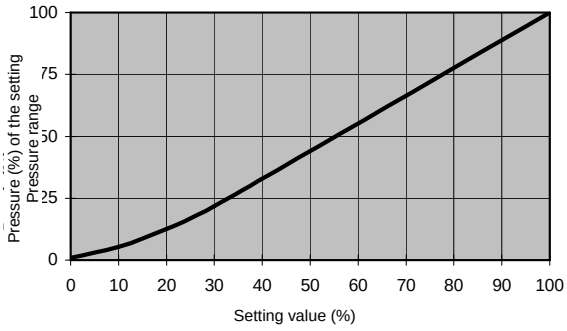
Pressure-volume flow-function
Δp-Q-characteristic
fig. 2 shows the pressure loss of the valve at relieved connection B .

fig. 2



Pressure signal function characteristic
Fig. 3 shows the valve specific characteristic of the volume flow signal function. It gives information about the linearity.

fig. 3



Description of the valve

1. Valve

The valves are double-stage valves. It's consisting mainly of the main control which is controlled by a pilot valve. Due to the pilot control is the pressure independent of the volume flow controlled and limited. The pressure 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. The adjustment pressure spring gets a exact position due the position control of the control electronics by the pre-set seat value. The force increase linear via the pressure adjustment spring and the actual value potentiometer provides a linear output signal there is also a proportional relation between set value and pressure. Mechanical limits Stops are integrated into the potentiometer which must not be contacted during the normal operation. No motor switch-off device is integrated into the valve, i.e. this must be realized via the motor control unit.

The advantage of the pulse motor control lies in the high precision and repeatability of the set value. Furthermore, the valve position is kept in case of a power failure. Upon special request the valve can also be delivered with an emergency manual actuation.

The actuator acts via a screw drive, via a pressure spring and a valve cone upon the anticipatory control valve seat against the hydraulic force of the hydraulic liquid in the control circuit. The result pressure is stamped onto the control piston in the main valve as reference pressure. The control piston takes up the function of a pressure balance controlling the pressure within the hydraulic circuit in accordance with the pilot control pressure.

The valve has three or four ports. The main ports **P** and **T** for inlet and outlet and the control port **B** and optional **A** for a separated control oil drain. If very exact arrangements desired or if the pressure in pipe T is heavy variable or using this valve as follow valve the control oil must drain via port **A**. Port **B** allows fort he 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.** However we recommend providing this port in control blocks or connection plates at any rate to be able to modify the damping characteristic of the valve via this port should any system vibrations occur.

In the valve variant **internal control oil drain** the control oil drained via port **T**.

2. Materials

The valve parts are made of engineering steel, the external parts are bronzed or galvanized. All wear parts are hardened. The housing of the actuating drive is made of aluminium, black anodized. The other parts of the actuating drive are made of various materials and they are corrosion protected.

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.