Datasheet
Valve positioner
SP/SPE

Si-805 EN

Edition: 2020-04

- **High accuracy**
- **High capacity**
- **Clear visual position indication**
- **Good resistance to vibration**
- **Easy setting**



Type SP405	**Pneumatic**
Type SPE405	**Electro-pneumatic**

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Product Information

The Somas pneumatic positioner type SP405 (20 – 100 kPa)
and the electro-pneumatic type SPE405 (4 – 20 mA) are developed to meet the demands from the process industry.

The Somas positioners are intended for a rotary motion up to 90°.

They are developed for quarter turn actuators and valves but can easily be adapted for actuators with a linear motion.

A number of different cam discs are available to cover various signal ranges, angles of rotation and valve characteristics. All cams discs are for a rotary motion of 60°-90°. Other types of cam discs on request.

Function

SP405 (Pneumatic type)

A pneumatic input signal (20-100 kPa bar*) acts on a diaphragm (41) and via the balance arm (46) the pilot valve (40) is controlled. When the input signal increases, the pilot valve distributes supply air to one side of the piston while the other side is vented. The cam disc (32), which is adjustable to the shaft (26), transmits the rotary motion of the actuator to the feed-back arm (35). The feed-back arm acts on the feed-back spring (53) and when there is a balance between the force from the diaphragm and the force from the feed-back spring, a new balanced position is established.

Range adjustment is done with the adjustment screw (7). The zero-point can be adjusted from the outside by the screw (50).

* 20-100 kPa = 0.2-1 bar = 3-15 psi

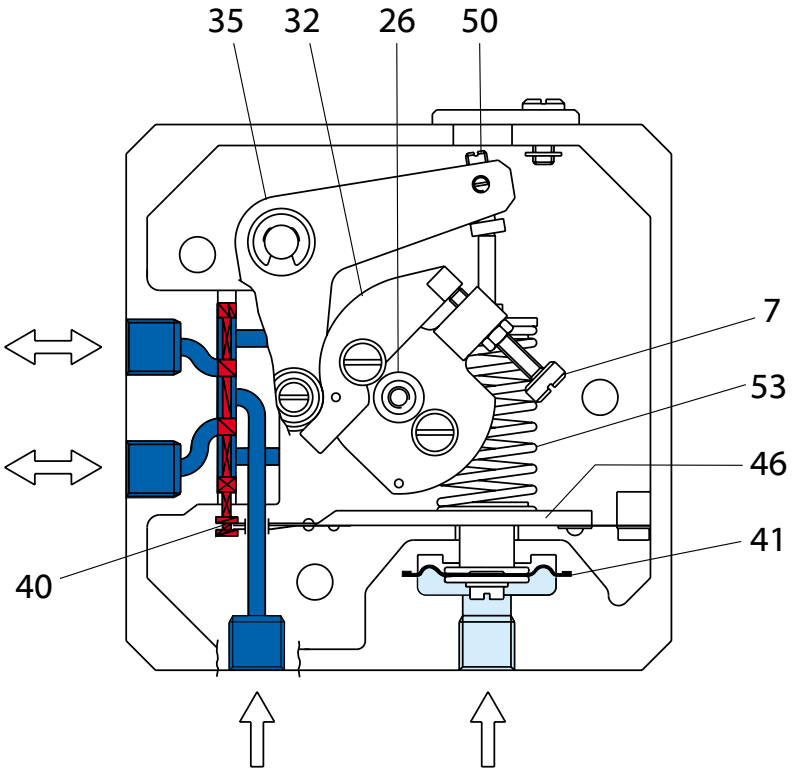


Fig.1 SP405

Function

SPE405 (Electro-pneumatic type)

The function of the SPE405 is based upon the pneumatic positioner which has been fitted with an I/P-converter. The converter is housed in a separate box on the pneumatic part.

Function of the I/P-converter

The electric input signal 4-20 mA goes to the coil (117) and creates a magnetic force which influences the flapper (106). With an increasing input signal the flapper moves closer to the nozzle (113) and the pressure acting on the diaphragm (41) increases.

The adjustment of range and zero is performed in the same way as for SP405. Range adjustment is done with the adjustment screw (7). The zero-point can be adjusted from the outside by the screw (50).

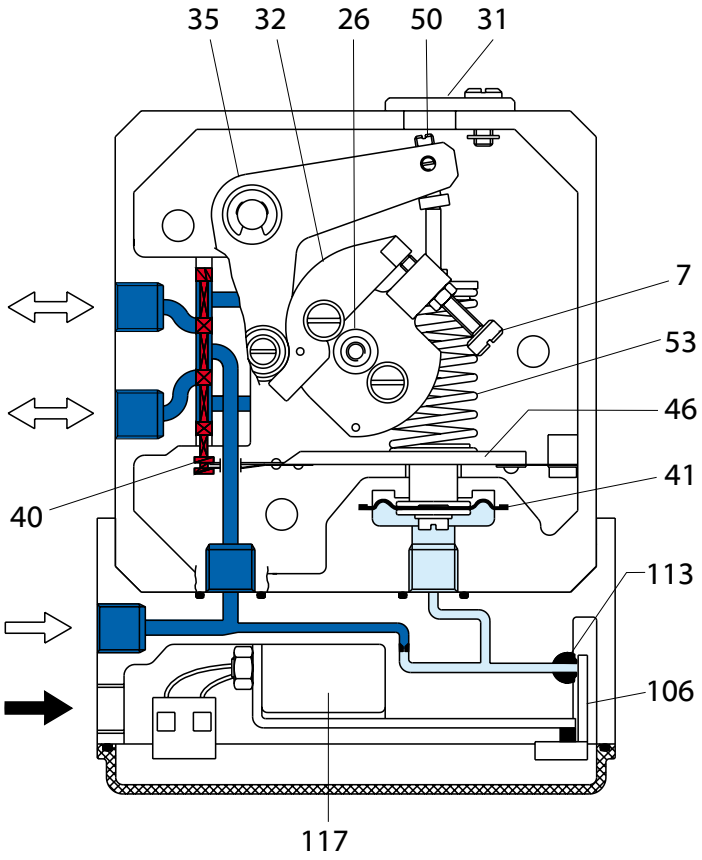


Fig.2 SPE405

Installation

Rotary motion

The transmission of the rotary motion between actuator and positioner is of a new design. No extra parts are needed for mounting the positioner SP/SPE405 on the actuator type A.

Mounting on a standard actuator

A mounting block is used as a standard solution to mount the positioner to the actuator. When the mounting block is used a lower type of driver is required.
The block is fitted to the bottom side of the positioner with screws and mounted on the actuator by using guide pins on the actuator cover. (Nuts are secured to avoid that they get lost when changing i.e. a positioner).

See data sheet Si-806 for additional mounting block information.

Setting

The setting of range is done with the adjustment screw (7).
The zero-point can easily be adjusted from the outside by means of a screwdriver on screw (50).

To reach the zero-point screw the cover (31) has to be opened (see the manual Mi-805).

Tubing

The tubing between positioner and actuator is to be made with plastic tubes.

Stainless steel tubing is available as an option.

Material specification

Detail	Material
Housing	Aluminium, Duasolid painted
Cover	Polycarbonate
Balance arm	Stainless steel
Feedback arm	Aluminium
Cam disc	Stainless steel
Feed-back spring	Spring steel, chromated
Pilot valve	Stainless steel
Pilot valve ViB5	High-strength stainlesssteel [2]
Diaphragm	Silicone rubber

Ordering example

Positioner type SPE405
Characteristic: Linear
Control signal: 4-20 mA
For actuator type…

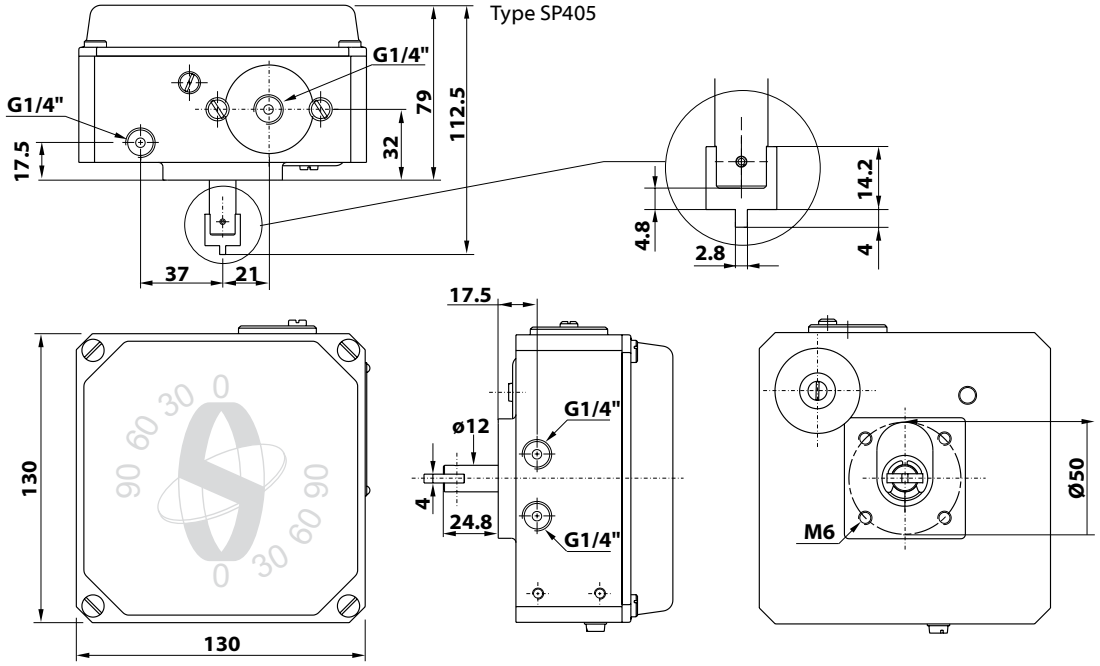
Technical specification

		SP405	SPE405
Control signal	Standard	20-100 kPa	4 - 20 mA
Control signal	Split range	20-60 kPa 60-100 kPa	4 - 12 mA 12 - 20 mA
Air consumption	(at balance and 6 bar supply pressure)	max 30 Nl/min	max 35 Nl/min
Air capacity	(at 6 bar supply pressure)	450 Nl/min approx.	ca. 450 Nl/min approx.
Max voltage drop		–	8,6 V at 20 mA
Cam discs	Linear	0 - 90°	0 - 90°
Cam discs	Equal percentage	0 - 60°, 0 - 90°	0 - 60°, 0 - 90°
Connections		G 1/4"	G 1/4"
Supply pressure		4-8 bar	4-8 bar
Ambient temperature		-40° to +100° C	-40° to +100° C
Hysteresis		± 0,5 % [1]	± 0,5 % [1]
Repeatability		< 0,5 % [1]	< 0,5 % [1]
Input resistance		–	430 Ohm
Weight		1,5 kg	2,3 kg
Supply air		According to ISO 8573-1 Class 3	According to ISO 8573-1 Class 3
Protection class		–	Equivalent to IP65

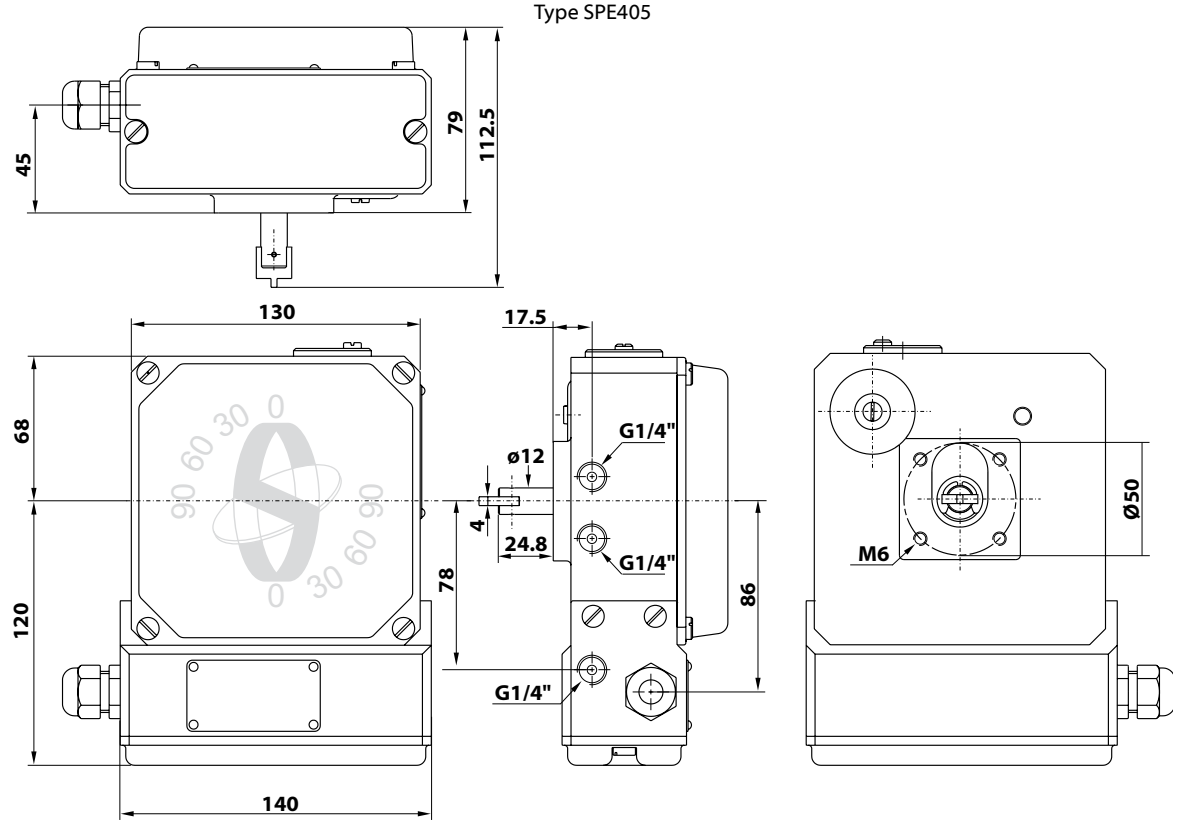
[1] Of chosen control signal
[2] For applications where the vibration speed of the valve positioner exceeds 40 mm / second

Dimensions

Type SP405



Type SPE405



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