

T 5840 EN

Type 2780-1 and Type 2780-2 Pneumatic Actuators



Application

Versatile actuators for use in heating, ventilation and air-conditioning systems as well as for mechanical engineering.

Actuator area	120 cm²
Rated travel	6, 12 or 15 mm



Fig. 1: Type 2780-1 Actuator



Fig. 2: Type 2780-2 Actuator

Special features

The Type 2780-1/-2 Pneumatic Actuators are diaphragm actuators with internal compression springs. They are suitable for mounting on SAMSON Type 3213 and Type 3222 Globe Valves as well as Type 3226 and Type 3260 Three-way Valves.

The actuators have the following special features:

- Housing made of die-cast aluminum
- Easily reversible direction of action
- Integral positioner attachment (Type 2780-2)
As a result, no external piping is required, regardless of the actuator's direction of action and the positioner.

Versions

- **Type 2780-1** (Fig. 1) · Pneumatic actuator
- **Type 2780-2** (Fig. 2) · Pneumatic actuator for integral positioner attachment

Principle of operation

The pneumatic actuator is operated by the forces acting on the diaphragm. The actuator spring force acts from the one side and the force of the signal pressure $F = p_{st} \cdot A$ on the other side. A represents the actuator area and p_{st} the signal pressure. If the signal pressure changes causing the force on the diaphragm to change as well, the actuator stem moves. The actuator's direction of action depends on how the springs are arranged in the actuator.

Depending on which fail-safe action is to be used for the valve when the air supply fails, the springs in the actuator are installed either in the top or in the bottom diaphragm chamber (see Fig. 3 and

Fig. 4). In both cases, the signal pressure is applied to the other diaphragm chamber.

The signal pressure connections of the Type 2780-1 Actuator are integrated in the housing for both fail-safe actions. It is not possible to attach a positioner. A positioner can be directly attached to the Type 2780-2 Actuator. In this case, the signal pressure is routed over internal ducts to the corresponding diaphragm chamber for both fail-safe actions. The signal pressure routing is determined by a switchover plate installed depending on the fail-safe action of the actuator and the positioner's direction of action.

Direction of action

Actuators are available with the following directions of action:

- **Actuator stem extends (FA):** The springs cause the actuator stem to move to the lower end position when the diaphragm is relieved of pressure or when the supply air fails.
- **Actuator stem retracts (FE):** The springs cause the actuator stem to retract when the diaphragm is relieved of pressure or when the supply air fails.

Fail-safe action

i Note

The listed fail-safe actions apply to SAMSON globe valves.

When the signal pressure is reduced or the air supply fails, the fail-safe position of the control valve depends on whether the springs are installed in the top or bottom diaphragm chamber.

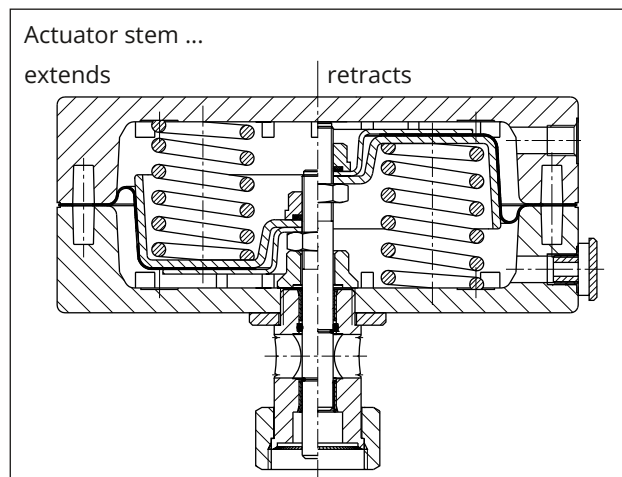


Fig. 3: Type 2780-1 Actuator

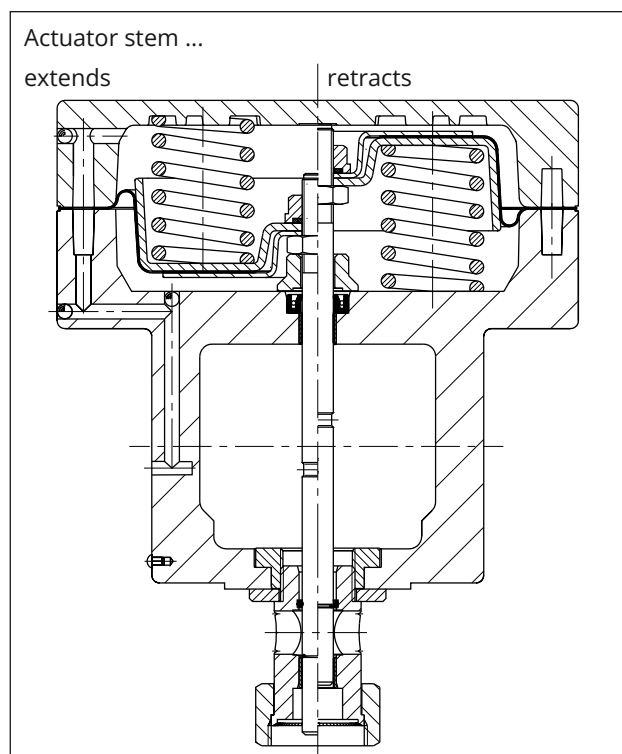


Fig. 4: Type 2780-2 Actuator

Table 1: Technical data for Type 2780-1/-2 Pneumatic Actuators

Nominal size		DN	15 to 50 (G ½ to G 1)
Actuator area		cm ²	120
Max. supply pressure		bar	4
Fail-safe action			Reversible
Rated travel	DN 15 to 25 G ½ to G 1	mm	6
	DN 32 to 50	mm	12
Bench range	Type 2780-1	bar	0.4 to 1
	Type 2780-2	bar	0.4 to 2 ¹⁾
Required supply pressure		bar	2.4
Number of springs			3 ²⁾
Leakage rate		l _n /h	<10
Signal pressure connection (Type 2780-1)			ISO 288/1, G ¼; ½ NPT
Ambient temperature		°C	-35 to +80

¹⁾ See data sheets of control valves for further signal pressure ranges

²⁾ Six springs with 0.4 to 2 bar signal pressure range and 12 mm travel

Table 2: Materials for Type 2780-1/-2 Pneumatic Actuators

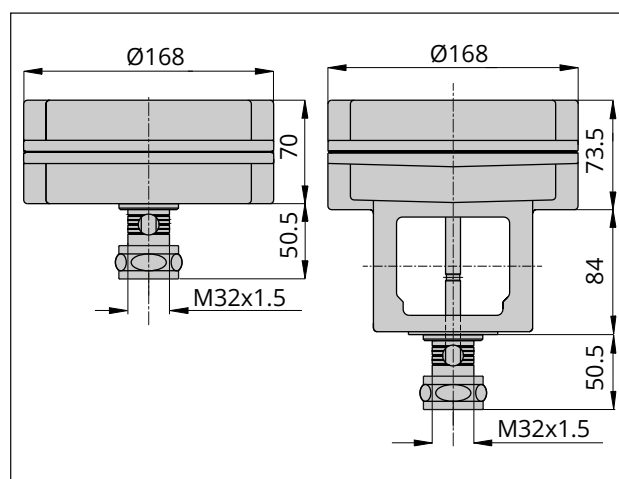
Housing ¹⁾	Aluminum GD-ALSi12
Diaphragm	NBR
Springs ¹⁾	Spring wire C
External bolts	Chromated steel
Bushing	CW617N (CuZn40Pb)

¹⁾ Not painted or surface treated

Table 3: Weights for Type 2780-1/-2 Pneumatic Actuators

Type 2780-1-1	kg	2
Type 2780-1-2	kg	3.2

Dimensions

**Fig. 5:** Type 2780-1 (left) and Type 2780-2 (right) · Dimensions in mm

Ordering text

Type ... Actuator	2780-1 2780-2 (for integral positioner attachment)
Rated travel	6, 12 or 15 mm
Direction of action	Actuator stem extends (FA) Actuator stem retracts (FE)
Bench range	... bar
Signal pressure connection	G 1/8/1/8 NPT