

# Type 3372 Electropneumatic Actuator

SAMSON

## Application

Electropneumatic linear actuators for attachment to Type 3214 and Type 3260 Valves as well as Series V2001 Valves

|                      |                                   |
|----------------------|-----------------------------------|
| <b>Rated travel</b>  | <b>15 and 30 mm</b>               |
| <b>Actuator area</b> | <b>120 and 350 cm<sup>2</sup></b> |



The Type 3372 Electropneumatic Actuator is available in the following versions:

- Version **with integrated i/p converter**, 120 cm<sup>2</sup> actuator area and 15 mm rated travel (Fig. 1)
- Version **with Type 3725 Positioner (direct attachment)**, 120 cm<sup>2</sup> actuator area and 15 mm rated travel (Fig. 2)
- Version **with Type 3725 Positioner (direct attachment)**, 350 cm<sup>2</sup> actuator area and 15 or 30 mm rated travel (Fig. 3)

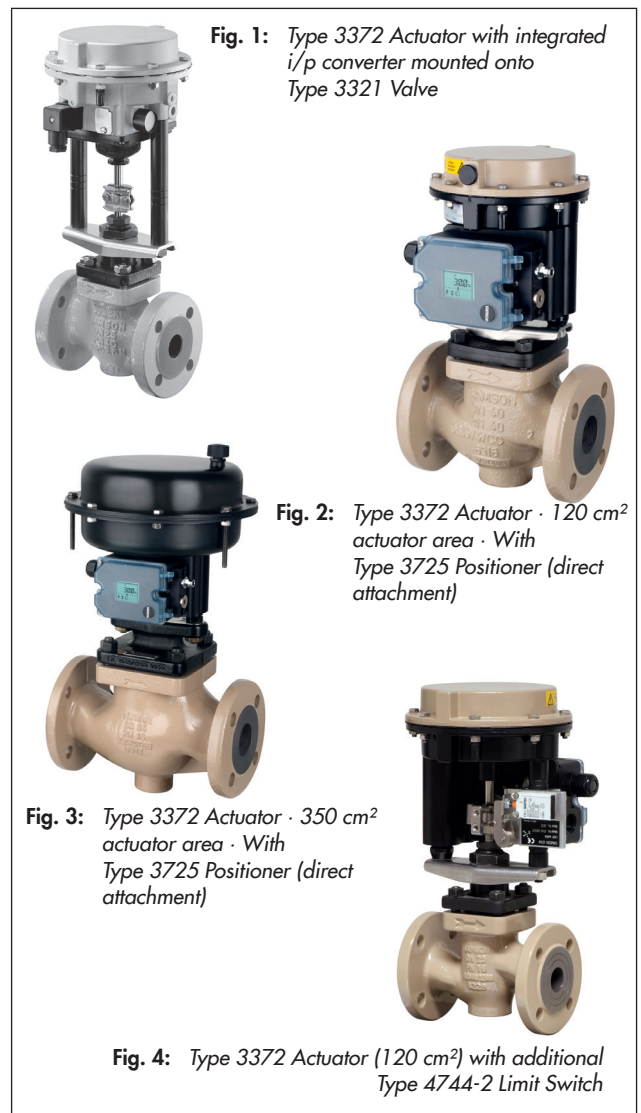
The actuators are suitable for attachment to Series V2001 Valves (e.g. Type 3321, Type 3323, Type 3531, Type 3535) as well as Type 3214 and Type 3260 Valves. The actuators mainly consist of two diaphragm cases, a rolling diaphragm and internal springs. The Type 3372 Electropneumatic Actuator is controlled by a 4 to 20 mA signal. For throttling service, an i/p converter is integrated into the actuator or a Type 3725 Positioner is mounted to the rod-type yoke using a support element.

## Further versions

- **Permissible operating temperatures from -35 to +90 °C**  
Only when a positioner is mounted
- **Mechanically adjustable limit stop** · Only when a positioner is mounted and for 120 cm<sup>2</sup> actuators
- **Handwheel** · Only when a positioner is mounted and for 120 cm<sup>2</sup> actuators
- **Explosion protection** for a mounted Type 3725 Positioner  
II 2G Ex ia IIC T4 according to ATEX, intrinsically safe  
Ex ia IIC T4 according to CSA Group, 1Ex ia IIC T4 Gb X  
according to GOST

## Accessories

- **Type 4744-2 Limit Switch** (Fig. 4) · With explosion protection II 2G Ex db IIC T6-T5 and degree of protection IP 66  
A clamping plate can be used to mount it · See Data Sheet  
▶ T 8367



### Principle of operation (actuator with integrated i/p converter)

The electric control signal issued by the controller as a reference variable from 4 to 20 mA is transmitted to the i/p converter where it is converted into a proportional pressure signal. The pressure signal creates a force that acts on the measuring diaphragm. This force is then compared with the force of the range spring. The movement of the measuring diaphragm is transmitted by the lever to the force switch, and finally a corresponding signal pressure is produced.

A change in input signal causes the actuator stem to move to the position determined by the reference variable. The flow rate through the valve changes accordingly.

### Principle of operation (actuator with mounted positioner)

Details on principle of operation are described in the Data Sheet ▶ T 8394 for Type 3725 Positioner.

### Tight-closing function

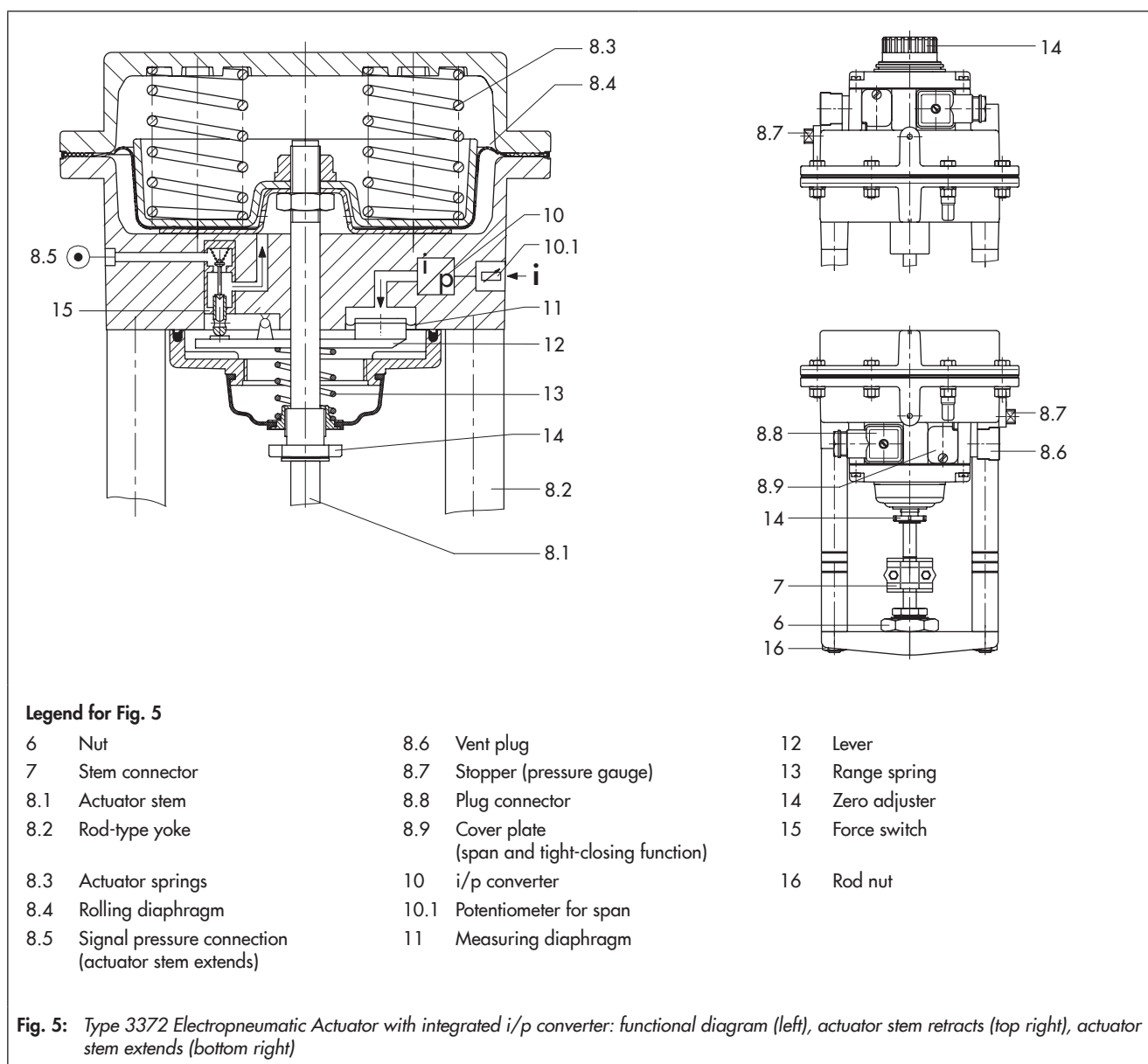
The electropneumatic actuator is completely filled with air or vented as soon as the reference variable falls below or exceeds a certain value.

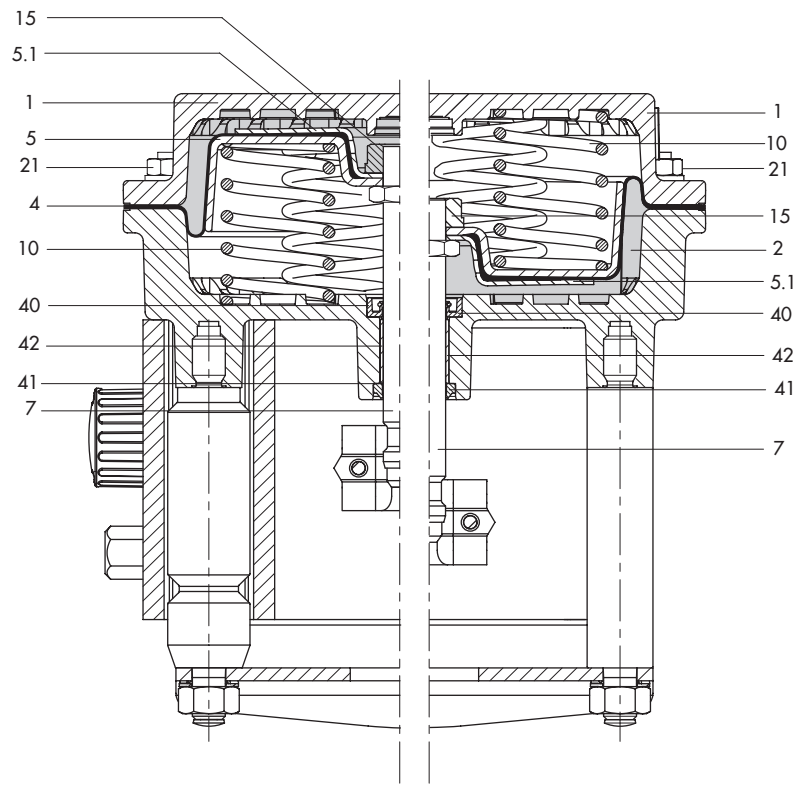
### Actuator stem extends (FA)

When the reference variable falls below the switching point of 4.08 mA, the actuator is fully vented. This causes a mounted globe valve to close. In three-way valves, port **B** is closed when the valve is used for mixing service and port **A** is closed when the valve is used for diverting service.

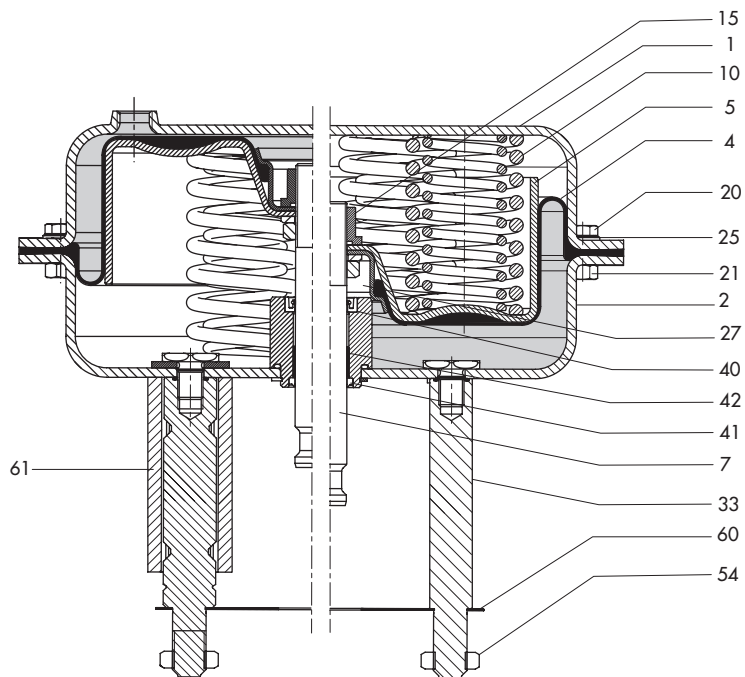
### Actuator stem retracts (FE)

When the reference variable exceeds the switching point of 19.95 mA, the actuator is filled with air. This causes a mounted globe valve to close. In three-way valves, port **B** is closed when the valve is used for mixing service and port **A** is closed when the valve is used for diverting service.





**Fig. 6:** Type 3372 Electropneumatic Actuator with 120 cm<sup>2</sup> actuator area for the direct attachment of a Type 3725 Positioner







**Fig. 7:** Type 3372 Electropneumatic Actuator with 350 cm<sup>2</sup> actuator area for the direct attachment of a Type 3725 Positioner

**Legend for Fig. 6 and Fig. 7**

|     |                 |    |                   |    |                      |
|-----|-----------------|----|-------------------|----|----------------------|
| 1/2 | Diaphragm case  | 20 | Hexagon bolt      | 41 | Wiper ring           |
| 4   | Diaphragm       | 21 | Hexagon nut       | 42 | Plain bearing        |
| 5   | Diaphragm plate | 25 | Washer            | 54 | Hexagon nut (for 33) |
| 7   | Actuator stem   | 27 | Compressor        | 60 | Plate                |
| 10  | Spring          | 33 | Rod               | 61 | Support element      |
| 15  | Collar nut      | 40 | Radial shaft seal |    |                      |

**Table 1: Technical data**

**Table 1.1: Electric data for Type 3372**

| Type 3372   | With integrated i/p converter  | With Type 3725 Positioner (direct attachment) <sup>1)</sup>                                   |                     |
|---|--|---|---------------------|
| Actuator area   | 120 cm <sup>2</sup>  | 120 cm <sup>2</sup>   | 350 cm <sup>2</sup> |
| Rated travel  | 15 mm  | 15 mm   | 15 mm    30 mm      |
| Function (mounted device)   | Conversion of a DC signal into a pneumatic output signal for measuring and control tasks | Electropneumatic positioner with self-calibrating, automatic adaptation to valve and actuator |                     |
| Reference variable  | 4 to 20 mA (reverse polarity protection)   | 4 to 20 mA (reverse polarity protection)  |                     |
| Split-range operation   | -  | 4 to 11.9 mA and 12.1 to 20 mA  |                     |
| Static destruction limit  | <-2 V or >+ 7 V  | ±33 V   |                     |
| Minimum current   | 3.6 mA   | 3.8 mA  |                     |
| Load impedance  | ≤7 V (300 Ω at 20 mA)  | Max. 6.3 V  |                     |
| Span adjustment   | 25 % of travel range using potentiometer   | Self-adjusting  |                     |
| Direction of action   | Increasing/increasing, fixed   | Adjustable: increasing/increasing or increasing/decreasing                                    |                     |
| Tight-closing function  | Stem extends: deactivation at ≤4.08 mA (≤0.5 %)  | w < 1 % and w > 99 %  |                     |
|   | Stem retracts: activation at ≥19.95 mA (≥99.5 %)   |   |                     |
| Operation   | Can be deactivated using a jumper  | Can be individually activated or deactivated using capacitive keys (P9 or P10)                |                     |
| Hysteresis  | ≤1 %   | ≤0.3 %  |                     |
| Variable position   | ≤7 %   | -   |                     |
| Switching accuracy  | 0.14 mA  | -   |                     |
| Air consumption in steady state   | When w = 100 %:<br>6 bar ≤200 l <sub>n</sub> /h<br>4 bar ≤160 l <sub>n</sub> /h          | ≤100 l <sub>n</sub> /h with a supply pressure up to 6 bar and a signal pressure of 0.6 bar    |                     |
| Temperature range <sup>2)</sup>   | -30 to +70 °C  | -25 to +80 °C <sup>5)</sup>   |                     |
| Ex approvals  |  |   |                     |
| ATEX<br>      | No.  | PTB 99 ATEX 2049  |                     |
|   | Date   | 1999-07-06  |                     |
|               | Type of protection   | II 2G Ex ia IIC T6  |                     |
|   | No.  | 2703735 X   |                     |
| CSA Group<br> | Date   | 2014-06-03  |                     |
|   | Type of protection   | -<br>Ex ia IIC T4;<br>Class I, Zone 0, AEx ia IIC T4;<br>Class I, Div. 1, Groups A, B, C & D  |                     |
| GOST<br>      | No.  | RU C-DE.GB08.B.00697  |                     |
|   | Date   | 2014-12-15  |                     |
|   | Valid until  | 2019-12-14  |                     |
|   | Type of protection   | 1EX ia IIC T4 Gb X  |                     |
| Degree of protection  | IP 54 or IP 65 <sup>3)</sup>   | IP 66 <sup>4)</sup>   |                     |
| Electropneumatic or pneumatic connection  | Connected inside actuator  | Separate from actuator (in the positioner)  |                     |
| Electromagnetic compatibility   | Requirements according to EN 61000-6-2 and EN 61000-6-3                                  | Complying with EN 61000-6-2, EN 61000-6-3 and NAMUR Recommendation NE 21                      |                     |
| Display   | Without  | With  |                     |
| Initialization  | Manual   | Automatic   |                     |
| Operation   | Using screws   | Using capacitive keys   |                     |
| Zero calibration  | Without  | Automatic<br>(activated by P15 or P16)  |                     |
| Associated documentation  | ▶ EB 8313-1  | ▶ EB 8313-3, ▶ EB 8394 or ▶ T 8394  |                     |

<sup>1)</sup> Versions with Type 3730 or Type 3731 Positioner on request


<sup>2)</sup> Observe temperature range of mounted devices (positioner etc.).

<sup>3)</sup> IP 65 only when the vent plug is replaced by a filter check valve (order no. 1790-7408)

<sup>4)</sup> Other ratings possible when a Type 373x-x Positioner is mounted. See corresponding mounting and operating instructions.

<sup>5)</sup> Maximum -35 to +90 °C with Type 373x-x Positioner and metal cable glands

**Table 1.2:** Further technical data for Type 3372

| Type 3372  | With integrated i/p converter |               |              |              | With Type 3725 Positioner (direct attachment) |               |              |              |                     |              |               |              |
|--|-------------------------------|---------------|--------------|--------------|---|---------------|--------------|--------------|---------------------|--------------|---------------|--------------|
| Actuator area  | 120 cm <sup>2</sup>           |               |              |              | 120 cm <sup>2</sup>                           |               |              |              | 350 cm <sup>2</sup> |              |               |              |
| Rated travel   | 15 mm                         |               |              |              | 15 mm   |               |              |              | 15 mm               |              | 30 mm         |              |
| <b>Pneumatic data</b>  |                               |               |              |              |   |               |              |              |                     |              |               |              |
| Tight-closing function   | Stem retracts                 | Stem retracts | Stem extends | Stem extends | Stem retracts                                 | Stem retracts | Stem extends | Stem extends | Stem retracts       | Stem extends | Stem retracts | Stem extends |
| Bench range  | 0.4 to 1.4                    | 1.4 to 2.3    |              | 2.1 to 3.3   | 0.4 to 1.4                                    | 1.4 to 2.3    |              | 2.1 to 3.3   | 1.5 to 2.1          | 2.1 to 2.7   | 1.5 to 2.7    | 2.2 to 3.8   |
| Supply pressure  | Max. 6 bar                    | Max. 4 bar    |              | Max. 6 bar   | Max. 6 bar                                    |               |              |              | Max. 6 bar          |              |               |              |
| <b>Materials</b>   |                               |               |              |              |   |               |              |              |                     |              |               |              |
| Actuator housing   | Aluminum, powder paint coated |               |              |              | Aluminum, powder paint coated                 |               |              |              | 1.0332              |              |               |              |
| Diaphragm  | NBR                           |               |              |              | NBR   |               |              |              | NBR                 |              |               |              |
| Actuator stem  | 1.4305                        |               |              |              | 1.4305  |               |              |              | 1.4401/1.4404       |              |               |              |
| <b>Weight (without positioner)</b>   |                               |               |              |              |   |               |              |              |                     |              |               |              |
| kg (approx.)   | 3.7                           |               |              |              | 3.3   |               |              |              | 15                  |              |               |              |
| <b>Attachment</b>  |                               |               |              |              |   |               |              |              |                     |              |               |              |
|  | Form B                        |               |              |              | Form B or Form C<br>(see Table 2)             |               |              |              | Form C              |              |               |              |
| <b>Compliance</b>  |                               |               |              |              |   |               |              |              |                     |              |               |              |
|  |                               |               |              |              |   |               |              |              |                     |              |               |              |

**Table 1.3:** Technical data of Type 4744-2 Limit Switch

| Type 4744-2 Limit Switch |  |
|--------------------------|--|
| Travel range             | 15 mm  |
| Permissible load         | AC voltage: 250 V/5 A<br>DC voltage: 250 V/0.4 A |
| Temperature range        | -20 to +60 °C                                    |
| Degree of protection     | IP 66  |
| Explosion protection     | Flameproof enclosure II 2G Ex db IIC T6-T5       |
| Weight, approx.          | 0.4 kg   |
| Associated documentation | ► T 8367   |

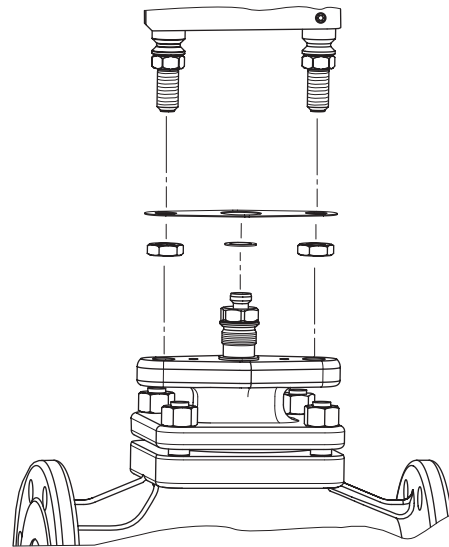
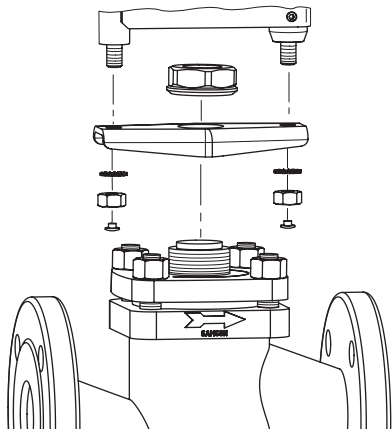
## Mounting types

There are two types of mounting depending on the valve/actuator combination: mounting using a crossbeam or mounting on rods. When the actuator is mounted to the valve using a crossbeam (Form B, Fig. 8), the actuator is fastened to the valve bonnet using a central nut.

When the actuator is mounted on rods (Form C, Fig. 9) the actuator is connected to the valve bonnet using rods. In this case, a crossbeam is not required for mounting the actuator.

**Table 2:** Mounting types (see Fig. 8 and Fig. 9)

|                | Version         | Integrated i/p converter | Type 3725 Positioner (direct attachment) |                     |                     |
|----------------|-----------------|--------------------------|--|---------------------|---------------------|
|                | Actuator area   |                          | 120 cm <sup>2</sup>                      | 120 cm <sup>2</sup> | 350 cm <sup>2</sup> |
|                | Travel          | 15 mm                    | 15 mm                                    | 15 mm               | 30 mm               |
| Type ... Valve | Nominal size DN |                          |  |                     |                     |
| 3321           | 15 to 50        | Form B                   | Form B                                   | -                   | -                   |
| 3321           | 65 to 100       | -                        | Form C                                   | Form C              | -                   |
| 3321           | 100             | -                        | -  | -                   | Form C              |
| 3323           | 15 to 50        | Form B                   | Form B                                   | -                   | -                   |
| 3323           | 65 to 80        | -                        | Form C                                   | Form C              | -                   |
| 3323           | 100             | -                        | -  | -                   | Form C              |
| 3531           | 15 to 80        | Form B                   | Form B                                   | -                   | -                   |
| 3535           | 15 to 80        | Form B                   | Form B                                   | -                   | -                   |
| 3214           | 65 to 100       | Form B                   | Form B                                   | -                   | -                   |
| 3214           | ≥ 125           | -                        | -  | -                   | On request          |
| 3260           | 65 to 80        | Form B                   | Form B                                   | -                   | -                   |
| 3260           | ≥ 100           | -                        | -  | -                   | On request          |



**Fig. 8:** Form B: mounting using crossbeam

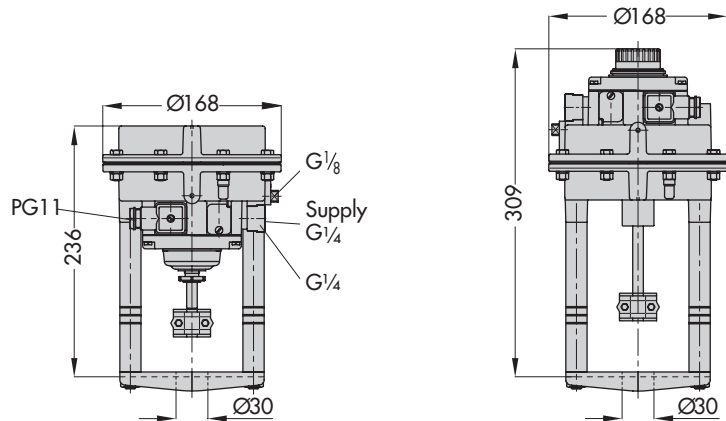
**Fig. 9:** Form C: mounting on rods

**Table 3:** Bench ranges of Type 3372 Actuator

| Actuator diaphragm area [cm <sup>2</sup> ] | Rated travel [mm] | Travel volume at rated travel [cm <sup>3</sup> ] | Bench range [bar] (signal pressure range at rated travel) | Additional possible spring pre-loading | No. of springs | Fail-safe action: actuator stem extends |                                   | Fail-safe action: actuator stem retracts                       |      |      |      |       |
|--|-------------------|--|---|--|----------------|---|-----------------------------------|--|------|------|------|-------|
|  |                   |  |   |  |                | Spring force at 0 mm travel [kN]        | Spring force at rated travel [kN] | Spring force [kN] at rated travel and supply pressure [bar] of |      |      |      |       |
|  |                   |  |   |  |                |   |                                   | 2  | 3    | 4    | 5    | 6     |
| 120  | 15                | 1800   | 0.4 to 1.4  | -                                      | 4              | 0.5                                     | 1.7                               | 0.7  | 1.9  | 3.1  | -    | -     |
|  |                   | 1800   | 1.4 to 2.3  |  | 8              | 1.7                                     | 2.8                               | -  | 0.8  | 2    | 3.2  | 4.4   |
|  |                   | 1800   | 2.1 to 3.3  |  | 12             | 2.5                                     | 4.0                               | -  | -    | -    | -    | -     |
| 350  | 15                | 5250   | 1.5 to 2.1  | -                                      | 8              | -                                       | -                                 | -  | 3.15 | 6.65 | 6.65 | 6.65  |
|  |                   | 5250   | 2.1 to 2.7  |  | 6              | 7.35                                    | 9.5                               | -  | -    | -    | -    | -     |
|  | 30                | 10500  | 1.5 to 2.7  |  | 8              | -                                       | -                                 | -  | 1.05 | 4.55 | 8.05 | 11.55 |
|  |                   | 10500  | 2.2 to 3.8  |  | 12             | 7.7                                     | 13                                | -  | -    | -    | -    | -     |

**Dimension diagrams** · All dimensions in mm

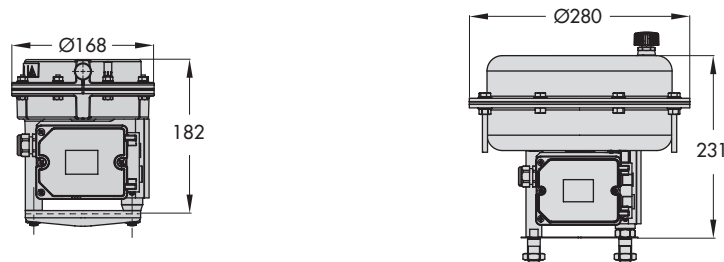
With integrated i/p converter



120 cm<sup>2</sup> actuator area  
(actuator stem extends)

120 cm<sup>2</sup> actuator area  
(actuator stem retracts)

With Type 3725 Positioner (direct attachment)



120 cm<sup>2</sup> actuator area  
(actuator stem retracts/extends)

350 cm<sup>2</sup> actuator area  
(actuator stem retracts/extends)

**Order specifications:**

|                           |  |
|---------------------------|--|
| Electropneumatic actuator | Type 3372  |
| Version                   | With integrated i/p converter<br>With Type 3725 Positioner (direct attachment) |
| Attachment to the valve   | Type ...   |
| Mounting type             | According to Table 2   |
| Actuator area             | 120 or 350 cm <sup>2</sup>   |
| Valve travel              | 15 or 30 mm  |
| Tight-closing function    | Actuator stem extends (FA)<br>Actuator stem retracts (FE)                      |
| Bench range               | According to Table 3   |
| Valve accessories         | Type 4744-2 Limit Switch   |

Specifications subject to change without notice



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