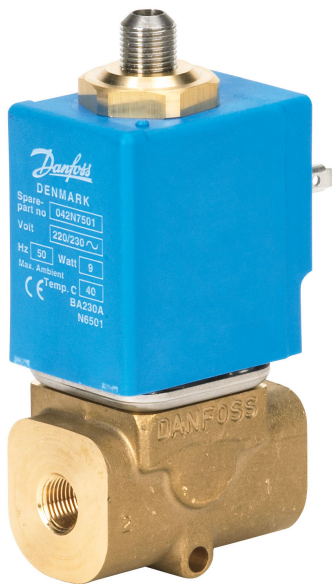


## Data Sheet

Solenoid valve  
Type **EV310B**

Direct-operated 3/2-way solenoid valves for universal use



EV310B covers a wide range of direct-operated 3/2-way solenoid valves for universal use. EV310B is a real robust valve program with high performance and can be used in all kind of tough working conditions. Clip-on coils can not be used on EV310B.

**Features**

- For water, oil, compressed air and similar neutral media
- Screw on coil
- Ambient temperature: Up to 40 °C
- Coil enclosure (cable plug): Up to IP67
- Viscosity: Up to 50 cSt

## 1 Portfolio overview

Table 1: Portfolio overview

| Features                                 | EV310B                                                                            | EV310B MAN                                                                         | EV310B Flange MAN                                                                   |
|------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
|                                          |  |  |  |
| <b>Body material</b>                     | Brass                                                                             | Brass                                                                              | Brass                                                                               |
| <b>DN [mm]</b>                           | 1.5-3.5                                                                           | 2.0                                                                                | 2.0                                                                                 |
| <b>Function</b>                          | NC, NO                                                                            | NC, NO                                                                             | NC                                                                                  |
| <b>Connection</b>                        | G $\frac{1}{8}$ - G $\frac{3}{8}$                                                 | G $\frac{1}{4}$                                                                    | Flange 32x32 mm                                                                     |
| <b>Sealing material</b>                  | FKM                                                                               | FKM                                                                                | FKM                                                                                 |
| <b>Kv [m<sup>3</sup>/h]</b>              | 0.8-0.40                                                                          | 0.15                                                                               | 0.15                                                                                |
| <b>Differential pressure range [bar]</b> | 0-20                                                                              | 0-16                                                                               | 0-16                                                                                |
| <b>Temperature range [°C]</b>            | -10 - 100                                                                         | -10 - 100                                                                          | -10 - 100                                                                           |
| <b>Manual override (MAN)</b>             | No                                                                                | Yes                                                                                | Yes                                                                                 |

## 2 Functions

### 2.1 Function, NC

#### Coil voltage disconnected (closed):

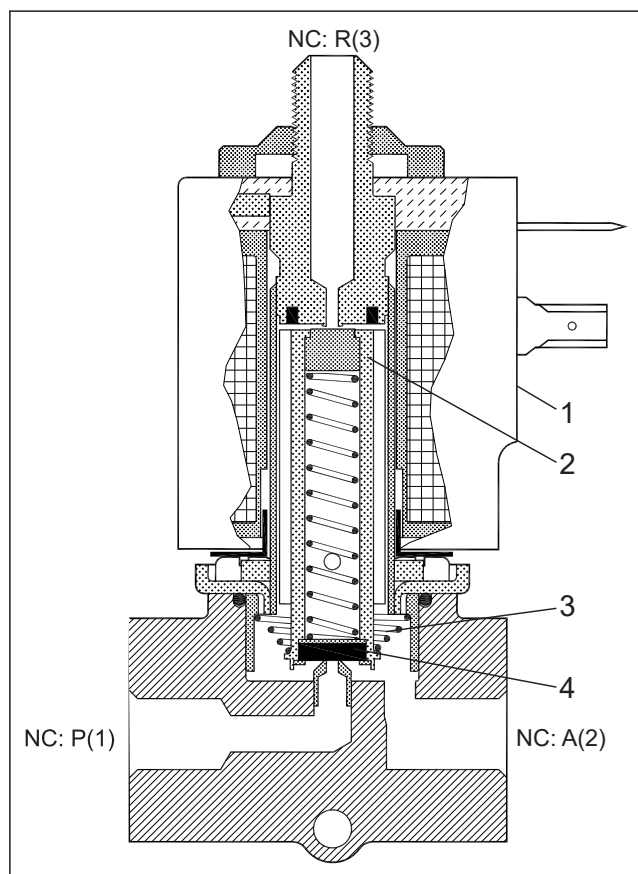
When the voltage to the coil is disconnected, the armature with the valve plates is pressed down by the closing spring and closes the connection between P and A. At the same time, the connection between ports A and R is opened.

The connection between P and A will be closed for as long as the voltage to the coil is disconnected.

#### Coil voltage connected (open):

When voltage is applied, the armature with the valve plates is lifted and closes the connection between A and R. At the same time, the connection between P and A is opened.

The connection between P and A will be open for as long as there is voltage to the coil.



|   |                               |
|---|-------------------------------|
| 1 | Coil                          |
| 2 | Armature                      |
| 3 | Closing spring                |
| 4 | Valve plate                   |
| p | Pressure port (stamped: 1)    |
| A | Application port (stamped: 2) |
| R | Relief port (3)               |

### 2.2 Function, NO

#### Coil voltage disconnected (open):

When the voltage is disconnected, the armature with the valve plates is pressed down by the opening spring and closes the connection between A and R. At the same time, the connection between ports P and A is open.

The connection between P and A will be open for as long as the voltage to the coil is disconnected.

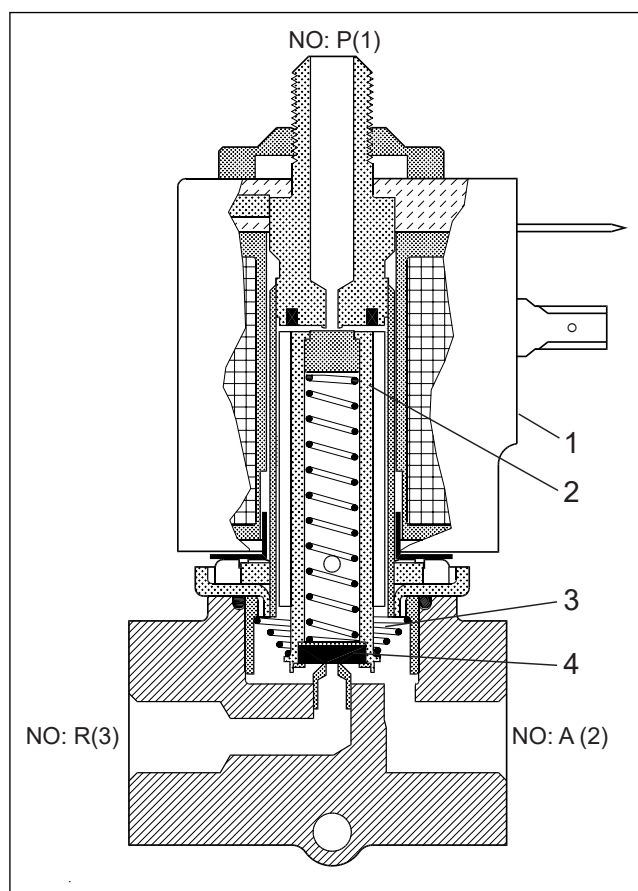
On valves with manual override the connection between P and A can be closed using a closing screw in the valve body.

#### Coil voltage connected (closed):

When voltage is applied to the coil, the armature with the valve plates is lifted and closes the connection between P and A. At the same time, the connection between ports A and R is opened.

## Solenoid valve, type EV310B

The connection between P and A will be closed for as long as there is voltage to the coil.



|   |                               |
|---|-------------------------------|
| 1 | Coil                          |
| 2 | Armature                      |
| 3 | Opening spring                |
| 4 | Valve plate                   |
| p | Pressure port (1)             |
| A | Application port (stamped: 2) |
| R | Relief port (stamped: 3)      |

### 2.3 Function, NC FL MAN

#### Coil voltage disconnected (open):

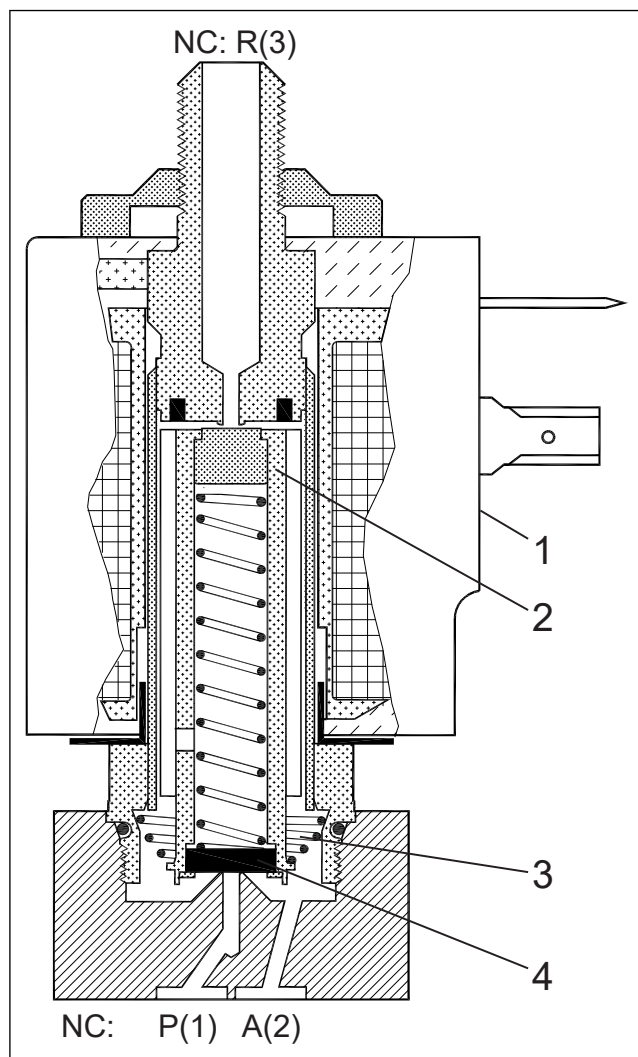
When the voltage to the coil is disconnected, the armature, with the valve plates, is pressed down by the closing spring and closes the connection between P and A. At the same time, the connection between ports A and R is opened. The connection between P and A will be closed for as long as the voltage to the coil is disconnected. On valves with manual override the connection between P and A can be opened using an opening screw in the valve body.

#### Coil voltage connected (closed):

When voltage is applied, the armature with the valve plates is lifted and closes the connection between A and R. At the same time, the connection between P and A is opened.

The connection between P and A will be open for as long as there is voltage to the coil.

Solenoid valve, type EV310B

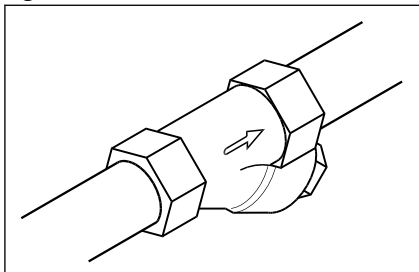


|   |                               |
|---|-------------------------------|
| 1 | Coil                          |
| 2 | Armature                      |
| 3 | Closing spring                |
| 4 | Valve plate                   |
| p | Pressure port (stamped: 1)    |
| A | Application port (stamped: 2) |
| R | Relief port (3)               |

### 3 Applications

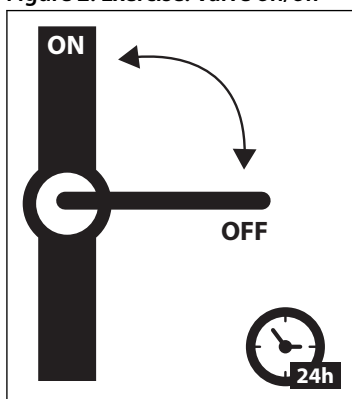
It is recommended to use a filter in front of the valve. Recommended filter 50 mesh (297 microns).

Figure 1: Filter



In water applications, exercise the valves at least once every 24 hours, meaning change the state of the valve. The valve exercise will minimize the risk of the valve sticking due to calcium carbonate, zinc or iron oxide build-up.

Figure 2: Exercise: Valve on/off



To minimize scaling, and corrosion attack it is recommended that the water passing the valve have the following values:

- Hardness 6 - 18 °dH to avoid scaling (chalk / lime stone build up)
- Conductivity 50 – 800 µS/cm to avoid brass dezincification and corrosion
- Above 25 °C media temperature avoid stagnant water inside the valve to avoid dezincification and corrosion attack

## 4 Product specification

### 4.1 Technical data

Table 2: Technical data

|                                          |                 |                                                          |
|------------------------------------------|-----------------|----------------------------------------------------------|
| Media                                    | FKM             | For water, oil, compressed air and similar neutral media |
| Media temperature [°C]                   | -10 °C - 100 °C |                                                          |
| Ambient temperature [°C]                 | Up to 40 °C     |                                                          |
| Kv value [m³/h]                          | DN1.5           | 0.08 m³/h                                                |
|                                          | DN2.0           | 0.15 m³/h                                                |
|                                          | DN3.0           | 0.30 m³/h                                                |
|                                          | DN3.5           | 0.40 m³/h                                                |
| Min. Opening differential pressure [bar] | 0 bar           |                                                          |
| Max. Opening differential pressure [bar] | Up to 20 bar    |                                                          |
| Max. working pressure [bar]              | Up to 20 bar    |                                                          |
| Max. test pressure [bar]                 | 50 bar          |                                                          |
| Viscosity [cSt]                          | Max. 50 cSt     |                                                          |

### Differential pressure range

Table 3: Differential pressure range

| Connection<br>ISO228/1 | Orifice size | Max working pressure<br>[bar] | Differential pressure, min. to max |                    |                    |
|------------------------|--------------|-------------------------------|------------------------------------|--------------------|--------------------|
|                        |              |                               | NC/NO<br>[bar]                     | NC/NO MAN<br>[bar] | NC FL MAN<br>[bar] |
| G½                     | 1.5          | 20                            | 0-20                               |                    |                    |
|                        | 2.0          | 16                            | 0-16                               |                    |                    |
|                        | 3.0          | 7                             | 0-7                                |                    |                    |
| G¾                     | 1.5          | 20                            | 0-20                               |                    |                    |
|                        | 2.0          | 16                            | 0-16                               | 0-16               | 0-16               |
|                        | 3.0          | 7                             | 0-7                                |                    |                    |
|                        | 3.5          | 5                             | 0-5                                |                    |                    |
| G¾                     | 2.0          | 16                            | 0-16                               |                    |                    |
|                        | 3.0          | 7                             | 0-7                                |                    |                    |
|                        | 3.5          | 5                             | 0-5                                |                    |                    |

### Time to open/close

Table 4: Time to open/close

| Main type                         | EV310B NC/NO/NC MAN/NO MAN/NC FL MAN |
|-----------------------------------|--------------------------------------|
| Time to open [ms] <sup>(1)</sup>  | 10 – 20                              |
| Time to close [ms] <sup>(1)</sup> | 10 – 20                              |

<sup>(1)</sup> The times are indicative.

### Materials

Table 5: Materials

| Components    | Materials       | Specifications          |
|---------------|-----------------|-------------------------|
| Valve body    | Brass           | W.no. 2.0402            |
| Armature      | Stainless steel | W.no. 1.4105/AISI 430FR |
| Armature tube | Stainless steel | W.no. 1.4306/AISI 304L  |
| Armature stop | Stainless steel | W.no. 1.4105/AISI 430FR |
| Spring        | Stainless steel | W.no. 1.4310 / AISI 301 |
| Seal material | FKM             |                         |

## 4.2 Dimension and weight

Figure 3: Dimension and weight NC / NO / NC MAN / NO MAN

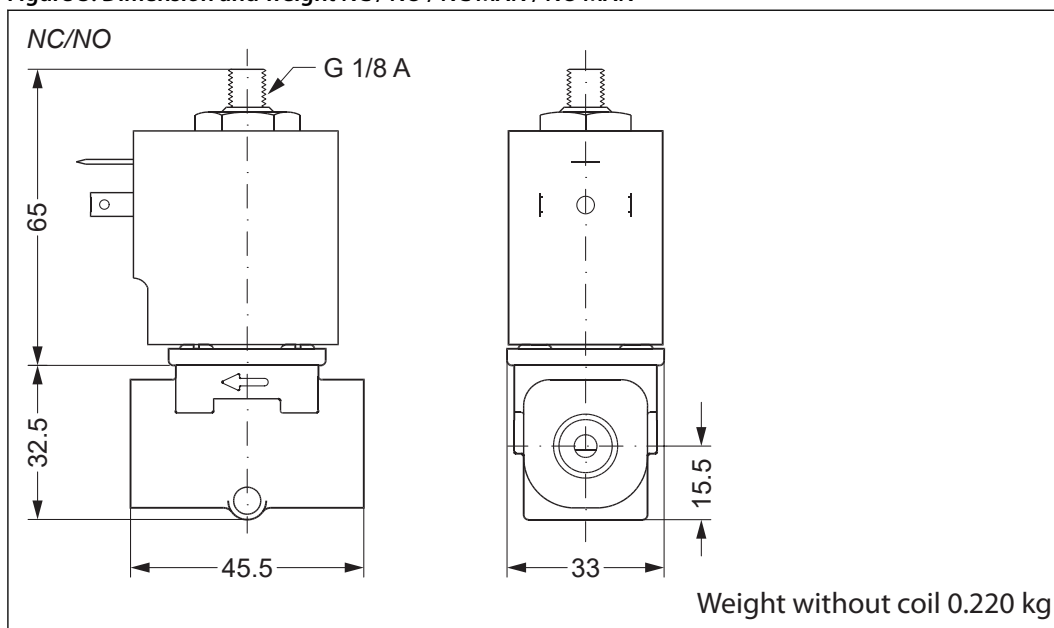
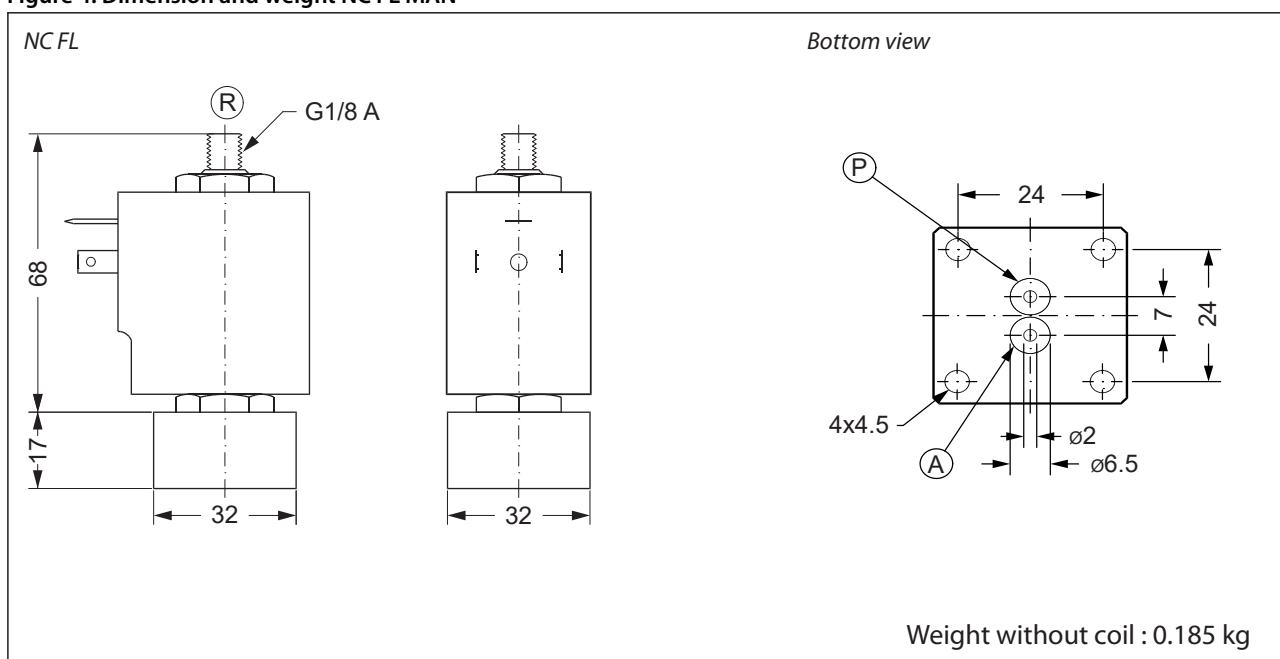


Figure 4: Dimension and weight NC FL MAN

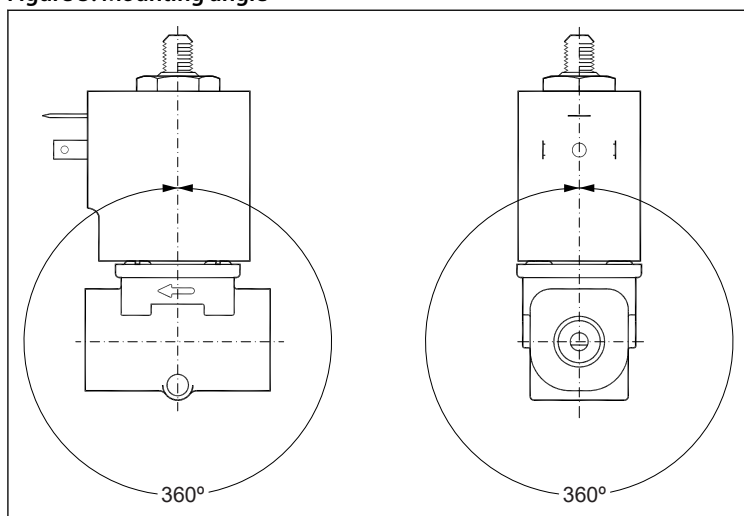


|   |                  |
|---|------------------|
| P | Pressure port    |
| A | Application port |
| R | Relief port      |



### 4.3 Mounting

Figure 5: Mounting angle



## 5 Ordering

### 5.1 Parts program

Table 6: Brass, valve body NC, NO, NC MAN, NO MAN, NC FL MAN

| Connection<br>ISO 228/1 | Orifice | Kv value | Function |          |          |          |           |
|-------------------------|---------|----------|----------|----------|----------|----------|-----------|
|                         | [mm]    | [m³/h]   | NC       | NO       | NC MAN   | NO MAN   | NC FL MAN |
| G 1/8                   | 1.5     | 0.08     | 032U4900 | 032U4926 |          |          |           |
|                         | 2.0     | 0.15     | 032U4901 | 032U4927 |          |          |           |
|                         | 3.0     | 0.30     | 032U4902 |          |          |          |           |
| G 1/4                   | 1.5     | 0.08     | 032U4903 | 032U4929 |          |          |           |
|                         | 2.0     | 0.15     | 032U4904 | 032U4930 | 032U4919 | 032U4944 |           |
|                         | 3.0     | 0.30     | 032U4905 | 032U4931 |          |          |           |
|                         | 3.5     | 0.40     | 032U4906 |          |          |          |           |
| G 3/8                   | 2.0     | 0.15     | 032U4907 | 032U4933 |          |          |           |
|                         | 3.0     | 0.30     | 032U4908 | 032U4934 |          |          |           |
|                         | 3.5     | 0.40     | 032U4909 |          |          |          |           |
| Flange 32x32            | 2.0     | 0.15     |          |          |          |          | 032U4923  |

### 5.2 Accessories

#### Coil

Table 7: Below coil can be used with EV310B

| Coil                                                                                | Type              | Power consumption            | Enclosure                    | Features                                          |
|-------------------------------------------------------------------------------------|-------------------|------------------------------|------------------------------|---------------------------------------------------|
|  | BA / BD, screw on | 9 W AC<br>15 W AC<br>15 W DC | IP00<br>with spade connector | IP20 with protective cap,<br>IP67 with cable plug |

#### Cable plug

Figure 6: Cable plug

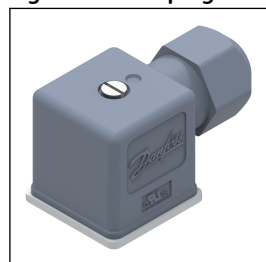


Table 8: Cable plug

| Cable plug size | Description     | Code no  |
|-----------------|-----------------|----------|
| DIN 18          | Cable plug IP67 | 042N1256 |

## Solenoid valve, type EV310B

### Universal electronic multi-timer, type ET20M

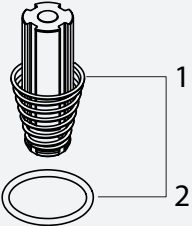
Figure 7: ET20M



| Type   | Voltage [V] | Suitable for coil types    | Code number |
|--------|-------------|----------------------------|-------------|
| BA024A | 24 – 240    | AL, AM, AS, AZ, BA, BD, BB | 042N0185    |

### Spare parts kit

Table 9: Actuator kit, NC and NO

| Type                                                                                | Actuator kit |          |
|-------------------------------------------------------------------------------------|--------------|----------|
|                                                                                     | NC           | NO       |
| EV310B                                                                              | 032U2033     | 032U2035 |
|  |              |          |
| 1. Armature with mounted spring<br>2. O-ring                                        |              |          |

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