

## Data Sheet

Solenoid valve  
Type **EV210A**

Direct-operated 2/2- way solenoid valves for use in industrial machinery



EV210A covers a wide range of small, direct-operated 2/2-way solenoid valves for use in industrial machinery.

The compact design together with the broad range of coils means that EV210A covers a broad variety of industrial applications.

**Features and versions**

- For water, steam, oil, compressed air, aggressive liquids and gases
- Screw on coil
- Ambient temperature: Up to 50 °C
- Coil enclosure: Up to IP65
- EV210A NC and NO versions in brass for neutral media
- EV210A NC stainless steel version for neutral and aggressive liquids and gases

## 1 Portfolio overview

Table 1: Portfolio overview

| Features                                 | EV210A NC                                                                         | EV210A NO                                                                          | EV210A NC                                                                           |
|------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
|                                          |  |  |  |
| <b>Body material</b>                     | Brass                                                                             | Brass                                                                              | Stainless steel                                                                     |
| <b>DN [mm]</b>                           | 1.2-3.5                                                                           | 1.5-3.5                                                                            | 1.2-3.5                                                                             |
| <b>Connection</b>                        | G $\frac{1}{8}$ – G $\frac{1}{4}$                                                 | G $\frac{1}{8}$                                                                    | G $\frac{1}{8}$ – G $\frac{1}{4}$                                                   |
| <b>Sealing material</b>                  | EPDM, FKM                                                                         | FKM                                                                                | FKM                                                                                 |
| <b>Kv [m<sup>3</sup>/h]</b>              | 0.04-0.26                                                                         | 0.06-0.20                                                                          | 0.04-0.26                                                                           |
| <b>Differential pressure range [bar]</b> | 0-30                                                                              | 0-30                                                                               | 0-30                                                                                |
| <b>Temperature range [°C]</b>            | -30-120                                                                           | -10-100                                                                            | -10-100                                                                             |

## 2 Functions

### 2.1 Function NC

#### Coil voltage disconnected (closed):

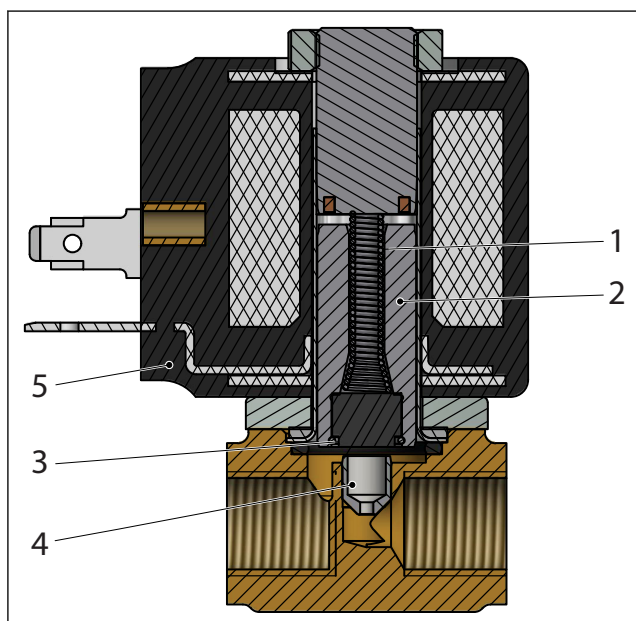
When the voltage is disconnected, the armature (2) with the valve plate (3) is pressed down against the valve orifice (4) by the closing spring (1) and the medium's pressure.

The valve will be closed for as long as the voltage to the coil is disconnected.

#### Coil voltage connected (open):

When voltage is applied to the coil (5), the armature (2) with the valve plate (3) is lifted clear of the valve orifice (4).

The valve is now open for unimpeded flow and will be open for as long as there is voltage to the coil.



|   |                |
|---|----------------|
| 1 | Closing spring |
| 2 | Armature       |
| 3 | Valve plate    |
| 4 | Valve orifice  |
| 5 | Coil           |

### 2.2 Function NO

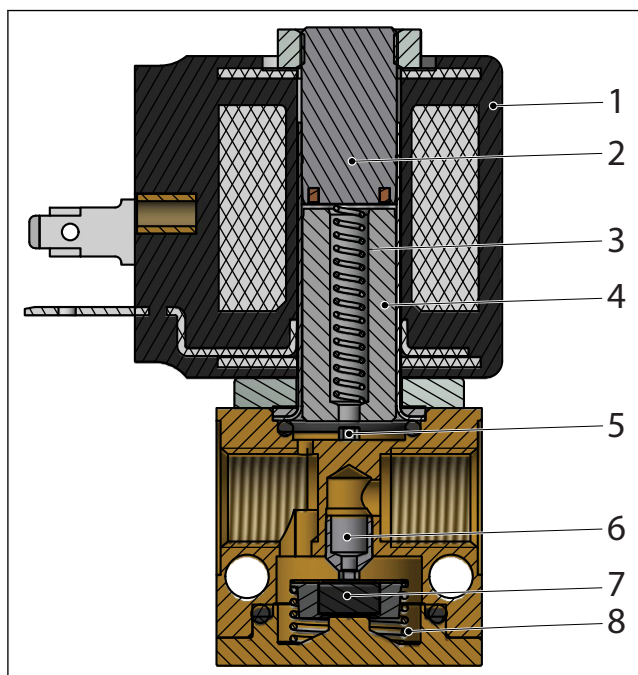
#### Coil voltage disconnected (open):

When the voltage to the coil is disconnected, the valve orifice (6) is open, the opening spring (3) pressing the valve plate (7) clear of the orifice (6) via the armature (4) and the pins (5). The valve will be open for as long as the supply voltage is disconnected.

#### Coil voltage connected (closed):

When voltage is applied to the coil, the armature (4) is drawn up to touch the fixed top (2). The valve plate (7) is pressed against the valve orifice (6) by the closing spring (8). The valve will be closed for as long as there is voltage to the coil.

# Solenoid valve, type EV210A

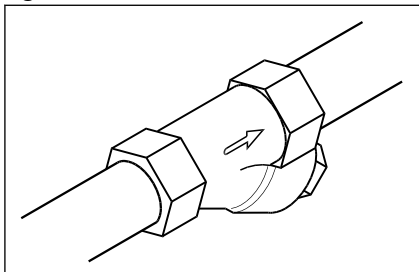


|   |                |
|---|----------------|
| 1 | Coil           |
| 2 | Fixed top      |
| 3 | Opening spring |
| 4 | Armature       |
| 5 | Pins           |
| 6 | Valve orifice  |
| 7 | Valve plate    |
| 8 | Closing spring |

### 3 Applications

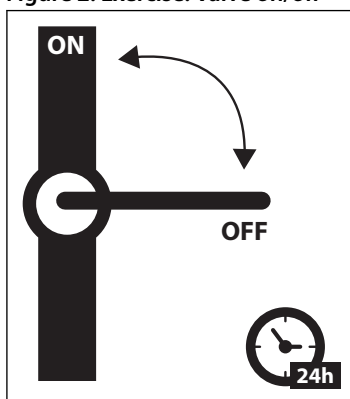
It is recommended to use a filter in front of the valve. Recommended filter 50 mesh (297 microns).

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

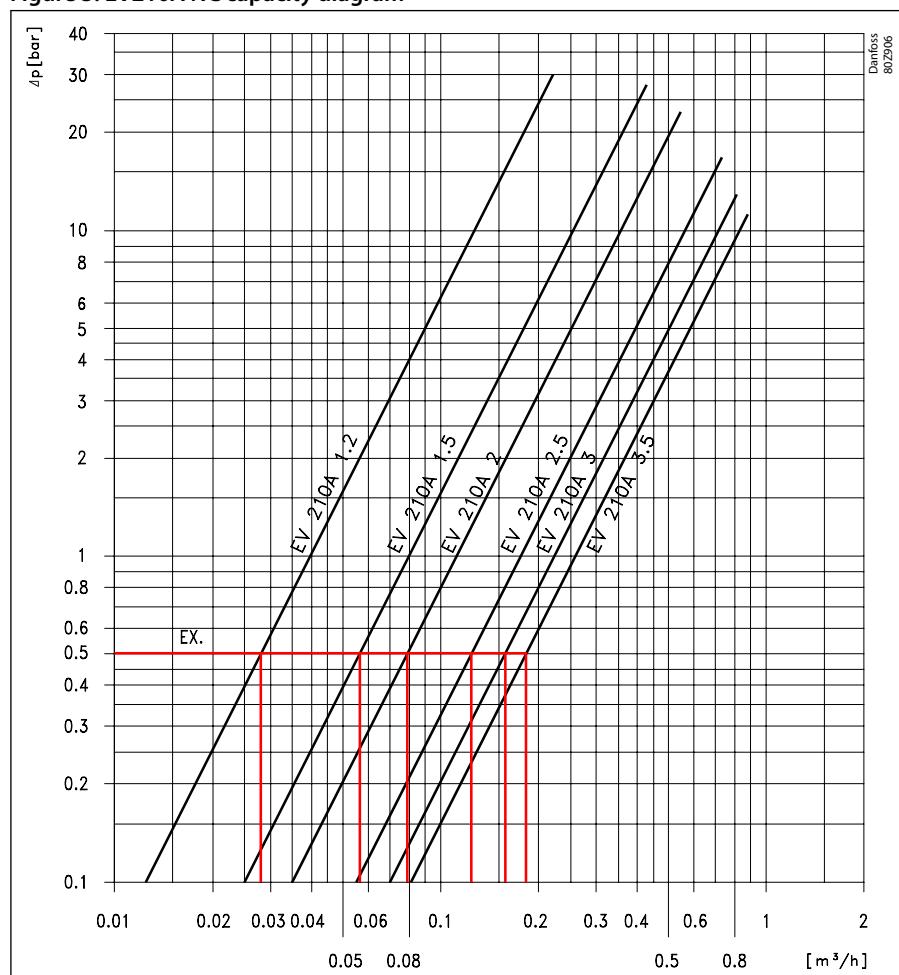
|                                                 |                                                    |                 |
|-------------------------------------------------|----------------------------------------------------|-----------------|
| <b>Media</b>                                    | FKM                                                | For oil and air |
|                                                 | EPDM                                               | For water       |
| <b>Media temperature [°C]</b>                   | FKM                                                | -10-100°C       |
|                                                 | EPDM                                               | -30-120°C       |
| <b>Ambient temperature [°C]</b>                 | Max to 50°C                                        |                 |
| <b>Kv value [m³/h]</b>                          | DN1.2                                              | 0.04 m³/h       |
|                                                 | DN1.5                                              | 0.06-0.08 m³/h  |
|                                                 | DN2                                                | 0.11-0.12 m³/h  |
|                                                 | DN2.5                                              | 0.15-0.17 m³/h  |
|                                                 | DN3                                                | 0.18-0.22 m³/h  |
|                                                 | DN3.5                                              | 0.20-0.26 m³/h  |
| <b>Min. Opening differential pressure [bar]</b> | 0 bar                                              |                 |
| <b>Max. Opening differential pressure [bar]</b> | Up to 30 bar                                       |                 |
| <b>Max. working pressure [bar]</b>              | Up to 30 bar (Equal to max. differential pressure) |                 |
| <b>Max. test pressure [bar]</b>                 | 50 bar                                             |                 |
| <b>Viscosity [cSt]</b>                          | Max. 20 cSt                                        |                 |

### Capacity diagrams

#### EV210A NC

Example, water at higher pressure: Capacity for EV210A 2.5B at differential pressure of 0.5 bar. Approx. 0.12 m³/h

Figure 3: EV210A NC capacity diagram



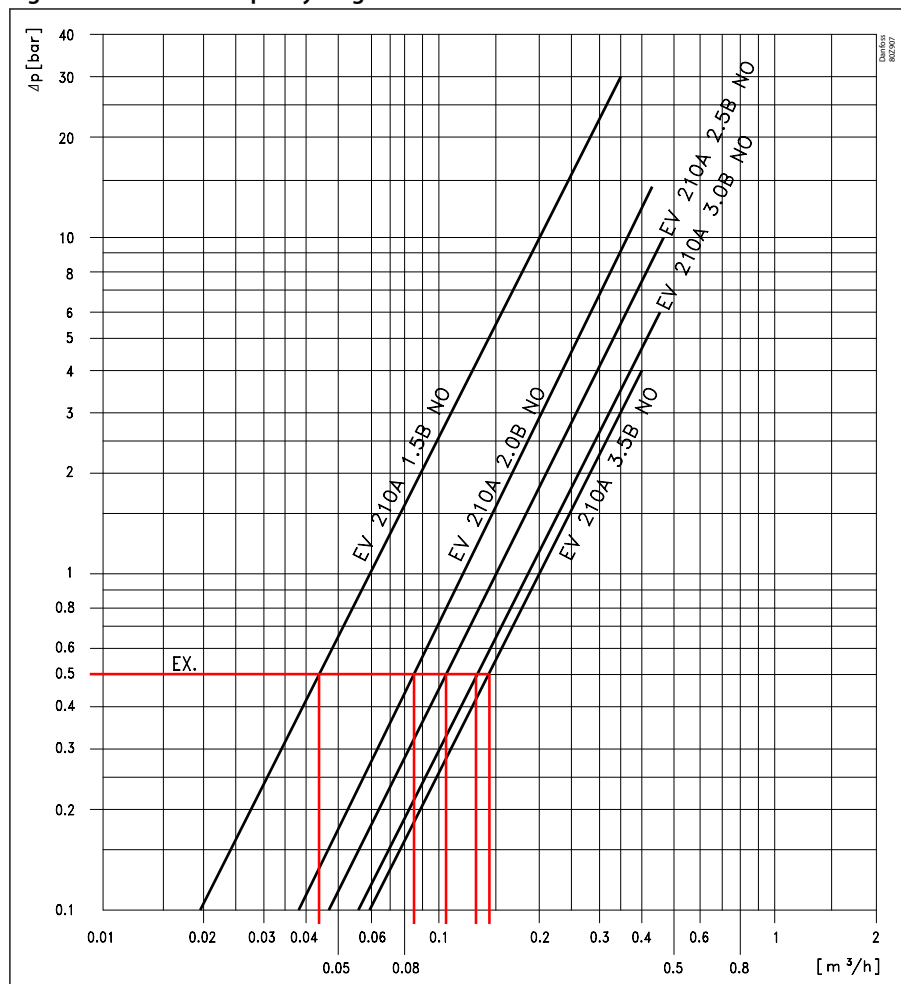
# Solenoid valve, type EV210A

Z

## EV210A NO

Example, water at higher pressure: Capacity for EV210A 2.5B NO at differential pressure of 0.5 bar. Approx. 0.11s m<sup>3</sup>/h

Figure 4: EV210A NO capacity diagram



## Differential pressure range

Table 3: Differential pressure range, NC and NO

| Connection<br>ISO228-1 | Orifice<br>size<br>[mm] | Seal material | Media | Differential pressure min. to max. [bar] |                      |                     |                       |                     |                       |        |      |      |
|------------------------|-------------------------|---------------|-------|------------------------------------------|----------------------|---------------------|-----------------------|---------------------|-----------------------|--------|------|------|
|                        |                         |               |       | NC                                       |                      |                     |                       |                     |                       |        | NO   |      |
|                        |                         |               |       | Suitable coil type                       |                      |                     |                       |                     |                       |        |      |      |
|                        |                         |               |       | AB                                       |                      | AC                  |                       | AM                  |                       | AK     | AM   |      |
|                        |                         |               |       | AC                                       | DC                   | AC                  | DC                    | AC                  | DC                    | DC     | AC   | DC   |
| G 1/8                  | 1.2                     | EPDM          | Water | 0-30                                     | 0-17.5               | 0-30                | 0-24                  | 0-30                | 0-24                  | 0-24   |      |      |
|                        |                         |               | Oil   | 0-28                                     | 0-16                 | 0-30                | 0-24                  | 0-30                | 0-24                  | 0-24   |      |      |
|                        |                         | FKM           | Air   | 0-30                                     | 0-19                 | 0-30                | 0-24                  | 0-30                | 0-24                  | 0-24   |      |      |
|                        | 1.5                     | EPDM          | Water | 0-18 <sup>(1)</sup>                      | 0-9.5 <sup>(1)</sup> | 0-26 <sup>(1)</sup> | 0-17.5 <sup>(1)</sup> | 0-28 <sup>(1)</sup> | 0-22.5 <sup>(1)</sup> | 0-17.5 | 0-30 | 0-16 |
|                        |                         |               | Oil   | 0-15                                     | 0-8                  | 0-24                | 0-16                  | 0-26                | 0-19                  | 0-17.5 | 0-24 | 0-13 |
|                        |                         | FKM           | Air   | 0-22                                     | 0-10.5               | 0-30                | 0-18.5                | 0-30                | 0-24                  | 0-19   | 0-30 | 0-16 |
|                        | 2.0                     | EPDM          | Water | 0-11                                     | 0-5.5                | 0-18                | 0-10.5                | 0-23                | 0-18.5                | 0-9    | 0-14 | 0-10 |
|                        |                         |               | Oil   | 0-9                                      | 0-5                  | 0-16                | 0-9.5                 | 0-22                | 0-17                  | 0-9    | 0-11 | 0-8  |
|                        |                         | FKM           | Air   | 0-14                                     | 0-6                  | 0-22                | 0-11                  | 0-30                | 0-24                  | 0-9    | 0-14 | 0-10 |

## Solenoid valve, type EV210A

| Connection<br>ISO228-1 | Orifice<br>size | Seal material | Media | Differential pressure min. to max. [bar] |       |       |       |      |        |       |      |       |
|------------------------|-----------------|---------------|-------|------------------------------------------|-------|-------|-------|------|--------|-------|------|-------|
|                        |                 |               |       | NC                                       |       |       |       |      |        |       | NO   |       |
|                        |                 |               |       | Suitable coil type                       |       |       |       |      |        |       |      |       |
|                        |                 |               |       | AB                                       |       | AC    |       | AM   |        | AK    | AM   |       |
|                        | AC              |               |       | DC                                       | AC    | DC    | AC    | DC   | DC     | AC    | DC   |       |
| G 1/8 - G 1/4          | 2.5             | EPDM          | Water | 0-6                                      | 0-3   | 0-11  | 0-5.5 | 0-17 | 0-13   | 0-5   | 0-10 | 0-6   |
|                        |                 | FKM           | Oil   | 0-5                                      | 0-2.5 | 0-9   | 0-5   | 0-16 | 0-12   | 0-5   | 0-8  | 0-4.5 |
|                        |                 |               | Air   | 0-8                                      | 0-3   | 0-12  | 0-6   | 0-20 | 0-14.5 | 0-5   | 0-10 | 0-6   |
|                        | 3.0             | EPDM          | Water | 0-4                                      | 0-1.5 | 0-7   | 0-3.5 | 0-13 | 0-9    | 0-3   | 0-6  | 0-4   |
|                        |                 | FKM           | Oil   | 0-3                                      | 0-1.5 | 0-6   | 0-3   | 0-12 | 0-8    | 0-3   | 0-5  | 0-3   |
|                        |                 |               | Air   | 0-5                                      | 0-2   | 0-8   | 0-3.5 | 0-14 | 0-9    | 0-3   | 0-6  | 0-4   |
| G 1/8 - G 1/4          | 3.5             | EPDM          | Water | 0-2.8                                    | 0-1.2 | 0-5   | 0-2.5 | 0-11 | 0-6    | 0-1.5 | 0-4  | 0-3   |
|                        |                 | FKM           | Oil   | 0-2                                      | 0-0.8 | 0-4   | 0-2.5 | 0-10 | 0-5.5  | 0-1.5 | 0-4  | 0-2   |
|                        |                 |               | Air   | 0-3.5                                    | 0-1.2 | 0-5.5 | 0-2.5 | 0-6  | 0-6    | 0-1.5 | 0-4  | 0-3   |

<sup>(1)</sup> Only NC SS

## Time to open/close

Table 4: Time to open/close

| Type                   | EV210A 1.2 - 3.5                                      |
|------------------------|-------------------------------------------------------|
| Time to open and close | 7 - 10 ms (depending on pressure, coil and viscosity) |

## Materials

Table 5: Materials

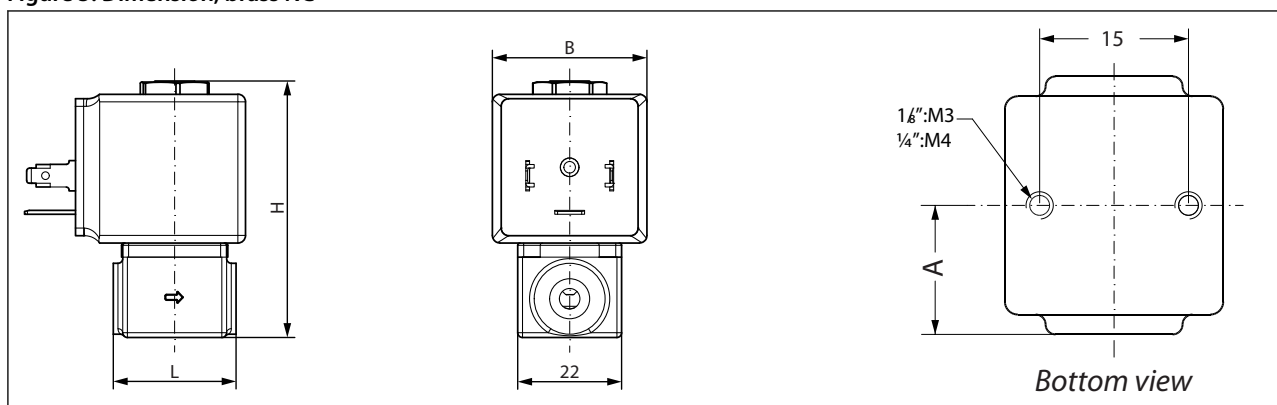
| Components          | Materials       | Specifications           |
|---------------------|-----------------|--------------------------|
| Valve body          | Brass           | W. no. 2.0401            |
|                     | Stainless steel | W.no. 1.4305 / AISI 303  |
| Armature            | Stainless steel | W. no. 1.4016 / AISI 430 |
| Armature tube       | Stainless steel | W. no. 1.4303 / AISI 305 |
| Armature stop       | Stainless steel | W. no. 1.4016 / AISI 430 |
| Spring              | Stainless steel | W. no. 1.4310 / AISI 301 |
| Valve orifice       | Stainless steel | W. no. 1.4305 / AISI 303 |
| O-ring/ valve plate | EPDM/FKM        |                          |

## 4.2 Dimension and weight

Table 6: Dimension and weight, brass NC

| Type   | Connection<br>ISO 228/1 | Weight gross<br>Valve body with-<br>out coil [kg] | L<br>[mm] | B [mm]               |                      | H<br>[mm] | A<br>[mm] |
|--------|-------------------------|---------------------------------------------------|-----------|----------------------|----------------------|-----------|-----------|
|        |                         |                                                   |           | Coil type<br>AB / AC | Coil type<br>AM / AK |           |           |
| EV210A | G $\frac{1}{8}$         | 0.085                                             | 26        | 22                   | 33                   | 54        | 13        |
|        | G $\frac{1}{4}$         | 0.110                                             | 35        | 22                   | 33                   | 59        | 17.5      |

Figure 5: Dimension, brass NC

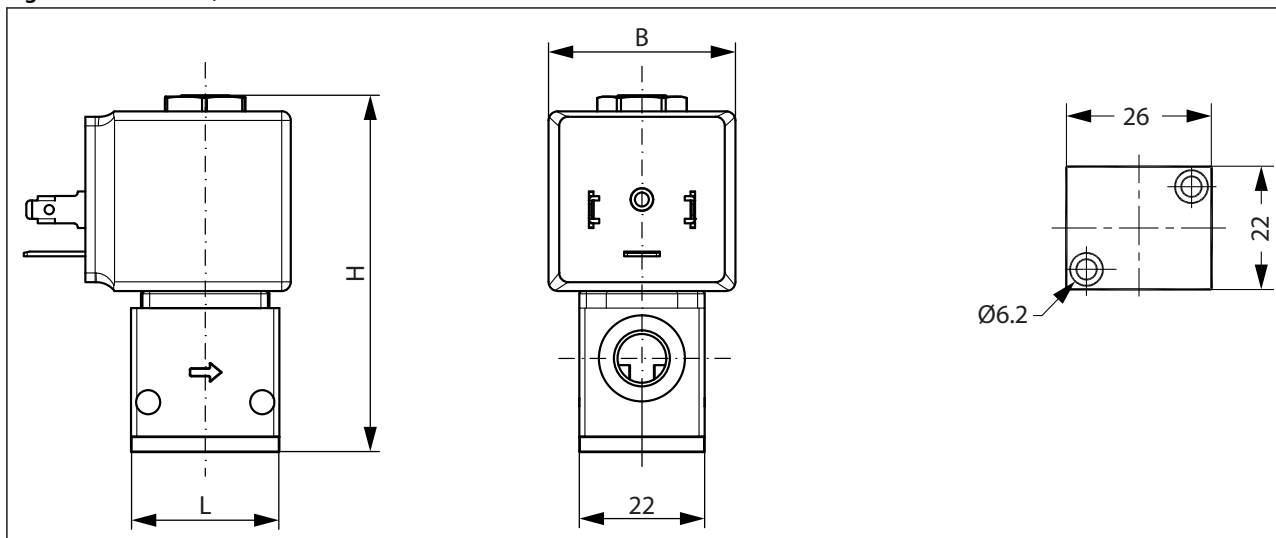


## Solenoid valve, type EV210A

**Table 7: Dimension and weight, brass NO**

| Type   | Connection<br>ISO 228/1 | Weight gross<br>Valve body without<br>coil [kg] | L<br>[mm] | B [mm]       | H<br>[mm] |
|--------|-------------------------|-------------------------------------------------|-----------|--------------|-----------|
|        |                         |                                                 |           | Coil type AM |           |
| EV210A | G 1/8                   | 0.125                                           | 26        | 33           | 63        |

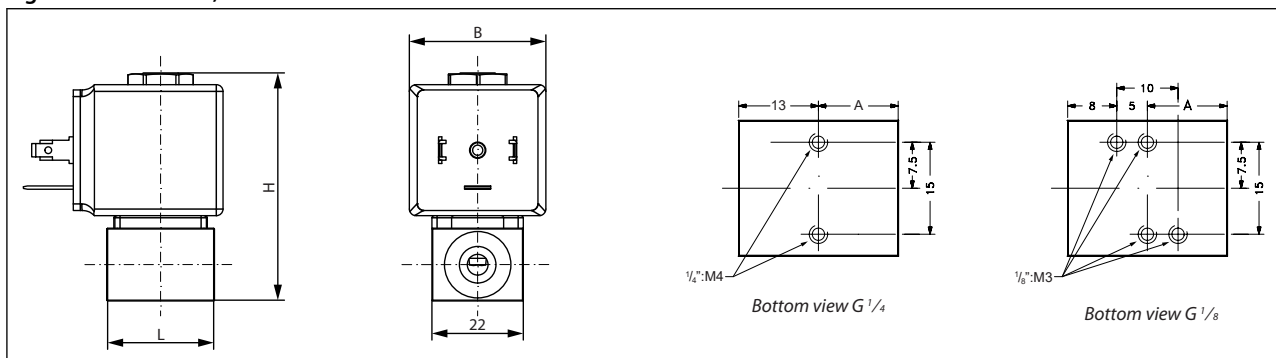
**Figure 6: Dimension, brass NO**



**Table 8: Dimension and weight, stainless steel**

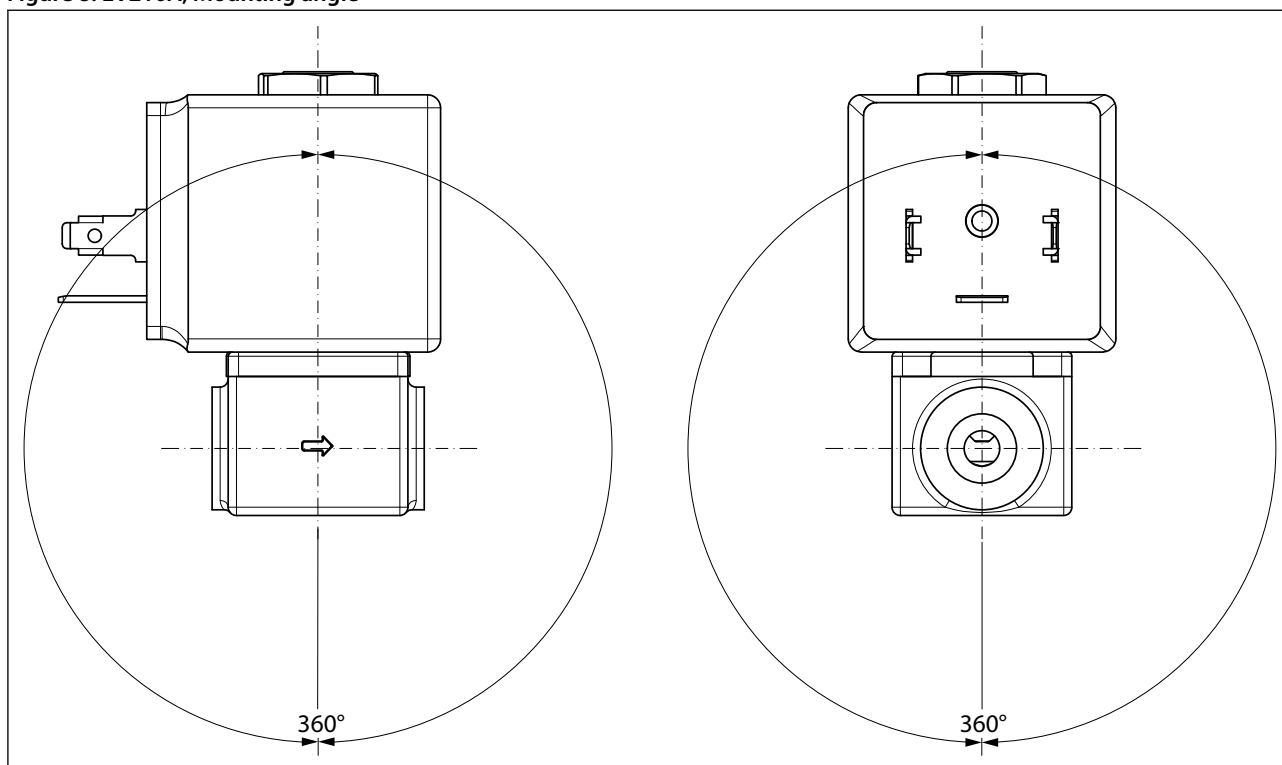
| Type     | Connection<br>ISO 228/1 | Weight gross<br>Valve body with-<br>out coil [kg] | L<br>[mm] | B [mm]               |                      | H<br>[mm] | A<br>[mm] |
|----------|-------------------------|---------------------------------------------------|-----------|----------------------|----------------------|-----------|-----------|
|          |                         |                                                   |           | Coil type<br>AB / AC | Coil type<br>AM / AK |           |           |
| EV210A   | G 1/8                   | 0.085                                             | 26        | 22                   | 33                   | 54        | 13        |
| EV210A 6 | G 1/4                   | 0.110                                             | 35        | 22                   | 33                   | 59        | 17.5      |

**Figure 7: Dimension, Stainless steel**



### 4.3 Mounting

Figure 8: EV210A, Mounting angle



## 5 Ordering

### 5.1 Parts program

Table 9: Brass/SS, valve body NC and NO

| Connection<br>ISO228/1 | Orifice<br>[mm] | Kv value<br>[m³/h] | Sealing<br>EPDM/FKM | Function |          |          |
|------------------------|-----------------|--------------------|---------------------|----------|----------|----------|
|                        |                 |                    |                     | Brass    |          | SS       |
|                        |                 |                    |                     | NC       | NO       | NC       |
| G $\frac{1}{8}$        | 1.2             | 0.04               | EPDM                | 032H8000 |          |          |
|                        |                 |                    | FKM                 | 032H8001 |          | 032H8025 |
|                        | 1.5             | 0.08               | FKM                 | 032H8003 |          | 032H8027 |
|                        |                 | 0.06               | FKM                 |          | 032H8049 |          |
|                        | 2.0             | 0.11               | EPDM                | 032H8004 |          |          |
|                        |                 |                    | FKM                 | 032H8005 |          | 032H8029 |
|                        |                 | 0.12               | FKM                 |          | 032H8051 |          |
|                        | 2.5             | 0.15               | FKM                 |          | 032H8053 |          |
|                        |                 |                    | EPDM                | 032H8006 |          |          |
|                        |                 | 0.17               | FKM                 | 032H8007 |          |          |
|                        | 3.0             | 0.18               | FKM                 |          | 032H8055 |          |
|                        |                 | 0.22               | EPDM                | 032H8008 |          |          |
| G $\frac{1}{4}$        | 3.5             | 0.20               | FKM                 | 032H8009 |          | 032H8033 |
|                        |                 |                    | EPDM                |          | 032H8057 |          |
|                        | 2.5             | 0.17               | EPDM                | 032H8014 |          |          |
|                        |                 |                    | FKM                 | 032H8015 |          | 032H8039 |
|                        | 3.0             | 0.22               | EPDM                | 032H8016 |          |          |
|                        |                 |                    | FKM                 | 032H8017 |          | 032H8041 |
|                        | 3.5             | 0.26               | EPDM                | 032H8018 |          |          |
|                        |                 |                    | FKM                 | 032H8019 |          | 032H8043 |

### 5.2 Accessories

#### Coils

Table 10: Below coils can be used with EV210A

| Coil                                                                                | Type | Power consumption    | Enclosure                                          | Features                    |
|-------------------------------------------------------------------------------------|------|----------------------|----------------------------------------------------|-----------------------------|
|  | AB   | 4.5 W AC<br>5 W DC   | IP00 with spade connector,<br>IP65 with cable plug | In accordance with VDE 0580 |
|  | AC   | 7.0 W AC<br>10 W DC  | IP00 with spade connector,<br>IP65 with cable plug | In accordance with VDE 0580 |
|  | AM   | 7.5 W AC<br>9.5 W DC | IP00 with spade connector,<br>IP65 with cable plug | In accordance with VDE 0580 |
|  | AK   | 3.0 W DC             | IP00 with spade connector,<br>IP65 with cable plug | In accordance with VDE 0580 |

## Solenoid valve, type EV210A

For further information and for ordering, see separate data sheet for coils.

### Cable plug

Figure 9: Cable plug



Table 11: Cable plug

| Cable plug size | Description     | Code no  |
|-----------------|-----------------|----------|
| DIN 18          | Cable plug IP65 | 042N1278 |

Figure 10: Cable plug



| Application                                            | Code number |
|--------------------------------------------------------|-------------|
| GM 209 (Black) cable plug according to DIN 46650-B PG9 | 042N0139    |

### Universal electronic multi-timer, Type ET 20M

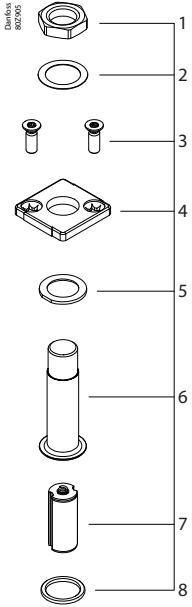
Figure 11: ET 20M



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

### 5.3 Spare parts kit, EV210A NC

Table 12: Spare parts kit

| Type           | Sealing                                                                                                                                                            |          |
|----------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|
|                | FKM                                                                                                                                                                | EPDM     |
| EV210A 1.2-3.5 | 042U0068                                                                                                                                                           | 042U0067 |
|                |                                                                                 |          |
|                | <p>1. Nut Steel<br/> 2. Spring washer<br/> 3. 2 x screws<br/> 4. Flange<br/> 5. Washer<br/> 6. Armature tube assembly<br/> 7. Armature assembly<br/> 8. O-ring</p> |          |

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