



# Miniature Cartridge Valves

## Diameter 7, 15 & 21mm

C7, C15 & C21 Series



ENGINEERING YOUR SUCCESS.

# C7, C15 & C21 Series

## Product Description

These 2 & 3 way cartridge valves offer the most compact solution with a fast response time and a very long service life thanks to its flat spring technology.

These miniature solenoid valves can be populated into the smallest portable device improving performance, size and weight.

High-quality stainless steels and sealing materials make the valves suitable for use with a wide range of gases.

This range is available in 3 sizes (7, 15 & 21 mm) with a wide range of orifices (0,3 to 4 mm).



## Typical applications can be found in:

### Market of interest

- Food & Beverage Processing
- Mobile / Transportation
- Industrial equipment
- Commercial Equipment

### Typical applications

- Milk foam in full auto coffee machine
- Injection control in small engines
- Portable tooling
- Gas analysers
- Vacuum handling



## Benefits

The most valuable features you will find in this product range:

- **Customizable** - can be adapted to the application : voltage, flow, shape, material, cable length, connection, proportional version...
- **Easy to embed** - reduce integration cost thanks to the cartridge concept
- **Compact** - 80% reduction of volume vs standard threading solenoid valves
- **Improve mobility/portability** - 80% reduction in weight vs standard threading solenoid valves
- **Save cost** - very low power (0,5 to 2,5W) decreasing the size of your battery and the energy consumption
- **Long service life** - > 10<sup>9</sup> cycles according application thanks to the frictionless design
- **Increase productivity** - fast response time (from 0,5 to 7 ms)

# General Description

## Materials in contact with fluid

### Body:

Stainless Steel AISI 303 (1.4305)

### Sealing:

FKM

### Others Parts:

Stainless Steel 1.4310 / 1.4105

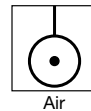
## Installation

The valves can be mounted in any position. It is however recommended to install them with the coil in vertical position above the body.

## Media

These valves are compatible with dry or lubricated air, neutral gases and liquids.

Vacuum service possible using the outlet port.



Air



Water

## Coils

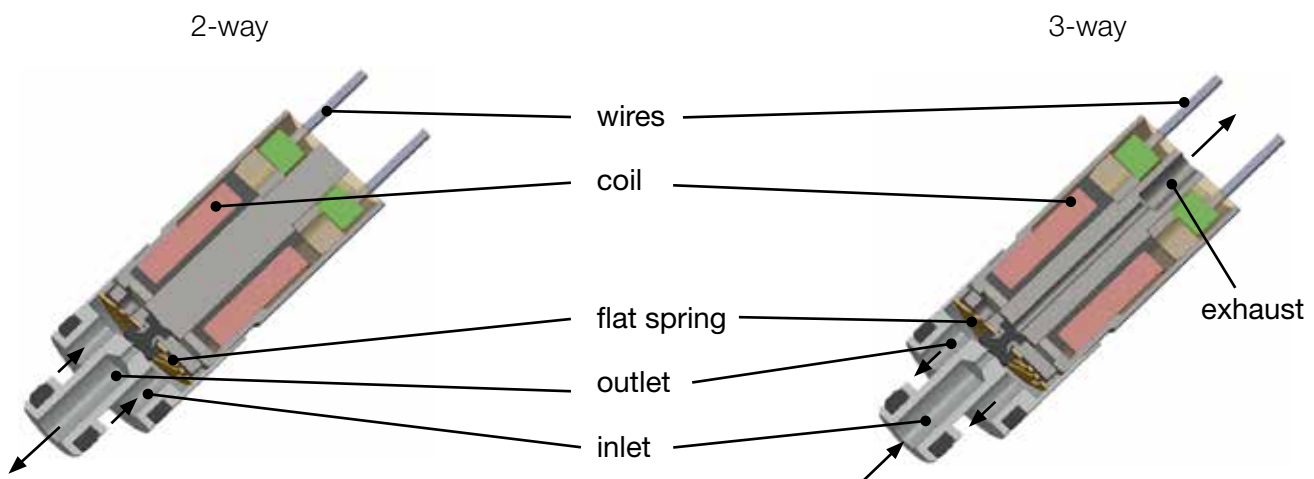
24 VDC standard, 12 VDC available, other voltages on request.

Flying leads length: 80mm, other lengths on request.

## Temperature

The ambient temperature range of the valve is 0°C to +50°C.

## Cross sectional drawing



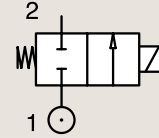
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## C7 C15 C21 Series

Miniature Cartridge Valves - Size Ø 7, 15 & 21mm  
Direct Operated - Orifice from 0.3 mm to 4 mm

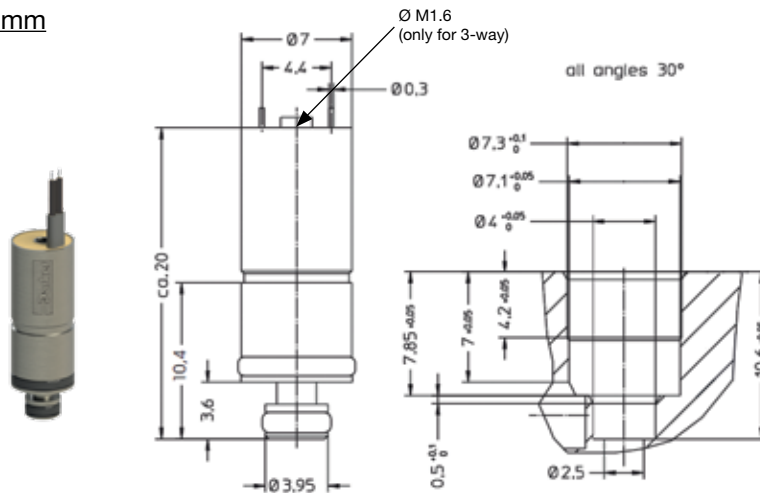
303 STAINLESS ST.  
CARTRIDGE

**NORMALLY CLOSED**



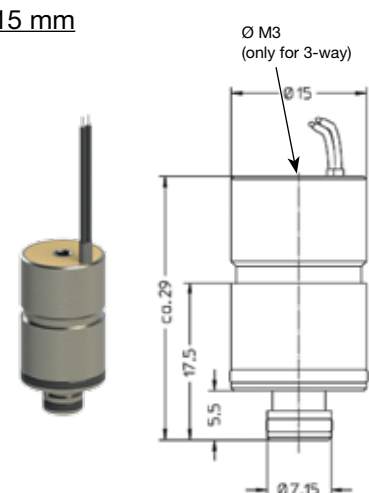
| Size  | Orifice Ø<br>mm | Flow factors |            | Operating Pressure Differential |            | Fluid Temp. |           | Seat Seal | Valve Ref.        | Voltage | Power<br>DC W |
|-------|-----------------|--------------|------------|---------------------------------|------------|-------------|-----------|-----------|-------------------|---------|---------------|
|       |                 | Kv<br>l/min  | KV<br>m³/h | Min<br>bar                      | Max<br>bar | Min<br>°C   | Max<br>°C |           |                   |         |               |
| 7 mm  | 0.3             | 0.05         | 0.003      | 0                               | 10         | 0           | 50        | FKM       | C07-212FK03FF-000 | 12 VDC  | 0.5           |
|       | 0.3             | 0.05         | 0.003      | 0                               | 10         | 0           | 50        | FKM       | C07-224FK03FF-000 | 24 VDC  | 0.6           |
|       | 0.5             | 0.12         | 0.007      | 0                               | 8          | 0           | 50        | FKM       | C07-212FK05FF-000 | 12 VDC  | 1.0           |
|       | 0.5             | 0.12         | 0.007      | 0                               | 8          | 0           | 50        | FKM       | C07-224FK05FF-000 | 24 VDC  | 0.9           |
|       | 0.8             | 0.15         | 0.009      | 0                               | 5          | 0           | 50        | FKM       | C07-212FK08FF-000 | 12 VDC  | 1.0           |
|       | 0.8             | 0.15         | 0.009      | 0                               | 5          | 0           | 50        | FKM       | C07-224FK08FF-000 | 24 VDC  | 1.2           |
|       | 1               | 0.25         | 0.015      | 0                               | 3          | 0           | 50        | FKM       | C07-212FK10FF-000 | 12 VDC  | 1.0           |
|       | 1               | 0.25         | 0.015      | 0                               | 3          | 0           | 50        | FKM       | C07-224FK10FF-000 | 24 VDC  | 1.2           |
| 15 mm | 0.5             | 0.12         | 0.007      | 0                               | 10         | 0           | 50        | FKM       | C15-212FK05FF-000 | 12 VDC  | 1.1           |
|       | 0.5             | 0.12         | 0.007      | 0                               | 10         | 0           | 50        | FKM       | C15-224FK05FF-000 | 24 VDC  | 1.1           |
|       | 1               | 0.47         | 0.028      | 0                               | 8          | 0           | 50        | FKM       | C15-212FK10FF-000 | 12 VDC  | 1.7           |
|       | 1               | 0.47         | 0.028      | 0                               | 8          | 0           | 50        | FKM       | C15-224FK10FF-000 | 24 VDC  | 1.6           |
|       | 1.5             | 0.82         | 0.049      | 0                               | 4          | 0           | 50        | FKM       | C15-212FK15FF-000 | 12 VDC  | 1.7           |
|       | 1.5             | 0.82         | 0.049      | 0                               | 4          | 0           | 50        | FKM       | C15-224FK15FF-000 | 24 VDC  | 1.6           |
|       | 2               | 1.32         | 0.079      | 0                               | 1.5        | 0           | 50        | FKM       | C15-212FK20FF-000 | 12 VDC  | 1.7           |
|       | 2               | 1.32         | 0.079      | 0                               | 1.5        | 0           | 50        | FKM       | C15-224FK20FF-000 | 24 VDC  | 1.6           |
| 21 mm | 1               | 0.47         | 0.028      | 0                               | 10         | 0           | 50        | FKM       | C21-212FK10FF-000 | 12 VDC  | 2.6           |
|       | 1               | 0.47         | 0.028      | 0                               | 10         | 0           | 50        | FKM       | C21-224FK10FF-000 | 24 VDC  | 2.5           |
|       | 2               | 1.18         | 0.071      | 0                               | 8          | 0           | 50        | FKM       | C21-212FK20FF-000 | 12 VDC  | 2.6           |
|       | 2               | 1.18         | 0.071      | 0                               | 8          | 0           | 50        | FKM       | C21-224FK20FF-000 | 24 VDC  | 2.5           |
|       | 3               | 1.97         | 0.118      | 0                               | 4          | 0           | 50        | FKM       | C21-212FK30FF-000 | 12 VDC  | 2.6           |
|       | 3               | 1.97         | 0.118      | 0                               | 4          | 0           | 50        | FKM       | C21-224FK30FF-000 | 24 VDC  | 2.5           |
|       | 4               | 2.57         | 0.154      | 0                               | 2          | 0           | 50        | FKM       | C21-212FK40FF-000 | 12 VDC  | 2.6           |
|       | 4               | 2.57         | 0.154      | 0                               | 2          | 0           | 50        | FKM       | C21-224FK40FF-000 | 24 VDC  | 2.5           |

7 mm



\*2-way (3-way)

15 mm



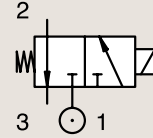
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## C7 C15 C21 Series

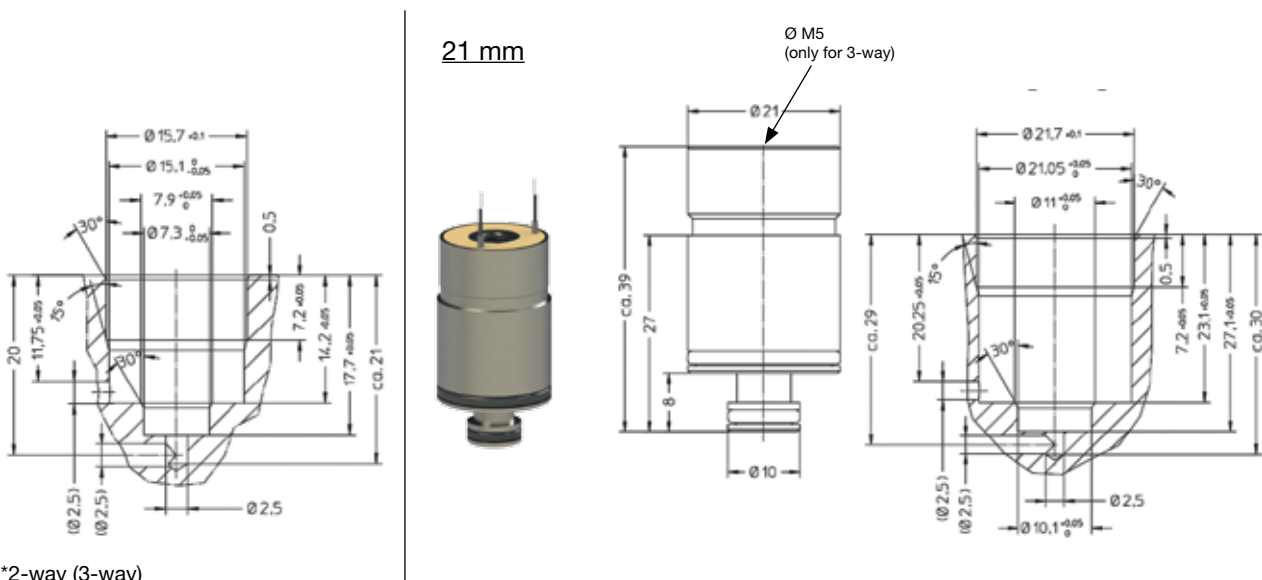
Miniature Cartridge Valves - Size Ø 7, 15 & 21mm  
Direct Operated - Orifice from 0.3 mm to 4 mm

303 STAINLESS ST.  
CARTRIDGE

**NORMALLY CLOSED**



| Port size (BSP) | Orifice Ø mm | Flow factors |             |       |       | Operating Pressure Differential |         | Fluid Temp. |        | Seat Seal | Valve Ref.        | Voltage | Power DC W |
|-----------------|--------------|--------------|-------------|-------|-------|---------------------------------|---------|-------------|--------|-----------|-------------------|---------|------------|
|                 |              | 1 Kv l/min   | (2) Kv m³/h | 1     | (2)   | Min bar                         | Max bar | Min °C      | Max °C |           |                   |         |            |
| 7 mm            | 0.3          | 0.05         | 0.05        | 0.003 | 0.003 | 0                               | 10      | 0           | 50     | FKM       | C07-312FK03FF-000 | 12 VDC  | 1.0        |
|                 | 0.3          | 0.05         | 0.05        | 0.003 | 0.003 | 0                               | 10      | 0           | 50     | FKM       | C07-324FK03FF-000 | 24 VDC  | 1.2        |
|                 | 0.5          | 0.12         | 0.12        | 0.007 | 0.007 | 0                               | 6       | 0           | 50     | FKM       | C07-312FK05FF-000 | 12 VDC  | 1.0        |
|                 | 0.5          | 0.12         | 0.12        | 0.007 | 0.007 | 0                               | 6       | 0           | 50     | FKM       | C07-324FK05FF-000 | 24 VDC  | 1.2        |
|                 | 0.8          | 0.15         | 0.15        | 0.009 | 0.009 | 0                               | 2.5     | 0           | 50     | FKM       | C07-312FK08FF-000 | 12 VDC  | 1.0        |
|                 | 0.8          | 0.15         | 0.15        | 0.009 | 0.009 | 0                               | 2.5     | 0           | 50     | FKM       | C07-324FK08FF-000 | 24 VDC  | 1.2        |
|                 | 1            | 0.25         | 0.22        | 0.015 | 0.013 | 0                               | 1.5     | 0           | 50     | FKM       | C07-312FK10FF-000 | 12 VDC  | 1.0        |
|                 | 1            | 0.25         | 0.22        | 0.015 | 0.013 | 0                               | 1.5     | 0           | 50     | FKM       | C07-324FK10FF-000 | 24 VDC  | 1.2        |
| 15 mm           | 0.5          | 0.12         | 0.12        | 0.007 | 0.007 | 0                               | 10      | 0           | 50     | FKM       | C15-312FK05FF-000 | 12 VDC  | 1.7        |
|                 | 0.5          | 0.12         | 0.12        | 0.007 | 0.007 | 0                               | 10      | 0           | 50     | FKM       | C15-324FK05FF-000 | 24 VDC  | 1.6        |
|                 | 1            | 0.47         | 0.47        | 0.028 | 0.028 | 0                               | 7       | 0           | 50     | FKM       | C15-312FK10FF-000 | 12 VDC  | 1.7        |
|                 | 1            | 0.47         | 0.47        | 0.028 | 0.028 | 0                               | 7       | 0           | 50     | FKM       | C15-324FK10FF-000 | 24 VDC  | 1.6        |
|                 | 1.5          | 0.82         | 0.82        | 0.049 | 0.049 | 0                               | 3.5     | 0           | 50     | FKM       | C15-312FK15FF-000 | 12 VDC  | 1.7        |
|                 | 1.5          | 0.82         | 0.82        | 0.049 | 0.049 | 0                               | 3.5     | 0           | 50     | FKM       | C15-324FK15FF-000 | 24 VDC  | 1.6        |
|                 | 2            | 1.32         | 1.32        | 0.079 | 0.079 | 0                               | 1       | 0           | 50     | FKM       | C15-312FK20FF-000 | 12 VDC  | 1.7        |
|                 | 2            | 1.32         | 1.32        | 0.079 | 0.079 | 0                               | 1       | 0           | 50     | FKM       | C15-324FK20FF-000 | 24 VDC  | 1.6        |
| 21 mm           | 1            | 0.47         | 0.47        | 0.028 | 0.028 | 0                               | 10      | 0           | 50     | FKM       | C21-312FK10FF-000 | 12 VDC  | 2.6        |
|                 | 1            | 0.47         | 0.47        | 0.028 | 0.028 | 0                               | 10      | 0           | 50     | FKM       | C21-324FK10FF-000 | 24 VDC  | 2.5        |
|                 | 2            | 1.18         | 1.18        | 0.071 | 0.071 | 0                               | 6       | 0           | 50     | FKM       | C21-312FK20FF-000 | 12 VDC  | 2.6        |
|                 | 2            | 1.18         | 1.18        | 0.071 | 0.071 | 0                               | 6       | 0           | 50     | FKM       | C21-324FK20FF-000 | 24 VDC  | 2.5        |
|                 | 3            | 1.97         | 1.97        | 0.118 | 0.118 | 0                               | 2.5     | 0           | 50     | FKM       | C21-312FK30FF-000 | 12 VDC  | 2.6        |
|                 | 3            | 1.97         | 1.97        | 0.118 | 0.118 | 0                               | 2.5     | 0           | 50     | FKM       | C21-324FK30FF-000 | 24 VDC  | 2.5        |
|                 | 4            | 2.57         | 1.85        | 0.154 | 0.111 | 0                               | 1       | 0           | 50     | FKM       | C21-312FK40FF-000 | 12 VDC  | 2.6        |
|                 | 4            | 2.57         | 1.85        | 0.154 | 0.111 | 0                               | 1       | 0           | 50     | FKM       | C21-324FK40FF-000 | 24 VDC  | 2.5        |



\*2-way (3-way)



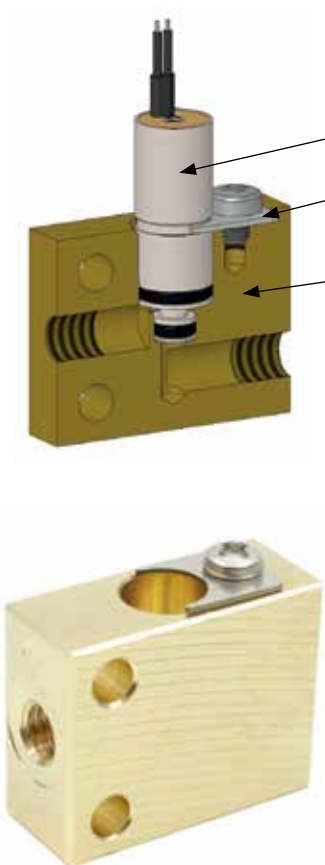
# Mounting Block

## C7 C15 Series - Ø7 & 15 mm

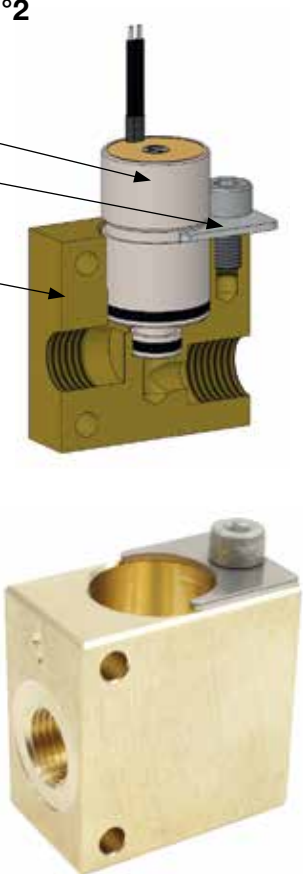
| Designation        | Reference         | Drawing Number |
|--------------------|-------------------|----------------|
| Mounting block Ø7  | C07-400XX008X-000 | 1              |
| Mounting block Ø15 | C15-400XX008X-000 | 2              |

Notes:  
1. Include the holding plate and the screw

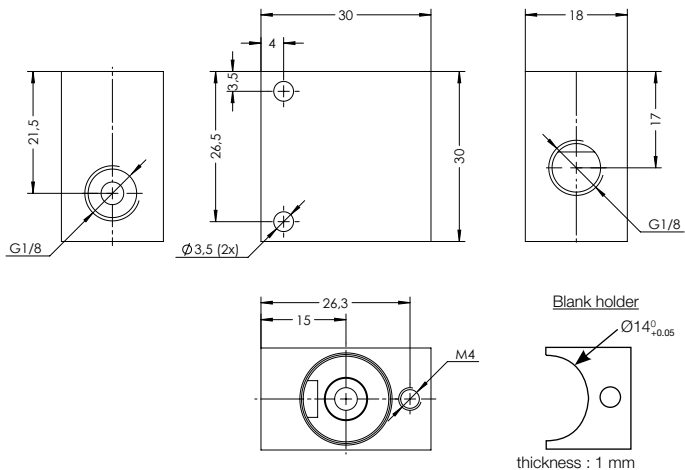
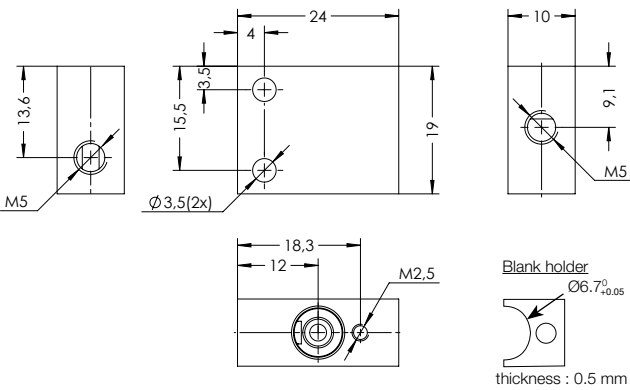
N°1



N°2



Valve  
Blank holder  
Mounting block



# Mounting Block

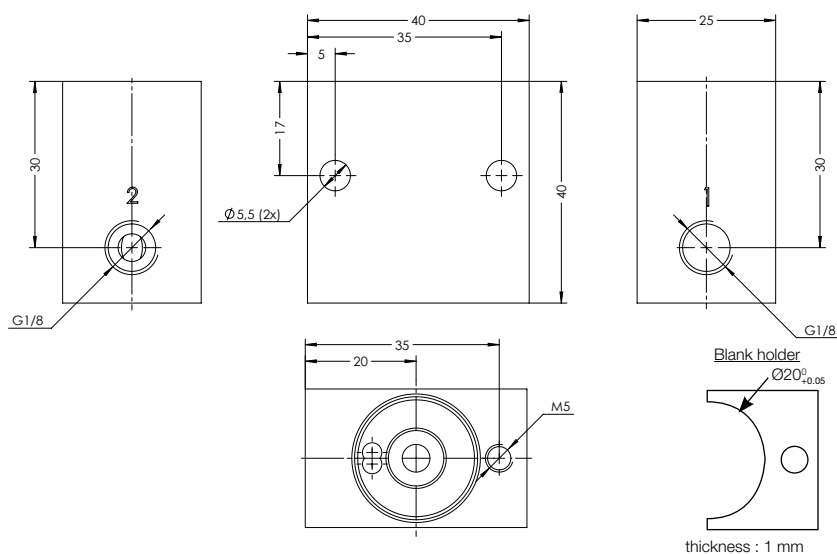
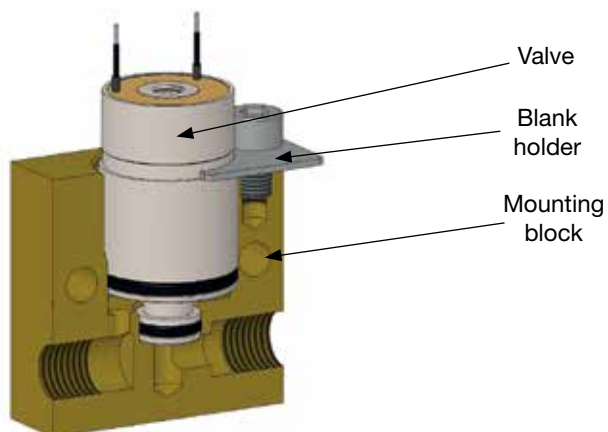
## C21 Series - Ø21 mm

| Designation        | Reference         | Drawing Number |
|--------------------|-------------------|----------------|
| Mounting block Ø21 | C21-400XX008X-000 | 3              |

**Notes:**

1. Include the holding plate and the screw

N°3



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