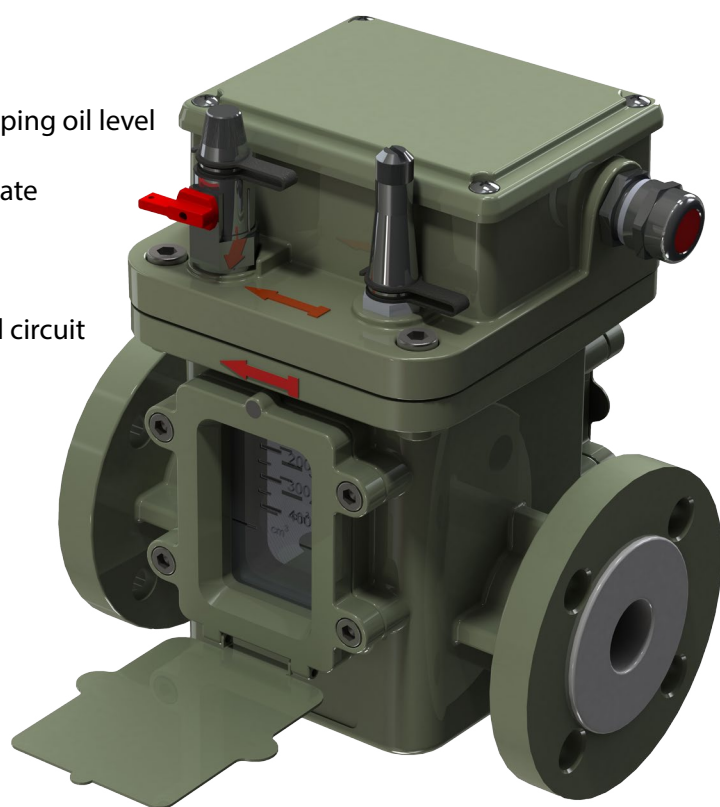


# Buchholz Relay MBP

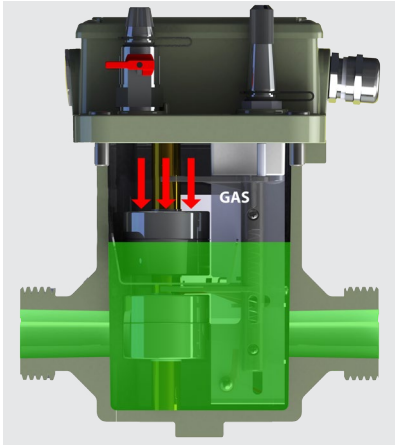
## *Gas and Oil Actuated Relay*

- Reed switches for detection of gas formation and dropping oil level
- Flap valve to protect in case of excessive high oil flow rate
- Separated oil and switching systems
- Replacing reed switches without intervention in the oil circuit
- UV-resistant C5-M coating (SOLIDLINE)
- 1/8" sampling valve
- Mechanical testing of contact switches (test button)
- Pneumatic simulation (optional)
- Gas sampling device (optional)



# Buchholz Relay MBP

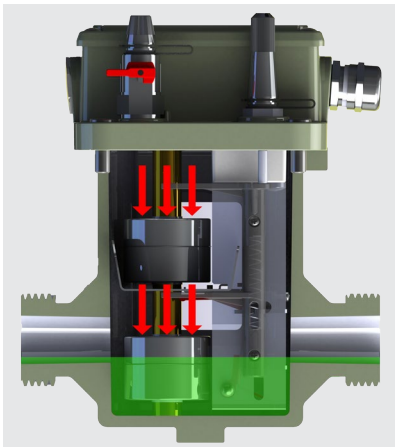
## Functions



### In case of gas accumulation

*Reason: Gas arises in the insulating liquid*

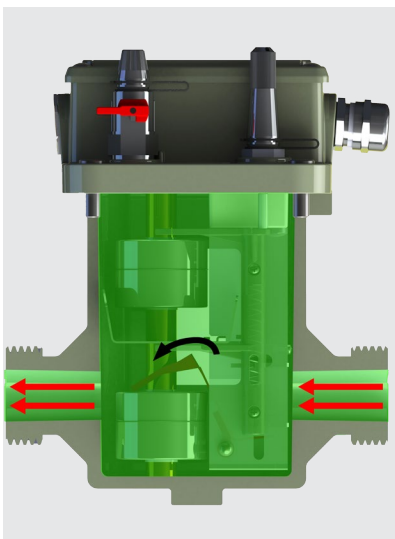
- Gas moves upwards, accumulates in the Buchholz Relay and displaces the insulating liquid
- The upper float moves downwards and activates the upper reed switch
- The lower float remains unaffected



### In case of dropping oil level

*Reason: Leakage*

- If the insulating liquid level drops the upper float moves downwards and switches the upper reed contact
- If further insulating liquid level decrease occurs, the pipeline and expansion tank get empty
- The lower float moves downwards and actuates the lower reed switch which can be used to deactivate the transformer
- Visual oil level indication from two sides



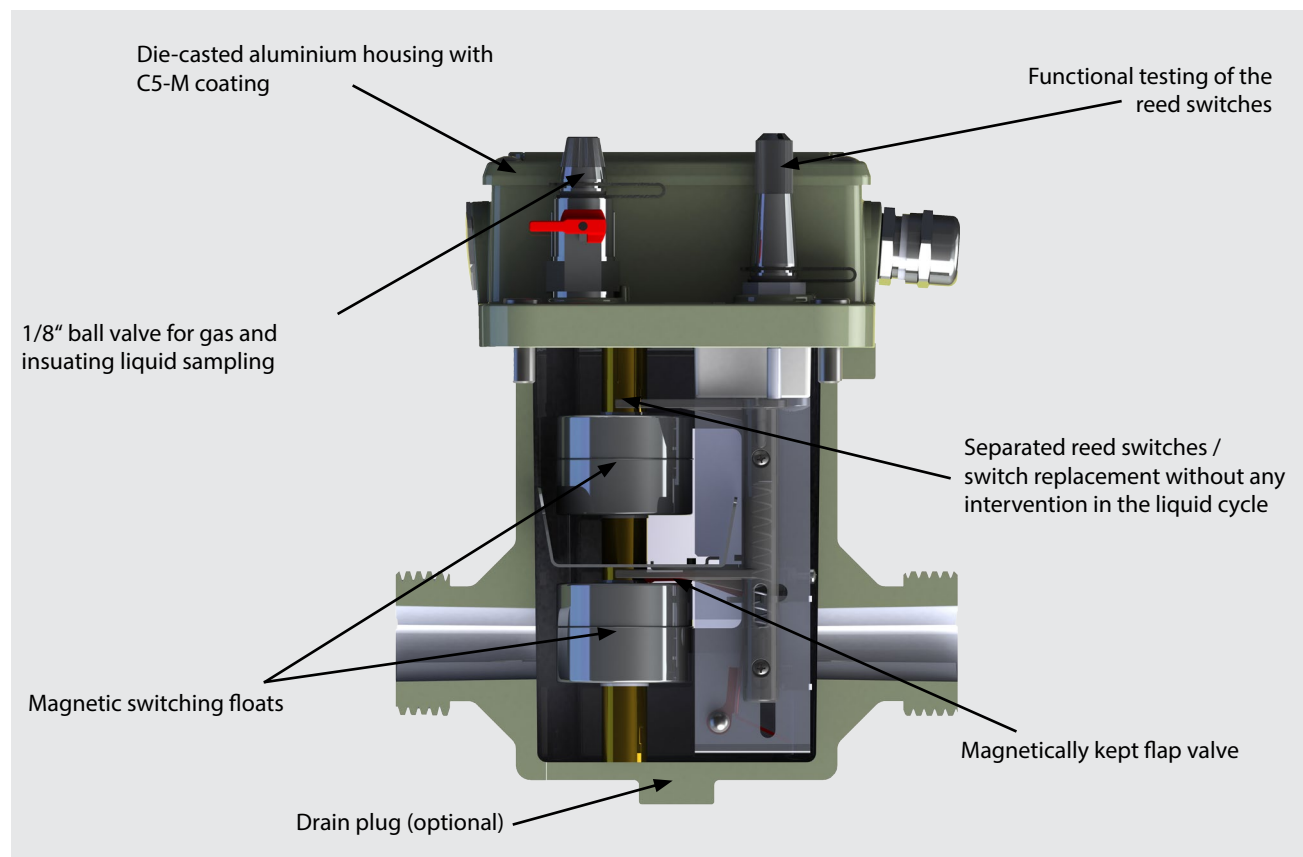
### In case of increased insulating liquid flow

*Reason: Because of sudden occurring event a pressure wave moves in the direction of the expansion tank*

- A sudden pressure wave occurs and moves within insulating liquid
- The Flap valve moves in the direction of the pressure wave and actuates the lower reed contact which can deactivate the transformer
- After decrease of the pressure wave the flap valve moves back to its origin position

# Buchholz Relay MBP

## Benefits at a Glance



### Connection Scheme (when ordering please select)

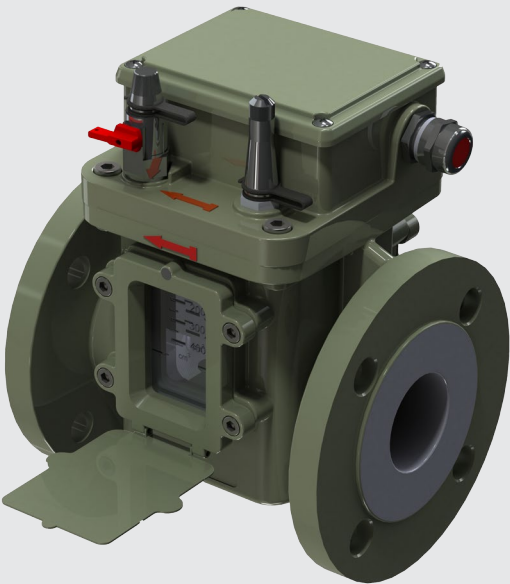
|                                                   |                                                                             |    |                                                   |                                                 |                                                                                                         |    |
|---------------------------------------------------|-----------------------------------------------------------------------------|----|---------------------------------------------------|-------------------------------------------------|---------------------------------------------------------------------------------------------------------|----|
| <p>Yellow</p> <p>13 14</p> <p>Lower (Trip)</p>    | <p>Single Contact</p> <p>Lower Float</p> <p>1 Normally Open Contact</p>     | 01 | <p>Yellow</p> <p>11 12</p> <p>Lower (Trip)</p>    | <p>Red</p> <p>21 22</p> <p>Upper (Alarm)</p>    | <p>2 Normally Open Contacts</p> <p>1 Normally Contact Lower</p> <p>1 Normally Contact Upper</p>         | 03 |
| <p>Yellow</p> <p>14 11 12</p> <p>Lower (Trip)</p> | <p>Single Contact</p> <p>Lower Float</p> <p>1 Changeover Contact (SPDT)</p> | 02 | <p>Yellow</p> <p>14 11 12</p> <p>Lower (Trip)</p> | <p>Red</p> <p>24 21 22</p> <p>Upper (Alarm)</p> | <p>2 Changeover Contacts (SPDT)</p> <p>1 Changeover Contact Lower</p> <p>1 Changeover Contact Upper</p> | 04 |



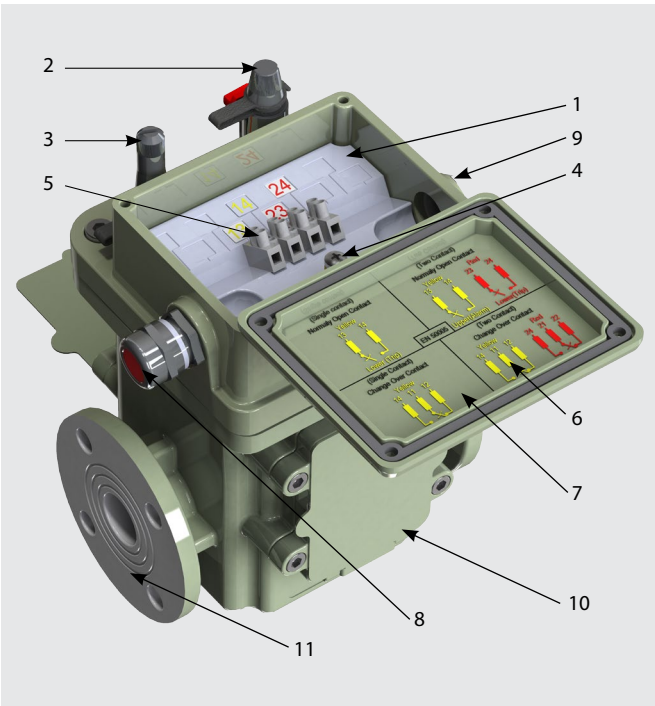
# Buchholz Relay MBP

Description, Flange- and Threaded Connection

Buchholz Relay with flange connection



Buchholz Relay with threaded connection



| Item | Descriptions                  |
|------|-------------------------------|
| 1    | Terminal box                  |
| 2    | 1/8" sampling valve           |
| 3    | Test button                   |
| 4    | Earthing screw                |
| 5    | Luster terminal               |
| 6    | Connection sheme              |
| 7    | Terminal box cover            |
| 8    | Cable gland                   |
| 9    | Blind plug                    |
| 10   | Protection cover              |
| 11   | Flange or threaded Connection |

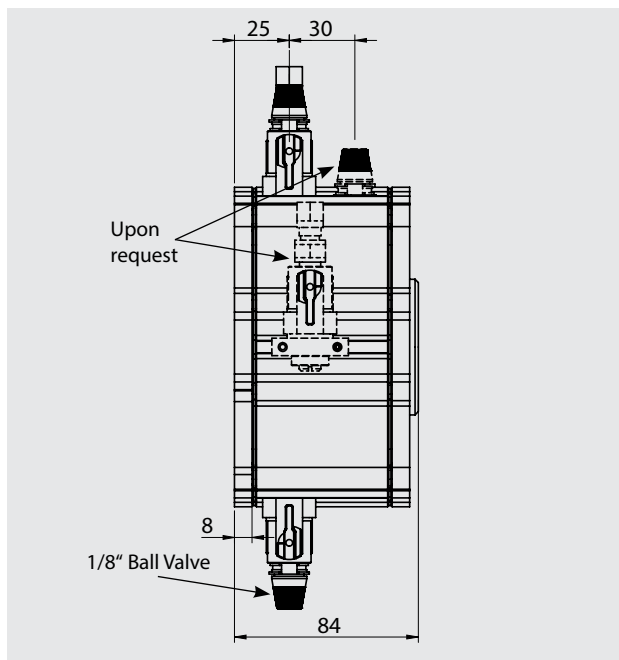
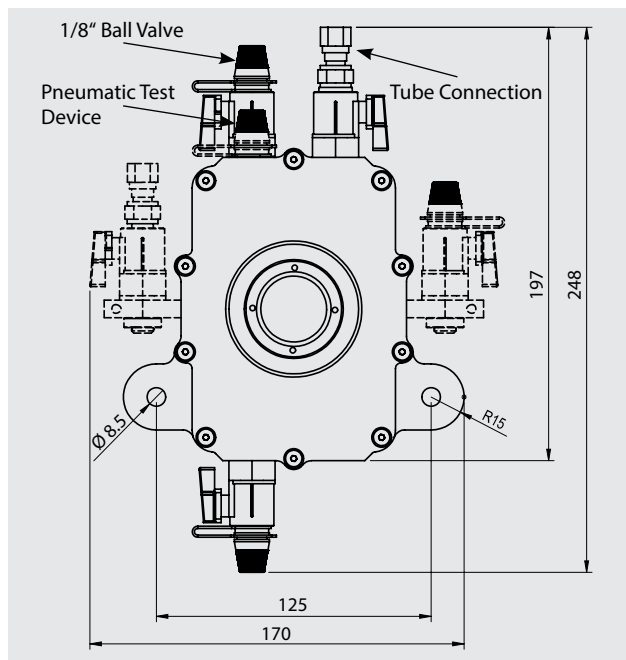
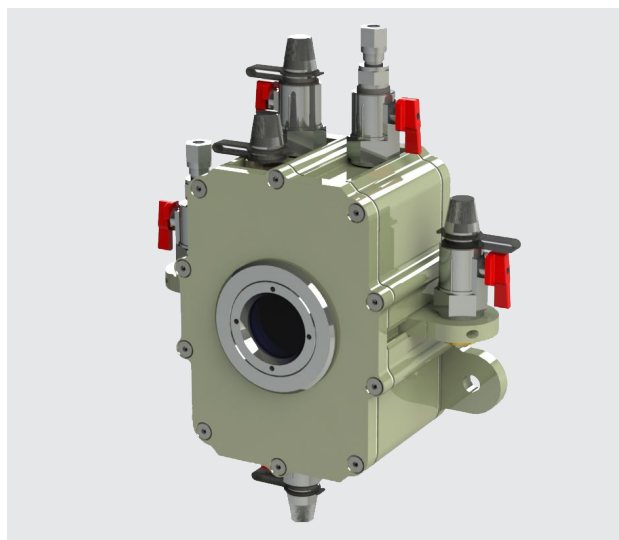
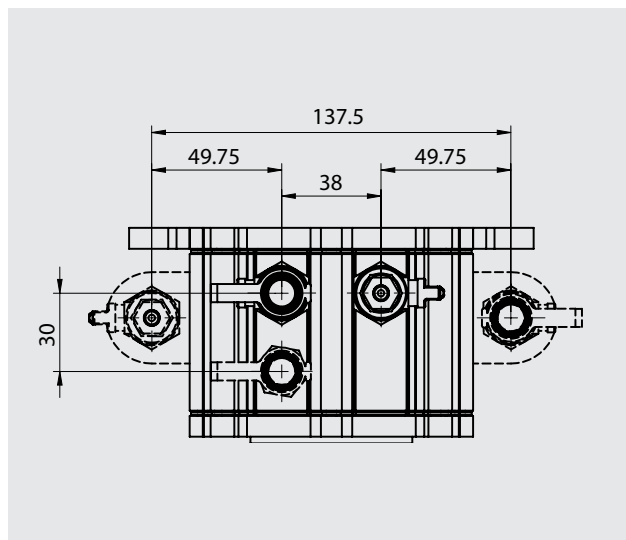
# Buchholz Relay MBP

## Parameters and Technical Data

| Parameters                           | Technical Data                                                                    |
|--------------------------------------|-----------------------------------------------------------------------------------|
| <b>Materials</b>                     |                                                                                   |
| Housing                              | Aluminium / C5-M powder coating / coated RAL 7033 (standard, others upon request) |
| <b>Reed switch</b>                   |                                                                                   |
| Switching element                    | Power reed contact switches                                                       |
| number of switching contacts         | Upon request up to 2 NO or 2 CO (SPDT) contacts per function                      |
| Insensitivity to magnetic fields     | 25 mT                                                                             |
| Switching voltage max.               | 240 V DC / V AC                                                                   |
| Carry current max.                   | 3 A                                                                               |
| Switching current max. / 24 V DC     | 3 A                                                                               |
| Switching current max. / 240 V AC    | 0,4 A                                                                             |
| Contact rating max.                  | 100 W / VA                                                                        |
| Minimum applicable load              | 3 W; 125 mA / 24 V DC                                                             |
| <b>Key figures</b>                   |                                                                                   |
| Nominal pipe diameter                | DN25 / DN50 / DN80 / G 1½" threaded connection                                    |
| Ambient temperature                  | - 30 °C / + 55 °C (DIN EN 60068-2-78 : 2002-09)                                   |
| Temperature of the insulating liquid | - 30 °C / + 115 °C (low temperature design upon request)                          |
| Degree of protection                 | IP 65                                                                             |
| Gas volume for response              | 200 cm <sup>3</sup> - 300 cm <sup>3</sup>                                         |
| Viscosity of the insulating liquid   | < 1100 mm <sup>2</sup> /s                                                         |
| Cable gland                          | M 20 x 1,5 (others upon request)                                                  |
| Nominal installation position        | 0° - 5° (ascending towards expansion tank)                                        |
| <b>Tests</b>                         |                                                                                   |
| Vibration resistance                 | DIN EN 60068-2-6; 2 - 200 Hz; 7 mm; 20 m/s <sup>2</sup>                           |
| Shock resistance                     | DIN EN 60068-2-27; 1/2 sin; 250 m/s <sup>2</sup> ; 11 ms                          |
| Pressure resistance                  | 250 kPa                                                                           |
| Vacuum resistance                    | < 2,5 kPa                                                                         |
| <b>Flap valve</b>                    |                                                                                   |
| Flap valve                           | Magnetically held                                                                 |
| Response time                        | < 0,5 s                                                                           |
| Insulating liquid flow speed         | 0,65 m/s, 1 m/s, 1,5 m/s, 2 m/s, (each ±15%)                                      |

# Gas Sampling Device

MGSD2017-01

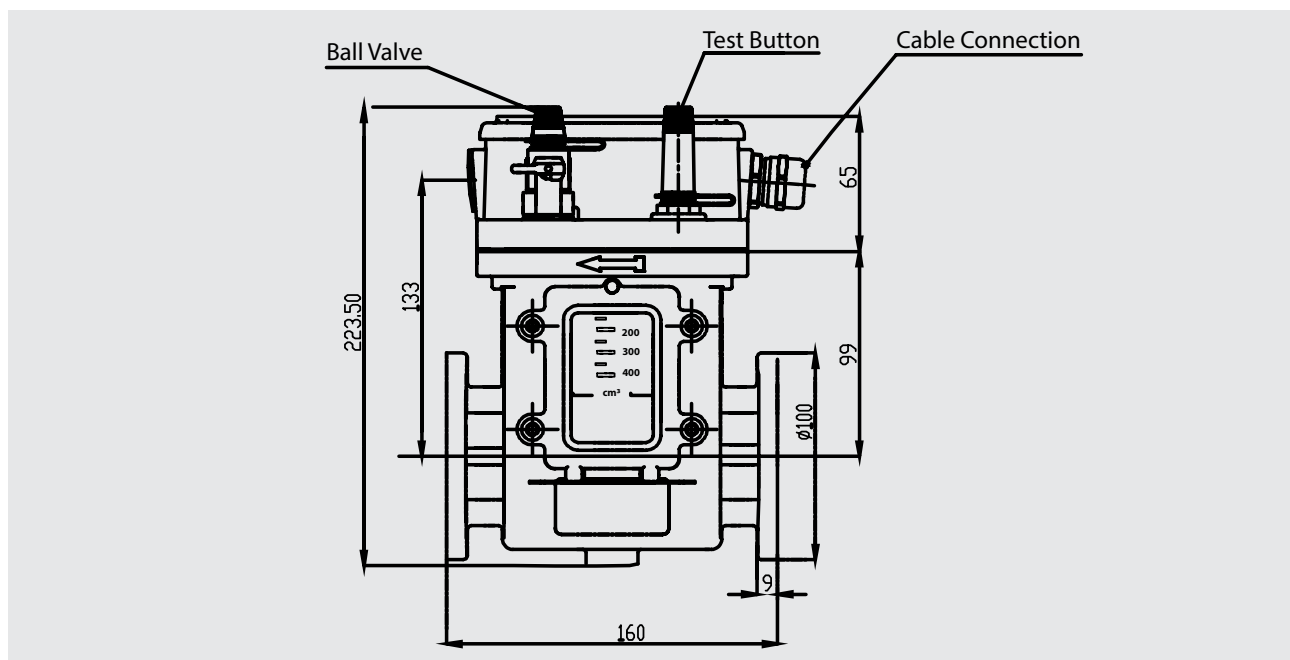
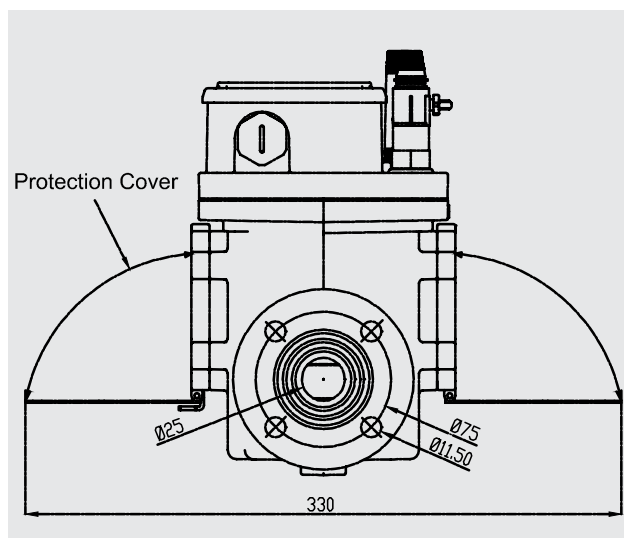


| Type | Type Number | Colour   | Weight (kg) |
|------|-------------|----------|-------------|
| MGSD | MGSD2017-01 | RAL 7033 | 1,9         |



## Buchholz Relay MBP in Accordance with EN 50216-2

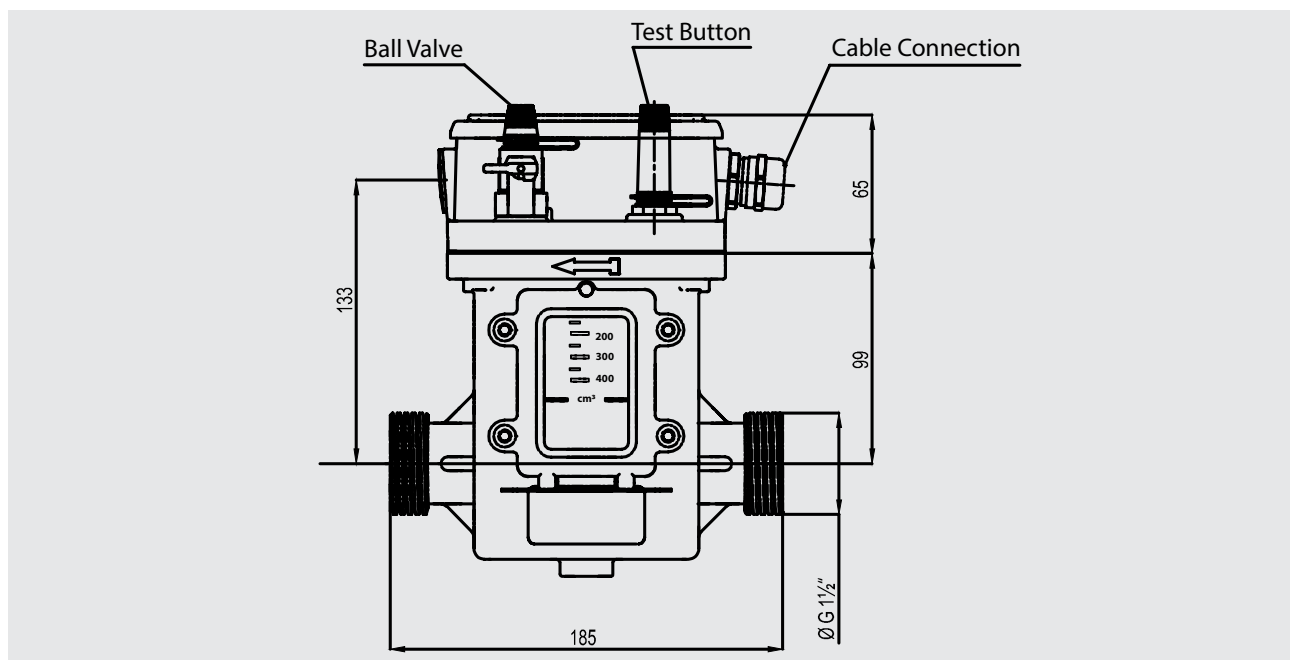
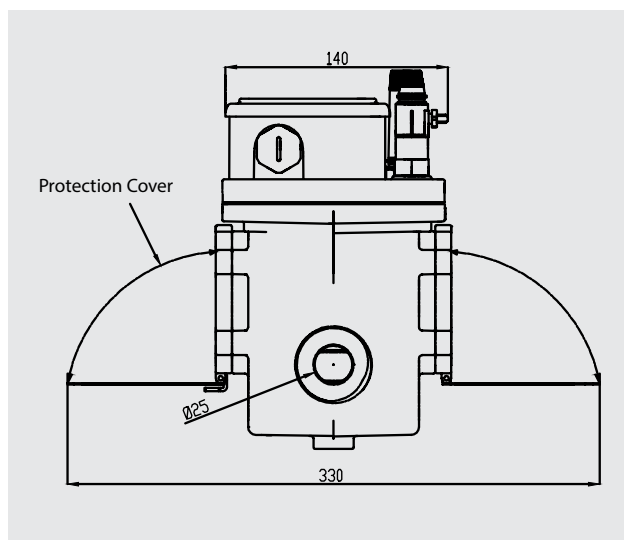
*MBP 25-F16*



| Type  | Type Number       | Connection        | Nominal Pipesize (mm) | Weight (kg) | Transformer Power Class |
|-------|-------------------|-------------------|-----------------------|-------------|-------------------------|
| MBP 1 | MBP25-F16 (DR 25) | Flange Connection | 25                    | 4,2         | ≤ 5 MVA                 |

## Buchholz Relay MBP in Accordance with EN 50216-2

*MBP 25-V50*

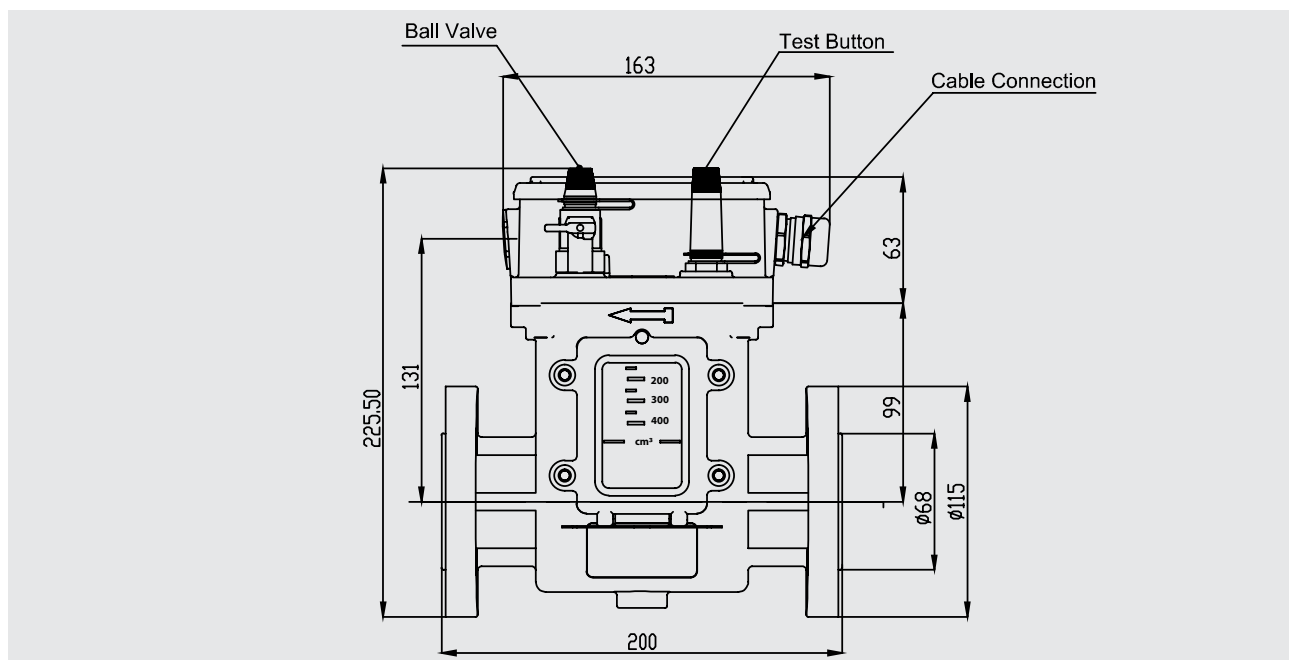
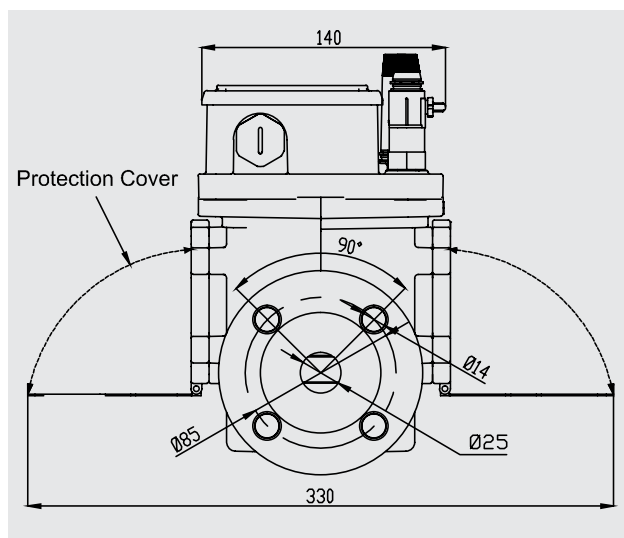


| Type  | Type Number       | Connection                   | Nominal Pipesize (mm) | Weight (kg) | Transformer Power Class |
|-------|-------------------|------------------------------|-----------------------|-------------|-------------------------|
| MBP 2 | MBP25-V50 (DR 25) | Threaded Connection G 1 1/2" | 25                    | 3,9         | ≤ 5 MVA                 |



## Buchholz Relay MBP in Accordance with EN 50216-2

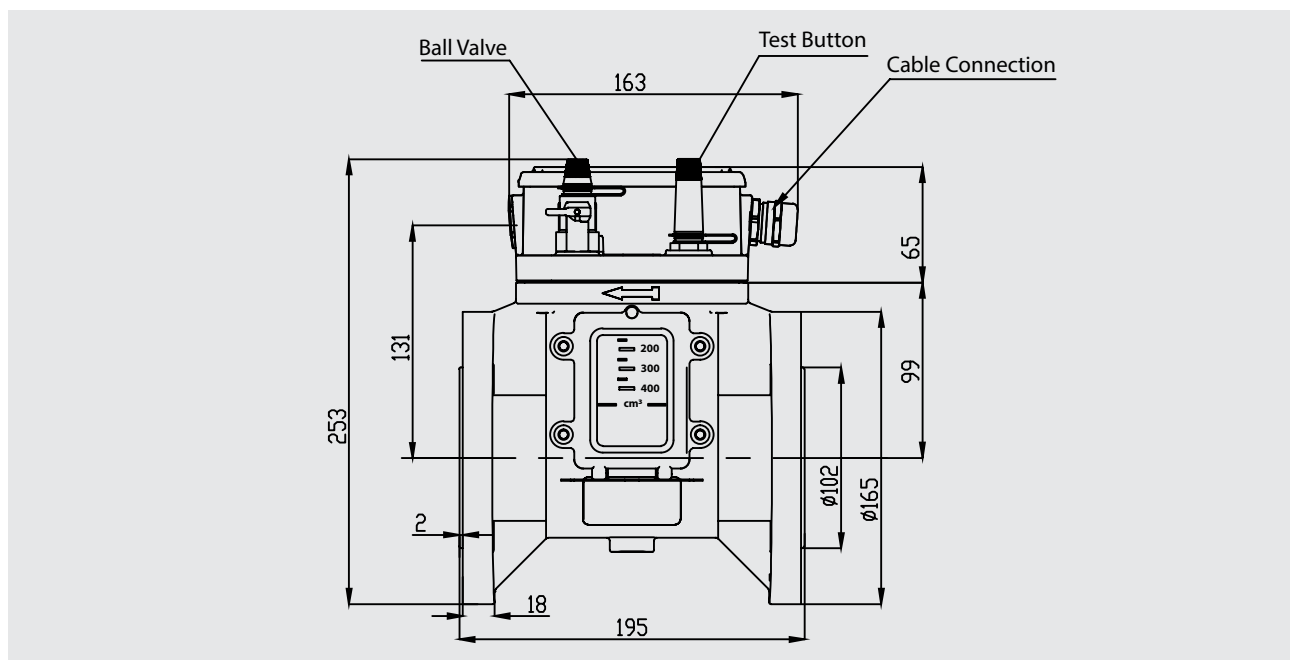
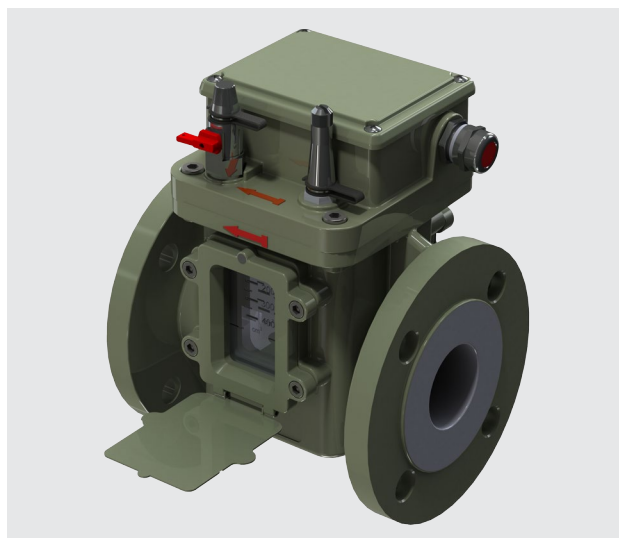
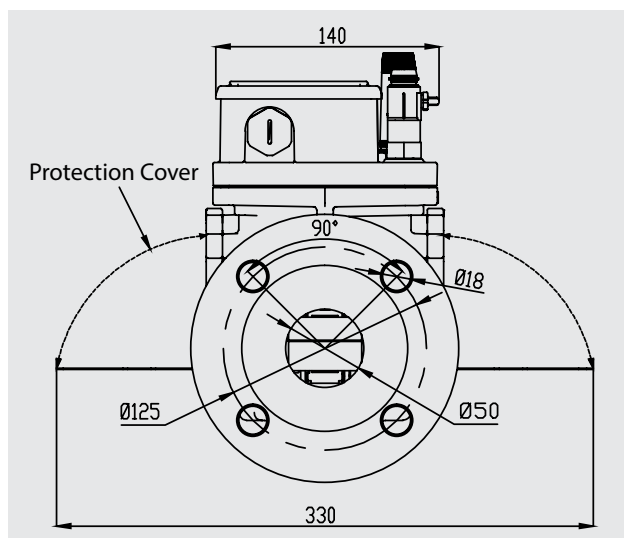
*MBP 25-F50*



| Type  | Type Number       | Connection        | Nominal Pipesize (mm) | Weight (kg) | Transformer Power Class |
|-------|-------------------|-------------------|-----------------------|-------------|-------------------------|
| MBP 3 | MBP25-F50 (DR 25) | Flange Connection | 25                    | 4,8         | ≤ 5 MVA                 |

## Buchholz Relay MBP in Accordance with EN 50216-2

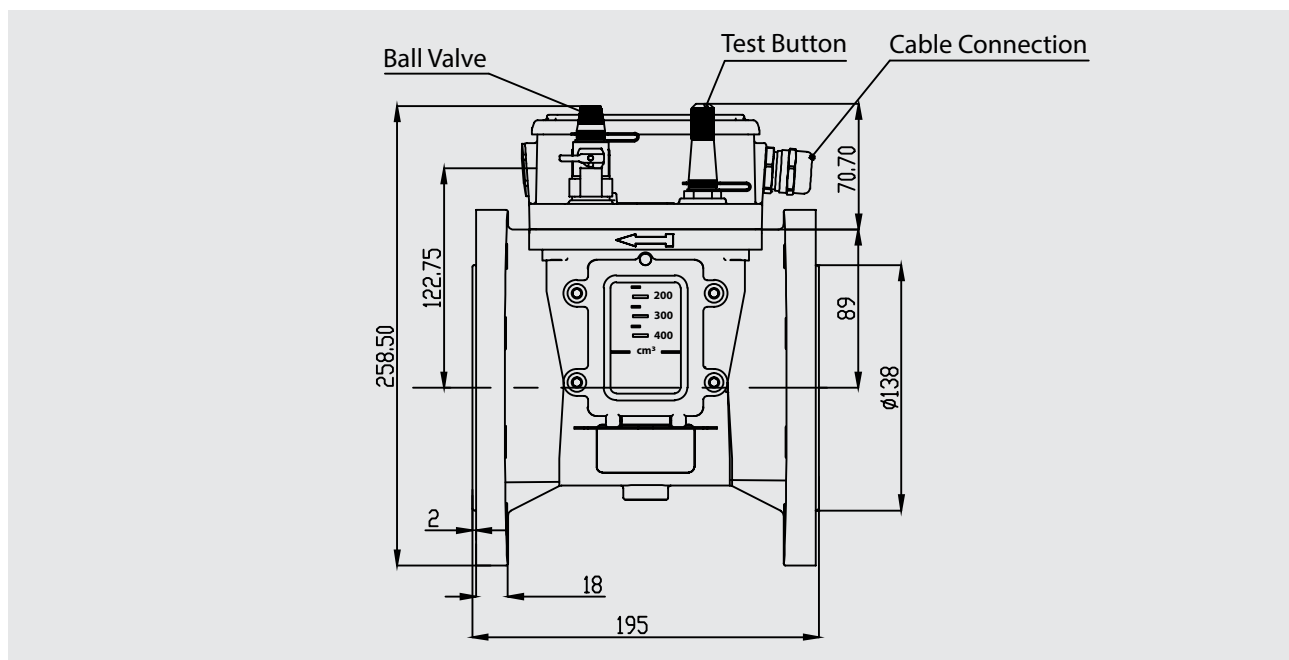
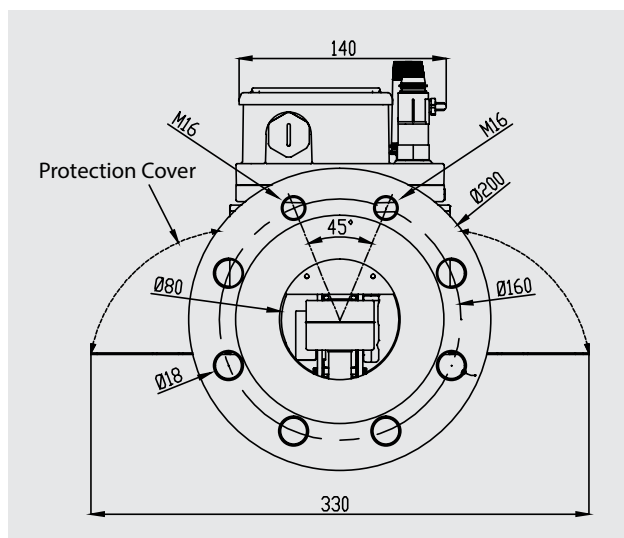
*MBP 50-F100*



| Type  | Type Number        | Connection        | Nominal Pipesize (mm) | Weight (kg) | Transformer Power Class                       |
|-------|--------------------|-------------------|-----------------------|-------------|-----------------------------------------------|
| MBP 4 | MBP50-F100 (DR 50) | Flange Connection | 50                    | 5,8         | $\leq 5 \text{ MVA}$<br>$\geq 10 \text{ MVA}$ |

## Buchholz Relay MBP in Accordance with EN 50216-2

*MBP 80-F100*

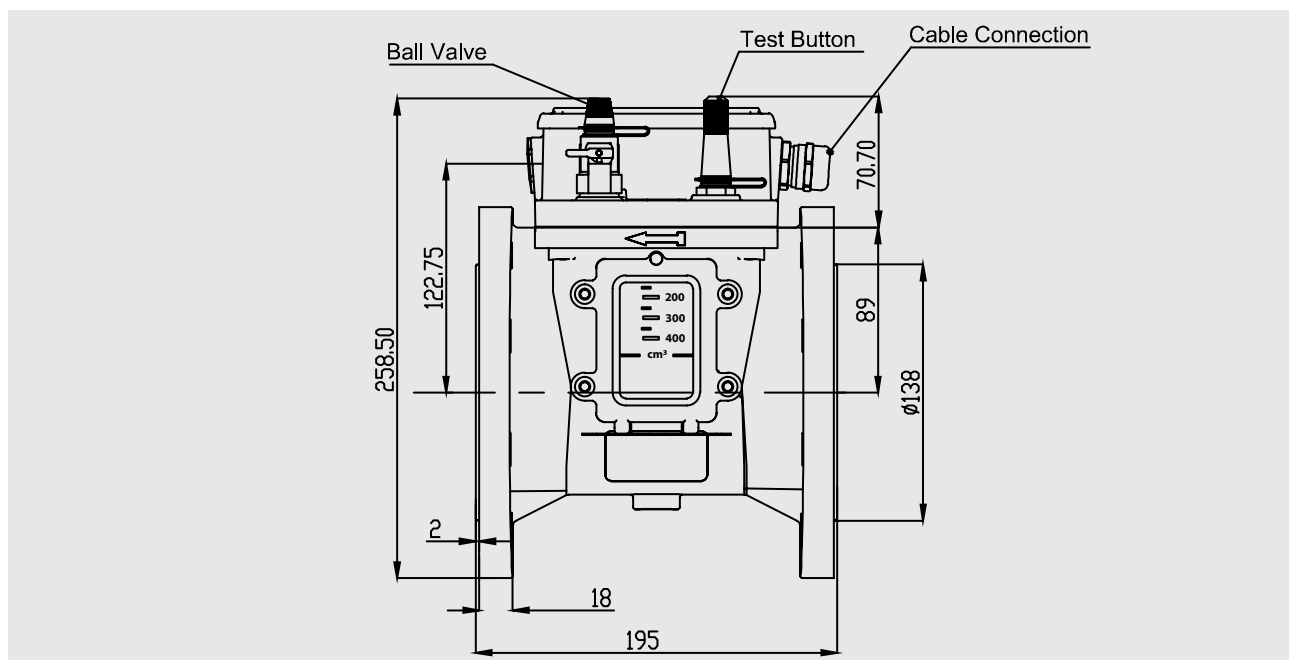
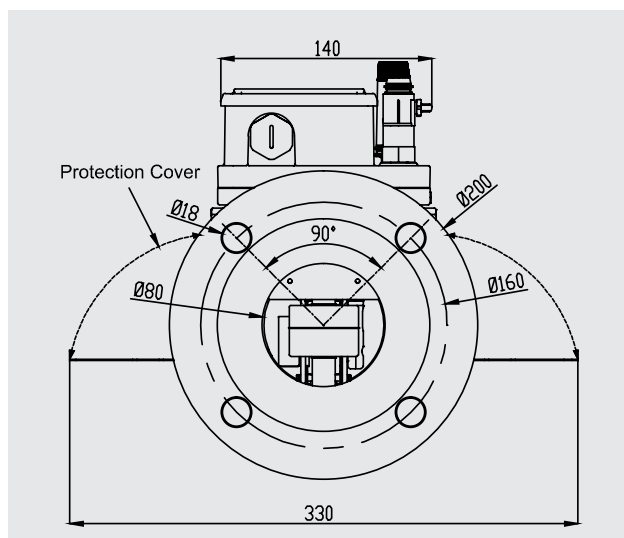


| Type  | Type Number        | Connection        | Nominal Pipesize (mm) | Weight (kg) | Transformer Power Class |
|-------|--------------------|-------------------|-----------------------|-------------|-------------------------|
| MBP 5 | MBP80-F100 (DR 80) | Flange Connection | 80                    | 6,2         | ≥ 10 MVA                |



## Buchholz Relay MBP in Accordance with EN 50216-2

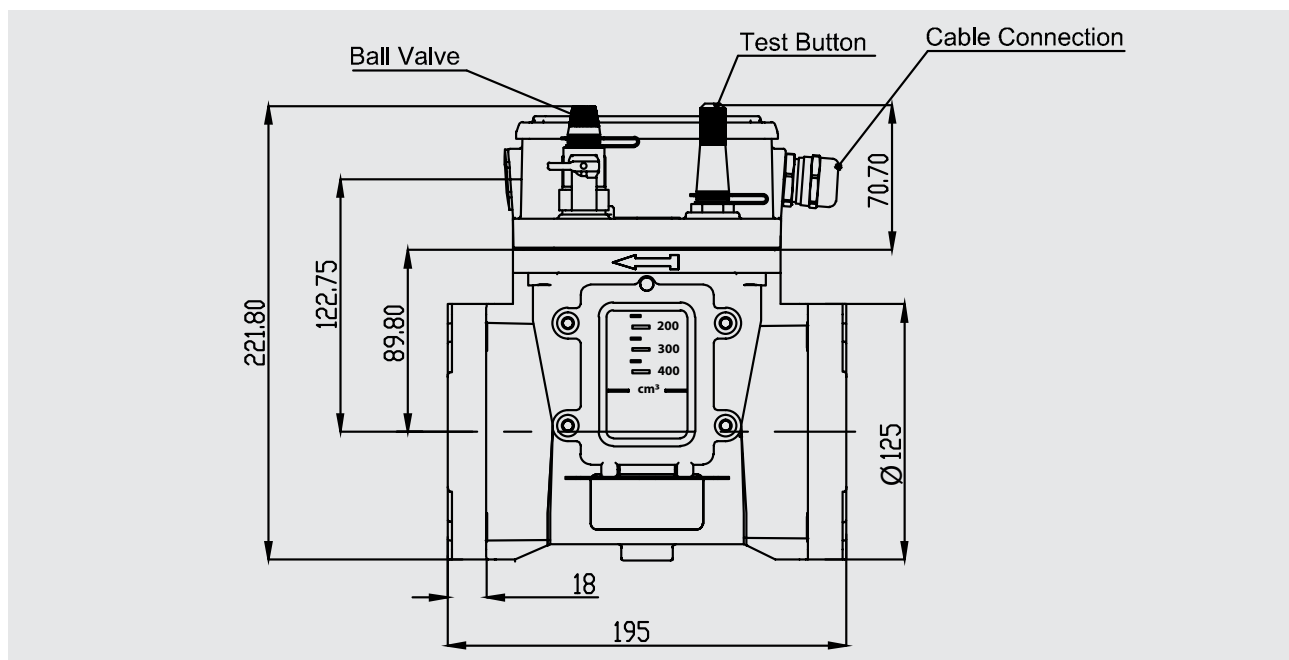
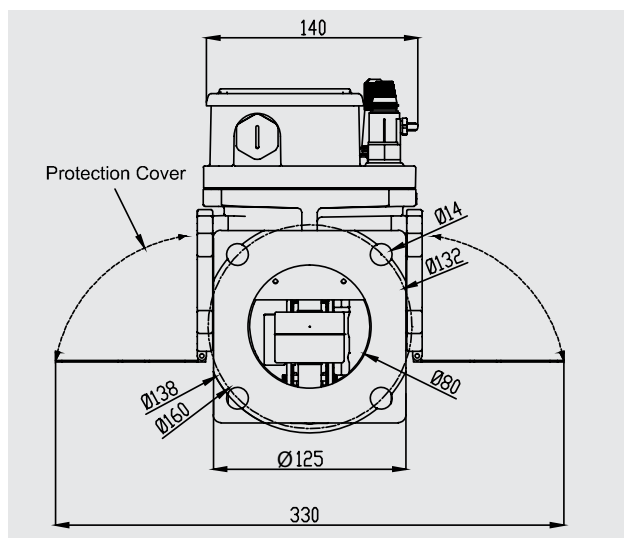
### MBP 80-F100 (4-Hole Flange)



| Type  | Type Number                  | Connection        | Nominal Pipesize (mm) | Weight (kg) | Transformer Power Class |
|-------|------------------------------|-------------------|-----------------------|-------------|-------------------------|
| MBP 6 | MBP80-F100<br>4-Hole (DR 80) | Flange Connection | 80                    | 6,5         | ≥ 10 MVA                |

## Buchholz Relay MBP in Accordance with EN 50216-2

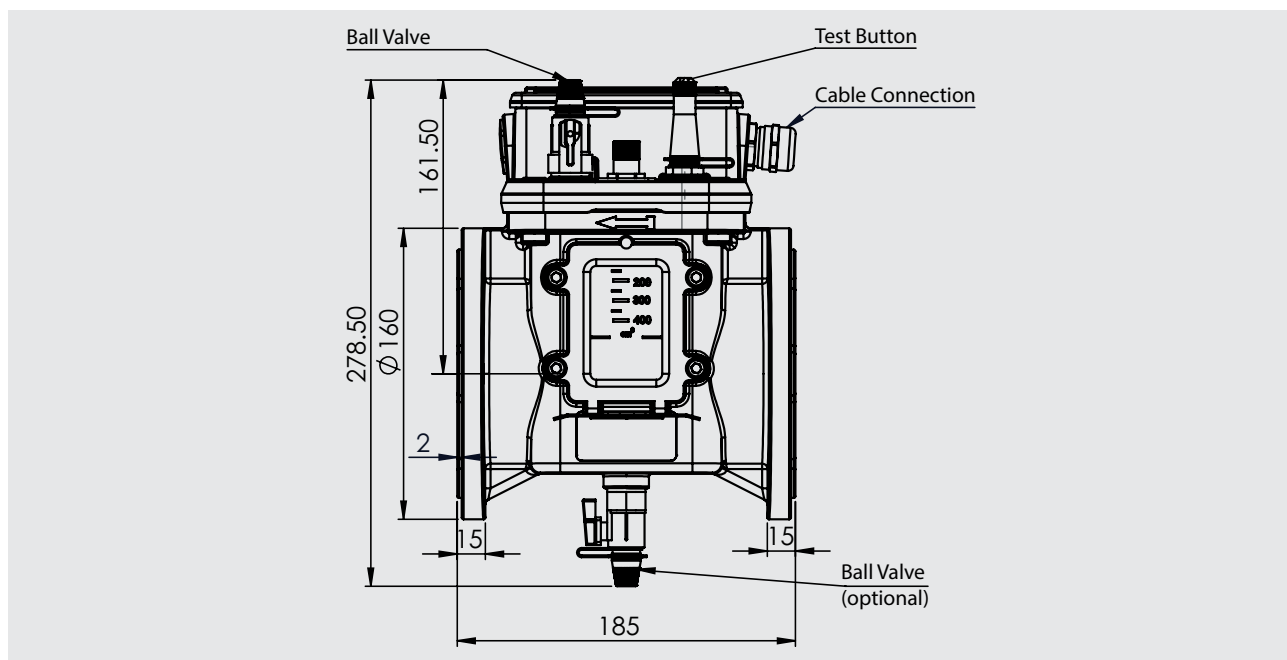
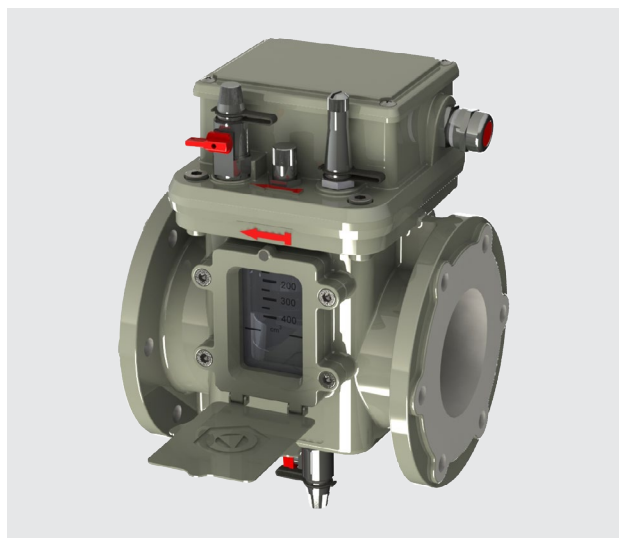
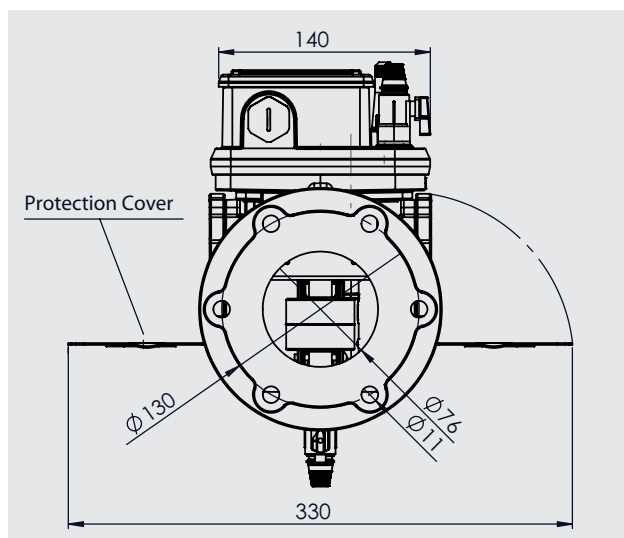
### MBP 80-F100 (Square Flange)



| Type  | Type Number                            | Connection        | Nominal Pipesize (mm) | Weight (kg) | Transformer Power Class |
|-------|----------------------------------------|-------------------|-----------------------|-------------|-------------------------|
| MBP 7 | MBP80-F100<br>Square Flange<br>(DR 80) | Flange Connection | 80                    | 5,8         | $\geq 10$ MVA           |

## Buchholz Relay MBP Special Design

### MBP 76-F100



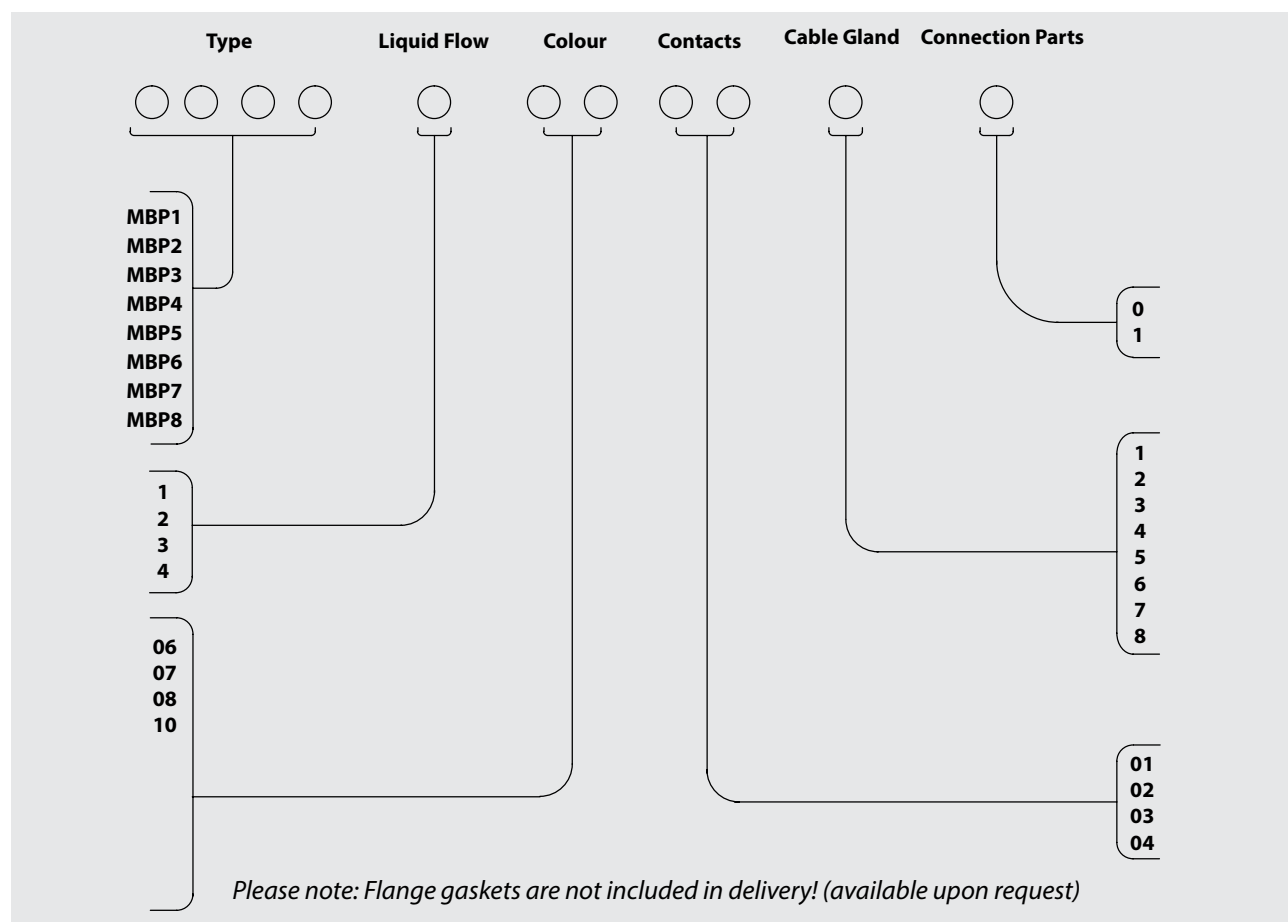
| Typ   | Typ Nummer | Anschluss        | Rohrnnweite DN (mm) | Gewicht (kg) | Transformatoren Leistungsgröße |
|-------|------------|------------------|---------------------|--------------|--------------------------------|
| MBP 8 | MBP76-F100 | Flanschanschluss | 76                  | 6,2          | $\geq 10$ MVA                  |



# Buchholz Relay MBP

## Ordering Options

In case of an order please select from the table below



| Type  | Insulating Liquid Flow |      | Colour<br>(more upon request) |           | Contacts    |      | Cable Gland        |      | Connection Parts |        |
|-------|------------------------|------|-------------------------------|-----------|-------------|------|--------------------|------|------------------|--------|
|       | m/s                    | Code | Type                          | Code      | Type        | Code | Type               | Code | Type             | Code   |
| MBP 1 | 0,65 m/s               | 1    | RAL 7032                      | 06        | 1 NO        | 01   | PG 16              | 1    | Without<br>With  | 0<br>1 |
| MBP 2 |                        |      |                               |           |             |      | PG 21              | 2    |                  |        |
| MBP 3 |                        |      |                               |           |             |      | M 20 x 1,5         | 3    |                  |        |
| MBP 4 |                        |      |                               |           |             |      | PG 16 (2 pcs)      | 4    |                  |        |
| MBP 5 | 1,00 m/s               | 2    | <b>RAL 7033</b>               | <b>07</b> | 1 CO (SPDT) | 02   | PG 21 (2 pcs)      | 5    |                  |        |
| MBP 6 | 1,50 m/s               | 3    | RAL 7035                      | 08        | 2 NO        | 03   | M 20 x 1,5 (2 pcs) | 6    |                  |        |
| MBP 7 | 2,00 m/s               | 4    | RAL 7035                      | 10        | 2 CO (SPDT) | 04   | M 25 x 1,5         | 7    |                  |        |
| MBP 8 |                        |      |                               |           |             |      | M 25 x 1,5 (2pcs)  | 8    |                  |        |



Radiator Valves



Protection Devices



Dehydrating Breathers



Oil Level Indicators



Pressure Relief Devices



Tank Components

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