



## Filter Clogging Indicators

### 1. TECHNICAL SPECIFICATIONS

#### 1.1 GENERAL

HYDAC clogging indicators are designed to indicate visually and/or electrically when the filter elements must be cleaned or changed. The operational safety of a system and efficient utilisation of a filter element can only be guaranteed if clogging indicators are used.

Depending on the type of filter, vacuum, return line or differential pressure clogging indicators are used.

#### 1.2 SEALS

NBR (= Perbunan) or V (= Viton)

#### 1.3 INSTALLATION

Some users install filters without clogging indicators and prefer instead to replace or clean the elements according to a specified time schedule or according to a set number of operating hours. However, this involves some risk.

Fitting a clogging indicator has two main advantages:

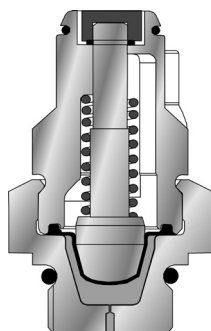
- The operator no longer has to estimate when the element is clogged.
- The unnecessary costs of changing the element too early are avoided.

All standard filters can be fitted with a clogging indicator at any time, by simply screwing it in.

#### 1.4 DESIGN

##### Return line indicators

These are used for return line and suction filters. In return line filters they react to the increasing static pressure before the filter element, and in suction filters to the decreasing pressure after the filter element, which is caused by increasing contamination.

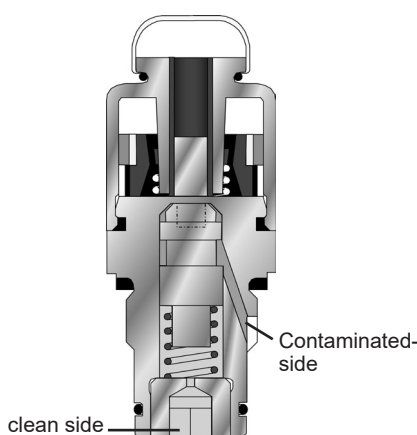


##### Differential pressure indicators

These are used for all inline filters and react to the increasing pressure differential caused by increasing contamination of the filter element.

The simplest installation of the differential clogging indicator is via G 1/2" cavity (according to HYDAC works standard HN 28-22)

The differential pressure indicator type V02 is piped up separately.



#### 1.5 SPECIAL INDICATORS

##### Mobile indicators

These indicators have been developed for special applications and are fitted with AMP Junior Power Timer, AMP Superseal or Deutsch plugs.

##### ATEX indicators

These indicators are used in potentially explosive locations and are subject to the ATEX Equipment Directive 2014/34/EU and the ATEX Operator Directive 1999/92/EG.



##### UL and CSA indicators

Indicators which are exported to the USA and Canada often require classification according to current UL and CSA standards. The UL and CSA symbols are found on many products, particularly in the field of electrical engineering.



#### 1.6 TABLE OF CONTENTS

| Contents                                              | Page:     |
|-------------------------------------------------------|-----------|
| <b>Quick selection table: by indicator type</b>       | <b>2</b>  |
| <b>Quick selection table: by filter type</b>          | <b>3</b>  |
| <b>Standard indicators</b>                            |           |
| Vacuum                                                | 4         |
| Return line                                           | 7         |
| Differential pressure                                 | 21        |
| <b>Indicator (VL...GW.x) for Condition Monitoring</b> | <b>24</b> |
| <b>Mobile indicators</b>                              |           |
| Return line                                           | 29        |
| Differential pressure                                 | 31        |
| <b>ATEX indicators</b>                                |           |
| Return line                                           | 34        |
| Differential pressure                                 | 36        |
| <b>UL/CSA indicators</b>                              |           |
| Differential pressure                                 | 38        |
| Return line                                           | 39        |
| <b>Model code - Standard</b>                          | <b>40</b> |
| <b>Adapters</b>                                       | <b>42</b> |
| <b>DESINA Specification</b>                           | <b>44</b> |

## 2. QUICK SELECTION TABLES FOR CLOGGING INDICATORS

### 2.1 BY INDICATOR TYPE

Please select the type of indicator you require from the table.

| Type                 |     | Vacuum indicator | Permitt. operating pressure [bar] | Return line indicator | Permitt. operating pressure [bar] | Differential pressure indicator | Permitt. operating pressure [bar] |
|----------------------|-----|------------------|-----------------------------------|-----------------------|-----------------------------------|---------------------------------|-----------------------------------|
| Visual               | B   |                  |                                   | ●                     | 7                                 | ●                               | 210/420                           |
|                      | BF  |                  |                                   |                       |                                   | ●                               | 40                                |
|                      | BM  |                  |                                   | ●                     | 7                                 | ●                               | 210/420                           |
|                      | E   |                  |                                   | ●                     | 7 (11)                            |                                 |                                   |
|                      | ES  |                  |                                   | ●                     | 7                                 |                                 |                                   |
|                      | K   | ●                | *                                 | ●                     | *                                 |                                 |                                   |
|                      | R   |                  |                                   | ●                     | 7                                 |                                 |                                   |
|                      | UBM | ●                | 0                                 |                       |                                   |                                 |                                   |
|                      | UE  | ●                | 0                                 |                       |                                   |                                 |                                   |
|                      | UED | ●                | 0                                 |                       |                                   |                                 |                                   |
|                      | V   |                  |                                   |                       |                                   | ●                               | 100                               |
| Electrical           | C   |                  |                                   | ●                     | 40                                | ●                               | 210/420                           |
|                      | D   |                  |                                   | ●                     | 40                                | ●                               | 210/420                           |
|                      | F   |                  |                                   | ●                     | 40                                |                                 |                                   |
|                      | LE  |                  |                                   | ●                     | 7                                 | ●                               | 420                               |
|                      | LZ  |                  |                                   | ●                     | 7                                 | ●                               | 420                               |
|                      | UF  | ●                | 0                                 |                       |                                   |                                 |                                   |
|                      | VE  |                  |                                   |                       |                                   | ●                               | 100                               |
|                      | VZ  |                  |                                   |                       |                                   | ●                               | 100                               |
| Electronic           | GC  |                  |                                   | ●                     | 7                                 | ●                               | 420                               |
|                      | GW  |                  |                                   |                       |                                   | ●                               | 25                                |
| Mobile               | CD  |                  |                                   |                       |                                   | ●                               | 210                               |
|                      | CJ  |                  |                                   |                       |                                   | ●                               | 210/420                           |
|                      | CM  |                  |                                   | ●                     | 40                                | ●                               | 210                               |
|                      | CS  |                  |                                   |                       |                                   | ●                               | 210/420                           |
|                      | FD  |                  |                                   | ●                     | 40                                |                                 |                                   |
|                      | FJ  |                  |                                   | ●                     | 40                                |                                 |                                   |
|                      | FS  |                  |                                   | ●                     | 40                                |                                 |                                   |
|                      | LEM |                  |                                   | ●                     | 7                                 | ●                               | 420                               |
|                      | M   |                  |                                   |                       |                                   | ●                               | 210                               |
| ATEX                 | B   |                  |                                   | ●                     | 7                                 | ●                               | 210/420                           |
|                      | C   |                  |                                   | ●                     | 40                                | ●                               | 210/420                           |
| UL Approval (=CRUUS) | C   |                  |                                   |                       |                                   | ●                               | 210/420                           |
| CSA Approval         | C   |                  |                                   | ●                     | 40                                |                                 |                                   |

\* Dependent on application.

## 2.2 BY FILTER TYPE

Please select the clogging indicator required for your filter from the table.

| Type         | BF | BL | BLT | DF<br>DFF | DFDK<br>DFDKN | DF<br>MA/QE<br>MP | DFM | DFN<br>DFNF | DFP<br>DFPF<br>DFFX | DFZ | ELF | FLN             | FLND<br>FMND | HDF<br>HDFX | HDP | HFM | LF<br>LFF       | LFM | LFN<br>LFNF |
|--------------|----|----|-----|-----------|---------------|-------------------|-----|-------------|---------------------|-----|-----|-----------------|--------------|-------------|-----|-----|-----------------|-----|-------------|
| B            |    |    |     | •         | •             | •                 | •   | •           |                     |     |     | •               | •            |             |     | •   | •               | •   | •           |
| BF           |    |    |     |           |               |                   |     |             |                     |     |     |                 |              |             |     |     |                 |     |             |
| BM           |    |    |     | •         | •             | •                 | •   | •           | •                   | •   |     | •               | •            | •           |     | •   | •               | •   | •           |
| E            |    |    |     |           |               |                   |     |             |                     |     |     |                 |              |             |     |     |                 |     |             |
| ES           |    |    |     |           |               |                   |     |             |                     |     |     |                 |              |             |     |     |                 |     |             |
| K            | •  | •  | •   |           |               |                   |     |             |                     |     | •   |                 |              |             |     |     |                 |     |             |
| R/RS         |    |    |     |           |               |                   |     |             |                     |     |     |                 |              |             |     |     |                 |     |             |
| UBM          | •  | •  | •   |           |               |                   |     |             |                     |     | •   |                 |              |             |     |     |                 |     |             |
| UE           |    |    |     |           |               |                   |     |             |                     |     |     | • <sup>1)</sup> |              |             |     |     | • <sup>1)</sup> |     |             |
| UED          |    |    |     |           |               |                   |     |             |                     |     |     |                 |              | •           |     |     |                 |     |             |
| V            |    |    |     |           |               |                   |     |             |                     |     |     |                 |              |             |     |     |                 |     |             |
| C            |    |    |     | •         | •             | •                 | •   | •           | •                   | •   |     | •               | •            | •           |     | •   | •               | •   | •           |
| D            |    |    |     | •         | •             | •                 | •   | •           | •                   | •   |     | •               | •            | •           |     | •   | •               | •   | •           |
| F            |    |    |     |           |               |                   |     |             |                     |     |     |                 |              |             |     |     |                 |     |             |
| LE           |    |    |     | •         | •             | •                 | •   | •           | •                   | •   |     | •               | •            | •           |     | •   | •               | •   | •           |
| LZ           |    |    |     | •         | •             | •                 | •   | •           | •                   | •   |     | •               | •            | •           |     | •   | •               | •   | •           |
| UF           |    |    |     |           |               |                   |     |             |                     |     |     | • <sup>1)</sup> |              |             |     |     | • <sup>1)</sup> |     |             |
| VE           |    |    |     |           |               |                   |     |             |                     |     |     |                 |              |             |     |     |                 |     |             |
| VZ           |    |    |     |           |               |                   |     |             |                     |     |     |                 |              |             |     |     |                 |     |             |
| GC           |    |    |     | •         | •             | •                 | •   | •           | •                   | •   |     | •               | •            | •           |     | •   | •               | •   | •           |
| GW           |    |    |     |           |               |                   |     |             |                     |     |     |                 |              |             |     |     |                 |     |             |
| CD           |    |    |     | •         | •             | •                 | •   | •           | •                   | •   |     | •               | •            | •           |     | •   | •               | •   | •           |
| CJ/CS        |    |    |     | •         | •             | •                 | •   | •           | •                   | •   |     | •               | •            | •           |     | •   | •               | •   | •           |
| CM           |    |    |     | •         | •             | •                 | •   | •           | •                   | •   |     | •               | •            | •           |     |     | •               | •   | •           |
| FJ/FD/<br>FS |    |    |     |           |               |                   |     |             |                     |     |     |                 |              |             |     |     |                 |     |             |
| M            |    |    |     |           |               |                   |     |             |                     |     |     | •               | •            |             |     |     | •               | •   | •           |
| LEM          |    |    |     | •         | •             | •                 | •   | •           | •                   | •   |     | •               | •            | •           |     | •   | •               | •   | •           |

| Type         | LPF             | MDF | MF              | MFD             | MFM | MFx | NF | NFD | RF | RFD | RFL             | RFLD | RFN | RFND | RFM | RKM | SF | SFF | SFM |
|--------------|-----------------|-----|-----------------|-----------------|-----|-----|----|-----|----|-----|-----------------|------|-----|------|-----|-----|----|-----|-----|
| B            | •               | •   |                 |                 | •   |     |    |     | •  | •   | •               | •    | •   | •    | •   | •   |    |     |     |
| BF           | •               |     |                 |                 |     | •   |    |     |    |     |                 |      |     |      |     |     |    |     |     |
| BM           | •               | •   |                 |                 | •   | •   | •  | •   | •  | •   | •               | •    | •   | •    | •   | •   |    |     |     |
| E            |                 |     | • <sup>2)</sup> | • <sup>2)</sup> |     |     |    |     | •  | •   |                 |      | •   | •    | •   |     |    |     |     |
| ES           |                 |     |                 |                 |     |     |    |     | •  | •   |                 |      | •   | •    | •   |     |    |     |     |
| K            |                 |     |                 |                 |     |     |    |     |    |     |                 |      |     |      |     |     |    |     |     |
| R/RS         |                 |     |                 |                 |     |     |    |     |    |     |                 |      |     |      |     | •   |    |     |     |
| UBM          |                 |     |                 |                 |     |     |    |     |    |     |                 |      |     |      |     |     |    |     |     |
| UE           | • <sup>1)</sup> |     | • <sup>1)</sup> | • <sup>1)</sup> |     |     |    |     |    |     | • <sup>1)</sup> |      |     |      |     | •   | •  | •   | •   |
| V            |                 |     |                 |                 |     |     |    |     |    |     | •               | •    |     |      |     |     |    |     |     |
| C            | •               | •   |                 |                 | •   | •   | •  | •   | •  | •   | •               | •    | •   | •    | •   | •   |    |     |     |
| D            | •               | •   |                 |                 | •   | •   | •  | •   | •  | •   | •               | •    | •   | •    | •   | •   |    |     |     |
| F            |                 |     | •               | •               |     |     |    |     | •  | •   |                 |      | •   | •    | •   | •   |    |     |     |
| LE           | •               | •   |                 |                 | •   | •   | •  | •   | •  | •   | •               | •    | •   | •    | •   | •   |    |     |     |
| LZ           | •               | •   |                 |                 | •   | •   | •  | •   | •  | •   | •               | •    | •   | •    | •   | •   |    |     |     |
| UF           | • <sup>1)</sup> |     | • <sup>1)</sup> | • <sup>1)</sup> |     |     |    |     |    |     | • <sup>1)</sup> |      |     |      |     | •   | •  | •   | •   |
| VE           |                 |     |                 |                 |     |     |    |     |    |     | •               | •    |     |      |     |     |    |     |     |
| VZ           |                 |     |                 |                 |     |     |    |     |    |     | •               | •    |     |      |     |     |    |     |     |
| GC           | •               | •   |                 |                 | •   |     | •  | •   | •  | •   | •               | •    | •   | •    | •   | •   |    |     |     |
| GW           | •               |     |                 |                 |     |     | •  | •   |    |     | •               | •    |     |      |     |     |    |     |     |
| CD           | •               | •   |                 |                 | •   |     | •  | •   | •  | •   | •               | •    | •   | •    | •   | •   |    |     |     |
| CJ/CS        | •               | •   |                 |                 | •   |     | •  | •   | •  | •   | •               | •    | •   | •    | •   | •   |    |     |     |
| CM           | •               | •   |                 |                 |     | •   | •  | •   | •  | •   | •               | •    | •   | •    | •   | •   |    |     |     |
| FJ/FD/<br>FS |                 |     | •               | •               |     |     |    |     | •  | •   |                 |      | •   | •    | •   | •   |    |     |     |
| M            | •               |     |                 |                 |     | •   |    |     |    |     |                 |      |     |      |     |     |    |     |     |
| LEM          | •               | •   |                 |                 | •   | •   | •  | •   | •  | •   | •               | •    | •   | •    | •   | •   |    |     |     |

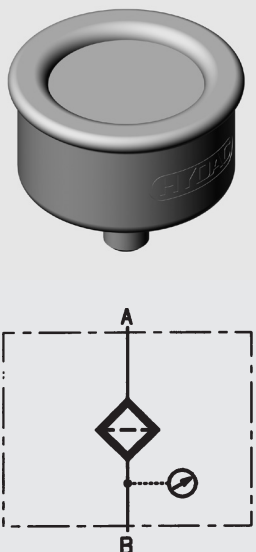
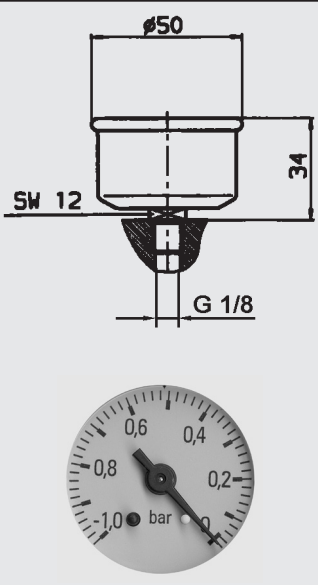
<sup>1)</sup> Can only be used for suction operation

<sup>2)</sup> Use VMF 16 E.0 only

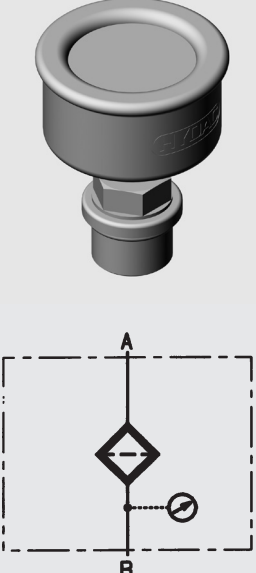
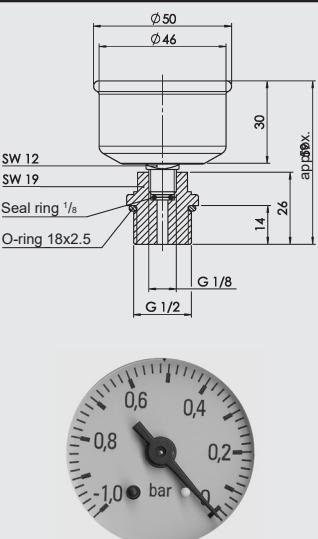
### 3. SPECIFICATIONS

#### 3.1 VACUUM INDICATORS

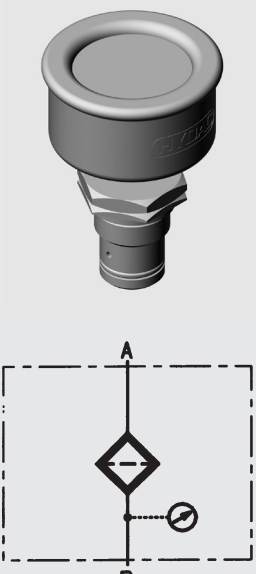
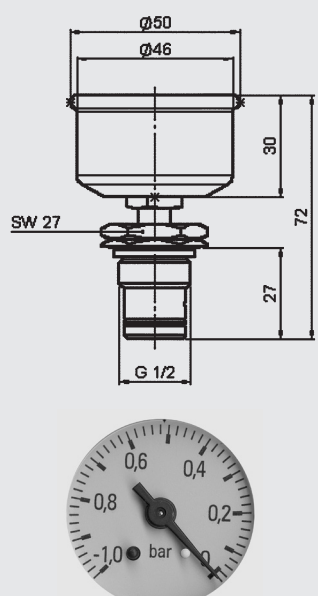
##### VMF x UE.x

|                                                                                   |                                          |                                   |                                                                                     |
|-----------------------------------------------------------------------------------|------------------------------------------|-----------------------------------|-------------------------------------------------------------------------------------|
|  | Type of indication                       | visual-analogue, scale indication |  |
|                                                                                   | Weight                                   | 53 g                              |                                                                                     |
|                                                                                   | Pressure setting or indication range     | -1 bar to 0 bar                   |                                                                                     |
|                                                                                   | Permitt. operating pressure              | -0.7 to 0 bar continuous          |                                                                                     |
|                                                                                   | Permitt. temperature range               | -20 °C to +60 °C                  |                                                                                     |
|                                                                                   | Thread                                   | G 1/8                             |                                                                                     |
|                                                                                   | Max. torque                              | 10 Nm                             |                                                                                     |
|                                                                                   | Switching type                           | -                                 |                                                                                     |
|                                                                                   | Max. switching voltage                   | -                                 |                                                                                     |
|                                                                                   | Electrical connection                    | -                                 |                                                                                     |
|                                                                                   | Max. switching voltage at resistive load | -                                 |                                                                                     |
|                                                                                   | switching capacity                       | -                                 |                                                                                     |
|                                                                                   | Protection class to DIN 40050            | -                                 |                                                                                     |
|                                                                                   | Order example                            | VMF 1 UE.0                        |                                                                                     |

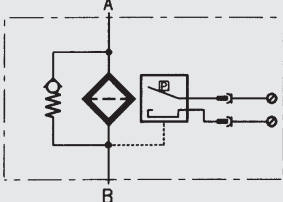
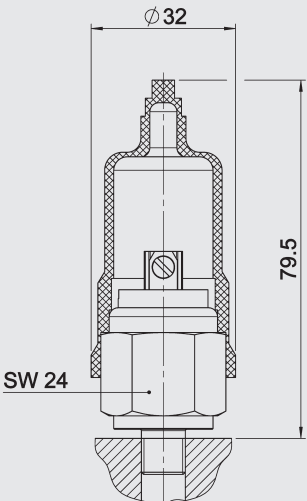
##### VR x UE.x

|                                                                                    |                                          |                                   |                                                                                      |
|------------------------------------------------------------------------------------|------------------------------------------|-----------------------------------|--------------------------------------------------------------------------------------|
|  | Type of indication                       | visual-analogue, scale indication |  |
|                                                                                    | Weight                                   | 125 g                             |                                                                                      |
|                                                                                    | Pressure setting or indication range     | -1 bar to 0 bar                   |                                                                                      |
|                                                                                    | Permitt. operating pressure              | -0.7 to 0 bar continuous          |                                                                                      |
|                                                                                    | Permitt. temperature range               | -20 °C to +60 °C                  |                                                                                      |
|                                                                                    | Thread                                   | G 1/2                             |                                                                                      |
|                                                                                    | Max. torque                              | 30 Nm                             |                                                                                      |
|                                                                                    | Switching type                           | -                                 |                                                                                      |
|                                                                                    | Max. switching voltage                   | -                                 |                                                                                      |
|                                                                                    | Electrical connection                    | -                                 |                                                                                      |
|                                                                                    | Max. switching voltage at resistive load | -                                 |                                                                                      |
|                                                                                    | switching capacity                       | -                                 |                                                                                      |
|                                                                                    | Protection class to DIN 40050            | -                                 |                                                                                      |
|                                                                                    | Order example                            | VR 1 UE.0                         |                                                                                      |

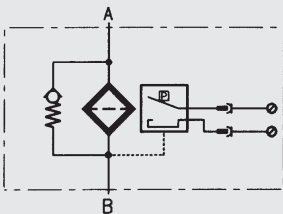
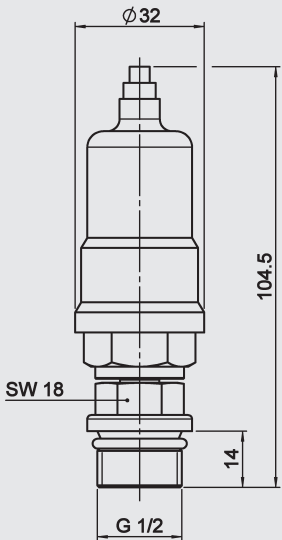
##### VRD x UE.x

|                                                                                     |                                          |                                   |                                                                                       |
|-------------------------------------------------------------------------------------|------------------------------------------|-----------------------------------|---------------------------------------------------------------------------------------|
|  | Type of indication                       | visual-analogue, scale indication |  |
|                                                                                     | Weight                                   | 133 g                             |                                                                                       |
|                                                                                     | Pressure setting or indication range     | -1 bar to 0 bar                   |                                                                                       |
|                                                                                     | Permitt. operating pressure              | -0.7 to 0 bar continuous          |                                                                                       |
|                                                                                     | Permitt. temperature range               | -20 °C to +60 °C                  |                                                                                       |
|                                                                                     | Thread                                   | G 1/2                             |                                                                                       |
|                                                                                     | Max. torque                              | 33 Nm                             |                                                                                       |
|                                                                                     | Switching type                           | -                                 |                                                                                       |
|                                                                                     | Max. switching voltage                   | -                                 |                                                                                       |
|                                                                                     | Electrical connection                    | -                                 |                                                                                       |
|                                                                                     | Max. switching voltage at resistive load | -                                 |                                                                                       |
|                                                                                     | switching capacity                       | -                                 |                                                                                       |
|                                                                                     | Protection class to DIN 40050            | -                                 |                                                                                       |
|                                                                                     | Order example                            | VRD 1 UE.0                        |                                                                                       |

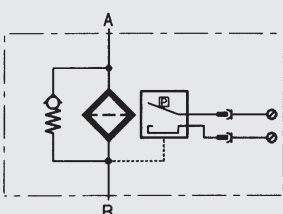
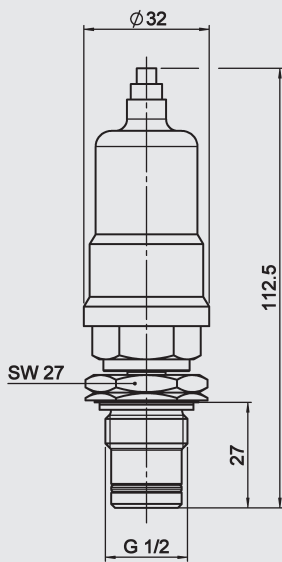
## VMF x UF.x

|                                                                                                                                                                     |                                          |                                             |                                                                                     |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------|---------------------------------------------|-------------------------------------------------------------------------------------|
|   | Type of indication                       | electrical switch                           |  |
|                                                                                                                                                                     | Weight                                   | 75 g                                        |                                                                                     |
|                                                                                                                                                                     | Pressure setting or indication range     | -0.2 bar $\pm$ 0.1 bar                      |                                                                                     |
|                                                                                                                                                                     | Permitt. operating pressure              | 40 bar                                      |                                                                                     |
|                                                                                                                                                                     | Permitt. temperature range               | -30 °C to +100 °C                           |                                                                                     |
|                                                                                                                                                                     | Thread                                   | G 1/8                                       |                                                                                     |
|                                                                                                                                                                     | Max. torque                              | 10 Nm                                       |                                                                                     |
|                                                                                                                                                                     | Switching type                           | N/O contact (N/C as an option)              |                                                                                     |
|                                                                                                                                                                     | Max. switching voltage                   | 48 V                                        |                                                                                     |
|                                                                                                                                                                     | Electrical connection                    | threaded connection                         |                                                                                     |
|                                                                                                                                                                     | Max. switching voltage at resistive load | 60 W = 100 VA ~                             |                                                                                     |
|                                                                                                                                                                     | switching capacity                       | ohmic 2.5 A at 24 V = ohmic 2.5 A at 42 V ~ |                                                                                     |
|                                                                                                                                                                     | Protection class to DIN 40050            | IP 65, terminals IP 00                      |                                                                                     |
|                                                                                                                                                                     | Order example                            | VMF 0.2 UF.1                                |                                                                                     |

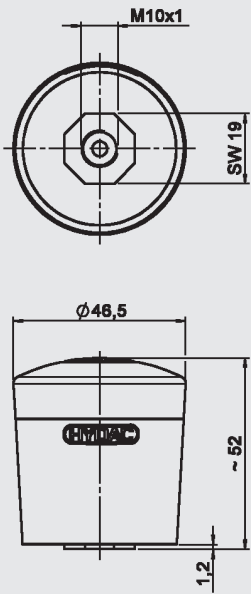
## VR x UF.x

|                                                                                                                                                                        |                                          |                                             |                                                                                      |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------|---------------------------------------------|--------------------------------------------------------------------------------------|
|   | Type of indication                       | electrical switch                           |  |
|                                                                                                                                                                        | Weight                                   | 146 g                                       |                                                                                      |
|                                                                                                                                                                        | Pressure setting or indication range     | -0.2 bar $\pm$ 0.1 bar                      |                                                                                      |
|                                                                                                                                                                        | Permitt. operating pressure              | 40 bar                                      |                                                                                      |
|                                                                                                                                                                        | Permitt. temperature range               | -30 °C to +100 °C                           |                                                                                      |
|                                                                                                                                                                        | Thread                                   | G 1/2                                       |                                                                                      |
|                                                                                                                                                                        | Max. torque                              | 30 Nm                                       |                                                                                      |
|                                                                                                                                                                        | Switching type                           | N/O contact (N/C as an option)              |                                                                                      |
|                                                                                                                                                                        | Max. switching voltage                   | 48 V                                        |                                                                                      |
|                                                                                                                                                                        | Electrical connection                    | threaded connection                         |                                                                                      |
|                                                                                                                                                                        | Max. switching voltage at resistive load | 60 W = 100 VA ~                             |                                                                                      |
|                                                                                                                                                                        | switching capacity                       | ohmic 2.5 A at 24 V = ohmic 2.5 A at 42 V ~ |                                                                                      |
|                                                                                                                                                                        | Protection class to DIN 40050            | IP 65, terminals IP 00                      |                                                                                      |
|                                                                                                                                                                        | Order example                            | VR 0.2 UF.1                                 |                                                                                      |

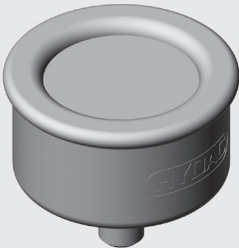
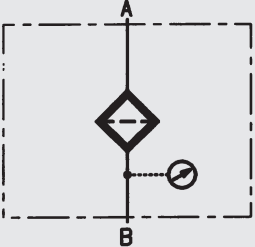
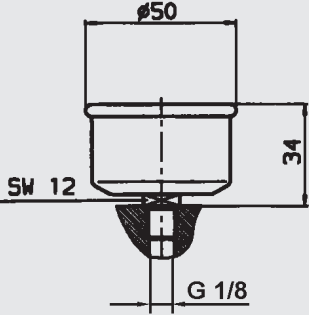
## VRD x UF.x

|                                                                                                                                                                         |                                          |                                             |                                                                                       |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------|---------------------------------------------|---------------------------------------------------------------------------------------|
|   | Type of indication                       | electrical switch                           |  |
|                                                                                                                                                                         | Weight                                   | 154 g                                       |                                                                                       |
|                                                                                                                                                                         | Pressure setting or indication range     | -0.2 bar $\pm$ 0.1 bar                      |                                                                                       |
|                                                                                                                                                                         | Permitt. operating pressure              | 40 bar                                      |                                                                                       |
|                                                                                                                                                                         | Permitt. temperature range               | -30 °C to +100 °C                           |                                                                                       |
|                                                                                                                                                                         | Thread                                   | G 1/2                                       |                                                                                       |
|                                                                                                                                                                         | Max. torque                              | 33 Nm                                       |                                                                                       |
|                                                                                                                                                                         | Switching type                           | N/O contact (N/C as an option)              |                                                                                       |
|                                                                                                                                                                         | Max. switching voltage                   | 48 V                                        |                                                                                       |
|                                                                                                                                                                         | Electrical connection                    | threaded connection                         |                                                                                       |
|                                                                                                                                                                         | Max. switching voltage at resistive load | 60 W = 100 VA ~                             |                                                                                       |
|                                                                                                                                                                         | switching capacity                       | ohmic 2.5 A at 24 V = ohmic 2.5 A at 42 V ~ |                                                                                       |
|                                                                                                                                                                         | Protection class to DIN 40050            | IP 65, terminals IP 00                      |                                                                                       |
|                                                                                                                                                                         | Order example                            | VRD 0.2 UF.1                                |                                                                                       |

## VMF x UBM.x

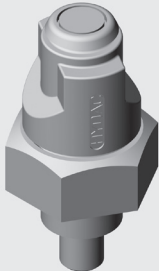
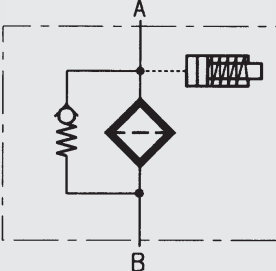
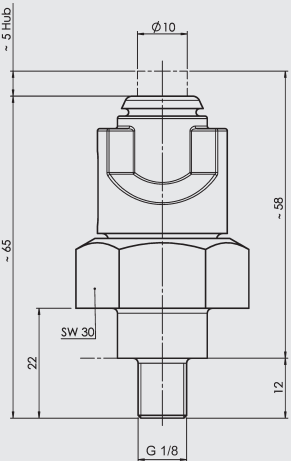
|                                                                                   |                                          |                    |                                                                                     |
|-----------------------------------------------------------------------------------|------------------------------------------|--------------------|-------------------------------------------------------------------------------------|
|  | Type of indication                       | visual, yellow pin |  |
|                                                                                   | Weight                                   | 54 g               |                                                                                     |
|                                                                                   | Pressure setting or indication range     | -0.035 bar         |                                                                                     |
|                                                                                   | Permitt. operating pressure              | 1 bar              |                                                                                     |
|                                                                                   | Permitt. temperature range               | -30 °C to +100 °C  |                                                                                     |
|                                                                                   | Thread                                   | M10 x 1            |                                                                                     |
|                                                                                   | Max. torque                              | 2 Nm               |                                                                                     |
|                                                                                   | Switching type                           | -                  |                                                                                     |
|                                                                                   | Max. switching voltage                   | -                  |                                                                                     |
|                                                                                   | Electrical connection                    | -                  |                                                                                     |
|                                                                                   | Max. switching voltage at resistive load | -                  |                                                                                     |
|                                                                                   | switching capacity                       | -                  |                                                                                     |
|                                                                                   | Protection class to DIN 40050            | -                  |                                                                                     |
|                                                                                   | Order example                            | VMF 0.035 UBM.0    |                                                                                     |

## VMF x UED.x

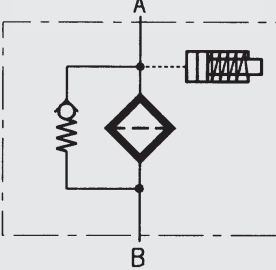
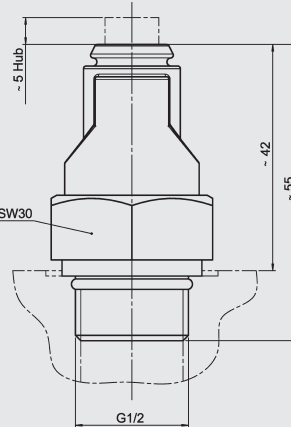
|                                                                                                                                                                           |                                          |                                                              |                                                                                                                                                                               |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------|--------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <br> | Type of indication                       | visual-analogue, scale indication (filled with silicone oil) | <br> |
|                                                                                                                                                                           | Weight                                   | 85 g                                                         |                                                                                                                                                                               |
|                                                                                                                                                                           | Pressure setting or indication range     | -1 bar to 0 bar                                              |                                                                                                                                                                               |
|                                                                                                                                                                           | Permitt. operating pressure              | -0.7 to 0 bar continuous                                     |                                                                                                                                                                               |
|                                                                                                                                                                           | Permitt. temperature range               | -20 °C to +90 °C                                             |                                                                                                                                                                               |
|                                                                                                                                                                           | Thread                                   | G 1/8                                                        |                                                                                                                                                                               |
|                                                                                                                                                                           | Max. torque                              | 10 Nm                                                        |                                                                                                                                                                               |
|                                                                                                                                                                           | Switching type                           | -                                                            |                                                                                                                                                                               |
|                                                                                                                                                                           | Max. switching voltage                   | -                                                            |                                                                                                                                                                               |
|                                                                                                                                                                           | Electrical connection                    | -                                                            |                                                                                                                                                                               |
|                                                                                                                                                                           | Max. switching voltage at resistive load | -                                                            |                                                                                                                                                                               |
|                                                                                                                                                                           | switching capacity                       | -                                                            |                                                                                                                                                                               |
|                                                                                                                                                                           | Protection class to DIN 40050            | -                                                            |                                                                                                                                                                               |
|                                                                                                                                                                           | Order example                            | VMF 1 UED.0                                                  |                                                                                                                                                                               |

### 3.2 RETURN LINE INDICATORS

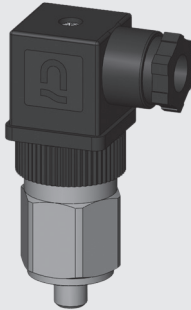
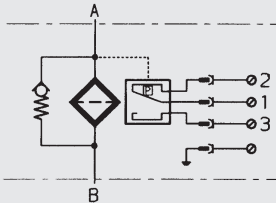
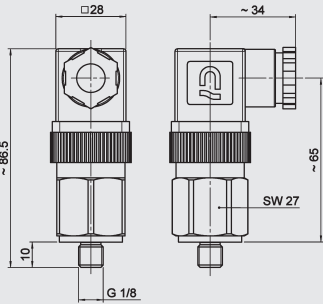
#### VMF x B.x

|                                                                                                                                                                     |                                                                                     |                   |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------|
|   | Type of indication                                                                  | visual, red pin   |
|                                                                                                                                                                     | Weight                                                                              | 81 g              |
|                                                                                                                                                                     | Pressure setting or indication range                                                | 2 bar -0.2 bar    |
|                                                                                                                                                                     | Permitt. operating pressure                                                         | 7 bar             |
|                                                                                                                                                                     | Permitt. temperature range                                                          | -10 °C to +100 °C |
|                                                                                                                                                                     | Thread                                                                              | G 1/8             |
|                                                                                                                                                                     | Max. torque                                                                         | 10 Nm             |
|                                                                                                                                                                     | Switching type                                                                      | -                 |
|                                                                                                                                                                     | Max. switching voltage                                                              | -                 |
|                                                                                                                                                                     | Electrical connection                                                               | -                 |
|                                                                                                                                                                     | Max. switching voltage at resistive load                                            | -                 |
|                                                                                                                                                                     | switching capacity                                                                  | -                 |
|                                                                                                                                                                     | Protection class to DIN 40050                                                       | -                 |
|                                                                                                                                                                     | Order example                                                                       | VMF 2 B.1         |
|                                                                                                                                                                     |  |                   |

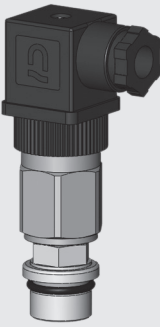
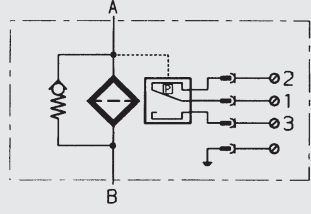
#### VR x B.x

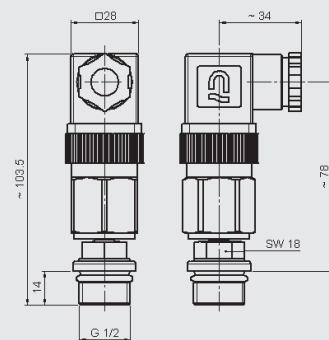
|                                                                                                                                                                        |                                                                                      |                   |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|-------------------|
|   | Type of indication                                                                   | visual, red pin   |
|                                                                                                                                                                        | Weight                                                                               | 42 g              |
|                                                                                                                                                                        | Pressure setting or indication range                                                 | 2 bar -0.2 bar    |
|                                                                                                                                                                        | Permitt. operating pressure                                                          | 7 bar             |
|                                                                                                                                                                        | Permitt. temperature range                                                           | -10 °C to +100 °C |
|                                                                                                                                                                        | Thread                                                                               | G 1/2             |
|                                                                                                                                                                        | Max. torque                                                                          | 15 Nm             |
|                                                                                                                                                                        | Switching type                                                                       | -                 |
|                                                                                                                                                                        | Max. switching voltage                                                               | -                 |
|                                                                                                                                                                        | Electrical connection                                                                | -                 |
|                                                                                                                                                                        | Max. switching voltage at resistive load                                             | -                 |
|                                                                                                                                                                        | switching capacity                                                                   | -                 |
|                                                                                                                                                                        | Protection class to DIN 40050                                                        | -                 |
|                                                                                                                                                                        | Order example                                                                        | VR 2 B.1          |
|                                                                                                                                                                        |  |                   |

#### VMF x C.x

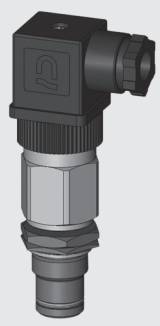
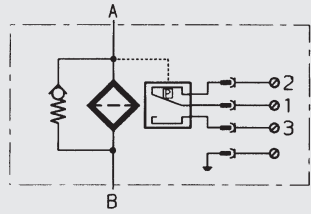
|                                                                                                                                                                         |                                                                                       |                                                              |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|--------------------------------------------------------------|
|   | Type of indication                                                                    | electrical switch                                            |
|                                                                                                                                                                         | Weight                                                                                | 121 g                                                        |
|                                                                                                                                                                         | Pressure setting or indication range                                                  | 2 bar -0.3 bar                                               |
|                                                                                                                                                                         | Permitt. operating pressure                                                           | 40 bar                                                       |
|                                                                                                                                                                         | Permitt. temperature range                                                            | -30 °C to +100 °C                                            |
|                                                                                                                                                                         | Thread                                                                                | G 1/8                                                        |
|                                                                                                                                                                         | Max. torque                                                                           | 10 Nm                                                        |
|                                                                                                                                                                         | Switching type                                                                        | N/C or N/O (change-over contacts)                            |
|                                                                                                                                                                         | Max. switching voltage                                                                | 230 V                                                        |
|                                                                                                                                                                         | Electrical connection                                                                 | Male connection M20<br>Female connector to DIN EN 175301-803 |
|                                                                                                                                                                         | Max. switching voltage at resistive load                                              | 250 W =<br>300 VA ~                                          |
|                                                                                                                                                                         | switching capacity                                                                    | Ohmic 6 A at 24 V =<br>Ohmic 0.03 to 6 A at max. 230 V ~     |
|                                                                                                                                                                         | Protection class to DIN 40050                                                         | IP 65 (only if the connector is wired and fitted correctly)  |
|                                                                                                                                                                         | Order example                                                                         | VMF 2 C.1                                                    |
|                                                                                                                                                                         |  |                                                              |

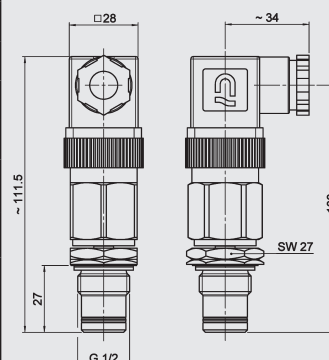
## VR x C.x

|                                                                                                                                                                    |                                          |                                                              |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------|--------------------------------------------------------------|
|   | Type of indication                       | electrical switch                                            |
|                                                                                                                                                                    | Weight                                   | 192 g                                                        |
|                                                                                                                                                                    | Pressure setting or indication range     | 2 bar -0.3 bar                                               |
|                                                                                                                                                                    | Permitt. operating pressure              | 40 bar                                                       |
|                                                                                                                                                                    | Permitt. temperature range               | -30 °C to +100 °C                                            |
|                                                                                                                                                                    | Thread                                   | G 1/2                                                        |
|                                                                                                                                                                    | Max. torque                              | 33 Nm                                                        |
|                                                                                                                                                                    | Switching type                           | N/C or N/O (change-over contacts)                            |
|                                                                                                                                                                    | Max. switching voltage                   | 230 V                                                        |
|                                                                                                                                                                    | Electrical connection                    | Male connection M20<br>Female connector to DIN EN 175301-803 |
|                                                                                                                                                                    | Max. switching voltage at resistive load | 250 W = 300 VA ~                                             |
|                                                                                                                                                                    | switching capacity                       | Ohmic 6 A at 24 V<br>Ohmic 0.03 to 6 A at max. 230 V ~       |
|                                                                                                                                                                    | Protection class to DIN 40050            | IP 65 (only if the connector is wired and fitted correctly)  |
|                                                                                                                                                                    | Order example                            | VR 2 C.1                                                     |

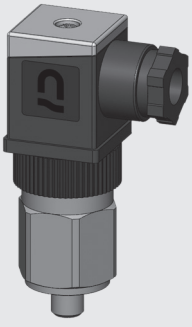
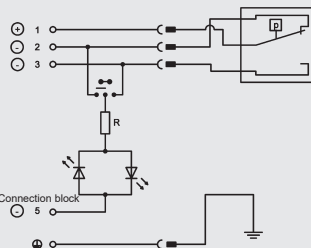


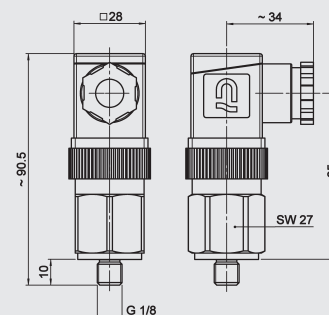
## VRD x C.x

|                                                                                                                                                                       |                                          |                                                              |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------|--------------------------------------------------------------|
|   | Type of indication                       | electrical switch                                            |
|                                                                                                                                                                       | Weight                                   | 208 g                                                        |
|                                                                                                                                                                       | Pressure setting or indication range     | 2 bar -0.3 bar                                               |
|                                                                                                                                                                       | Permitt. operating pressure              | 40 bar                                                       |
|                                                                                                                                                                       | Permitt. temperature range               | -30 °C to +100 °C                                            |
|                                                                                                                                                                       | Thread                                   | G 1/2                                                        |
|                                                                                                                                                                       | Max. torque                              | 33 Nm                                                        |
|                                                                                                                                                                       | Switching type                           | N/C or N/O (change-over contacts)                            |
|                                                                                                                                                                       | Max. switching voltage                   | 230 V                                                        |
|                                                                                                                                                                       | Electrical connection                    | Male connection M20<br>Female connector to DIN EN 175301-803 |
|                                                                                                                                                                       | Max. switching voltage at resistive load | 250 W = 300 VA ~                                             |
|                                                                                                                                                                       | switching capacity                       | Ohmic 6 A at 24 V<br>Ohmic 0.03 to 6 A at max. 230 V ~       |
|                                                                                                                                                                       | Protection class to DIN 40050            | IP 65 (only if the connector is wired and fitted correctly)  |
|                                                                                                                                                                       | Order example                            | VRD 2 C.1                                                    |

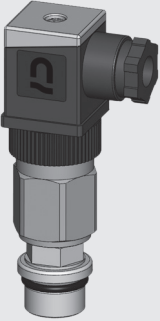
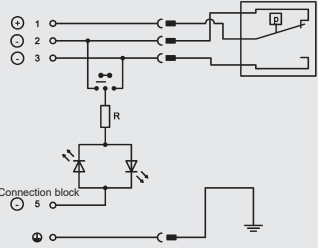


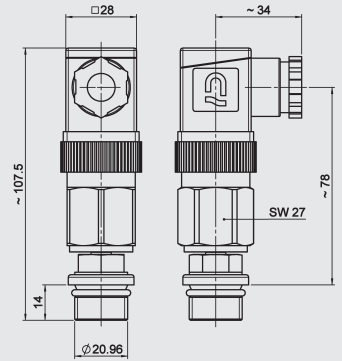
## VMF x D.x /-L...

|                                                                                                                                                                        |                                          |                                                              |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------|--------------------------------------------------------------|
|   | Type of indication                       | visual indicator and electrical switch                       |
|                                                                                                                                                                        | Weight                                   | 127 g                                                        |
|                                                                                                                                                                        | Pressure setting or indication range     | 2 bar -0.3 bar                                               |
|                                                                                                                                                                        | Permitt. operating pressure              | 40 bar                                                       |
|                                                                                                                                                                        | Permitt. temperature range               | -30 °C to +100 °C                                            |
|                                                                                                                                                                        | Thread                                   | G 1/8                                                        |
|                                                                                                                                                                        | Max. torque                              | 10 Nm                                                        |
|                                                                                                                                                                        | Switching type                           | N/C or N/O (change-over contacts)                            |
|                                                                                                                                                                        | Max. switching voltage                   | 24, 48, 115, 230 V (depending on the type of light insert)   |
|                                                                                                                                                                        | Electrical connection                    | Male connection M20<br>Female connector to DIN EN 175301-803 |
|                                                                                                                                                                        | Max. switching voltage at resistive load | 250 W = 300 VA ~                                             |
|                                                                                                                                                                        | switching capacity                       | Ohmic 6 A at 230 V =<br>Ohmic 0.03 to 6 A at max. 230 V ~    |
|                                                                                                                                                                        | Protection class to DIN 40050            | IP 65 (only if the connector is wired and fitted correctly)  |
|                                                                                                                                                                        | Order example                            | VMF 2 D.1 /-L24                                              |

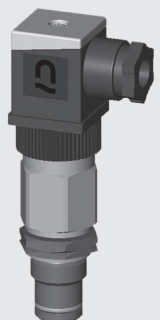
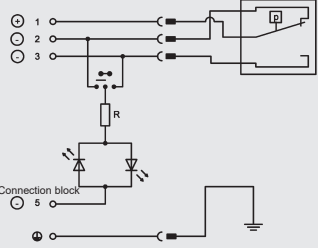


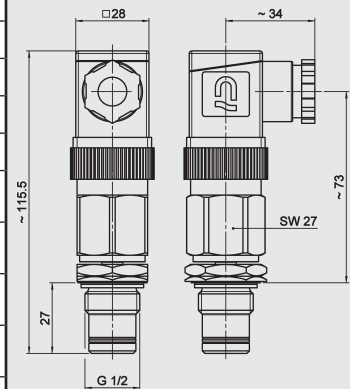
## VR x D.x /-L...

|                                                                                                                                                                    |                                          |                                                              |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------|--------------------------------------------------------------|
|   | Type of indication                       | visual indicator and electrical switch                       |
|                                                                                                                                                                    | Weight                                   | 200 g                                                        |
|                                                                                                                                                                    | Pressure setting or indication range     | 2 bar -0.3 bar                                               |
|                                                                                                                                                                    | Permitt. operating pressure              | 40 bar                                                       |
|                                                                                                                                                                    | Permitt. temperature range               | -30 °C to +100 °C                                            |
|                                                                                                                                                                    | Thread                                   | G 1/2                                                        |
|                                                                                                                                                                    | Max. torque                              | 33 Nm                                                        |
|                                                                                                                                                                    | Switching type                           | N/C or N/O (change-over contacts)                            |
|                                                                                                                                                                    | Max. switching voltage                   | 24, 48, 115, 230 V (depending on the type of light insert)   |
|                                                                                                                                                                    | Electrical connection                    | Male connection M20<br>Female connector to DIN EN 175301-803 |
|                                                                                                                                                                    | Max. switching voltage at resistive load | 250 W = 300 VA ~                                             |
|                                                                                                                                                                    | switching capacity                       | Ohmic 6 A at 24 V =<br>Ohmic 0.03 to 6 A at max. 230 V ~     |
|                                                                                                                                                                    | Protection class to DIN 40050            | IP 65 (only if the connector is wired and fitted correctly)  |
|                                                                                                                                                                    | Order example                            | VR 2 D.1 /-L110                                              |

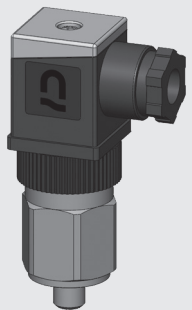
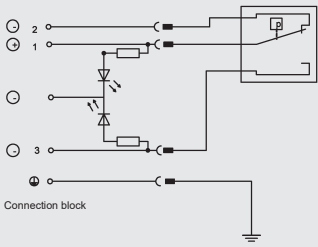


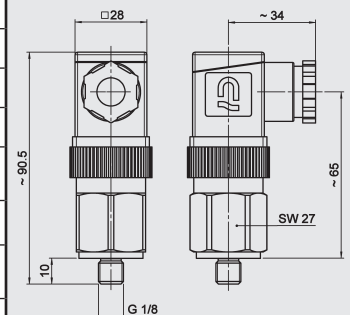
## VRD x D.x /-L...

|                                                                                                                                                                       |                                          |                                                              |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------|--------------------------------------------------------------|
|   | Type of indication                       | visual indicator and electrical switch                       |
|                                                                                                                                                                       | Weight                                   | 215 g                                                        |
|                                                                                                                                                                       | Pressure setting or indication range     | 2 bar -0.3 bar                                               |
|                                                                                                                                                                       | Permitt. operating pressure              | 40 bar                                                       |
|                                                                                                                                                                       | Permitt. temperature range               | -30 °C to +100 °C                                            |
|                                                                                                                                                                       | Thread                                   | G 1/2                                                        |
|                                                                                                                                                                       | Max. torque                              | 33 Nm                                                        |
|                                                                                                                                                                       | Switching type                           | N/C or N/O (change-over contacts)                            |
|                                                                                                                                                                       | Max. switching voltage                   | 24, 48, 115, 230 V (depending on the type of light insert)   |
|                                                                                                                                                                       | Electrical connection                    | Male connection M20<br>Female connector to DIN EN 175301-803 |
|                                                                                                                                                                       | Max. switching voltage at resistive load | 250 W = 300 VA ~                                             |
|                                                                                                                                                                       | switching capacity                       | Ohmic 6 A at 24 V =<br>Ohmic 0.03 to 6 A at max. 230 V ~     |
|                                                                                                                                                                       | Protection class to DIN 40050            | IP 65 (only if the connector is wired and fitted correctly)  |
|                                                                                                                                                                       | Order example                            | VRD 2 D.1 /-L110                                             |

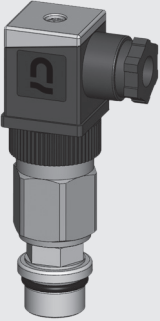
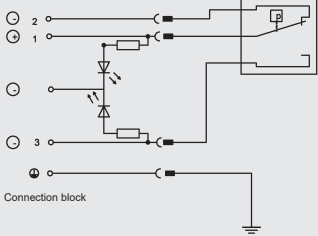


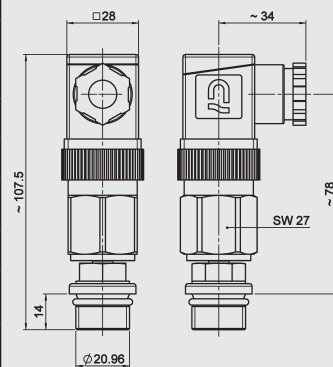
## VMF x D.x /-LED

|                                                                                                                                                                        |                                          |                                                              |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------|--------------------------------------------------------------|
|   | Type of indication                       | visual indicator and electrical switch                       |
|                                                                                                                                                                        | Weight                                   | 120 g                                                        |
|                                                                                                                                                                        | Pressure setting or indication range     | 2 bar -0.3 bar                                               |
|                                                                                                                                                                        | Permitt. operating pressure              | 40 bar                                                       |
|                                                                                                                                                                        | Permitt. temperature range               | -30 °C to +100 °C                                            |
|                                                                                                                                                                        | Thread                                   | G 1/8                                                        |
|                                                                                                                                                                        | Max. torque                              | 10 Nm                                                        |
|                                                                                                                                                                        | Switching type                           | N/O contact                                                  |
|                                                                                                                                                                        | Max. switching voltage                   | 24 V                                                         |
|                                                                                                                                                                        | Electrical connection                    | Male connection M20<br>Female connector to DIN EN 175301-803 |
|                                                                                                                                                                        | Max. switching voltage at resistive load | 250 W = 300 VA ~                                             |
|                                                                                                                                                                        | switching capacity                       | Ohmic 6 A at 24 V =                                          |
|                                                                                                                                                                        | Protection class to DIN 40050            | IP 65 (only if the connector is wired and fitted correctly)  |
|                                                                                                                                                                        | Order example                            | VMF 2 D.1 /-LED                                              |

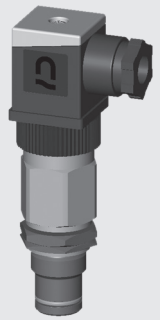
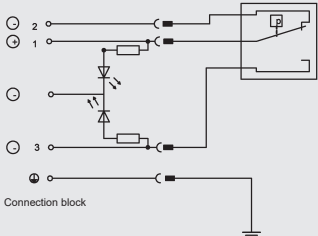


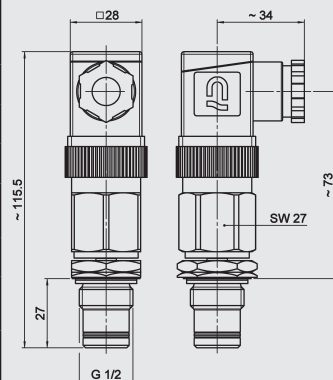
## VR x D.x /-LED

|                                                                                                                                                                    |                                          |                                                              |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------|--------------------------------------------------------------|
|   | Type of indication                       | visual indicator and electrical switch                       |
|                                                                                                                                                                    | Weight                                   | 191 g                                                        |
|                                                                                                                                                                    | Pressure setting or indication range     | 2 bar -0.3 bar                                               |
|                                                                                                                                                                    | Permitt. operating pressure              | 40 bar                                                       |
|                                                                                                                                                                    | Permitt. temperature range               | -30 °C to +100 °C                                            |
|                                                                                                                                                                    | Thread                                   | G 1/2                                                        |
|                                                                                                                                                                    | Max. torque                              | 33 Nm                                                        |
|                                                                                                                                                                    | Switching type                           | N/O contact                                                  |
|                                                                                                                                                                    | Max. switching voltage                   | 24 V                                                         |
|                                                                                                                                                                    | Electrical connection                    | Male connection M20<br>Female connector to DIN EN 175301-803 |
|                                                                                                                                                                    | Max. switching voltage at resistive load | 250 W =<br>300 VA ~                                          |
|                                                                                                                                                                    | switching capacity                       | Ohmic 6 A at 24 V =                                          |
|                                                                                                                                                                    | Protection class to DIN 40050            | IP 65 (only if the connector is wired and fitted correctly)  |
|                                                                                                                                                                    | Order example                            | VR 2 D.1 /-LED                                               |

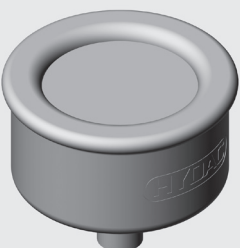
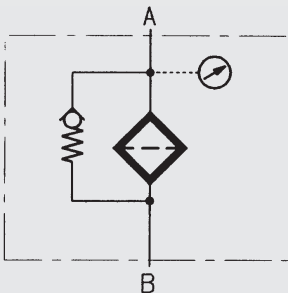


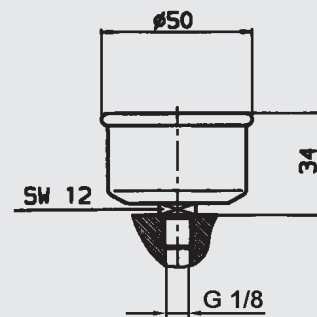
## VRD x D.x /-LED

|                                                                                                                                                                       |                                          |                                                              |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------|--------------------------------------------------------------|
|   | Type of indication                       | visual indicator and electrical switch                       |
|                                                                                                                                                                       | Weight                                   | 207 g                                                        |
|                                                                                                                                                                       | Pressure setting or indication range     | 2 bar -0.3 bar                                               |
|                                                                                                                                                                       | Permitt. operating pressure              | 40 bar                                                       |
|                                                                                                                                                                       | Permitt. temperature range               | -30 °C to +100 °C                                            |
|                                                                                                                                                                       | Thread                                   | G 1/2                                                        |
|                                                                                                                                                                       | Max. torque                              | 33 Nm                                                        |
|                                                                                                                                                                       | Switching type                           | N/O contact                                                  |
|                                                                                                                                                                       | Max. switching voltage                   | 24 V                                                         |
|                                                                                                                                                                       | Electrical connection                    | Male connection M20<br>Female connector to DIN EN 175301-803 |
|                                                                                                                                                                       | Max. switching voltage at resistive load | 250 W =<br>300 VA ~                                          |
|                                                                                                                                                                       | switching capacity                       | Ohmic 6 A at 24 V =                                          |
|                                                                                                                                                                       | Protection class to DIN 40050            | IP 65 (only if the connector is wired and fitted correctly)  |
|                                                                                                                                                                       | Order example                            | VRD 2 D.1 /-LED                                              |

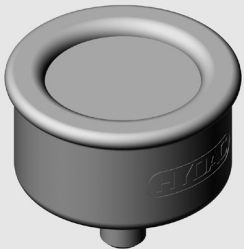
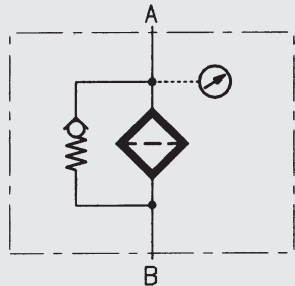


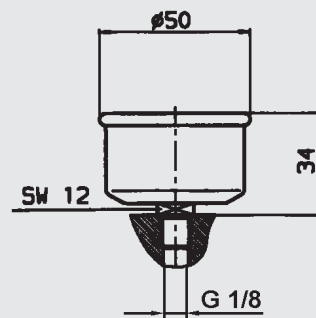
## VMF x E.x

|                                                                                                                                                                         |                                          |                                   |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------|-----------------------------------|
|   | Type of indication                       | visual-analogue, scale indication |
|                                                                                                                                                                         | Weight                                   | 54 g                              |
|                                                                                                                                                                         | Pressure setting or indication range     | 0 bar to +10 bar                  |
|                                                                                                                                                                         | Permitt. operating pressure              | 7 bar continuous                  |
|                                                                                                                                                                         | Permitt. temperature range               | -20 °C to +60 °C                  |
|                                                                                                                                                                         | Thread                                   | G 1/8                             |
|                                                                                                                                                                         | Max. torque                              | 10 Nm                             |
|                                                                                                                                                                         | Switching type                           | -                                 |
|                                                                                                                                                                         | Max. switching voltage                   | -                                 |
|                                                                                                                                                                         | Electrical connection                    | -                                 |
|                                                                                                                                                                         | Max. switching voltage at resistive load | -                                 |
|                                                                                                                                                                         | switching capacity                       | -                                 |
|                                                                                                                                                                         | Protection class to DIN 40050            | -                                 |
|                                                                                                                                                                         | Order example                            | VMF 2 E.0                         |

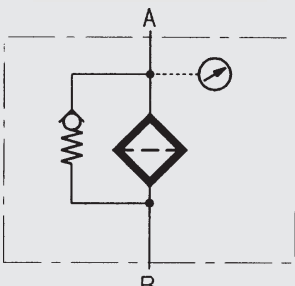


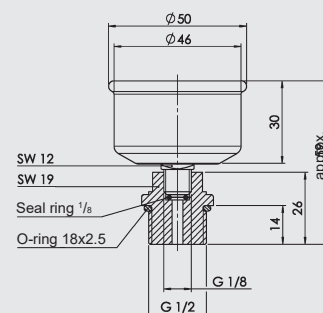
## VMF 16 E.x

|                                                                                                                                                                    |                                          |                                   |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------|-----------------------------------|
|   | Type of indication                       | visual-analogue, scale indication |
|                                                                                                                                                                    | Weight                                   | 55 g                              |
|                                                                                                                                                                    | Pressure setting or indication range     | 0 bar to +16 bar                  |
|                                                                                                                                                                    | Permitt. operating pressure              | 11 bar continuous                 |
|                                                                                                                                                                    | Permitt. temperature range               | -20 °C to +60 °C                  |
|                                                                                                                                                                    | Thread                                   | G 1/8                             |
|                                                                                                                                                                    | Max. torque                              | 10 Nm                             |
|                                                                                                                                                                    | Switching type                           | -                                 |
|                                                                                                                                                                    | Max. switching voltage                   | -                                 |
|                                                                                                                                                                    | Electrical connection                    | -                                 |
|                                                                                                                                                                    | Max. switching voltage at resistive load | -                                 |
|                                                                                                                                                                    | switching capacity                       | -                                 |
|                                                                                                                                                                    | Protection class to DIN 40050            | -                                 |
|                                                                                                                                                                    | Order example                            | VMF 16 E.0                        |
|                                                                                                                                                                    |                                          |                                   |
|                                                                                                                                                                    |                                          |                                   |

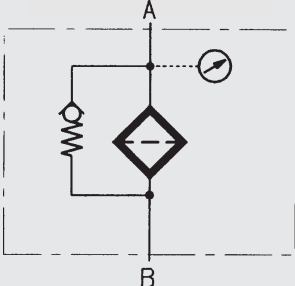


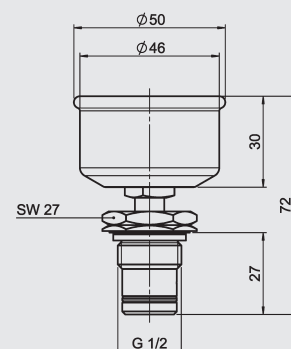
## VR x E.x

|                                                                                                                                                                       |                                          |                                   |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------|-----------------------------------|
|   | Type of indication                       | visual-analogue, scale indication |
|                                                                                                                                                                       | Weight                                   | 125 g                             |
|                                                                                                                                                                       | Pressure setting or indication range     | 0 bar to +10 bar                  |
|                                                                                                                                                                       | Permitt. operating pressure              | 7 bar continuous                  |
|                                                                                                                                                                       | Permitt. temperature range               | -20 °C to +60 °C                  |
|                                                                                                                                                                       | Thread                                   | G 1/2                             |
|                                                                                                                                                                       | Max. torque                              | 33 Nm                             |
|                                                                                                                                                                       | Switching type                           | -                                 |
|                                                                                                                                                                       | Max. switching voltage                   | -                                 |
|                                                                                                                                                                       | Electrical connection                    | -                                 |
|                                                                                                                                                                       | Max. switching voltage at resistive load | -                                 |
|                                                                                                                                                                       | switching capacity                       | -                                 |
|                                                                                                                                                                       | Protection class to DIN 40050            | -                                 |
|                                                                                                                                                                       | Order example                            | VR 2 E.0                          |
|                                                                                                                                                                       |                                          |                                   |
|                                                                                                                                                                       |                                          |                                   |

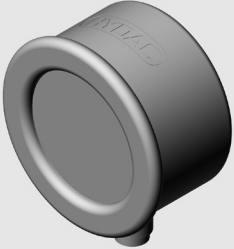
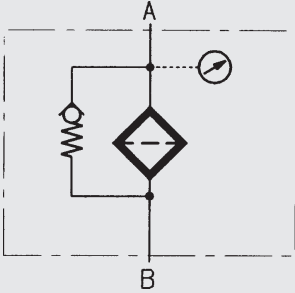
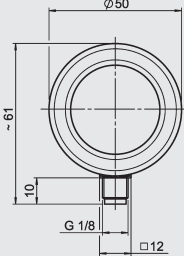
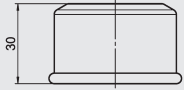


## VRD x E.x

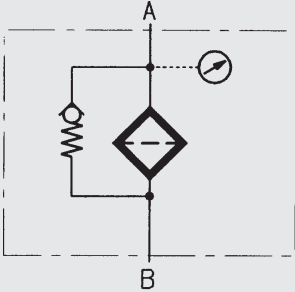
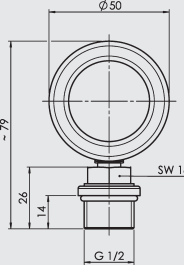
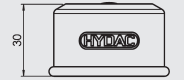
|                                                                                                                                                                        |                                          |                                   |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------|-----------------------------------|
|   | Type of indication                       | visual-analogue, scale indication |
|                                                                                                                                                                        | Weight                                   | 141 g                             |
|                                                                                                                                                                        | Pressure setting or indication range     | 0 bar to +10 bar                  |
|                                                                                                                                                                        | Permitt. operating pressure              | 7 bar continuous                  |
|                                                                                                                                                                        | Permitt. temperature range               | -20 °C to +60 °C                  |
|                                                                                                                                                                        | Thread                                   | G 1/2                             |
|                                                                                                                                                                        | Max. torque                              | 33 Nm                             |
|                                                                                                                                                                        | Switching type                           | -                                 |
|                                                                                                                                                                        | Max. switching voltage                   | -                                 |
|                                                                                                                                                                        | Electrical connection                    | -                                 |
|                                                                                                                                                                        | Max. switching voltage at resistive load | -                                 |
|                                                                                                                                                                        | switching capacity                       | -                                 |
|                                                                                                                                                                        | Protection class to DIN 40050            | -                                 |
|                                                                                                                                                                        | Order example                            | VRD 2 E.0                         |
|                                                                                                                                                                        |                                          |                                   |
|                                                                                                                                                                        |                                          |                                   |



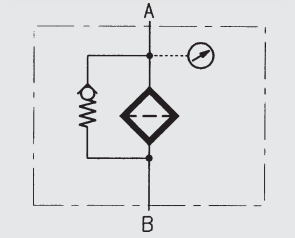
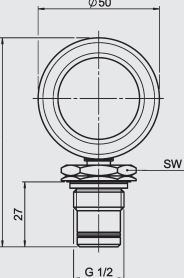
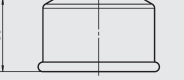
## VMF x ES.x

|                                                                                                                                                                    |                                          |                                   |                                                                                                                                                                                                                                                             |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------|-----------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|   | Type of indication                       | visual-analogue, scale indication |    |
|                                                                                                                                                                    | Weight                                   | 59 g                              |                                                                                                                                                                                                                                                             |
|                                                                                                                                                                    | Pressure setting or indication range     | 0 bar to +10 bar                  |                                                                                                                                                                                                                                                             |
|                                                                                                                                                                    | Permitt. operating pressure              | 7 bar continuous                  |                                                                                                                                                                                                                                                             |
|                                                                                                                                                                    | Permitt. temperature range               | -20 °C to +60 °C                  |                                                                                                                                                                                                                                                             |
|                                                                                                                                                                    | Thread                                   | G 1/8                             |                                                                                                                                                                                                                                                             |
|                                                                                                                                                                    | Max. torque                              | 10 Nm                             |                                                                                                                                                                                                                                                             |
|                                                                                                                                                                    | Switching type                           | -                                 |                                                                                                                                                                                                                                                             |
|                                                                                                                                                                    | Max. switching voltage                   | -                                 |                                                                                                                                                                                                                                                             |
|                                                                                                                                                                    | Electrical connection                    | -                                 |                                                                                                                                                                                                                                                             |
|                                                                                                                                                                    | Max. switching voltage at resistive load | -                                 |                                                                                                                                                                                                                                                             |
|                                                                                                                                                                    | switching capacity                       | -                                 |                                                                                                                                                                                                                                                             |
|                                                                                                                                                                    | Protection class to DIN 40050            | -                                 |                                                                                                                                                                                                                                                             |
|                                                                                                                                                                    | Order example                            | VMF 2 ES.0                        |                                                                                                                                                                                                                                                             |

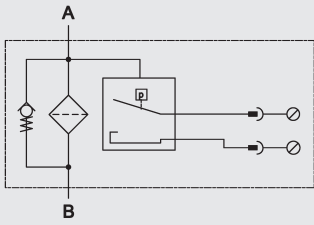
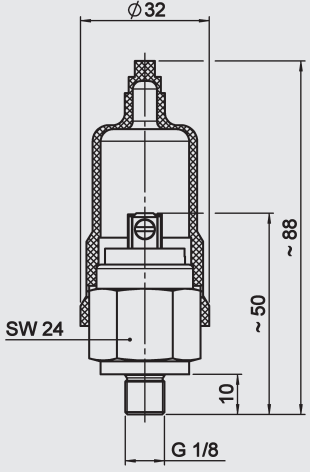
## VR x ES.x

|                                                                                                                                                                       |                                          |                                   |                                                                                                                                                                                                                                                                  |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------|-----------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|   | Type of indication                       | visual-analogue, scale indication |    |
|                                                                                                                                                                       | Weight                                   | 130 g                             |                                                                                                                                                                                                                                                                  |
|                                                                                                                                                                       | Pressure setting or indication range     | 0 bar to +10 bar                  |                                                                                                                                                                                                                                                                  |
|                                                                                                                                                                       | Permitt. operating pressure              | 7 bar continuous                  |                                                                                                                                                                                                                                                                  |
|                                                                                                                                                                       | Permitt. temperature range               | -20 °C to +60 °C                  |                                                                                                                                                                                                                                                                  |
|                                                                                                                                                                       | Thread                                   | G 1/2                             |                                                                                                                                                                                                                                                                  |
|                                                                                                                                                                       | Max. torque                              | 33 Nm                             |                                                                                                                                                                                                                                                                  |
|                                                                                                                                                                       | Switching type                           | -                                 |                                                                                                                                                                                                                                                                  |
|                                                                                                                                                                       | Max. switching voltage                   | -                                 |                                                                                                                                                                                                                                                                  |
|                                                                                                                                                                       | Electrical connection                    | -                                 |                                                                                                                                                                                                                                                                  |
|                                                                                                                                                                       | Max. switching voltage at resistive load | -                                 |                                                                                                                                                                                                                                                                  |
|                                                                                                                                                                       | switching capacity                       | -                                 |                                                                                                                                                                                                                                                                  |
|                                                                                                                                                                       | Protection class to DIN 40050            | -                                 |                                                                                                                                                                                                                                                                  |
|                                                                                                                                                                       | Order example                            | VR 2 ES.0                         |                                                                                                                                                                                                                                                                  |

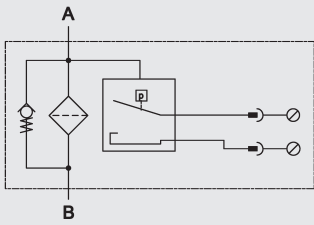
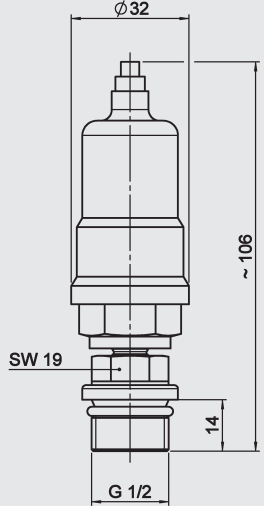
## VRD x ES.x

|                                                                                                                                                                        |                                          |                                   |                                                                                                                                                                                                                                                                   |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------|-----------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|   | Type of indication                       | visual-analogue, scale indication |    |
|                                                                                                                                                                        | Weight                                   | 146 g                             |                                                                                                                                                                                                                                                                   |
|                                                                                                                                                                        | Pressure setting or indication range     | 0 bar to +10 bar                  |                                                                                                                                                                                                                                                                   |
|                                                                                                                                                                        | Permitt. operating pressure              | 7 bar continuous                  |                                                                                                                                                                                                                                                                   |
|                                                                                                                                                                        | Permitt. temperature range               | -20 °C to +60 °C                  |                                                                                                                                                                                                                                                                   |
|                                                                                                                                                                        | Thread                                   | G 1/2                             |                                                                                                                                                                                                                                                                   |
|                                                                                                                                                                        | Max. torque                              | 33 Nm                             |                                                                                                                                                                                                                                                                   |
|                                                                                                                                                                        | Switching type                           | -                                 |                                                                                                                                                                                                                                                                   |
|                                                                                                                                                                        | Max. switching voltage                   | -                                 |                                                                                                                                                                                                                                                                   |
|                                                                                                                                                                        | Electrical connection                    | -                                 |                                                                                                                                                                                                                                                                   |
|                                                                                                                                                                        | Max. switching voltage at resistive load | -                                 |                                                                                                                                                                                                                                                                   |
|                                                                                                                                                                        | switching capacity                       | -                                 |                                                                                                                                                                                                                                                                   |
|                                                                                                                                                                        | Protection class to DIN 40050            | -                                 |                                                                                                                                                                                                                                                                   |
|                                                                                                                                                                        | Order example                            | VRD 2 ES.0                        |                                                                                                                                                                                                                                                                   |

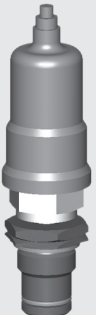
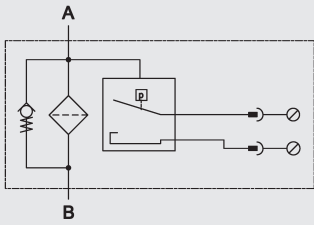
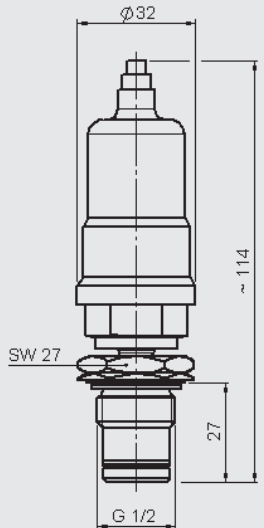
## VMF x F.x

|                                                                                                                                                                    |                                          |                                             |                                                                                     |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------|---------------------------------------------|-------------------------------------------------------------------------------------|
|   | Type of indication                       | electrical switch                           |  |
|                                                                                                                                                                    | Weight                                   | 71 g                                        |                                                                                     |
|                                                                                                                                                                    | Pressure setting or indication range     | 2 bar ±0.3 bar                              |                                                                                     |
|                                                                                                                                                                    | Permitt. operating pressure              | 40 bar                                      |                                                                                     |
|                                                                                                                                                                    | Permitt. temperature range               | -30 °C to +100 °C                           |                                                                                     |
|                                                                                                                                                                    | Thread                                   | G 1/8                                       |                                                                                     |
|                                                                                                                                                                    | Max. torque                              | 10 Nm                                       |                                                                                     |
|                                                                                                                                                                    | Switching type                           | N/O contact (N/C as an option)              |                                                                                     |
|                                                                                                                                                                    | Max. switching voltage                   | 42 V                                        |                                                                                     |
|                                                                                                                                                                    | Electrical connection                    | threaded connection                         |                                                                                     |
|                                                                                                                                                                    | Max. switching voltage at resistive load | 60 W = 100 VA ~                             |                                                                                     |
|                                                                                                                                                                    | switching capacity                       | Ohmic 2.5 A at 24 V = Ohmic 2.5 A at 42 V ~ |                                                                                     |
|                                                                                                                                                                    | Protection class to DIN 40050            | IP 65, terminals IP 00                      |                                                                                     |
|                                                                                                                                                                    | Order example                            | VMF 2 F.0                                   |                                                                                     |

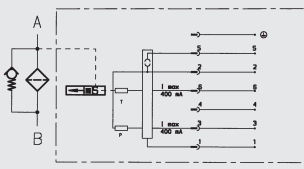
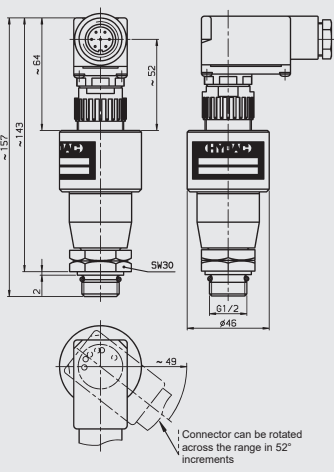
## VR x F.x

|                                                                                                                                                                       |                                          |                                             |                                                                                      |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------|---------------------------------------------|--------------------------------------------------------------------------------------|
|   | Type of indication                       | electrical switch                           |  |
|                                                                                                                                                                       | Weight                                   | 142 g                                       |                                                                                      |
|                                                                                                                                                                       | Pressure setting or indication range     | 2 bar ±0.3 bar                              |                                                                                      |
|                                                                                                                                                                       | Permitt. operating pressure              | 40 bar                                      |                                                                                      |
|                                                                                                                                                                       | Permitt. temperature range               | -30 °C to +100 °C                           |                                                                                      |
|                                                                                                                                                                       | Thread                                   | G 1/2                                       |                                                                                      |
|                                                                                                                                                                       | Max. torque                              | 33 Nm                                       |                                                                                      |
|                                                                                                                                                                       | Switching type                           | N/O contact (N/C as an option)              |                                                                                      |
|                                                                                                                                                                       | Max. switching voltage                   | 42 V                                        |                                                                                      |
|                                                                                                                                                                       | Electrical connection                    | threaded connection                         |                                                                                      |
|                                                                                                                                                                       | Max. switching voltage at resistive load | 60 W = 100 VA ~                             |                                                                                      |
|                                                                                                                                                                       | switching capacity                       | Ohmic 2.5 A at 24 V = Ohmic 2.5 A at 42 V ~ |                                                                                      |
|                                                                                                                                                                       | Protection class to DIN 40050            | IP 65, terminals IP 00                      |                                                                                      |
|                                                                                                                                                                       | Order example                            | VR 2 F.0                                    |                                                                                      |

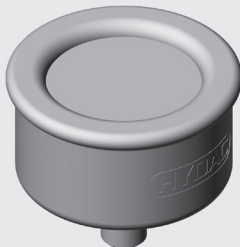
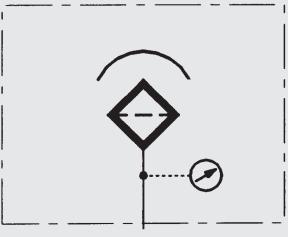
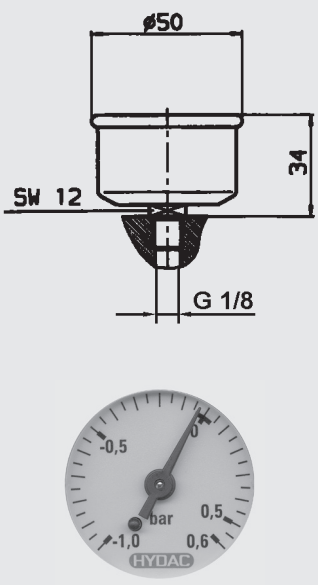
## VRD x F.x

|                                                                                                                                                                        |                                          |                                             |                                                                                       |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------|---------------------------------------------|---------------------------------------------------------------------------------------|
|   | Type of indication                       | electrical switch                           |  |
|                                                                                                                                                                        | Weight                                   | 158 g                                       |                                                                                       |
|                                                                                                                                                                        | Pressure setting or indication range     | 2 bar ±0.3 bar                              |                                                                                       |
|                                                                                                                                                                        | Permitt. operating pressure              | 40 bar                                      |                                                                                       |
|                                                                                                                                                                        | Permitt. temperature range               | -30 °C to +100 °C                           |                                                                                       |
|                                                                                                                                                                        | Thread                                   | G 1/2                                       |                                                                                       |
|                                                                                                                                                                        | Max. torque                              | 33 Nm                                       |                                                                                       |
|                                                                                                                                                                        | Switching type                           | N/O contact (N/C as an option)              |                                                                                       |
|                                                                                                                                                                        | Max. switching voltage                   | 42 V                                        |                                                                                       |
|                                                                                                                                                                        | Electrical connection                    | threaded connection                         |                                                                                       |
|                                                                                                                                                                        | Max. switching voltage at resistive load | 60 W = 100 VA ~                             |                                                                                       |
|                                                                                                                                                                        | switching capacity                       | Ohmic 2.5 A at 24 V = Ohmic 2.5 A at 42 V ~ |                                                                                       |
|                                                                                                                                                                        | Protection class to DIN 40050            | IP 65, terminals IP 00                      |                                                                                       |
|                                                                                                                                                                        | Order example                            | VRD 2 F.1                                   |                                                                                       |

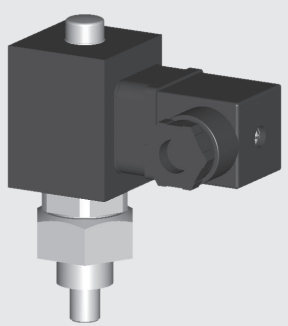
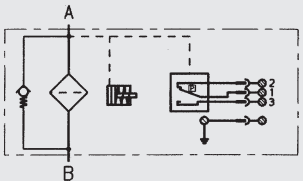
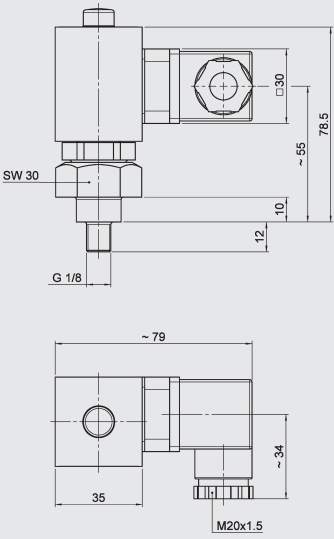
## VR x GC.x

|                                                                                                                                                                       |                                          |                                                                                                                                                                                                        |                                                                                     |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| <br> | Type of indication                       | Electronic/analogue<br>(4-20 mA or 1-10 V)<br>1 electrical switching contact at 75%<br>and at 100% of the pressure setting<br>Analogue signal up to 20% of the<br>pressure setting constant 4mA or 1 V |  |
|                                                                                                                                                                       | Weight                                   | 340 g                                                                                                                                                                                                  |                                                                                     |
|                                                                                                                                                                       | Pressure setting or indication range     | 2 bar -10%                                                                                                                                                                                             |                                                                                     |
|                                                                                                                                                                       | Permitt. operating pressure              | 7 bar                                                                                                                                                                                                  |                                                                                     |
|                                                                                                                                                                       | Permitt. temperature range               | -10 °C to +80 °C                                                                                                                                                                                       |                                                                                     |
|                                                                                                                                                                       | Thread                                   | G 1/2                                                                                                                                                                                                  |                                                                                     |
|                                                                                                                                                                       | Max. torque                              | 15 Nm                                                                                                                                                                                                  |                                                                                     |
|                                                                                                                                                                       | Switching type                           | N/C or N/O, electronic<br>PNP positive switching (factory setting)                                                                                                                                     |                                                                                     |
|                                                                                                                                                                       | Max. switching voltage                   | Operating voltage 20-30 V DC                                                                                                                                                                           |                                                                                     |
|                                                                                                                                                                       | Electrical connection                    | 7 pole plug to DIN 43651; PG 11                                                                                                                                                                        |                                                                                     |
|                                                                                                                                                                       | Max. switching voltage at resistive load | 12 W                                                                                                                                                                                                   |                                                                                     |
|                                                                                                                                                                       | switching capacity                       | Ohmic 0.4 A at 30 V =                                                                                                                                                                                  |                                                                                     |
|                                                                                                                                                                       | Protection class to DIN 40050            | IP 65 (only if the connector is wired and fitted correctly)                                                                                                                                            |                                                                                     |
|                                                                                                                                                                       | Order example                            | VR 2 GC.0 /-LED-SQ-123                                                                                                                                                                                 |                                                                                     |

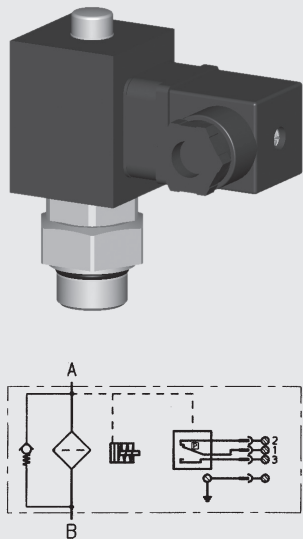
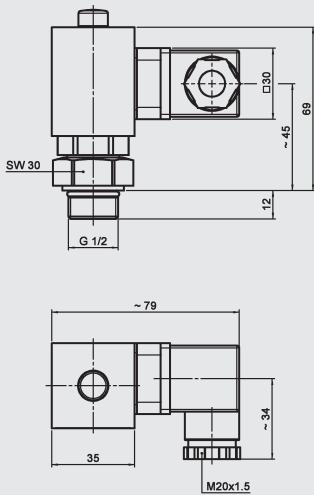
## VMF x K.x

|                                                                                                                                                                           |                                          |                                      |                                                                                      |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------|--------------------------------------|--------------------------------------------------------------------------------------|
| <br> | Type of indication                       | visual-analogue,<br>scale indication |  |
|                                                                                                                                                                           | Weight                                   | 54 g                                 |                                                                                      |
|                                                                                                                                                                           | Pressure setting or indication range     | -1 bar to + 0.6 bar                  |                                                                                      |
|                                                                                                                                                                           | Permitt. operating pressure              | -0.7 to +0.4 bar continuous          |                                                                                      |
|                                                                                                                                                                           | Permitt. temperature range               | -20 °C to +60 °C                     |                                                                                      |
|                                                                                                                                                                           | Thread                                   | G 1/8                                |                                                                                      |
|                                                                                                                                                                           | Max. torque                              | 10 Nm                                |                                                                                      |
|                                                                                                                                                                           | Switching type                           | -                                    |                                                                                      |
|                                                                                                                                                                           | Max. switching voltage                   | -                                    |                                                                                      |
|                                                                                                                                                                           | Electrical connection                    | -                                    |                                                                                      |
|                                                                                                                                                                           | Max. switching voltage at resistive load | -                                    |                                                                                      |
|                                                                                                                                                                           | switching capacity                       | -                                    |                                                                                      |
|                                                                                                                                                                           | Protection class to DIN 40050            | -                                    |                                                                                      |
|                                                                                                                                                                           | Order example                            | VMF 0.6 K.0                          |                                                                                      |

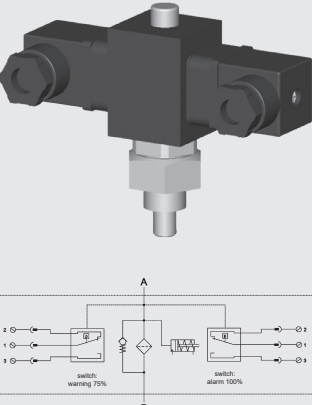
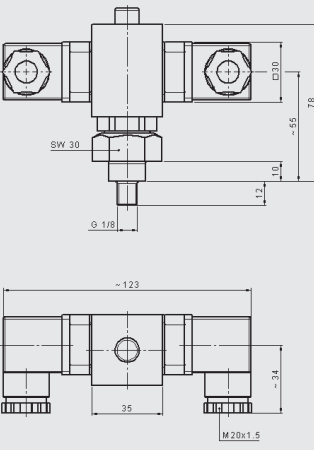
## VMF x LE.x

|                                                                                                                                                                           |                                          |                                                                                                    |                                                                                       |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------|----------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
| <br> | Type of indication                       | visual, red pin<br>and electrical switch<br>1 switching contact at 100% of the<br>pressure setting |  |
|                                                                                                                                                                           | Weight                                   | 176 g                                                                                              |                                                                                       |
|                                                                                                                                                                           | Pressure setting or indication range     | 2 bar -0.2 bar                                                                                     |                                                                                       |
|                                                                                                                                                                           | Permitt. operating pressure              | 7 bar                                                                                              |                                                                                       |
|                                                                                                                                                                           | Permitt. temperature range               | -10 °C to +100 °C                                                                                  |                                                                                       |
|                                                                                                                                                                           | Thread                                   | G 1/8                                                                                              |                                                                                       |
|                                                                                                                                                                           | Max. torque                              | 10 Nm                                                                                              |                                                                                       |
|                                                                                                                                                                           | Switching type                           | N/C or N/O contacts<br>Reed contacts (change-over contacts)                                        |                                                                                       |
|                                                                                                                                                                           | Max. switching voltage                   | 115 V                                                                                              |                                                                                       |
|                                                                                                                                                                           | Electrical connection                    | Male connection M20<br>Female connector to DIN EN 175301-803                                       |                                                                                       |
|                                                                                                                                                                           | Max. switching voltage at resistive load | 15 W =<br>max. 15 VA ~                                                                             |                                                                                       |
|                                                                                                                                                                           | switching capacity                       | Ohmic 1 A at 15 V =<br>Ohmic 1 A at 15 V ~                                                         |                                                                                       |
|                                                                                                                                                                           | Protection class to DIN 40050            | IP 65 (only if the connector is wired and fitted correctly)                                        |                                                                                       |
|                                                                                                                                                                           | Order example                            | VMF 2 LE.1                                                                                         |                                                                                       |

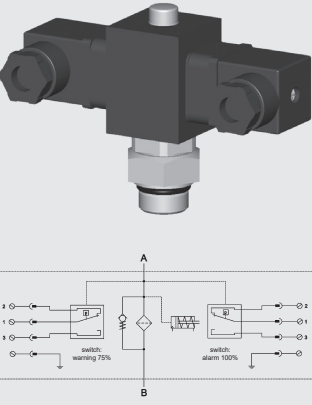
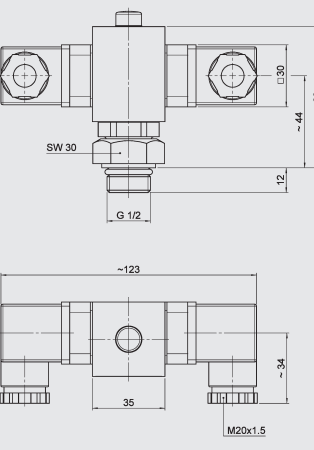
## VR x LE.x

|                                                                                  |                                          |                                                                                              |                                                                                     |
|----------------------------------------------------------------------------------|------------------------------------------|----------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
|  | Type of indication                       | visual, red pin and electrical switch<br>1 switching contact at 100% of the pressure setting |  |
|                                                                                  | Weight                                   | 137 g                                                                                        |                                                                                     |
|                                                                                  | Pressure setting or indication range     | 2 bar -0.2 bar                                                                               |                                                                                     |
|                                                                                  | Permitt. operating pressure              | 7 bar                                                                                        |                                                                                     |
|                                                                                  | Permitt. temperature range               | -10 °C to +100 °C                                                                            |                                                                                     |
|                                                                                  | Thread                                   | G 1/2                                                                                        |                                                                                     |
|                                                                                  | Max. torque                              | 15 Nm                                                                                        |                                                                                     |
|                                                                                  | Switching type                           | N/C or N/O contacts<br>Reed contacts (change-over contacts)                                  |                                                                                     |
|                                                                                  | Max. switching voltage                   | 115 V                                                                                        |                                                                                     |
|                                                                                  | Electrical connection                    | Male connection M20<br>Female connector to DIN EN 175301-803                                 |                                                                                     |
|                                                                                  | Max. switching voltage at resistive load | 15 W =<br>max. 15 VA ~                                                                       |                                                                                     |
|                                                                                  | switching capacity                       | Ohmic 1 A at 15 V =<br>Ohmic 1 A at 15 V ~                                                   |                                                                                     |
|                                                                                  | Protection class to DIN 40050            | IP 65 (only if the connector is wired and fitted correctly)                                  |                                                                                     |
|                                                                                  | Order example                            | VR 2 LE.1                                                                                    |                                                                                     |

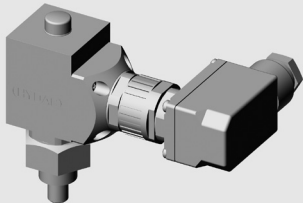
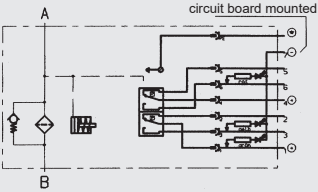
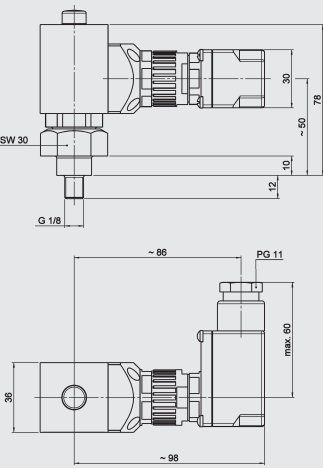
## VMF x LZ.x

|                                                                                   |                                          |                                                                                               |                                                                                      |
|-----------------------------------------------------------------------------------|------------------------------------------|-----------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|
|  | Type of indication                       | visual, red pin and 1 electrical switching contact at 75% and at 100% of the pressure setting |  |
|                                                                                   | Weight                                   | 230 g                                                                                         |                                                                                      |
|                                                                                   | Pressure setting or indication range     | 2 bar -0.2 bar                                                                                |                                                                                      |
|                                                                                   | Permitt. operating pressure              | 7 bar                                                                                         |                                                                                      |
|                                                                                   | Permitt. temperature range               | -10 °C to +100 °C                                                                             |                                                                                      |
|                                                                                   | Thread                                   | G 1/8                                                                                         |                                                                                      |
|                                                                                   | Max. torque                              | 10 Nm                                                                                         |                                                                                      |
|                                                                                   | Switching type                           | N/C or N/O contacts<br>Reed contacts (change-over contacts)                                   |                                                                                      |
|                                                                                   | Max. switching voltage                   | 115 V                                                                                         |                                                                                      |
|                                                                                   | Electrical connection                    | Male connection M20<br>Female connector to DIN EN 175301-803                                  |                                                                                      |
|                                                                                   | Max. switching voltage at resistive load | 15 W =<br>max. 15 VA ~                                                                        |                                                                                      |
|                                                                                   | switching capacity                       | Ohmic 1 A at 15 V =<br>Ohmic 1 A at 15 V ~                                                    |                                                                                      |
|                                                                                   | Protection class to DIN 40050            | IP 65 (only if the connector is wired and fitted correctly)                                   |                                                                                      |
|                                                                                   | Order example                            | VMF 2 LZ.1                                                                                    |                                                                                      |

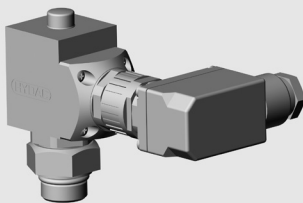
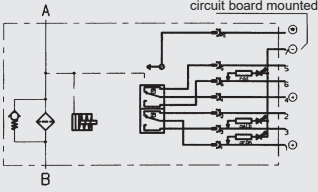
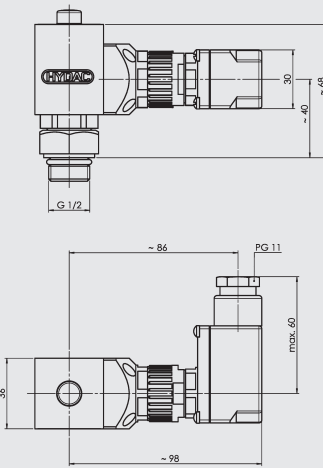
## VR x LZ.x

|                                                                                    |                                          |                                                                                               |                                                                                       |
|------------------------------------------------------------------------------------|------------------------------------------|-----------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
|  | Type of indication                       | visual, red pin and 1 electrical switching contact at 75% and at 100% of the pressure setting |  |
|                                                                                    | Weight                                   | 190 g                                                                                         |                                                                                       |
|                                                                                    | Pressure setting or indication range     | 2 bar -0.2 bar                                                                                |                                                                                       |
|                                                                                    | Permitt. operating pressure              | 7 bar                                                                                         |                                                                                       |
|                                                                                    | Permitt. temperature range               | -10 °C to +100 °C                                                                             |                                                                                       |
|                                                                                    | Thread                                   | G 1/2                                                                                         |                                                                                       |
|                                                                                    | Max. torque                              | 15 Nm                                                                                         |                                                                                       |
|                                                                                    | Switching type                           | N/C or N/O contacts<br>Reed contacts (change-over contacts)                                   |                                                                                       |
|                                                                                    | Max. switching voltage                   | 115 V                                                                                         |                                                                                       |
|                                                                                    | Electrical connection                    | Male connection M20<br>Female connector to DIN EN 175301-803                                  |                                                                                       |
|                                                                                    | Max. switching voltage at resistive load | 15 W =<br>max. 15 VA ~                                                                        |                                                                                       |
|                                                                                    | switching capacity                       | Ohmic 1 A at 15 V =<br>Ohmic 1 A at 15 V ~                                                    |                                                                                       |
|                                                                                    | Protection class to DIN 40050            | IP 65 (only if the connector is wired and fitted correctly)                                   |                                                                                       |
|                                                                                    | Order example                            | VR 2 LZ.1                                                                                     |                                                                                       |

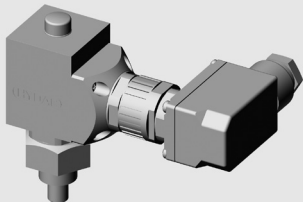
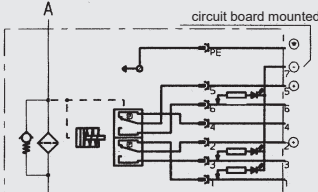
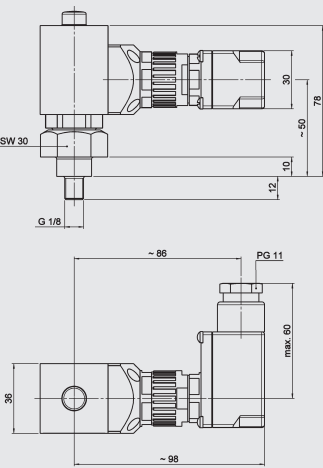
## VMF x LZ.x /-DB

|                                                                                                                                                                      |                                          |                                                                                                                                                                                                            |                                                                                     |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| <br> | Type of indication                       | visual, red pin<br>and 1 electrical switching contact at 75% and<br>at 100% of the pressure setting<br>1 green LED constantly lit<br>1 yellow LED lights from 75%<br>1 red LED lights from 100% $\Delta p$ |  |
|                                                                                                                                                                      | Weight                                   | 170 g                                                                                                                                                                                                      |                                                                                     |
|                                                                                                                                                                      | Pressure setting or indication range     | 2 bar -0.2 bar                                                                                                                                                                                             |                                                                                     |
|                                                                                                                                                                      | Permitt. operating pressure              | 7 bar                                                                                                                                                                                                      |                                                                                     |
|                                                                                                                                                                      | Permitt. temperature range               | -10 °C to +100 °C                                                                                                                                                                                          |                                                                                     |
|                                                                                                                                                                      | Thread                                   | G 1/8                                                                                                                                                                                                      |                                                                                     |
|                                                                                                                                                                      | Max. torque                              | 10 Nm                                                                                                                                                                                                      |                                                                                     |
|                                                                                                                                                                      | Switching type                           | N/C or N/O contacts<br>Reed contacts (change-over contacts)                                                                                                                                                |                                                                                     |
|                                                                                                                                                                      | Max. switching voltage                   | 24 V                                                                                                                                                                                                       |                                                                                     |
|                                                                                                                                                                      | Electrical connection                    | Male connection PG 11<br>Female connector to DIN 43651                                                                                                                                                     |                                                                                     |
|                                                                                                                                                                      | Max. switching voltage at resistive load | 15 W =<br>max. 15 VA ~                                                                                                                                                                                     |                                                                                     |
|                                                                                                                                                                      | switching capacity                       | Ohmic 1 A at 15 V =<br>Ohmic 1 A at 15 V ~                                                                                                                                                                 |                                                                                     |
|                                                                                                                                                                      | Protection class to DIN 40050            | IP 65 (only if the connector is wired and fitted correctly)                                                                                                                                                |                                                                                     |
|                                                                                                                                                                      | Order example                            | VMF 2 LZ.1 /-DB                                                                                                                                                                                            |                                                                                     |

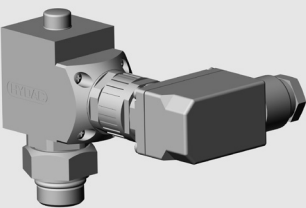
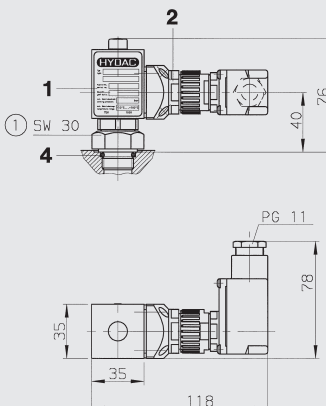
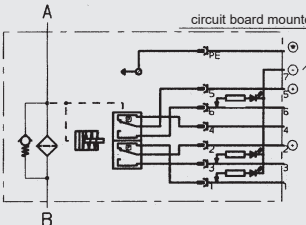
## VR x LZ.x /-DB

|                                                                                                                                                                         |                                          |                                                                                                                                                                                                            |                                                                                      |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|
| <br> | Type of indication                       | visual, red pin<br>and 1 electrical switching contact at 75% and<br>at 100% of the pressure setting<br>1 green LED constantly lit<br>1 yellow LED lights from 75%<br>1 red LED lights from 100% $\Delta p$ |  |
|                                                                                                                                                                         | Weight                                   | 190 g                                                                                                                                                                                                      |                                                                                      |
|                                                                                                                                                                         | Pressure setting or indication range     | 2 bar -0.2 bar                                                                                                                                                                                             |                                                                                      |
|                                                                                                                                                                         | Permitt. operating pressure              | 7 bar                                                                                                                                                                                                      |                                                                                      |
|                                                                                                                                                                         | Permitt. temperature range               | -10 °C to +100 °C                                                                                                                                                                                          |                                                                                      |
|                                                                                                                                                                         | Thread                                   | G 1/2                                                                                                                                                                                                      |                                                                                      |
|                                                                                                                                                                         | Max. torque                              | 15 Nm                                                                                                                                                                                                      |                                                                                      |
|                                                                                                                                                                         | Switching type                           | N/C or N/O contacts<br>Reed contacts (change-over contacts)                                                                                                                                                |                                                                                      |
|                                                                                                                                                                         | Max. switching voltage                   | 24 V                                                                                                                                                                                                       |                                                                                      |
|                                                                                                                                                                         | Electrical connection                    | Male connection PG 11<br>Female connector to DIN 43651                                                                                                                                                     |                                                                                      |
|                                                                                                                                                                         | Max. switching voltage at resistive load | 15 W =<br>max. 15 VA ~                                                                                                                                                                                     |                                                                                      |
|                                                                                                                                                                         | switching capacity                       | Ohmic 1 A at 15 V =<br>Ohmic 1 A at 15 V ~                                                                                                                                                                 |                                                                                      |
|                                                                                                                                                                         | Protection class to DIN 40050            | IP 65 (only if the connector is wired and fitted correctly)                                                                                                                                                |                                                                                      |
|                                                                                                                                                                         | Order example                            | VR 2 LZ.1 /-DB                                                                                                                                                                                             |                                                                                      |

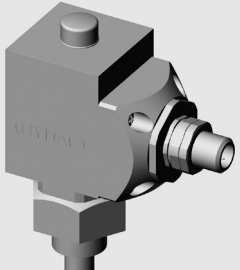
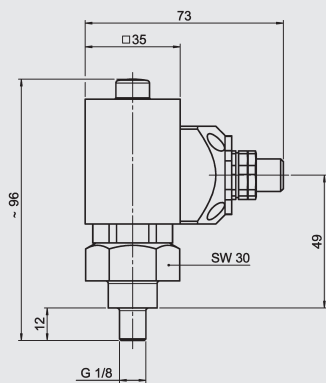
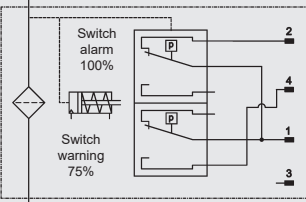
## VMF x LZ.x /-CN

|                                                                                                                                                                          |                                          |                                                                                                                                                                                                             |                                                                                       |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
| <br> | Type of indication                       | visual, red pin<br>and 1 electrical switching contact at 75%<br>and at 100% of the pressure setting<br>1 green LED goes out at 75%<br>1 yellow LED lights from 75%<br>1 red LED lights from 100% $\Delta p$ |  |
|                                                                                                                                                                          | Weight                                   | 170 g                                                                                                                                                                                                       |                                                                                       |
|                                                                                                                                                                          | Pressure setting or indication range     | 2 bar -0.2 bar                                                                                                                                                                                              |                                                                                       |
|                                                                                                                                                                          | Permitt. operating pressure              | 7 bar                                                                                                                                                                                                       |                                                                                       |
|                                                                                                                                                                          | Permitt. temperature range               | -10 °C to +100 °C                                                                                                                                                                                           |                                                                                       |
|                                                                                                                                                                          | Thread                                   | G 1/8                                                                                                                                                                                                       |                                                                                       |
|                                                                                                                                                                          | Max. torque                              | 10 Nm                                                                                                                                                                                                       |                                                                                       |
|                                                                                                                                                                          | Switching type                           | N/C or N/O contacts<br>Reed contacts (change-over contacts)                                                                                                                                                 |                                                                                       |
|                                                                                                                                                                          | Max. switching voltage                   | 24 V                                                                                                                                                                                                        |                                                                                       |
|                                                                                                                                                                          | Electrical connection                    | Male connection PG 11<br>Female connector to DIN 43651                                                                                                                                                      |                                                                                       |
|                                                                                                                                                                          | Max. switching voltage at resistive load | 15 W =<br>max. 15 VA ~                                                                                                                                                                                      |                                                                                       |
|                                                                                                                                                                          | switching capacity                       | Ohmic 1 A at 15 V =<br>Ohmic 1 A at 15 V ~                                                                                                                                                                  |                                                                                       |
|                                                                                                                                                                          | Protection class to DIN 40050            | IP 65 (only if the connector is wired and fitted correctly)                                                                                                                                                 |                                                                                       |
|                                                                                                                                                                          | Order example                            | VMF 2 LZ.1 /-CN                                                                                                                                                                                             |                                                                                       |

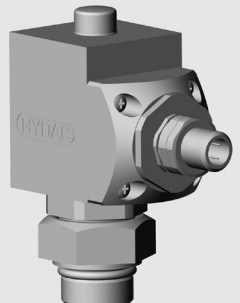
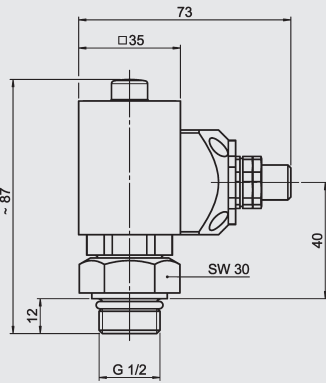
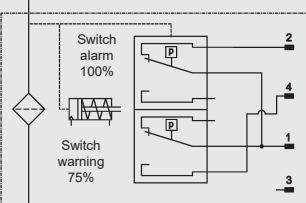
## VR x LZ.x /-CN

|                                                                                  |                                          |                                                                                                                                                                                                     |                                                                                     |
|----------------------------------------------------------------------------------|------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
|  | Type of indication                       | visual, red pin<br>and 1 electrical switching contact at 75%<br>and at 100% of the pressure setting<br>1 green LED goes out at 75%<br>1 yellow LED lights from 75%<br>1 red LED lights from 100% Δp |  |
|                                                                                  | Weight                                   | 190 g                                                                                                                                                                                               |                                                                                     |
|  | Pressure setting or indication range     | 2 bar -0.2 bar                                                                                                                                                                                      |                                                                                     |
|                                                                                  | Permitt. operating pressure              | 7 bar                                                                                                                                                                                               |                                                                                     |
|                                                                                  | Permitt. temperature range               | -10 °C to +100 °C                                                                                                                                                                                   |                                                                                     |
|                                                                                  | Thread                                   | G 1/2                                                                                                                                                                                               |                                                                                     |
|                                                                                  | Max. torque                              | 15 Nm                                                                                                                                                                                               |                                                                                     |
|                                                                                  | Switching type                           | N/C or N/O contacts<br>Reed contacts (change-over contacts)                                                                                                                                         |                                                                                     |
|                                                                                  | Max. switching voltage                   | 24 V                                                                                                                                                                                                |                                                                                     |
|                                                                                  | Electrical connection                    | Male connection PG 11<br>Female connector to DIN 43651                                                                                                                                              |                                                                                     |
|                                                                                  | Max. switching voltage at resistive load | 15 W =<br>max. 15 VA ~                                                                                                                                                                              |                                                                                     |
|                                                                                  | switching capacity                       | Ohmic 1 A at 15 V =<br>Ohmic 1 A at 15 V ~                                                                                                                                                          |                                                                                     |
|                                                                                  | Protection class to DIN 40050            | IP 65 (only if the connector is wired and fitted correctly)                                                                                                                                         |                                                                                     |
|                                                                                  | Order example                            | VR 2 LZ.1 /-CN                                                                                                                                                                                      |                                                                                     |

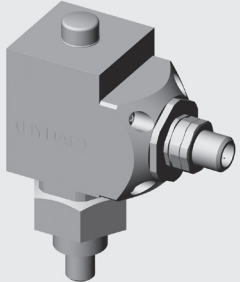
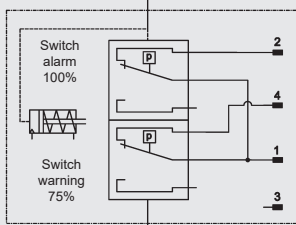
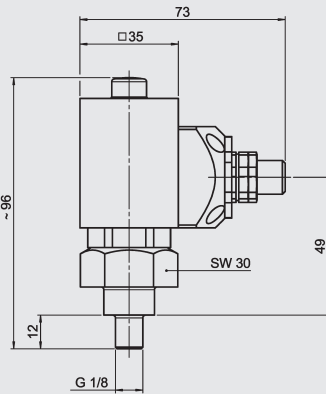
## VMF x LZ.x /-BO

|                                                                                    |                                          |                                                                                                     |                                                                                      |
|------------------------------------------------------------------------------------|------------------------------------------|-----------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|
|  | Type of indication                       | visual, red pin<br>and 1 electrical switching contact at 75% and<br>at 100% of the pressure setting |  |
|                                                                                    | Weight                                   | 120 g                                                                                               |                                                                                      |
|  | Pressure setting or indication range     | 2 bar (or 2.5 bar) -10%                                                                             |                                                                                      |
|                                                                                    | Permitt. operating pressure              | 7 bar                                                                                               |                                                                                      |
|                                                                                    | Permitt. temperature range               | -10 °C to +100 °C                                                                                   |                                                                                      |
|                                                                                    | Thread                                   | G 1/8                                                                                               |                                                                                      |
|                                                                                    | Max. torque                              | 10 Nm                                                                                               |                                                                                      |
|                                                                                    | Switching type                           | N/O (75%)<br>N/C (100%)                                                                             |                                                                                      |
|                                                                                    | Max. switching voltage                   | 24 V                                                                                                |                                                                                      |
|                                                                                    | Electrical connection                    | Male connection<br>M12 x 1                                                                          |                                                                                      |
|                                                                                    | Max. switching voltage at resistive load | 15 W =<br>max. 15 VA ~                                                                              |                                                                                      |
|                                                                                    | switching capacity                       | Ohmic 1 A at 15 V =<br>Ohmic 1 A at 15 V ~                                                          |                                                                                      |
|                                                                                    | Protection class to DIN 40050            | IP 65                                                                                               |                                                                                      |
|                                                                                    | Order example                            | VMF 2 LZ.1 /-BO                                                                                     |                                                                                      |

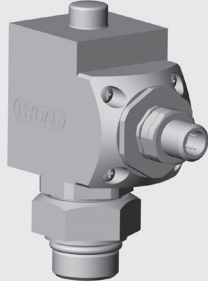
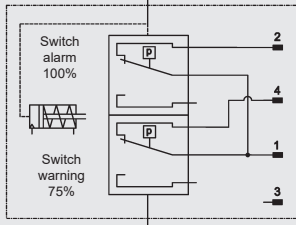
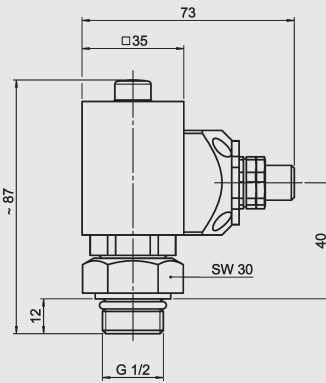
## VR x LZ.x /-BO

|                                                                                     |                                          |                                                                                                     |                                                                                       |
|-------------------------------------------------------------------------------------|------------------------------------------|-----------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
|  | Type of indication                       | visual, red pin<br>and 1 electrical switching contact at 75% and<br>at 100% of the pressure setting |  |
|                                                                                     | Weight                                   | 145 g                                                                                               |                                                                                       |
|   | Pressure setting or indication range     | 2 bar (or 2.5 bar) -10%                                                                             |                                                                                       |
|                                                                                     | Permitt. operating pressure              | 7 bar                                                                                               |                                                                                       |
|                                                                                     | Permitt. temperature range               | -10 °C to +100 °C                                                                                   |                                                                                       |
|                                                                                     | Thread                                   | G 1/2                                                                                               |                                                                                       |
|                                                                                     | Max. torque                              | 15 Nm                                                                                               |                                                                                       |
|                                                                                     | Switching type                           | N/O (75%)<br>N/C (100%)                                                                             |                                                                                       |
|                                                                                     | Max. switching voltage                   | 24 V                                                                                                |                                                                                       |
|                                                                                     | Electrical connection                    | Male connection<br>M12 x 1                                                                          |                                                                                       |
|                                                                                     | Max. switching voltage at resistive load | 15 W =<br>max. 15 VA ~                                                                              |                                                                                       |
|                                                                                     | switching capacity                       | Ohmic 1 A at 15 V =<br>Ohmic 1 A at 15 V ~                                                          |                                                                                       |
|                                                                                     | Protection class to DIN 40050            | IP 65                                                                                               |                                                                                       |
|                                                                                     | Order example                            | VR 2 LZ.1 /-BO                                                                                      |                                                                                       |

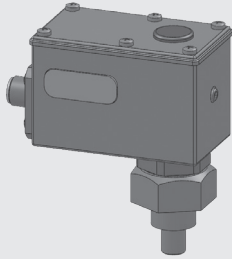
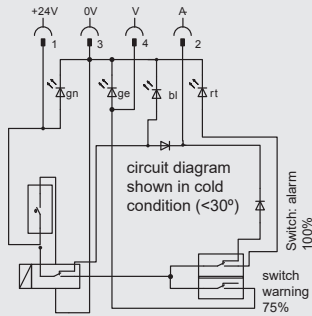
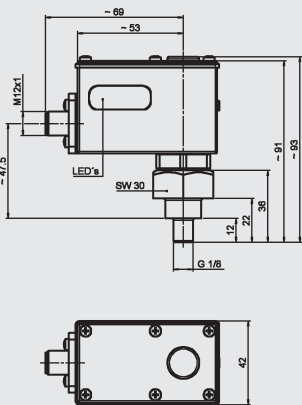
## VMF x LZ.x /-AV

|                                                                                                                                                                       |                                          |                                                                                               |                                                                                     |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------|-----------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| <br> | Type of indication                       | visual, red pin and 1 electrical switching contact at 75% and at 100% of the pressure setting |  |
|                                                                                                                                                                       | Weight                                   | 120 g                                                                                         |                                                                                     |
|                                                                                                                                                                       | Pressure setting or indication range     | 2 bar (or 2.5 bar) -10%                                                                       |                                                                                     |
|                                                                                                                                                                       | Permitt. operating pressure              | 7 bar                                                                                         |                                                                                     |
|                                                                                                                                                                       | Permitt. temperature range               | -10 °C to +100 °C                                                                             |                                                                                     |
|                                                                                                                                                                       | Thread                                   | G 1/8                                                                                         |                                                                                     |
|                                                                                                                                                                       | Max. torque                              | 10 Nm                                                                                         |                                                                                     |
|                                                                                                                                                                       | Switching type                           | N/C (75% and 100%)                                                                            |                                                                                     |
|                                                                                                                                                                       | Max. switching voltage                   | 24 V                                                                                          |                                                                                     |
|                                                                                                                                                                       | Electrical connection                    | Male connection M12 x 1                                                                       |                                                                                     |
|                                                                                                                                                                       | Max. switching voltage at resistive load | 15 W = max. 15 VA ~                                                                           |                                                                                     |
|                                                                                                                                                                       | switching capacity                       | Ohmic 1 A at 15 V = Ohmic 1 A at 15 V ~                                                       |                                                                                     |
|                                                                                                                                                                       | Protection class to DIN 40050            | IP 65                                                                                         |                                                                                     |
|                                                                                                                                                                       | Order example                            | VMF 2 LZ.1 /-AV                                                                               |                                                                                     |

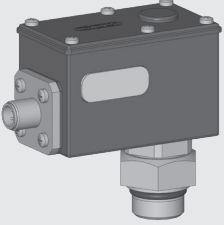
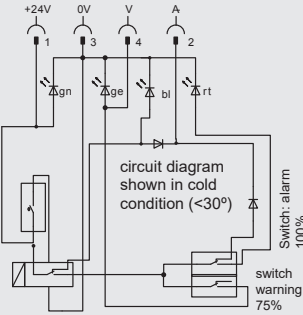
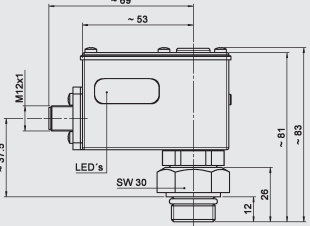
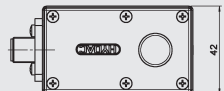
## VR x LZ.x /-AV

|                                                                                                                                                                          |                                          |                                                                                               |                                                                                      |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------|-----------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|
| <br> | Type of indication                       | visual, red pin and 1 electrical switching contact at 75% and at 100% of the pressure setting |  |
|                                                                                                                                                                          | Weight                                   | 145 g                                                                                         |                                                                                      |
|                                                                                                                                                                          | Pressure setting or indication range     | 2 bar (or 2.5 bar) -10%                                                                       |                                                                                      |
|                                                                                                                                                                          | Permitt. operating pressure              | 7 bar                                                                                         |                                                                                      |
|                                                                                                                                                                          | Permitt. temperature range               | -10 °C to +100 °C                                                                             |                                                                                      |
|                                                                                                                                                                          | Thread                                   | G 1/2                                                                                         |                                                                                      |
|                                                                                                                                                                          | Max. torque                              | 15 Nm                                                                                         |                                                                                      |
|                                                                                                                                                                          | Switching type                           | N/C (75% and 100%)                                                                            |                                                                                      |
|                                                                                                                                                                          | Max. switching voltage                   | 24 V                                                                                          |                                                                                      |
|                                                                                                                                                                          | Electrical connection                    | Male connection M12 x 1                                                                       |                                                                                      |
|                                                                                                                                                                          | Max. switching voltage at resistive load | 15 W = max. 15 VA ~                                                                           |                                                                                      |
|                                                                                                                                                                          | switching capacity                       | Ohmic 1 A at 15 V = Ohmic 1 A at 15 V ~                                                       |                                                                                      |
|                                                                                                                                                                          | Protection class to DIN 40050            | IP 65                                                                                         |                                                                                      |
|                                                                                                                                                                          | Order example                            | VR 2 LZ.1 /-AV                                                                                |                                                                                      |

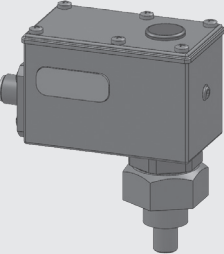
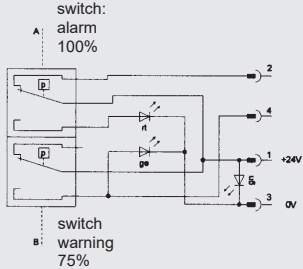
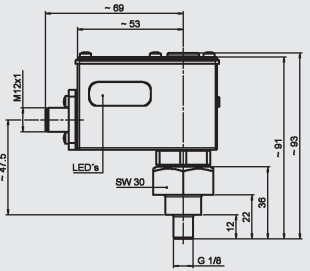
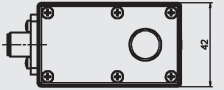
## VMF x LZ.x /-D4C

|                                                                                                                                                                           |                                          |                                                                                                                                                                                                                                                                             |                                                                                       |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
| <br> | Type of indication                       | 1 electrical switching contact at 75% and 100% of the pressure setting and suppression of the switching signal up to approx. 30 °C<br>2 green LED's light when below 30 °C<br>1 green LED lights from 30 °C<br>1 yellow LED lights from 75%<br>1 redLED lights from 100% Δp |  |
|                                                                                                                                                                           | Weight                                   | 245 g                                                                                                                                                                                                                                                                       |                                                                                       |
|                                                                                                                                                                           | Pressure setting or indication range     | 2.5 bar -10%                                                                                                                                                                                                                                                                |                                                                                       |
|                                                                                                                                                                           | Permitt. operating pressure              | 7 bar                                                                                                                                                                                                                                                                       |                                                                                       |
|                                                                                                                                                                           | Permitt. temperature range               | -10 °C to +100 °C                                                                                                                                                                                                                                                           |                                                                                       |
|                                                                                                                                                                           | Thread                                   | G 1/8                                                                                                                                                                                                                                                                       |                                                                                       |
|                                                                                                                                                                           | Max. torque                              | 10 Nm                                                                                                                                                                                                                                                                       |                                                                                       |
|                                                                                                                                                                           | Switching type                           | N/O (75%)<br>N/C (100%)                                                                                                                                                                                                                                                     |                                                                                       |
|                                                                                                                                                                           | Max. switching voltage                   | 24 V                                                                                                                                                                                                                                                                        |                                                                                       |
|                                                                                                                                                                           | Electrical connection                    | Male connection M12 x 1                                                                                                                                                                                                                                                     |                                                                                       |
|                                                                                                                                                                           | Max. switching voltage at resistive load | 15 W = max. 15 VA ~                                                                                                                                                                                                                                                         |                                                                                       |
|                                                                                                                                                                           | switching capacity                       | Ohmic 1 A at 15 V = Ohmic 1 A at 15 V ~                                                                                                                                                                                                                                     |                                                                                       |
|                                                                                                                                                                           | Protection class to DIN 40050            | IP 65                                                                                                                                                                                                                                                                       |                                                                                       |
|                                                                                                                                                                           | Order example                            | VMF 2 LZ.2 /-D4C                                                                                                                                                                                                                                                            |                                                                                       |

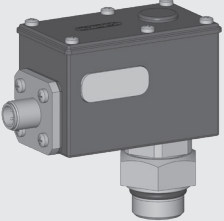
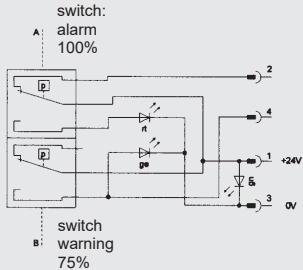
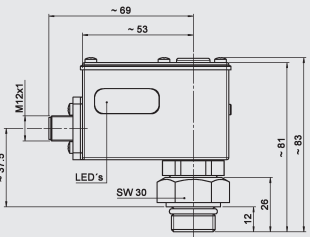
## VR x LZ.x /-D4C

|                                                                                                                                                                       |                                          |                                                                                                                                                                                                                                                                                  |                                                                                                                                                                            |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <br> | Type of indication                       | 1 electrical switching contact at 75% and at 100% of the pressure setting and suppression of the switching signal up to approx. 30 °C.<br>2 green LED's light when below 30 °C<br>1 green LED lights from 30 °C<br>1 yellow LED lights from 75%<br>1 red LED lights from 100% Δp | <br> |
|                                                                                                                                                                       | Weight                                   | 205 g                                                                                                                                                                                                                                                                            |                                                                                                                                                                            |
|                                                                                                                                                                       | Pressure setting or indication range     | 2.5 bar -10%                                                                                                                                                                                                                                                                     |                                                                                                                                                                            |
|                                                                                                                                                                       | Permitt. operating pressure              | 7 bar                                                                                                                                                                                                                                                                            |                                                                                                                                                                            |
|                                                                                                                                                                       | Permitt. temperature range               | -10 °C to +100 °C                                                                                                                                                                                                                                                                |                                                                                                                                                                            |
|                                                                                                                                                                       | Thread                                   | G 1/2                                                                                                                                                                                                                                                                            |                                                                                                                                                                            |
|                                                                                                                                                                       | Max. torque                              | 15 Nm                                                                                                                                                                                                                                                                            |                                                                                                                                                                            |
|                                                                                                                                                                       | Switching type                           | N/O (75%)<br>N/C (100%)                                                                                                                                                                                                                                                          |                                                                                                                                                                            |
|                                                                                                                                                                       | Max. switching voltage                   | 24 V                                                                                                                                                                                                                                                                             |                                                                                                                                                                            |
|                                                                                                                                                                       | Electrical connection                    | Male connection<br>M12 x 1                                                                                                                                                                                                                                                       |                                                                                                                                                                            |
|                                                                                                                                                                       | Max. switching voltage at resistive load | 15 W = max. 15 VA ~                                                                                                                                                                                                                                                              |                                                                                                                                                                            |
|                                                                                                                                                                       | switching capacity                       | Ohmic 1 A at 15 V =<br>Ohmic 1 A at 15 V ~                                                                                                                                                                                                                                       |                                                                                                                                                                            |
|                                                                                                                                                                       | Protection class to DIN 40050            | IP 65                                                                                                                                                                                                                                                                            |                                                                                                                                                                            |
|                                                                                                                                                                       | Order example                            | VR 2 LZ.2 /-D4C                                                                                                                                                                                                                                                                  |                                                                                                                                                                            |

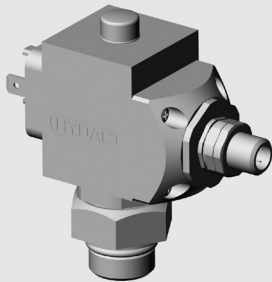
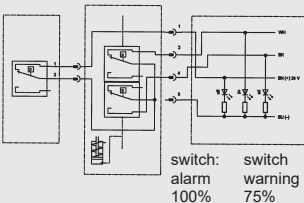
## VMF x LZ.x /-BO-LED

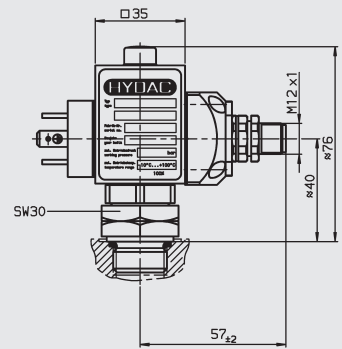
|                                                                                                                                                                          |                                          |                                                                                                                                                                          |                                                                                                                                                                               |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <br> | Type of indication                       | 1 electrical switching contact at 75% and at 100% of the pressure setting<br>1 green LED constantly lit<br>1 yellow LED lights from 75%<br>1 red LED lights from 100% Δp | <br> |
|                                                                                                                                                                          | Weight                                   | 245 g                                                                                                                                                                    |                                                                                                                                                                               |
|                                                                                                                                                                          | Pressure setting or indication range     | 2.5 bar -10%                                                                                                                                                             |                                                                                                                                                                               |
|                                                                                                                                                                          | Permitt. operating pressure              | 7 bar                                                                                                                                                                    |                                                                                                                                                                               |
|                                                                                                                                                                          | Permitt. temperature range               | -10 °C to +100 °C                                                                                                                                                        |                                                                                                                                                                               |
|                                                                                                                                                                          | Thread                                   | G 1/8                                                                                                                                                                    |                                                                                                                                                                               |
|                                                                                                                                                                          | Max. torque                              | 10 Nm                                                                                                                                                                    |                                                                                                                                                                               |
|                                                                                                                                                                          | Switching type                           | N/O (75%), N/C (100%)                                                                                                                                                    |                                                                                                                                                                               |
|                                                                                                                                                                          | Max. switching voltage                   | 24 V                                                                                                                                                                     |                                                                                                                                                                               |
|                                                                                                                                                                          | Electrical connection                    | Male connection<br>M12 x 1                                                                                                                                               |                                                                                                                                                                               |
|                                                                                                                                                                          | Max. switching voltage at resistive load | 15 W = max. 15 VA ~                                                                                                                                                      |                                                                                                                                                                               |
|                                                                                                                                                                          | switching capacity                       | Ohmic 1 A at 15 V =<br>Ohmic 1 A at 15 V ~                                                                                                                               |                                                                                                                                                                               |
|                                                                                                                                                                          | Protection class to DIN 40050            | IP 65                                                                                                                                                                    |                                                                                                                                                                               |
|                                                                                                                                                                          | Order example                            | VMF 2 LZ.2 /-BO-LED                                                                                                                                                      |                                                                                                                                                                               |

## VR x LZ.x /-BO-LED

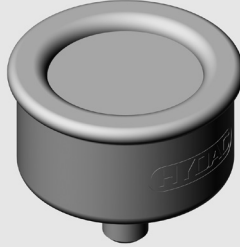
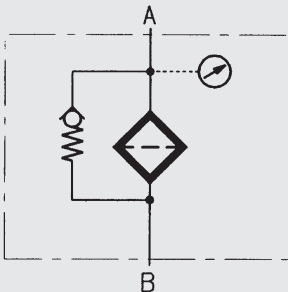
|                                                                                                                                                                           |                                          |                                                                                                                                                                          |                                                                                                                                                                                |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <br> | Type of indication                       | 1 electrical switching contact at 75% and at 100% of the pressure setting<br>1 green LED constantly lit<br>1 yellow LED lights from 75%<br>1 red LED lights from 100% Δp | <br> |
|                                                                                                                                                                           | Weight                                   | 205 g                                                                                                                                                                    |                                                                                                                                                                                |
|                                                                                                                                                                           | Pressure setting or indication range     | 2.5 bar -10%                                                                                                                                                             |                                                                                                                                                                                |
|                                                                                                                                                                           | Permitt. operating pressure              | 7 bar                                                                                                                                                                    |                                                                                                                                                                                |
|                                                                                                                                                                           | Permitt. temperature range               | -10 °C to +100 °C                                                                                                                                                        |                                                                                                                                                                                |
|                                                                                                                                                                           | Thread                                   | G 1/2                                                                                                                                                                    |                                                                                                                                                                                |
|                                                                                                                                                                           | Max. torque                              | 15 Nm                                                                                                                                                                    |                                                                                                                                                                                |
|                                                                                                                                                                           | Switching type                           | N/O (75%), N/C (100%)                                                                                                                                                    |                                                                                                                                                                                |
|                                                                                                                                                                           | Max. switching voltage                   | 24 V                                                                                                                                                                     |                                                                                                                                                                                |
|                                                                                                                                                                           | Electrical connection                    | Male connection<br>M12 x 1                                                                                                                                               |                                                                                                                                                                                |
|                                                                                                                                                                           | Max. switching voltage at resistive load | 15 W = max. 15 VA ~                                                                                                                                                      |                                                                                                                                                                                |
|                                                                                                                                                                           | switching capacity                       | Ohmic 1 A at 15 V =<br>Ohmic 1 A at 15 V ~                                                                                                                               |                                                                                                                                                                                |
|                                                                                                                                                                           | Protection class to DIN 40050            | IP 65                                                                                                                                                                    |                                                                                                                                                                                |
|                                                                                                                                                                           | Order example                            | VR 2 LZ.2 /-BO-LED                                                                                                                                                       |                                                                                                                                                                                |

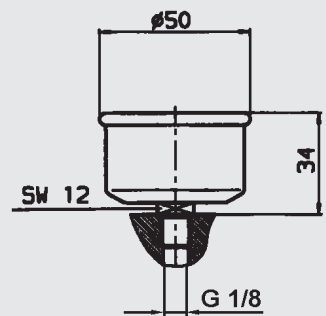
## VR x LZ.x /-GM

|                                                                                   |                                          |                                                                                                                                                                             |
|-----------------------------------------------------------------------------------|------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | Type of indication                       | visual, red pin and 1 electrical switching contact at 75% and at 100% of the pressure setting<br>Indicator function possible in conjunction with the "No element" indicator |
|                                                                                   | Weight                                   | 290 g                                                                                                                                                                       |
|   | Pressure setting or indication range     | 2.5 bar -10%                                                                                                                                                                |
|                                                                                   | Permitt. operating pressure              | 7 bar                                                                                                                                                                       |
|                                                                                   | Permitt. temperature range               | -10 °C to +100 °C                                                                                                                                                           |
|                                                                                   | Thread                                   | G 1/2                                                                                                                                                                       |
|                                                                                   | Max. torque                              | 15 Nm                                                                                                                                                                       |
|                                                                                   | Switching type                           | -                                                                                                                                                                           |
|                                                                                   | Max. switching voltage                   | 24 V                                                                                                                                                                        |
|                                                                                   | Electrical connection                    | Male connection<br>M12 x 1                                                                                                                                                  |
|                                                                                   | Max. switching voltage at resistive load | 15 W =<br>max. 15 VA ~                                                                                                                                                      |
|                                                                                   | switching capacity                       | Ohmic 1 A at 15 V =<br>Ohmic 1 A at 15 V ~                                                                                                                                  |
|                                                                                   | Protection class to DIN 40050            | IP 65                                                                                                                                                                       |
|                                                                                   | Order example                            | VR 2 LZ.1 /-GM                                                                                                                                                              |

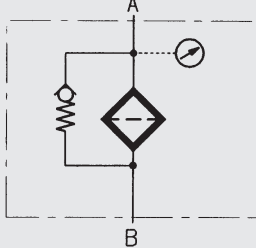


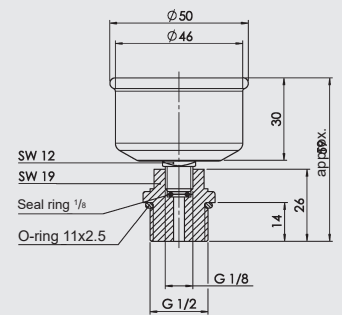
## VMF x R.x

|                                                                                     |                                          |                                   |
|-------------------------------------------------------------------------------------|------------------------------------------|-----------------------------------|
|   | Type of indication                       | visual-analogue, scale indication |
|                                                                                     | Weight                                   | 54 g                              |
|  | Pressure setting or indication range     | 0 to 10 bar                       |
|                                                                                     | Permitt. operating pressure              | 7 bar continuous                  |
|                                                                                     | Permitt. temperature range               | -20 °C to +60 °C                  |
|                                                                                     | Thread                                   | G 1/8                             |
|                                                                                     | Max. torque                              | 10 Nm                             |
|                                                                                     | Switching type                           | -                                 |
|                                                                                     | Max. switching voltage                   | -                                 |
|                                                                                     | Electrical connection                    | -                                 |
|                                                                                     | Max. switching voltage at resistive load | -                                 |
|                                                                                     | switching capacity                       | -                                 |
|                                                                                     | Protection class to DIN 40050            | -                                 |
|                                                                                     | Order example                            | VMF 2 R.0                         |



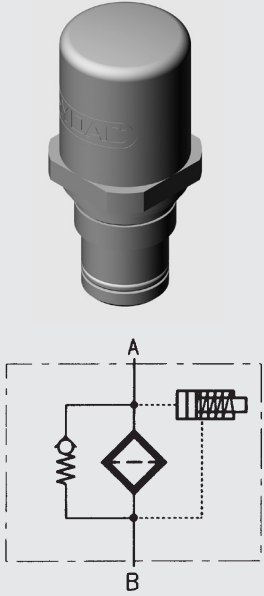
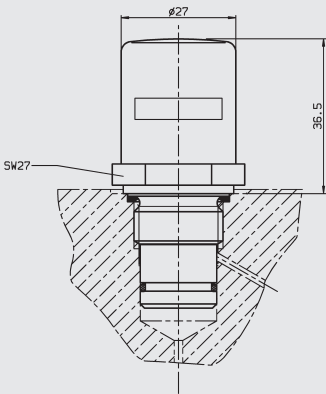
## VR x R.x

|                                                                                     |                                          |                                   |
|-------------------------------------------------------------------------------------|------------------------------------------|-----------------------------------|
|  | Type of indication                       | visual-analogue, scale indication |
|                                                                                     | Weight                                   | 125 g                             |
|  | Pressure setting or indication range     | 0 to 10 bar                       |
|                                                                                     | Permitt. operating pressure              | 7 bar continuous                  |
|                                                                                     | Permitt. temperature range               | -20 °C to +60 °C                  |
|                                                                                     | Thread                                   | G 1/2                             |
|                                                                                     | Max. torque                              | 33 Nm                             |
|                                                                                     | Switching type                           | -                                 |
|                                                                                     | Max. switching voltage                   | -                                 |
|                                                                                     | Electrical connection                    | -                                 |
|                                                                                     | Max. switching voltage at resistive load | -                                 |
|                                                                                     | switching capacity                       | -                                 |
|                                                                                     | Protection class to DIN 40050            | -                                 |
|                                                                                     | Order example                            | VR 2 R.0                          |

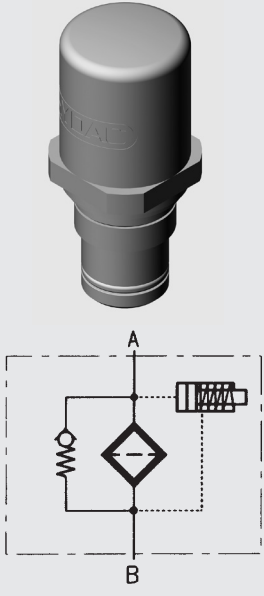
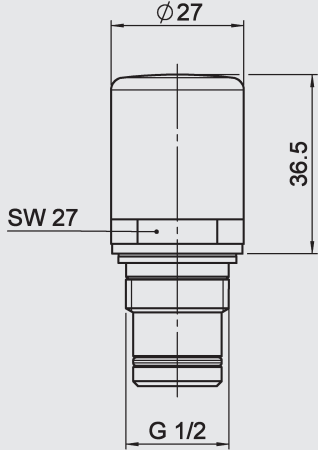


### 3.3 DIFFERENTIAL PRESSURE INDICATORS

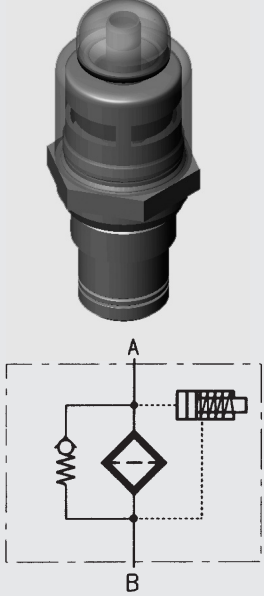
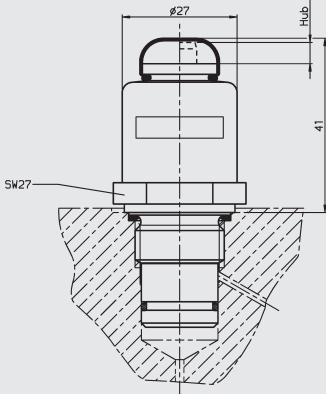
#### VM x B.x

|                                                                                   |                                                                                     |                                           |
|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------|
|  | Type of indication                                                                  | visual, red/green band<br>Automatic reset |
|                                                                                   | Weight                                                                              | 55 g                                      |
|                                                                                   | Pressure setting or indication range                                                | 2 bar -10%<br>5 bar -10%<br>8 bar ±10%    |
|                                                                                   | Permitt. operating pressure                                                         | 210 bar                                   |
|                                                                                   | Permitt. temperature range                                                          | -30 °C to +100 °C                         |
|                                                                                   | Thread                                                                              | G 1/2                                     |
|                                                                                   | Max. torque                                                                         | 33 Nm                                     |
|                                                                                   | Switching type                                                                      | -                                         |
|                                                                                   | Max. switching voltage                                                              | -                                         |
|                                                                                   | Electrical connection                                                               | -                                         |
|                                                                                   | Max. switching voltage at resistive load                                            | -                                         |
|                                                                                   | switching capacity                                                                  | -                                         |
|                                                                                   | Protection class to DIN 40050                                                       | -                                         |
|                                                                                   | Order example                                                                       | VM 5 B.1                                  |
|                                                                                   |  |                                           |

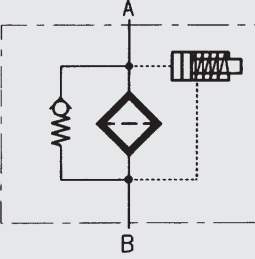
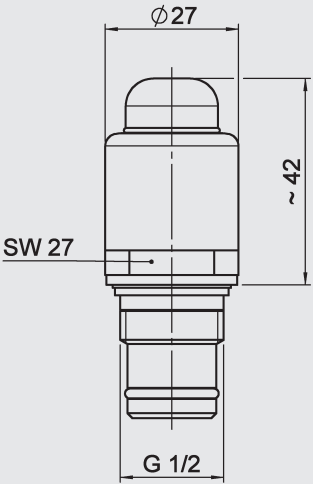
#### VD x B.x

|                                                                                    |                                                                                      |                                           |
|------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|-------------------------------------------|
|  | Type of indication                                                                   | visual, red/green band<br>Automatic reset |
|                                                                                    | Weight                                                                               | 110 g                                     |
|                                                                                    | Pressure setting or indication range                                                 | 2 bar -10%<br>5 bar -10%<br>8 bar ±10%    |
|                                                                                    | Permitt. operating pressure                                                          | 420 bar                                   |
|                                                                                    | Permitt. temperature range                                                           | -30 °C to +100 °C                         |
|                                                                                    | Thread                                                                               | G 1/2                                     |
|                                                                                    | Max. torque                                                                          | 100 Nm                                    |
|                                                                                    | Switching type                                                                       | -                                         |
|                                                                                    | Max. switching voltage                                                               | -                                         |
|                                                                                    | Electrical connection                                                                | -                                         |
|                                                                                    | Max. switching voltage at resistive load                                             | -                                         |
|                                                                                    | switching capacity                                                                   | -                                         |
|                                                                                    | Protection class to DIN 40050                                                        | -                                         |
|                                                                                    | Order example                                                                        | VD 5 B.1                                  |
|                                                                                    |  |                                           |

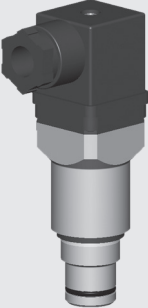
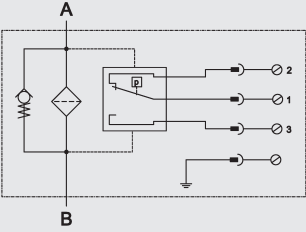
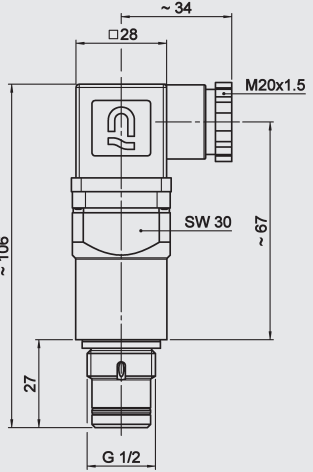
#### VM x BM.x

|                                                                                     |                                                                                       |                                        |
|-------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|----------------------------------------|
|  | Type of indication                                                                    | visual, red/green band<br>Manual reset |
|                                                                                     | Weight                                                                                | 55 g                                   |
|                                                                                     | Pressure setting or indication range                                                  | 2 bar -10%<br>5 bar -10%<br>8 bar ±10% |
|                                                                                     | Permitt. operating pressure                                                           | 210 bar                                |
|                                                                                     | Permitt. temperature range                                                            | -30 °C to +100 °C                      |
|                                                                                     | Thread                                                                                | G 1/2                                  |
|                                                                                     | Max. torque                                                                           | 33 Nm                                  |
|                                                                                     | Switching type                                                                        | -                                      |
|                                                                                     | Max. switching voltage                                                                | -                                      |
|                                                                                     | Electrical connection                                                                 | -                                      |
|                                                                                     | Max. switching voltage at resistive load                                              | -                                      |
|                                                                                     | switching capacity                                                                    | -                                      |
|                                                                                     | Protection class to DIN 40050                                                         | -                                      |
|                                                                                     | Order example                                                                         | VM 5 BM.1                              |
|                                                                                     |  |                                        |

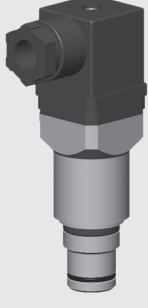
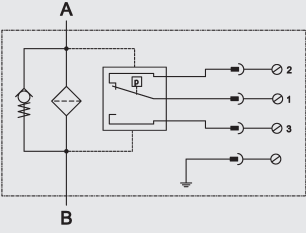
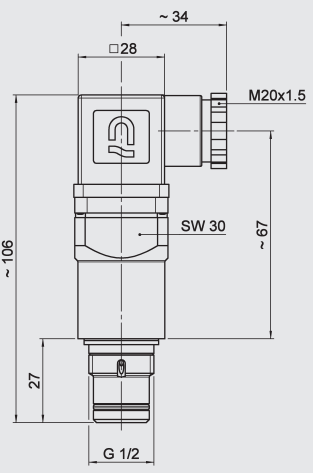
## VD x BM.x

|                                                                                                                                                                     |                                          |                                         |                                                                                     |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------|-----------------------------------------|-------------------------------------------------------------------------------------|
|   | Type of indication                       | visual, red/green band<br>Manual reset  |  |
|                                                                                                                                                                     | Weight                                   | 110 g                                   |                                                                                     |
|                                                                                                                                                                     | Pressure setting or indication range     | 2 bar -10 %<br>5 bar -10%<br>8 bar ±10% |                                                                                     |
|                                                                                                                                                                     | Permitt. operating pressure              | 420 bar                                 |                                                                                     |
|                                                                                                                                                                     | Permitt. temperature range               | -30 °C to +100 °C                       |                                                                                     |
|                                                                                                                                                                     | Thread                                   | G 1/2                                   |                                                                                     |
|                                                                                                                                                                     | Max. torque                              | 100 Nm                                  |                                                                                     |
|                                                                                                                                                                     | Switching type                           | -                                       |                                                                                     |
|                                                                                                                                                                     | Max. switching voltage                   | -                                       |                                                                                     |
|                                                                                                                                                                     | Electrical connection                    | -                                       |                                                                                     |
|                                                                                                                                                                     | Max. switching voltage at resistive load | -                                       |                                                                                     |
|                                                                                                                                                                     | switching capacity                       | -                                       |                                                                                     |
|                                                                                                                                                                     | Protection class to DIN 40050            | -                                       |                                                                                     |
|                                                                                                                                                                     | Order example                            | VD 5 BM.1                               |                                                                                     |

## VM x C.x

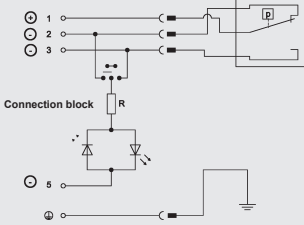
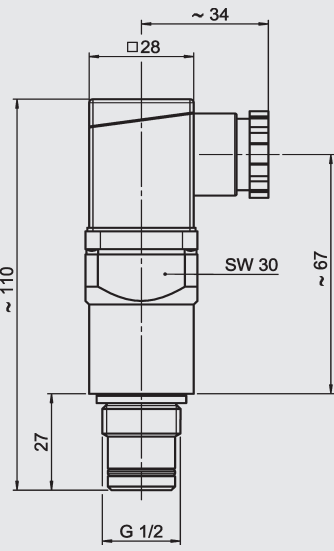
|                                                                                                                                                                       |                                          |                                                              |                                                                                      |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------|--------------------------------------------------------------|--------------------------------------------------------------------------------------|
|   | Type of indication                       | electrical switch                                            |  |
|                                                                                                                                                                       | Weight                                   | 120 g                                                        |                                                                                      |
|                                                                                                                                                                       | Pressure setting or indication range     | 2 bar -10%<br>5 bar -10%<br>8 bar ±10%                       |                                                                                      |
|                                                                                                                                                                       | Permitt. operating pressure              | 210 bar                                                      |                                                                                      |
|                                                                                                                                                                       | Permitt. temperature range               | -30 °C to +100 °C                                            |                                                                                      |
|                                                                                                                                                                       | Thread                                   | G 1/2                                                        |                                                                                      |
|                                                                                                                                                                       | Max. torque                              | 33 Nm                                                        |                                                                                      |
|                                                                                                                                                                       | Switching type                           | N/C or N/O<br>(change-over contacts)                         |                                                                                      |
|                                                                                                                                                                       | Max. switching voltage                   | 230 V                                                        |                                                                                      |
|                                                                                                                                                                       | Electrical connection                    | Male connection M20<br>Female connector to DIN EN 175301-803 |                                                                                      |
|                                                                                                                                                                       | Max. switching voltage at resistive load | 60 W =<br>100 VA ~                                           |                                                                                      |
|                                                                                                                                                                       | Switching capacity <sup>1)</sup>         | Ohmic 3 A at 24 V =<br>Ohmic 0.03 to 5 A at max. 230 V ~     |                                                                                      |
|                                                                                                                                                                       | Protection class to DIN 40050            | IP 65 (only if the connector is wired and fitted correctly)  |                                                                                      |
|                                                                                                                                                                       | Order example                            | VM 5 C.0                                                     |                                                                                      |

## VD x C.x

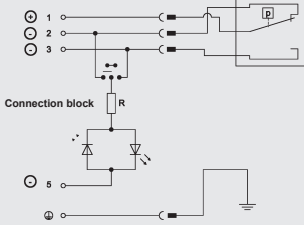
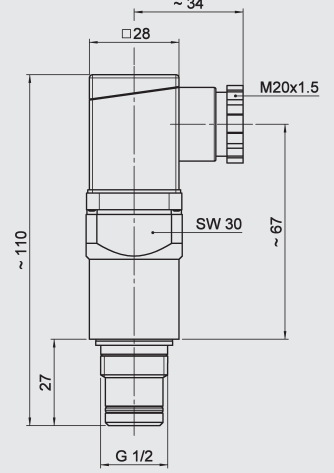
|                                                                                                                                                                        |                                          |                                                              |                                                                                       |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------|--------------------------------------------------------------|---------------------------------------------------------------------------------------|
|   | Type of indication                       | electrical switch                                            |  |
|                                                                                                                                                                        | Weight                                   | 220 g                                                        |                                                                                       |
|                                                                                                                                                                        | Pressure setting or indication range     | 5 bar -10%<br>8 bar ±10%                                     |                                                                                       |
|                                                                                                                                                                        | Permitt. operating pressure              | 420 bar                                                      |                                                                                       |
|                                                                                                                                                                        | Permitt. temperature range               | -30 °C to +100 °C                                            |                                                                                       |
|                                                                                                                                                                        | Thread                                   | G 1/2                                                        |                                                                                       |
|                                                                                                                                                                        | Max. torque                              | 100 Nm                                                       |                                                                                       |
|                                                                                                                                                                        | Switching type                           | N/C or N/O<br>(change-over contacts)                         |                                                                                       |
|                                                                                                                                                                        | Max. switching voltage                   | 230 V                                                        |                                                                                       |
|                                                                                                                                                                        | Electrical connection                    | Male connection M20<br>Female connector to DIN EN 175301-803 |                                                                                       |
|                                                                                                                                                                        | Max. switching voltage at resistive load | 60 W =<br>100 VA ~                                           |                                                                                       |
|                                                                                                                                                                        | Switching capacity <sup>1)</sup>         | Ohmic 3 A at 24 V =<br>Ohmic 0.03 to 5 A at max. 230 V ~     |                                                                                       |
|                                                                                                                                                                        | Protection class to DIN 40050            | IP 65 (only if the connector is wired and fitted correctly)  |                                                                                       |
|                                                                                                                                                                        | Order example                            | VD 5 C.0                                                     |                                                                                       |

<sup>1)</sup> Required amperage > 20 mA; for lower amperages, order "-SO135" indicators (see Supplementary details).

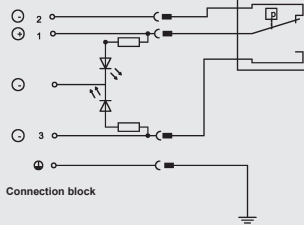
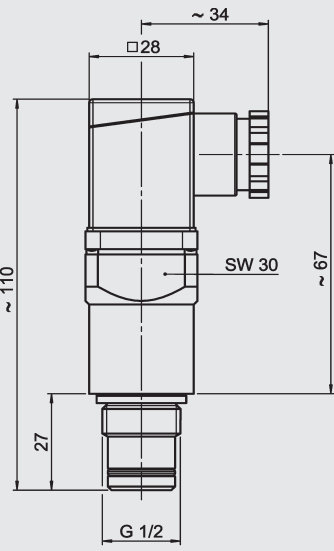
## VM x D.x /-L...

|                                                                                                                                                                    |                                          |                                                               |                                                                                     |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------|---------------------------------------------------------------|-------------------------------------------------------------------------------------|
|   | Type of indication                       | visual indicator and electrical switch                        |  |
|                                                                                                                                                                    | Weight                                   | 150 g                                                         |                                                                                     |
|                                                                                                                                                                    | Pressure setting or indication range     | 2 bar -10%<br>5 bar -10%<br>8 bar ±10%                        |                                                                                     |
|                                                                                                                                                                    | Permitt. operating pressure              | 210 bar                                                       |                                                                                     |
|                                                                                                                                                                    | Permitt. temperature range               | -30 °C to +100 °C                                             |                                                                                     |
|                                                                                                                                                                    | Thread                                   | G 1/2                                                         |                                                                                     |
|                                                                                                                                                                    | Max. torque                              | 33 Nm                                                         |                                                                                     |
|                                                                                                                                                                    | Switching type                           | N/C or N/O<br>(change-over contacts)                          |                                                                                     |
|                                                                                                                                                                    | Max. switching voltage                   | 24, 48, 115, 230 V<br>(depending on the type of light insert) |                                                                                     |
|                                                                                                                                                                    | Electrical connection                    | Male connection M20<br>Female connector to DIN EN 175301-803  |                                                                                     |
|                                                                                                                                                                    | Max. switching voltage at resistive load | 60 W =<br>100 VA ~                                            |                                                                                     |
|                                                                                                                                                                    | Switching capacity <sup>1)</sup>         | Ohmic 3 A at 24 V =<br>Ohmic 0.03 to 5 A at max. 230 V ~      |                                                                                     |
|                                                                                                                                                                    | Protection class to DIN 40050            | IP 65 (only if the connector is wired and fitted correctly)   |                                                                                     |
|                                                                                                                                                                    | Order example                            | VM 5 D.0 /-L24                                                |                                                                                     |

## VD x D.x /-L...

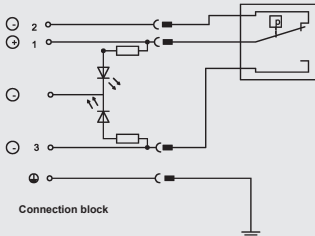
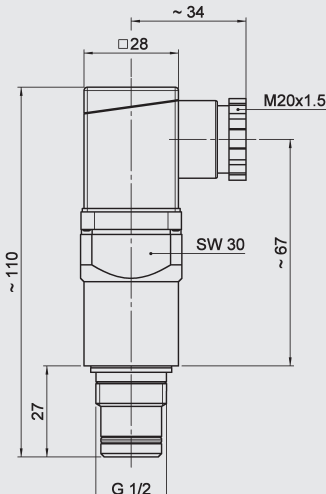
|                                                                                                                                                                       |                                          |                                                               |                                                                                      |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------|---------------------------------------------------------------|--------------------------------------------------------------------------------------|
|   | Type of indication                       | visual indicator and electrical switch                        |  |
|                                                                                                                                                                       | Weight                                   | 250 g                                                         |                                                                                      |
|                                                                                                                                                                       | Pressure setting or indication range     | 2 bar -10%<br>5 bar -10%<br>8 bar ±10%                        |                                                                                      |
|                                                                                                                                                                       | Permitt. operating pressure              | 420 bar                                                       |                                                                                      |
|                                                                                                                                                                       | Permitt. temperature range               | -30 °C to +100 °C                                             |                                                                                      |
|                                                                                                                                                                       | Thread                                   | G 1/2                                                         |                                                                                      |
|                                                                                                                                                                       | Max. torque                              | 100 Nm                                                        |                                                                                      |
|                                                                                                                                                                       | Switching type                           | N/C or N/O<br>(change-over contacts)                          |                                                                                      |
|                                                                                                                                                                       | Max. switching voltage                   | 24, 48, 115, 230 V<br>(depending on the type of light insert) |                                                                                      |
|                                                                                                                                                                       | Electrical connection                    | Male connection M20<br>Female connector to DIN EN 175301-803  |                                                                                      |
|                                                                                                                                                                       | Max. switching voltage at resistive load | 60 W =<br>100 VA ~                                            |                                                                                      |
|                                                                                                                                                                       | Switching capacity <sup>1)</sup>         | Ohmic 3 A at 24 V =<br>Ohmic 0.03 to 5 A at max. 230 V ~      |                                                                                      |
|                                                                                                                                                                       | Protection class to DIN 40050            | IP 65 (only if the connector is wired and fitted correctly)   |                                                                                      |
|                                                                                                                                                                       | Order example                            | VD 5 D.0 /-L24                                                |                                                                                      |

## VM x D.x /-LED

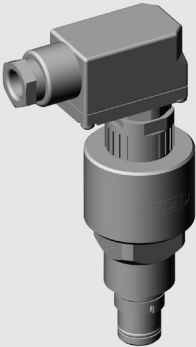
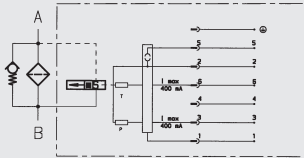
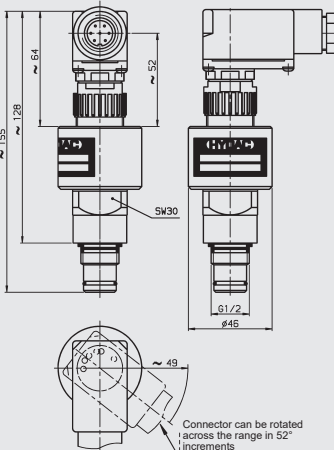
|                                                                                                                                                                        |                                          |                                                              |                                                                                       |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------|--------------------------------------------------------------|---------------------------------------------------------------------------------------|
|   | Type of indication                       | visual indicator and electrical switch                       |  |
|                                                                                                                                                                        | Weight                                   | 150 g                                                        |                                                                                       |
|                                                                                                                                                                        | Pressure setting or indication range     | 2 bar -10%<br>5 bar -10%<br>8 bar ±10%                       |                                                                                       |
|                                                                                                                                                                        | Permitt. operating pressure              | 210 bar                                                      |                                                                                       |
|                                                                                                                                                                        | Permitt. temperature range               | -30 °C to +100 °C                                            |                                                                                       |
|                                                                                                                                                                        | Thread                                   | G 1/2                                                        |                                                                                       |
|                                                                                                                                                                        | Max. torque                              | 33 Nm                                                        |                                                                                       |
|                                                                                                                                                                        | Switching type                           | N/C or N/O<br>(change-over contacts)                         |                                                                                       |
|                                                                                                                                                                        | Max. switching voltage                   | 24 V                                                         |                                                                                       |
|                                                                                                                                                                        | Electrical connection                    | Male connection M20<br>Female connector to DIN EN 175301-803 |                                                                                       |
|                                                                                                                                                                        | Max. switching voltage at resistive load | 60 W =<br>100 VA ~                                           |                                                                                       |
|                                                                                                                                                                        | Switching capacity <sup>1)</sup>         | ohmic 3 A at 24 V =                                          |                                                                                       |
|                                                                                                                                                                        | Protection class to DIN 40050            | IP 65 (only if the connector is wired and fitted correctly)  |                                                                                       |
|                                                                                                                                                                        | Order example                            | VM 5 D.0 /-LED                                               |                                                                                       |

<sup>1)</sup> Required amperage > 20 mA; for lower amperages, order "-SO135" indicators (see Supplementary details).

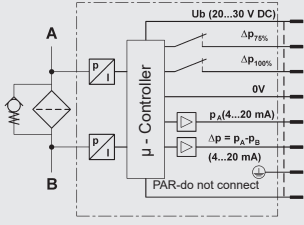
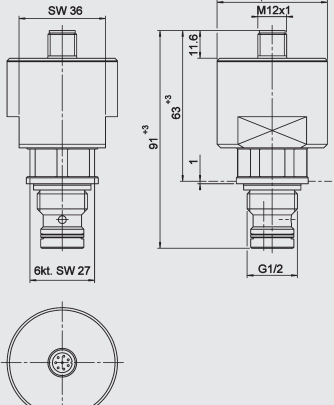
## VD x D.x /-LED

|                                                                                                                                                                    |                                                                                     |                                                              |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|--------------------------------------------------------------|
|   | Type of indication                                                                  | visual indicator and electrical switch                       |
|                                                                                                                                                                    | Weight                                                                              | 250 g                                                        |
|                                                                                                                                                                    | Pressure setting or indication range                                                | 2 bar -10%<br>5 bar -10%<br>8 bar ±10%                       |
|                                                                                                                                                                    | Permitt. operating pressure                                                         | 420 bar                                                      |
|                                                                                                                                                                    | Permitt. temperature range                                                          | -30 °C to +100 °C                                            |
|                                                                                                                                                                    | Thread                                                                              | G 1/2                                                        |
|                                                                                                                                                                    | Max. torque                                                                         | 100 Nm                                                       |
|                                                                                                                                                                    | Switching type                                                                      | N/C or N/O<br>(change-over contacts)                         |
|                                                                                                                                                                    | Max. switching voltage                                                              | 24 V                                                         |
|                                                                                                                                                                    | Electrical connection                                                               | Male connection M20<br>Female connector to DIN EN 175301-803 |
|                                                                                                                                                                    | Max. switching voltage at resistive load                                            | 60 W =<br>100 VA ~                                           |
|                                                                                                                                                                    | Switching capacity <sup>1)</sup>                                                    | ohmic 3 A at 24 V =                                          |
|                                                                                                                                                                    | Protection class to DIN 40050                                                       | IP 65 (only if the connector is wired and fitted correctly)  |
|                                                                                                                                                                    | Order example                                                                       | VD 5 D.0 /-LED                                               |
|                                                                                                                                                                    |  |                                                              |

## VD x GC.x

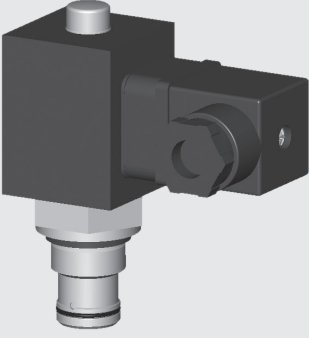
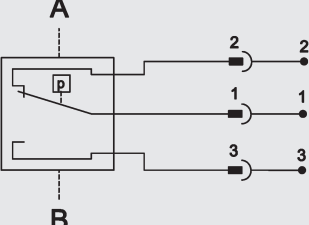
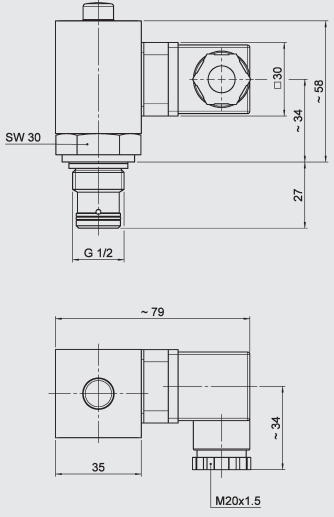
|                                                                                                                                                                       |                                                                                      |                                                                                                                                                                                                  |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|   | Type of indicator                                                                    | Electronic/analogue<br>(4-20 mA or 1-10 V)<br>1 electrical switching contact at 75% and at 100% of the pressure setting<br>Analogue signal up to 20% of the pressure setting constant 4mA or 1 V |
|                                                                                                                                                                       | Weight                                                                               | 400 g                                                                                                                                                                                            |
|                                                                                                                                                                       | Pressure setting or indication range                                                 | 2 bar -10%<br>5 bar -10%<br>8 bar -10%                                                                                                                                                           |
|                                                                                                                                                                       | Permitt. operating pressure                                                          | 420 bar                                                                                                                                                                                          |
|                                                                                                                                                                       | Permitt. temperature range                                                           | -30 °C to +80 °C                                                                                                                                                                                 |
|                                                                                                                                                                       | Thread                                                                               | G 1/2                                                                                                                                                                                            |
|                                                                                                                                                                       | Max. torque                                                                          | 100 Nm                                                                                                                                                                                           |
|                                                                                                                                                                       | Switching type                                                                       | N/C or N/O, electronic<br>PNP positive switching (factory setting)                                                                                                                               |
|                                                                                                                                                                       | Max. switching voltage                                                               | Operating voltage<br>20 to 30 V DC                                                                                                                                                               |
|                                                                                                                                                                       | Electrical connection                                                                | 7 pole plug to DIN 43651; PG 11                                                                                                                                                                  |
|                                                                                                                                                                       | Max. switching voltage at resistive load                                             | 12 W                                                                                                                                                                                             |
|                                                                                                                                                                       | switching capacity                                                                   | ohmic 0.4 A at 30 V =                                                                                                                                                                            |
|                                                                                                                                                                       | Protection class to DIN 40050                                                        | IP 65 (only if the connector is wired and fitted correctly)                                                                                                                                      |
|                                                                                                                                                                       | Order example                                                                        | VD 5 GC.0 /-LED-SQ-123                                                                                                                                                                           |
|                                                                                                                                                                       |  |                                                                                                                                                                                                  |

## VL x GW.x

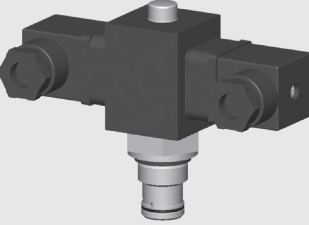
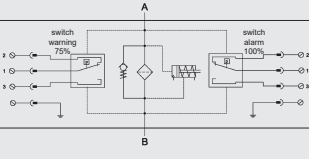
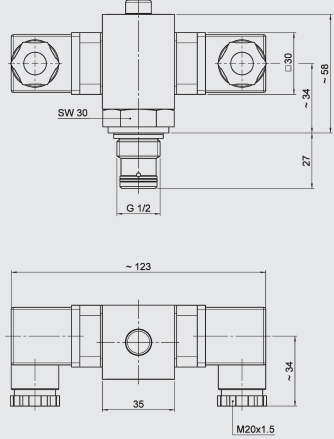
|                                                                                                                                                                        |                                                                                       |                                                                                                                                                        |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------|
|   | Type of indication                                                                    | Electronic/analogue (4-20 mA) for condition monitoring filters incl. bypass monitoring. 1 switching contact at 75% and at 100% of the pressure setting |
|                                                                                                                                                                        | Weight                                                                                | 157 g                                                                                                                                                  |
|                                                                                                                                                                        | Pressure setting p (switching contact 100%)                                           | 2 bar ±5%    3 bar ±5%    5 bar ±5%                                                                                                                    |
|                                                                                                                                                                        | Indication range Δp                                                                   | 0 to 5 bar    0 to 5 bar    0 to 8 bar                                                                                                                 |
|                                                                                                                                                                        | Indication range "pressure before filter"                                             | 25 bar                                                                                                                                                 |
|                                                                                                                                                                        | Type of switching                                                                     | electronic switch, PNP positive switching                                                                                                              |
|                                                                                                                                                                        | switching outputs Δp                                                                  | N/O or N/C contacts (factory setting)                                                                                                                  |
|                                                                                                                                                                        | Output Load                                                                           | 400 mA                                                                                                                                                 |
|                                                                                                                                                                        | Max. switching voltage / operating voltage                                            | 20 to 30 V DC                                                                                                                                          |
|                                                                                                                                                                        | Analogue outputs "press. before filter" & Δp                                          | 4 to 20 mA (max. resistance 600Ω)                                                                                                                      |
|                                                                                                                                                                        | Electrical connection                                                                 | M12 x 1 / 8 pole                                                                                                                                       |
|                                                                                                                                                                        | Protection class to DIN 40050                                                         | IP 65                                                                                                                                                  |
|                                                                                                                                                                        | Permitt. operating pressure                                                           | 25 bar                                                                                                                                                 |
|                                                                                                                                                                        | Permitt. temperature range                                                            | -40 °C to +85 °C                                                                                                                                       |
|                                                                                                                                                                        | Thread                                                                                | G 1/2                                                                                                                                                  |
|                                                                                                                                                                        | Max. torque                                                                           | 33 Nm                                                                                                                                                  |
|                                                                                                                                                                        | Order example                                                                         | VL 5 GW.0 /-V-123                                                                                                                                      |
|                                                                                                                                                                        |  |                                                                                                                                                        |

<sup>1)</sup> Required amperage > 20 mA; for lower amperages, order "-SO135" indicators (see Supplementary details).

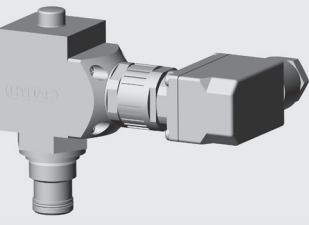
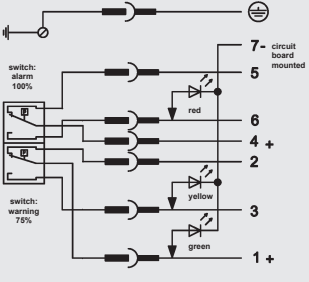
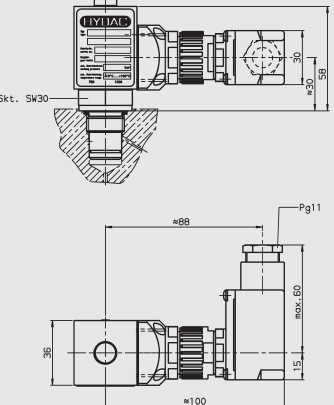
## VD x LE.x

|                                                                                                                                                                      |                                          |                                                                                              |                                                                                     |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------|----------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| <br> | Type of indication                       | visual, red pin and electrical switch<br>1 switching contact at 100% of the pressure setting |  |
|                                                                                                                                                                      | Weight                                   | 198 g                                                                                        |                                                                                     |
|                                                                                                                                                                      | Pressure setting or indication range     | 2 bar -10%<br>5 bar -10%<br>8 bar -10%                                                       |                                                                                     |
|                                                                                                                                                                      | Permitt. operating pressure              | 420 bar                                                                                      |                                                                                     |
|                                                                                                                                                                      | Permitt. temperature range               | -10 °C to +100 °C                                                                            |                                                                                     |
|                                                                                                                                                                      | Thread                                   | G 1/2                                                                                        |                                                                                     |
|                                                                                                                                                                      | Max. torque                              | 50 Nm                                                                                        |                                                                                     |
|                                                                                                                                                                      | Switching type                           | N/C or N/O contacts<br>Reed contacts (change-over contacts)                                  |                                                                                     |
|                                                                                                                                                                      | Max. switching voltage                   | 115 V                                                                                        |                                                                                     |
|                                                                                                                                                                      | Electrical connection                    | Male connection M20<br>Female connector to DIN EN 175301-803                                 |                                                                                     |
|                                                                                                                                                                      | Max. switching voltage at resistive load | 15 W =<br>max. 15 VA ~                                                                       |                                                                                     |
|                                                                                                                                                                      | switching capacity                       | Ohmic 1 A at 15 V =<br>Ohmic 1 A at 15 V ~                                                   |                                                                                     |
|                                                                                                                                                                      | Protection class to DIN 40050            | IP 65 (only if the connector is wired and fitted correctly)                                  |                                                                                     |
|                                                                                                                                                                      | Order example                            | VD 5 LE.1                                                                                    |                                                                                     |

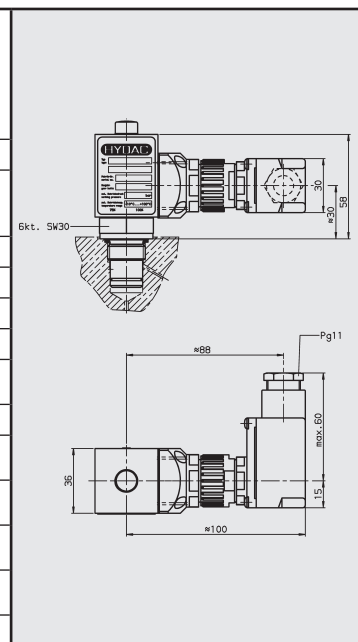
## VD x LZ.x

|                                                                                                                                                                         |                                          |                                                                                               |                                                                                      |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------|-----------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|
| <br> | Type of indication                       | visual, red pin and 1 electrical switching contact at 75% and at 100% of the pressure setting |  |
|                                                                                                                                                                         | Weight                                   | 240 g                                                                                         |                                                                                      |
|                                                                                                                                                                         | Pressure setting or indication range     | 2 bar -10%<br>5 bar -10%<br>8 bar -10%                                                        |                                                                                      |
|                                                                                                                                                                         | Permitt. operating pressure              | 420 bar                                                                                       |                                                                                      |
|                                                                                                                                                                         | Permitt. temperature range               | -10 °C to +100 °C                                                                             |                                                                                      |
|                                                                                                                                                                         | Thread                                   | G 1/2                                                                                         |                                                                                      |
|                                                                                                                                                                         | Max. torque                              | 50 Nm                                                                                         |                                                                                      |
|                                                                                                                                                                         | Switching type                           | N/C or N/O contacts<br>Reed contacts (change-over contacts)                                   |                                                                                      |
|                                                                                                                                                                         | Max. switching voltage                   | 115 V                                                                                         |                                                                                      |
|                                                                                                                                                                         | Electrical connection                    | Male connection M20<br>Female connector to DIN EN 175301-803                                  |                                                                                      |
|                                                                                                                                                                         | Max. switching voltage at resistive load | 15 W =<br>max. 15 VA ~                                                                        |                                                                                      |
|                                                                                                                                                                         | switching capacity                       | Ohmic 1 A at 15 V =<br>Ohmic 1 A at 15 V ~                                                    |                                                                                      |
|                                                                                                                                                                         | Protection class to DIN 40050            | IP 65 (only if the connector is wired and fitted correctly)                                   |                                                                                      |
|                                                                                                                                                                         | Order example                            | VD 5 LZ.1                                                                                     |                                                                                      |

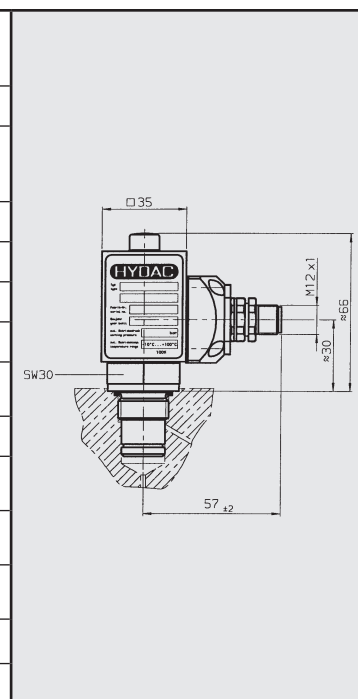
## VD x LZ.x /-DB

|                                                                                                                                                                          |                                          |                                                                                                                                                                                              |                                                                                       |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
| <br> | Type of indication                       | visual, red pin and 1 electrical switching contact at 75% and at 100% of the pressure setting<br>1 green LED constantly lit<br>1 yellow LED lights from 75%<br>1 red LED lights from 100% Δp |  |
|                                                                                                                                                                          | Weight                                   | 245 g                                                                                                                                                                                        |                                                                                       |
|                                                                                                                                                                          | Pressure setting or indication range     | 2 bar -10%<br>5 bar -10%<br>8 bar -10%                                                                                                                                                       |                                                                                       |
|                                                                                                                                                                          | Permitt. operating pressure              | 420 bar                                                                                                                                                                                      |                                                                                       |
|                                                                                                                                                                          | Permitt. temperature range               | -10 °C to +100 °C                                                                                                                                                                            |                                                                                       |
|                                                                                                                                                                          | Thread                                   | G 1/2                                                                                                                                                                                        |                                                                                       |
|                                                                                                                                                                          | Max. torque                              | 50 Nm                                                                                                                                                                                        |                                                                                       |
|                                                                                                                                                                          | Switching type                           | N/C or N/O contacts<br>Reed contacts (change-over contacts)                                                                                                                                  |                                                                                       |
|                                                                                                                                                                          | Max. switching voltage                   | 24 V                                                                                                                                                                                         |                                                                                       |
|                                                                                                                                                                          | Electrical connection                    | Male connection PG 11<br>Female connector to DIN 43651                                                                                                                                       |                                                                                       |
|                                                                                                                                                                          | Max. switching voltage at resistive load | 15 W =<br>max. 15 VA ~                                                                                                                                                                       |                                                                                       |
|                                                                                                                                                                          | switching capacity                       | Ohmic 1 A at 15 V =<br>Ohmic 1 A at 15 V ~                                                                                                                                                   |                                                                                       |
|                                                                                                                                                                          | Protection class to DIN 40050            | IP 65 (only if the connector is wired and fitted correctly)                                                                                                                                  |                                                                                       |
|                                                                                                                                                                          | Order example                            | VD 5 LZ.1 /-DB                                                                                                                                                                               |                                                                                       |

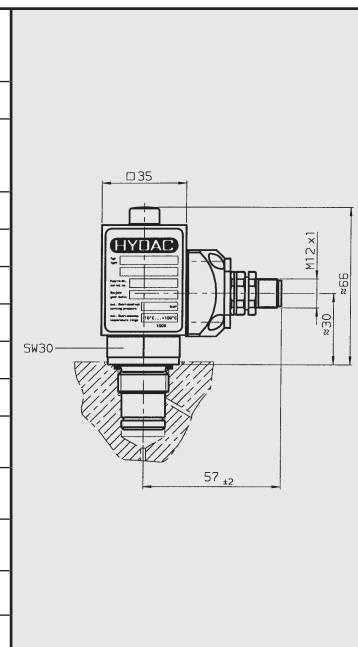
|                                             |                                                                                                                                                                                                             |
|---------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Type of indication                          | visual, red pin<br>and 1 electrical switching contact at 75%<br>and at 100% of the pressure setting<br>1 green LED goes out at 75%<br>1 yellow LED lights from 75%<br>1 red LED lights from 100% $\Delta p$ |
| Weight                                      | 245 g                                                                                                                                                                                                       |
| Pressure setting or<br>indication range     | 2 bar -10%<br>5 bar -10%<br>8 bar -10%                                                                                                                                                                      |
| Permitt. operating pressure                 | 420 bar                                                                                                                                                                                                     |
| Permitt. temperature range                  | -10 °C to +100 °C                                                                                                                                                                                           |
| Thread                                      | G 1/2                                                                                                                                                                                                       |
| Max. torque                                 | 50 Nm                                                                                                                                                                                                       |
| Switching type                              | N/C or N/O contacts<br>Reed contacts (change-over contacts)                                                                                                                                                 |
| Max. switching voltage                      | 24 V                                                                                                                                                                                                        |
| Electrical connection                       | Male connection PG 11<br>Female connector to DIN 43651                                                                                                                                                      |
| Max. switching voltage<br>at resistive load | 15 W =<br>max. 15 VA ~                                                                                                                                                                                      |
| switching capacity                          | Ohmic 1 A at 15 V =<br>Ohmic 1 A at 15 V ~                                                                                                                                                                  |
| Protection class to<br>DIN 40050            | IP 65 (only if the connector is wired and<br>fitted correctly)                                                                                                                                              |
| Order example                               | VD 5 LZ.1 /-CN                                                                                                                                                                                              |



|                                             |                                                                                                       |
|---------------------------------------------|-------------------------------------------------------------------------------------------------------|
| Type of indication                          | visual, red pin<br>and one electrical switching contact at 75%<br>and at 100% of the pressure setting |
| Weight                                      | 197 g                                                                                                 |
| Pressure setting or<br>indication range     | 2 bar -10%<br>5 bar -10%<br>8 bar -10%                                                                |
| Permitt. operating pressure                 | 420 bar                                                                                               |
| Permitt. temperature range                  | -10 °C to +100 °C                                                                                     |
| Thread                                      | G 1/2                                                                                                 |
| Max. torque                                 | 50 Nm                                                                                                 |
| Switching type                              | N/O (75%)<br>N/C (100%)                                                                               |
| Max. switching voltage                      | 24 V                                                                                                  |
| Electrical connection                       | Male connection<br>M12 x 1                                                                            |
| Max. switching voltage<br>at resistive load | 15 W =<br>max. 15 VA ~                                                                                |
| switching capacity                          | Ohmic 1 A at 15 V =<br>Ohmic 1 A at 15 V ~                                                            |
| Protection class to<br>DIN 40050            | IP 65                                                                                                 |
| Order example                               | VD 5 LZ.1 /-BO                                                                                        |



|                                          |                                                                                                 |
|------------------------------------------|-------------------------------------------------------------------------------------------------|
| Type of indication                       | visual, red pin and one electrical switching contact at 75% and at 100% of the pressure setting |
| Weight                                   | 197 g                                                                                           |
| Pressure setting or indication range     | 2 bar -10%<br>5 bar -10%<br>8 bar -10%                                                          |
| Permitt. operating pressure              | 420 bar                                                                                         |
| Permitt. temperature range               | -10 °C to +100 °C                                                                               |
| Thread                                   | G 1/2                                                                                           |
| Max. torque                              | 50 Nm                                                                                           |
| Switching type                           | N/C (75% and 100%)                                                                              |
| Max. switching voltage                   | 24 V                                                                                            |
| Electrical connection                    | Male connection<br>M12 x 1                                                                      |
| Max. switching voltage at resistive load | 15 W =<br>max. 15 VA ~                                                                          |
| switching capacity                       | Ohmic 1 A at 15 V =<br>Ohmic 1 A at 15 V ~                                                      |
| Protection class to DIN 40050            | IP 65                                                                                           |
| Order example                            | VD 5 LZ.1 /-AV                                                                                  |



Technical drawing of the LED module showing front and top views with dimensions.

**Front View Dimensions:**

- Overall width:  $\sim 69$
- Overall height:  $\sim 86$
- Mounting hole diameter: M12x1
- LED chip label: LED's
- SW 30 switch label
- Bottom mounting hole diameter: G 1/2
- Bottom mounting hole offset: 27
- Top mounting hole offset:  $\sim 53$
- Bottom mounting hole offset:  $\sim 88$

**Top View Dimensions:**

- Overall width: 42
- Overall height: 42
- Mounting holes: 6 holes (4 corner holes and 2 center holes)
- LED chip label: LED's

Technical drawing of the SW 30 LED light fixture, showing front and top views with dimensions.

**Front View Dimensions:**

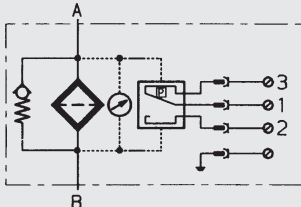
- Top width:  $\sim 69$
- Bottom width:  $\sim 53$
- Left side height:  $\sim 27$
- Right side height:  $\sim 86$  and  $\sim 88$
- Mounting hole: M12x1
- LED indicator: LED's
- Switch label: SW 30
- Bottom connection: G 1/2
- Bottom height: 27

**Top View Dimensions:**

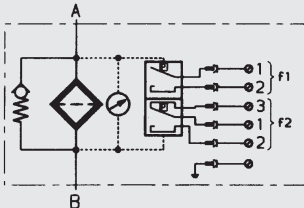
- Right side width: 42
- Mounting holes: 8 holes (4 corners and 4 midpoints)
- Central feature: Circular hole and rectangular label "SW 30 LED"

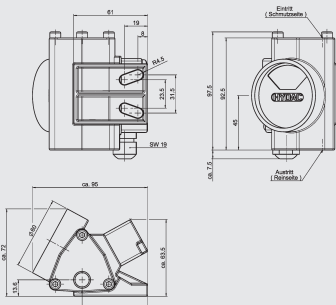
[illegible]

V02 x VE.x

|                                                                                                                                                                      |                                          |                                                                                         |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------|-----------------------------------------------------------------------------------------|
| <br> | Type of indication                       | Visual/analogue indicator and electrical switching contact 100% of the pressure setting |
|                                                                                                                                                                      | Weight                                   | 640 g                                                                                   |
|                                                                                                                                                                      | Pressure setting or indication range     | 0.8 bar $\pm 10\%$<br>2.0 bar $\pm 10\%$<br>4.3 bar $\pm 10\%$                          |
|                                                                                                                                                                      | Permitt. operating pressure              | 100 bar                                                                                 |
|                                                                                                                                                                      | Permitt. temperature range               | -30 °C to +100 °C                                                                       |
|                                                                                                                                                                      | Thread                                   | G 1/4                                                                                   |
|                                                                                                                                                                      | Max. torque                              | -                                                                                       |
|                                                                                                                                                                      | Switching type                           | 100% change-over contact                                                                |
|                                                                                                                                                                      | Max. switching voltage                   | 250 V                                                                                   |
|                                                                                                                                                                      | Electrical connection                    | threaded connection<br>M16 x 1.5                                                        |
|                                                                                                                                                                      | Max. switching voltage at resistive load | 100% contact<br>30 W =<br>60 VA ~                                                       |
|                                                                                                                                                                      | switching capacity                       | Ohmic 2.5 A at 24 V =<br>Ohmic 1 A at 220 V ~                                           |
|                                                                                                                                                                      | Protection class to DIN 40050            | IP 65                                                                                   |
|                                                                                                                                                                      | Order example                            | V02 2 VE.0                                                                              |

V02 x VZ.x

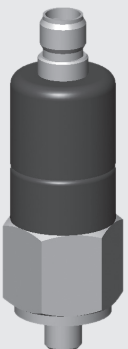
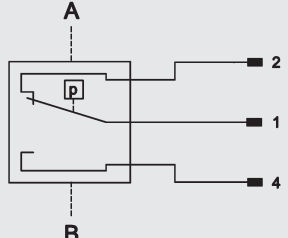
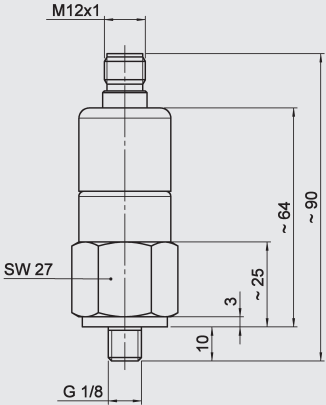
|                                                                                                                                                                           |                                          |                                                                                                      |                                   |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------|------------------------------------------------------------------------------------------------------|-----------------------------------|
| <br> | Type of indication                       | Visual/analogue indicator and 1 electrical switching contact at 75% and 100% of the pressure setting |                                   |
|                                                                                                                                                                           | Weight                                   | 650 g                                                                                                |                                   |
|                                                                                                                                                                           | Pressure setting or indication range     | 0.8 bar $\pm 10\%$<br>2.0 bar $\pm 10\%$<br>4.3 bar $\pm 10\%$                                       |                                   |
|                                                                                                                                                                           | Permitt. operating pressure              | 100 bar                                                                                              |                                   |
|                                                                                                                                                                           | Permitt. temperature range               | -30 °C to +100 °C                                                                                    |                                   |
|                                                                                                                                                                           | Thread                                   | G 1/4                                                                                                |                                   |
|                                                                                                                                                                           | Max. torque                              | -                                                                                                    |                                   |
|                                                                                                                                                                           | Switching type                           | 75% - N/O contact<br>100% - change-over contact                                                      |                                   |
|                                                                                                                                                                           | Max. switching voltage                   | 250 V                                                                                                |                                   |
|                                                                                                                                                                           | Electrical connection                    | threaded connection<br>M16 x 1.5                                                                     |                                   |
|                                                                                                                                                                           | Max. switching voltage at resistive load | 75% contact<br>120 W =<br>120 VA ~                                                                   | 100% contact<br>30 W =<br>60 VA ~ |
|                                                                                                                                                                           | switching capacity                       | Ohmic 2.5 A at 24 V =<br>Ohmic 1 A at 220 V ~                                                        |                                   |
|                                                                                                                                                                           | Protection class to DIN 40050            | IP 65                                                                                                |                                   |
|                                                                                                                                                                           | Order example                            | V02 2 VZ.0                                                                                           |                                   |



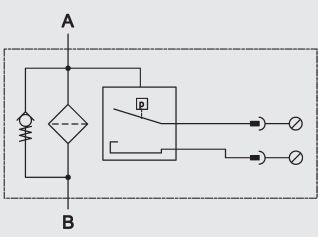
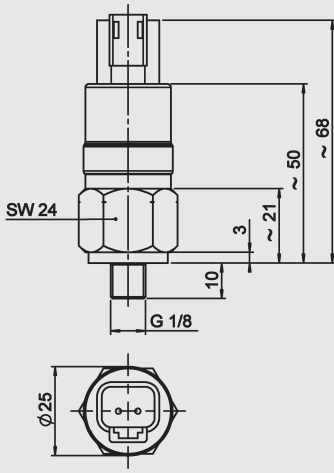
### 3.4 MOBILE INDICATORS

#### 3.4.1 RETURN LINE

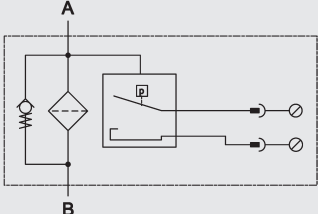
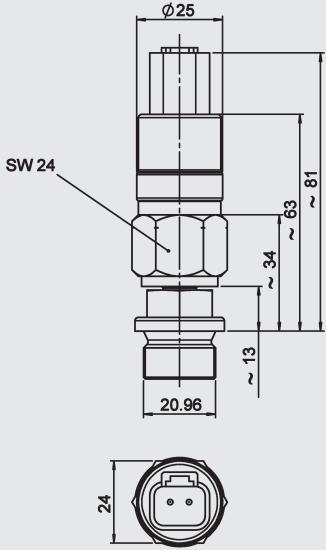
##### VMF x CM.x

|                                                                                                                                                                     |                                          |                                                             |                                                                                     |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------|-------------------------------------------------------------|-------------------------------------------------------------------------------------|
|   | Type of indication                       | electrical switch                                           |  |
|                                                                                                                                                                     | Weight                                   | 90 g                                                        |                                                                                     |
|                                                                                                                                                                     | Pressure setting or indication range     | 2 bar $\pm 0.3$ bar                                         |                                                                                     |
|                                                                                                                                                                     | Permitt. operating pressure              | 10 bar                                                      |                                                                                     |
|                                                                                                                                                                     | Permitt. temperature range               | -10 °C to +100 °C                                           |                                                                                     |
|                                                                                                                                                                     | Thread                                   | G 1/8                                                       |                                                                                     |
|                                                                                                                                                                     | Max. torque                              | 10 Nm                                                       |                                                                                     |
|                                                                                                                                                                     | Switching type                           | N/C or N/O (change-over contacts)                           |                                                                                     |
|                                                                                                                                                                     | Max. switching voltage                   | 24V                                                         |                                                                                     |
|                                                                                                                                                                     | Electrical connection                    | Male connection M12 x 1                                     |                                                                                     |
|                                                                                                                                                                     | Max. switching voltage at resistive load | 250 W = 300 VA ~                                            |                                                                                     |
|                                                                                                                                                                     | switching capacity                       | Ohmic 6 A at 24 V = Ohmic 0.03 to 6 A at max. 230 V ~       |                                                                                     |
|                                                                                                                                                                     | Protection class to DIN 40050            | IP 67 (only if the connector is wired and fitted correctly) |                                                                                     |
|                                                                                                                                                                     | Order example                            | VMF 2 CM.1/-4M0                                             |                                                                                     |

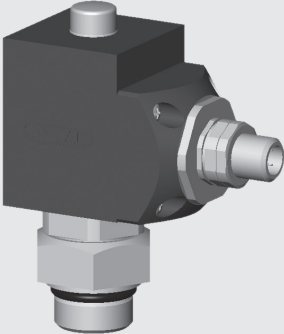
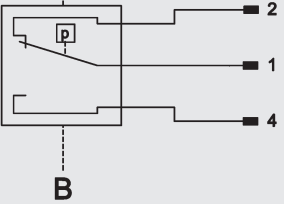
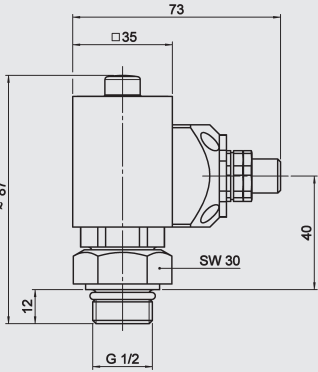
##### VMF x FD.x (plug connection: Deutsch DT 04-2P)

|                                                                                                                                                                       |                                          |                                                             |                                                                                      |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------|-------------------------------------------------------------|--------------------------------------------------------------------------------------|
|   | Type of indication                       | electrical switch                                           |  |
|                                                                                                                                                                       | Weight                                   | 70 g                                                        |                                                                                      |
|                                                                                                                                                                       | Pressure setting or indication range     | 2 bar $\pm 0.3$ bar                                         |                                                                                      |
|                                                                                                                                                                       | Permitt. operating pressure              | 11 bar continuous                                           |                                                                                      |
|                                                                                                                                                                       | Permitt. temperature range               | -30 °C to +100 °C                                           |                                                                                      |
|                                                                                                                                                                       | Thread                                   | G 1/8                                                       |                                                                                      |
|                                                                                                                                                                       | Max. torque                              | 10 Nm                                                       |                                                                                      |
|                                                                                                                                                                       | Switching type                           | N/O or N/C                                                  |                                                                                      |
|                                                                                                                                                                       | Max. switching voltage                   | 42 V                                                        |                                                                                      |
|                                                                                                                                                                       | Electrical connection                    | Deutsch DT 04-2P                                            |                                                                                      |
|                                                                                                                                                                       | Max. switching voltage at resistive load | 60 W = 100 VA ~                                             |                                                                                      |
|                                                                                                                                                                       | switching capacity                       | Ohmic 2.5 A at 24 V = Ohmic 1 A at 220 V ~                  |                                                                                      |
|                                                                                                                                                                       | Protection class to DIN 40050            | IP 67 (only if the connector is wired and fitted correctly) |                                                                                      |
|                                                                                                                                                                       | Order example                            | VMF 2 FD.0 /-2M0                                            |                                                                                      |

##### VR x FD.x (plug connection: Deutsch DT 04-2P)

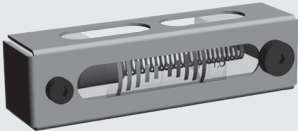
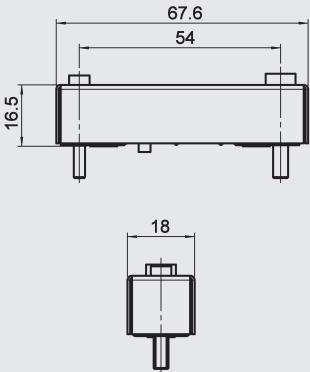
|                                                                                                                                                                        |                                          |                                                             |                                                                                       |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------|-------------------------------------------------------------|---------------------------------------------------------------------------------------|
|   | Type of indication                       | electrical switch                                           |  |
|                                                                                                                                                                        | Weight                                   | 90 g                                                        |                                                                                       |
|                                                                                                                                                                        | Pressure setting or indication range     | 2 bar $\pm 0.3$ bar                                         |                                                                                       |
|                                                                                                                                                                        | Permitt. operating pressure              | 11 bar continuous                                           |                                                                                       |
|                                                                                                                                                                        | Permitt. temperature range               | -30 °C to +100 °C                                           |                                                                                       |
|                                                                                                                                                                        | Thread                                   | G 1/2                                                       |                                                                                       |
|                                                                                                                                                                        | Max. torque                              | 33 Nm                                                       |                                                                                       |
|                                                                                                                                                                        | Switching type                           | N/O or N/C                                                  |                                                                                       |
|                                                                                                                                                                        | Max. switching voltage                   | 42 V                                                        |                                                                                       |
|                                                                                                                                                                        | Electrical connection                    | Deutsch DT 04-2P                                            |                                                                                       |
|                                                                                                                                                                        | Max. switching voltage at resistive load | 60 W = 100 VA ~                                             |                                                                                       |
|                                                                                                                                                                        | switching capacity                       | Ohmic 2.5 A at 24 V = Ohmic 1 A at 220 V ~                  |                                                                                       |
|                                                                                                                                                                        | Protection class to DIN 40050            | IP 67 (only if the connector is wired and fitted correctly) |                                                                                       |
|                                                                                                                                                                        | Order example                            | VR 2 FD.0 /-2M0                                             |                                                                                       |

VR x LEM.x

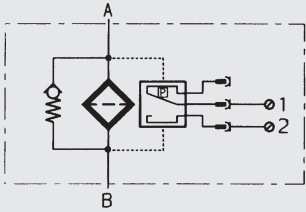
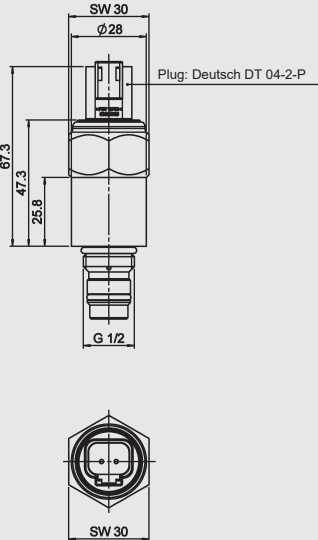
|                                                                                                                                                                        |                                          |                                                                                                 |                                                                                     |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------|-------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| <br> | Type of indication                       | visual, red pin<br>and electrical switch<br>1 switching contact at 100% of the pressure setting |  |
|                                                                                                                                                                        | Weight                                   | 140 g                                                                                           |                                                                                     |
|                                                                                                                                                                        | Pressure setting or indication range     | 2 bar -0.2 bar                                                                                  |                                                                                     |
|                                                                                                                                                                        | Permitt. operating pressure              | 7 bar                                                                                           |                                                                                     |
|                                                                                                                                                                        | Permitt. temperature range               | -10 °C to +100 °C                                                                               |                                                                                     |
|                                                                                                                                                                        | Thread                                   | G 1/2                                                                                           |                                                                                     |
|                                                                                                                                                                        | Max. torque                              | 15 Nm                                                                                           |                                                                                     |
|                                                                                                                                                                        | Switching type                           | N/C or N/O contacts<br>Reed contacts (change-over contacts)                                     |                                                                                     |
|                                                                                                                                                                        | Max. switching voltage                   | 24V                                                                                             |                                                                                     |
|                                                                                                                                                                        | Electrical connection                    | Male connection<br>M12 x 1                                                                      |                                                                                     |
|                                                                                                                                                                        | Max. switching voltage at resistive load | 15 W =<br>max. 15 VA ~                                                                          |                                                                                     |
|                                                                                                                                                                        | switching capacity                       | Ohmic 1 A at 15 V =<br>Ohmic 1 A at 15 V ~                                                      |                                                                                     |
|                                                                                                                                                                        | Protection class to DIN 40050            | IP 65                                                                                           |                                                                                     |
|                                                                                                                                                                        | Order example                            | VR 2 LEM.1/-4M0                                                                                 |                                                                                     |

### 3.4.2 DIFFERENTIAL PRESSURE

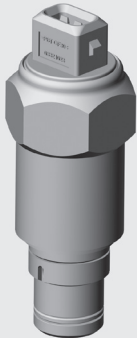
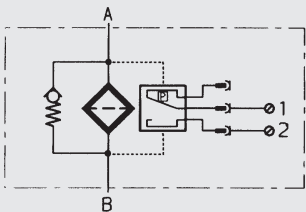
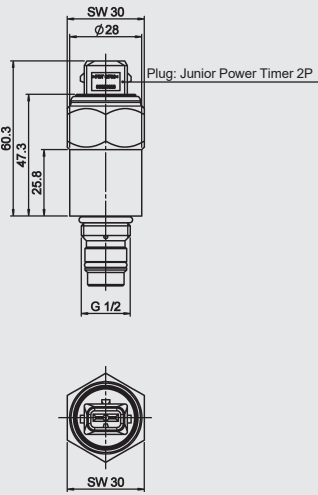
#### VL x BF.x

|                                                                                  |                                          |                            |                                                                                     |
|----------------------------------------------------------------------------------|------------------------------------------|----------------------------|-------------------------------------------------------------------------------------|
|  | Type of indication                       | visual                     |  |
|                                                                                  | Weight                                   | 25 g                       |                                                                                     |
|                                                                                  | Pressure setting or indication range     | 1 bar -10%<br>2.5 bar -10% |                                                                                     |
|                                                                                  | Permitt. operating pressure              | 40 bar                     |                                                                                     |
|                                                                                  | Permitt. temperature range               | -10 °C to +80 °C           |                                                                                     |
|                                                                                  | Thread                                   | M3; M4                     |                                                                                     |
|                                                                                  | Max. torque                              | 0.6 Nm                     |                                                                                     |
|                                                                                  | Switching type                           | -                          |                                                                                     |
|                                                                                  | Max. switching voltage                   | -                          |                                                                                     |
|                                                                                  | Electrical connection                    | -                          |                                                                                     |
|                                                                                  | Max. switching voltage at resistive load | -                          |                                                                                     |
|                                                                                  | switching capacity                       | -                          |                                                                                     |
|                                                                                  | Protection class to DIN 40050            | -                          |                                                                                     |
|                                                                                  | Order example                            | VL 2.5 BF.0                |                                                                                     |

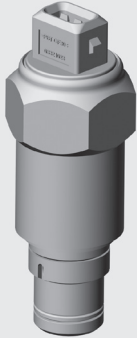
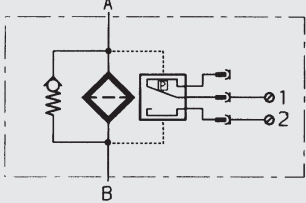
#### VM x CD.x (plug type: Deutsch DT 04-2P)

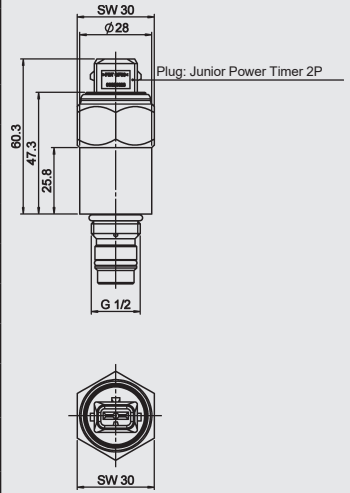
|                                                                                                                                                                          |                                          |                                                             |                                                                                      |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------|-------------------------------------------------------------|--------------------------------------------------------------------------------------|
| <br> | Type of indication                       | electrical switch                                           |  |
|                                                                                                                                                                          | Weight                                   | 100 g                                                       |                                                                                      |
|                                                                                                                                                                          | Pressure setting or indication range     | 2 bar -10%<br>5 bar -10%<br>8 bar ±10%                      |                                                                                      |
|                                                                                                                                                                          | Permitt. operating pressure              | 210 bar                                                     |                                                                                      |
|                                                                                                                                                                          | Permitt. temperature range               | -30 °C to +100 °C                                           |                                                                                      |
|                                                                                                                                                                          | Thread                                   | G 1/2                                                       |                                                                                      |
|                                                                                                                                                                          | Max. torque                              | 33 Nm                                                       |                                                                                      |
|                                                                                                                                                                          | Switching type                           | N/O or N/C                                                  |                                                                                      |
|                                                                                                                                                                          | Max. switching voltage                   | 48 V                                                        |                                                                                      |
|                                                                                                                                                                          | Electrical connection                    | -                                                           |                                                                                      |
|                                                                                                                                                                          | Max. switching voltage at resistive load | 60 W =<br>100 VA ~                                          |                                                                                      |
|                                                                                                                                                                          | switching capacity                       | Ohmic 3 A at 24 V =<br>Ohmic 0.03 to 5 A at max. 230 V ~    |                                                                                      |
|                                                                                                                                                                          | Protection class to DIN 40050            | IP 67 (only if the connector is wired and fitted correctly) |                                                                                      |
|                                                                                                                                                                          | Order example                            | VM 5 CD.0 /-2M0                                             |                                                                                      |

#### VM x CJ.x (plug type: Junior Power Timer)

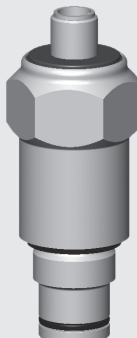
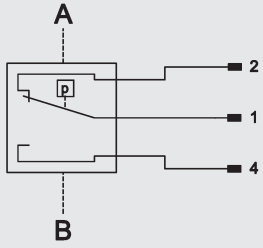
|                                                                                                                                                                           |                                          |                                                             |                                                                                       |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------|-------------------------------------------------------------|---------------------------------------------------------------------------------------|
| <br> | Type of indication                       | electrical switch                                           |  |
|                                                                                                                                                                           | Weight                                   | 100 g                                                       |                                                                                       |
|                                                                                                                                                                           | Pressure setting or indication range     | 2 bar -10%<br>5 bar -10%<br>8 bar ±10%                      |                                                                                       |
|                                                                                                                                                                           | Permitt. operating pressure              | 210 bar                                                     |                                                                                       |
|                                                                                                                                                                           | Permitt. temperature range               | -30 °C to +100 °C                                           |                                                                                       |
|                                                                                                                                                                           | Thread                                   | G 1/2                                                       |                                                                                       |
|                                                                                                                                                                           | Max. torque                              | 33 Nm                                                       |                                                                                       |
|                                                                                                                                                                           | Switching type                           | N/O or N/C                                                  |                                                                                       |
|                                                                                                                                                                           | Max. switching voltage                   | 48 V                                                        |                                                                                       |
|                                                                                                                                                                           | Electrical connection                    | Junior Power Timer                                          |                                                                                       |
|                                                                                                                                                                           | Max. switching voltage at resistive load | 60 W =<br>100 VA ~                                          |                                                                                       |
|                                                                                                                                                                           | switching capacity                       | Ohmic 3 A at 24 V =<br>Ohmic 0.03 to 5 A at max. 230 V ~    |                                                                                       |
|                                                                                                                                                                           | Protection class to DIN 40050            | IP 54 (only if the connector is wired and fitted correctly) |                                                                                       |
|                                                                                                                                                                           | Order example                            | VM 5 CJ.0 /-2M0                                             |                                                                                       |

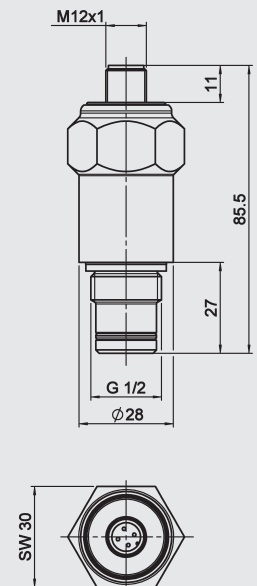
## VD x CJ.x (plug type: Junior Power Timer)

|                                                                                                                                                                       |                                          |                                                             |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------|-------------------------------------------------------------|
| <br> | Type of indication                       | electrical switch                                           |
|                                                                                                                                                                       | Weight                                   | 200 g                                                       |
|                                                                                                                                                                       | Pressure setting or indication range     | 2 bar -10%<br>5 bar -10%<br>8 bar ±10%                      |
|                                                                                                                                                                       | Permitt. operating pressure              | 420 bar                                                     |
|                                                                                                                                                                       | Permitt. temperature range               | -30 °C to +100 °C                                           |
|                                                                                                                                                                       | Thread                                   | G 1/2                                                       |
|                                                                                                                                                                       | Max. torque                              | 100 Nm                                                      |
|                                                                                                                                                                       | Switching type                           | N/O or N/C                                                  |
|                                                                                                                                                                       | Max. switching voltage                   | 48 V                                                        |
|                                                                                                                                                                       | Electrical connection                    | Junior Power Timer                                          |
|                                                                                                                                                                       | Max. switching voltage at resistive load | 60 W =<br>100 VA ~                                          |
|                                                                                                                                                                       | switching capacity                       | Ohmic 3 A at 24 V =<br>Ohmic 0.03 to 5 A at max. 230 V ~    |
|                                                                                                                                                                       | Protection class to DIN 40050            | IP 54 (only if the connector is wired and fitted correctly) |
|                                                                                                                                                                       | Order example                            | VD 5 CJ.0 /-2M0                                             |

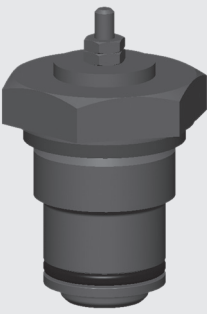
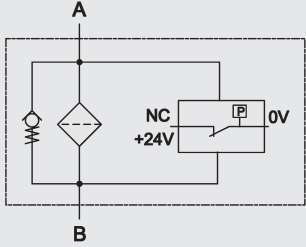


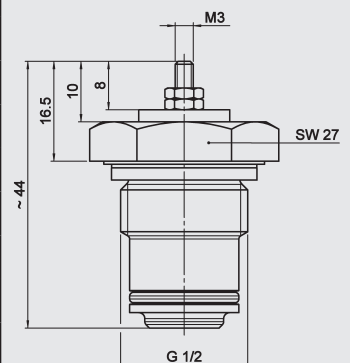
## VM x CM.x

|                                                                                                                                                                           |                                      |                                        |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------|----------------------------------------|
| <br> | Type of indication                   | electrical switch                      |
|                                                                                                                                                                           | Weight                               | 70 g                                   |
|                                                                                                                                                                           | Pressure setting or indication range | 2 bar -10%<br>5 bar -10%<br>8 bar ±10% |
|                                                                                                                                                                           | Permitt. operating pressure          | 210 bar                                |
|                                                                                                                                                                           | Permitt. temperature range           | -10 °C to +100 °C                      |
|                                                                                                                                                                           | Thread                               | G 1/2                                  |
|                                                                                                                                                                           | Max. torque                          | 33 Nm                                  |
|                                                                                                                                                                           | Switching type                       | N/C or N/O<br>(change-over contacts)   |
|                                                                                                                                                                           | Max. switching voltage               | 48 V                                   |
|                                                                                                                                                                           | Electrical connection                | Male connection<br>M12 x 1             |

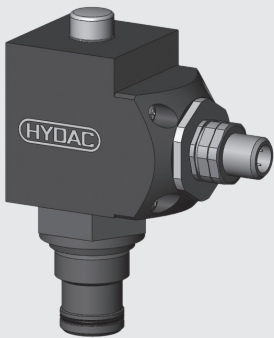
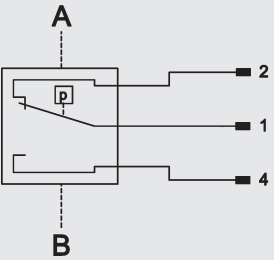
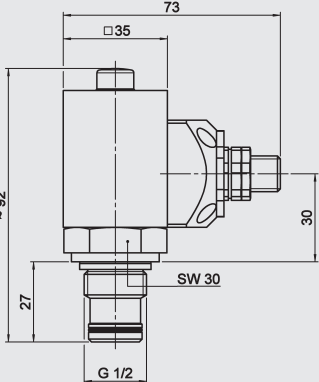


## VM x M.x

|                                                                                                                                                                           |                                          |                                |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------|--------------------------------|
| <br> | Type of indication                       | single pole (ground switching) |
|                                                                                                                                                                           | Weight                                   | 31 g                           |
|                                                                                                                                                                           | Pressure setting or indication range     | 2 bar ±15%                     |
|                                                                                                                                                                           | Permitt. operating pressure              | 210 bar                        |
|                                                                                                                                                                           | Permitt. temperature range               | -30 °C to +100 °C              |
|                                                                                                                                                                           | Thread                                   | G 1/2                          |
|                                                                                                                                                                           | Max. torque                              | 33 Nm                          |
|                                                                                                                                                                           | Switching type                           | N/O or N/C                     |
|                                                                                                                                                                           | Max. switching voltage                   | 24V                            |
|                                                                                                                                                                           | Electrical connection                    | -                              |
|                                                                                                                                                                           | Max. switching voltage at resistive load | -                              |



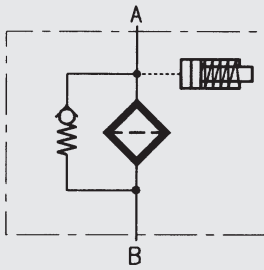
VD x LEM.x

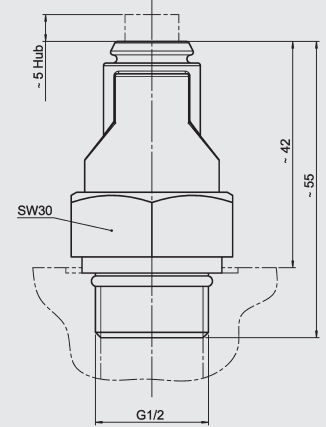
|                                                                                                                                                                        |                                          |                                                                                              |                                                                                     |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------|----------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| <br> | Type of indication                       | visual, red pin and electrical switch<br>1 switching contact at 100% of the pressure setting |  |
|                                                                                                                                                                        | Weight                                   | 350 g                                                                                        |                                                                                     |
|                                                                                                                                                                        | Pressure setting or indication range     | 2 bar -10%<br>5 bar -10%<br>8 bar -10%                                                       |                                                                                     |
|                                                                                                                                                                        | Permitt. operating pressure              | 420 bar                                                                                      |                                                                                     |
|                                                                                                                                                                        | Permitt. temperature range               | -10 °C to +100 °C                                                                            |                                                                                     |
|                                                                                                                                                                        | Thread                                   | G 1/2                                                                                        |                                                                                     |
|                                                                                                                                                                        | Max. torque                              | 50 Nm                                                                                        |                                                                                     |
|                                                                                                                                                                        | Switching type                           | N/C or N/O contacts<br>Reed contacts (change-over contacts)                                  |                                                                                     |
|                                                                                                                                                                        | Max. switching voltage                   | 24V                                                                                          |                                                                                     |
|                                                                                                                                                                        | Electrical connection                    | Male connection<br>M12 x 1                                                                   |                                                                                     |
|                                                                                                                                                                        | Max. switching voltage at resistive load | 15 W =<br>max. 15 VA ~                                                                       |                                                                                     |
|                                                                                                                                                                        | switching capacity                       | Ohmic 1 A at 15 V =<br>Ohmic 1 A at 15 V ~                                                   |                                                                                     |
|                                                                                                                                                                        | Protection class to DIN 40050            | IP 65                                                                                        |                                                                                     |
|                                                                                                                                                                        | Order example                            | VD 5 LEM.1/-4M0                                                                              |                                                                                     |

### 3.5 INDICATORS IN ACCORDANCE WITH ATEX DIRECTIVE

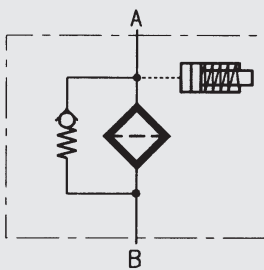
#### 3.5.1 RETURN LINE

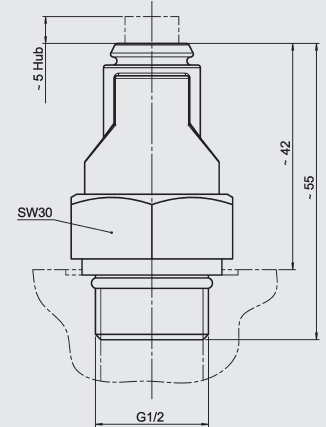
**VR x B.x (ATEX) Can be used on aluminium filters up to Zone 1**

|                                                                                                                                                                     |                                          |                   |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------|-------------------|
|   | Type of indication                       | visual, red pin   |
|                                                                                                                                                                     | Weight                                   | 44 g              |
|                                                                                                                                                                     | Pressure setting or indication range     | 2 bar -0.2 bar    |
|                                                                                                                                                                     | Permitt. operating pressure              | 7 bar             |
|                                                                                                                                                                     | Permitt. temperature range               | -10 °C to +100 °C |
|                                                                                                                                                                     | Thread                                   | G 1/2             |
|                                                                                                                                                                     | Max. torque                              | 15 Nm             |
|                                                                                                                                                                     | Switching type                           | -                 |
|                                                                                                                                                                     | Max. switching voltage                   | -                 |
|                                                                                                                                                                     | Electrical connection                    | -                 |
|                                                                                                                                                                     | Max. switching voltage at resistive load | -                 |
|                                                                                                                                                                     | switching capacity                       | -                 |
|                                                                                                                                                                     | Protection class to DIN 40050            | -                 |
|                                                                                                                                                                     | Order example                            | VR 2 B.0 /-2GC    |

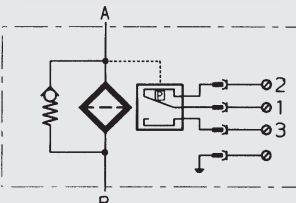


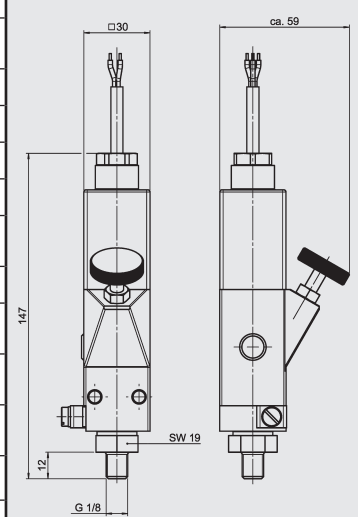
**VR x B.x (ATEX) Can be used on steel/cast iron filters up to Zone 1**

|                                                                                                                                                                        |                                          |                      |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------|----------------------|
|   | Type of indication                       | visual, red pin      |
|                                                                                                                                                                        | Weight                                   | 44 g                 |
|                                                                                                                                                                        | Pressure setting or indication range     | 2 bar -0.2 bar       |
|                                                                                                                                                                        | Permitt. operating pressure              | 7 bar                |
|                                                                                                                                                                        | Permitt. temperature range               | -10 °C to +100 °C    |
|                                                                                                                                                                        | Thread                                   | G 1/2                |
|                                                                                                                                                                        | Max. torque                              | 15 Nm                |
|                                                                                                                                                                        | Switching type                           | -                    |
|                                                                                                                                                                        | Max. switching voltage                   | -                    |
|                                                                                                                                                                        | Electrical connection                    | -                    |
|                                                                                                                                                                        | Max. switching voltage at resistive load | -                    |
|                                                                                                                                                                        | switching capacity                       | -                    |
|                                                                                                                                                                        | Protection class to DIN 40050            | -                    |
|                                                                                                                                                                        | Order example                            | VR 2 B.0 /-2GC-SO174 |

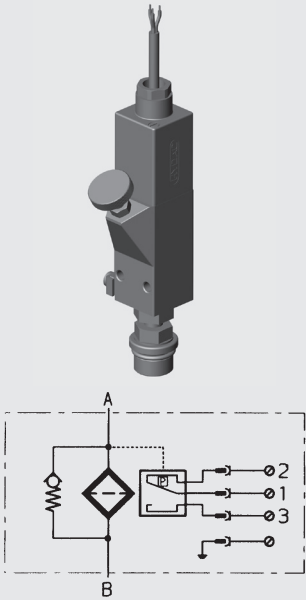


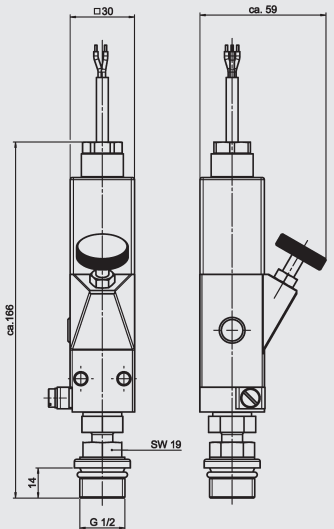
**VMF x C.x /-Ex2G**

|                                                                                                                                                                        |                                          |                                                 |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------|-------------------------------------------------|
|   | Type of indication                       | electrical switch                               |
|                                                                                                                                                                        | Weight                                   | 415 g                                           |
|                                                                                                                                                                        | Pressure setting or indication range     | 2 bar ±0.5 bar                                  |
|                                                                                                                                                                        | Permitt. operating pressure              | 200 bar                                         |
|                                                                                                                                                                        | Permitt. temperature range               | -20 °C to +70 °C (T6)/-20 °C to +80 °C (T5)     |
|                                                                                                                                                                        | Thread                                   | G 1/8                                           |
|                                                                                                                                                                        | Max. torque                              | 10 Nm                                           |
|                                                                                                                                                                        | Switching type                           | N/C or N/O (change-over contacts)               |
|                                                                                                                                                                        | Max. switching voltage                   | 250 V                                           |
|                                                                                                                                                                        | Electrical connection                    | Cable connection PG 9<br>Cable length 2 m       |
|                                                                                                                                                                        | Max. switching voltage at resistive load | 62.5 W =<br>250 VA ~                            |
|                                                                                                                                                                        | switching capacity                       | Ohmic 0.25 A at 250 V =<br>Ohmic 1 A at 250 V ~ |
|                                                                                                                                                                        | Protection class to DIN 40050            | IP 65                                           |
|                                                                                                                                                                        | ATEX designation                         | II 2G EEx d IIC T6 / T5                         |

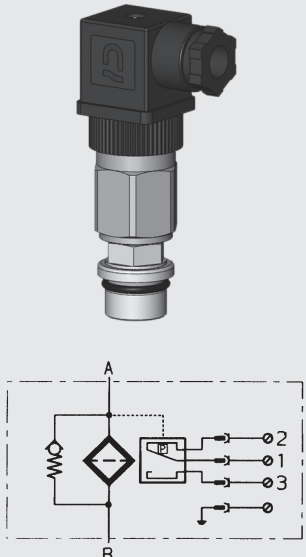


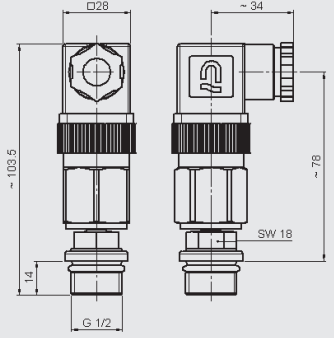
VR x C.x /-Ex2G

|                                                                                  |                                          |                                                 |
|----------------------------------------------------------------------------------|------------------------------------------|-------------------------------------------------|
|  | Type of indication                       | electrical switch                               |
|                                                                                  | Weight                                   | 470 g                                           |
|                                                                                  | Pressure setting or indication range     | 2 bar ±0.5 bar                                  |
|                                                                                  | Permitt. operating pressure              | 40 bar                                          |
|                                                                                  | Permitt. temperature range               | -20 °C to +70 °C (T6)/-20 °C to +80 °C (T5)     |
|                                                                                  | Thread                                   | G 1/2                                           |
|                                                                                  | Max. torque                              | 33 Nm                                           |
|                                                                                  | Switching type                           | N/C or N/O<br>(change-over contacts)            |
|                                                                                  | Max. switching voltage                   | 250 V                                           |
|                                                                                  | Electrical connection                    | Cable connection PG 9<br>Cable length 2 m       |
|                                                                                  | Max. switching voltage at resistive load | 62.5 W =<br>250 VA ~                            |
|                                                                                  | switching capacity                       | Ohmic 0.25 A at 250 V =<br>Ohmic 1 A at 250 V ~ |
|                                                                                  | Protection class to DIN 40050            | IP 65                                           |
|                                                                                  | ATEX designation                         | Ex II 2G Ex d IIC T6 / T5                       |
|                                                                                  | Order example                            | VR 2 C.0 /-Ex2G                                 |



VR x C.x (ATEX) Can be used on filters up to Zone 1 \*

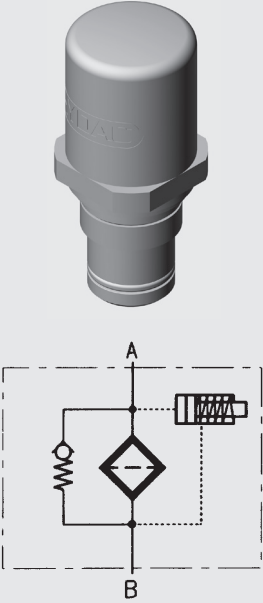
|                                                                                   |                                          |                                                              |
|-----------------------------------------------------------------------------------|------------------------------------------|--------------------------------------------------------------|
|  | Type of indication                       | electrical switch                                            |
|                                                                                   | Weight                                   | 340 g                                                        |
|                                                                                   | Pressure setting or indication range     | 2 bar ±0.3 bar                                               |
|                                                                                   | Permitt. operating pressure              | 40 bar                                                       |
|                                                                                   | Permitt. temperature range               | -30 °C to +100 °C                                            |
|                                                                                   | Thread                                   | G 1/2                                                        |
|                                                                                   | Max. torque                              | 33 Nm                                                        |
|                                                                                   | Switching type                           | N/C or N/O<br>(change-over contacts)                         |
|                                                                                   | Max. switching voltage                   | *                                                            |
|                                                                                   | Electrical connection                    | Male connection M20<br>Female connector to DIN EN 175301-803 |
|                                                                                   | Max. switching voltage at resistive load | *                                                            |
|                                                                                   | switching capacity                       | *                                                            |
|                                                                                   | Protection class to DIN 40050            | IP 65 (only if the connector is wired and fitted correctly)  |
|                                                                                   | Order example                            | VR 2 C.1 /-2GBC                                              |

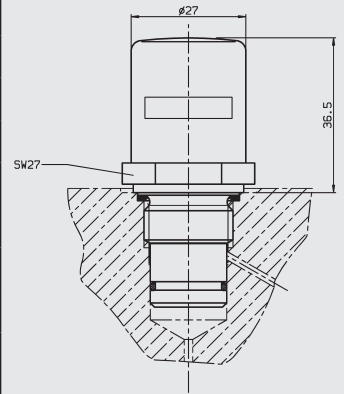


\* The clogging indicator is simple electrical operating equipment according to DIN EN 60079-14 and may only be used in intrinsically safe circuits (supplied with manufacturer's declaration and operating instructions).

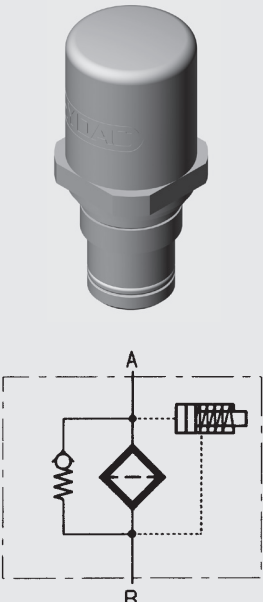
### 3.5.2 DIFFERENTIAL PRESSURE

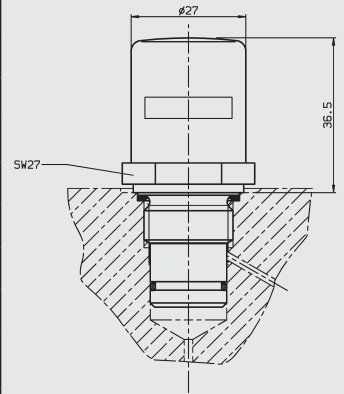
VM x B.x (ATEX) Can be used on aluminium filters up to Zone 1

|                                                                                   |                                          |                                           |
|-----------------------------------------------------------------------------------|------------------------------------------|-------------------------------------------|
|  | Type of indication                       | visual, red/green band<br>Automatic reset |
|                                                                                   | Weight                                   | 110 g                                     |
|                                                                                   | Pressure setting or indication range     | 5 bar -10%<br>8 bar ±10%                  |
|                                                                                   | Permitt. operating pressure              | 210 bar                                   |
|                                                                                   | Permitt. temperature range               | -30 °C to +100 °C                         |
|                                                                                   | Thread                                   | G 1/2                                     |
|                                                                                   | Max. torque                              | 33 Nm                                     |
|                                                                                   | Switching type                           | -                                         |
|                                                                                   | Max. switching voltage                   | -                                         |
|                                                                                   | Electrical connection                    | -                                         |
|                                                                                   | Max. switching voltage at resistive load | -                                         |
|                                                                                   | switching capacity                       | -                                         |
|                                                                                   | Protection class to DIN 40050            | -                                         |
|                                                                                   | Order example                            | VM 5 B.1 /-2GC                            |

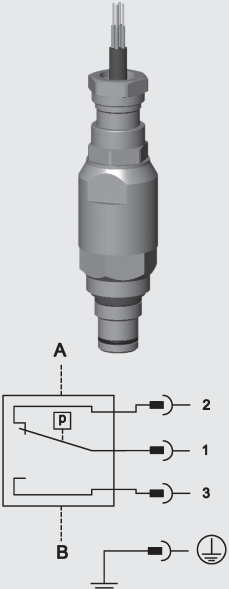


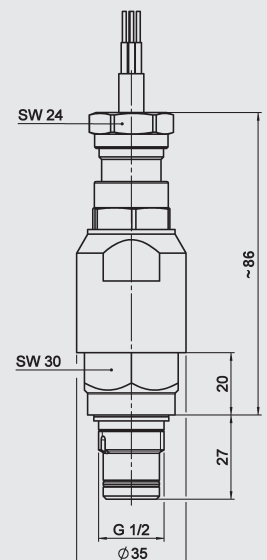
VD x B.x (ATEX) Can be used on filters up to Zone 1

|                                                                                    |                                          |                                           |
|------------------------------------------------------------------------------------|------------------------------------------|-------------------------------------------|
|  | Type of indication                       | visual, red/green band<br>Automatic reset |
|                                                                                    | Weight                                   | 110 g                                     |
|                                                                                    | Pressure setting or indication range     | 5 bar -10%<br>8 bar ±10%                  |
|                                                                                    | Permitt. operating pressure              | 420 bar                                   |
|                                                                                    | Permitt. temperature range               | -30 °C to +100 °C                         |
|                                                                                    | Thread                                   | G 1/2                                     |
|                                                                                    | Max. torque                              | 100 Nm                                    |
|                                                                                    | Switching type                           | -                                         |
|                                                                                    | Max. switching voltage                   | -                                         |
|                                                                                    | Electrical connection                    | -                                         |
|                                                                                    | Max. switching voltage at resistive load | -                                         |
|                                                                                    | switching capacity                       | -                                         |
|                                                                                    | Protection class to DIN 40050            | -                                         |
|                                                                                    | Order example                            | VD 5 B.1 /-2GC                            |

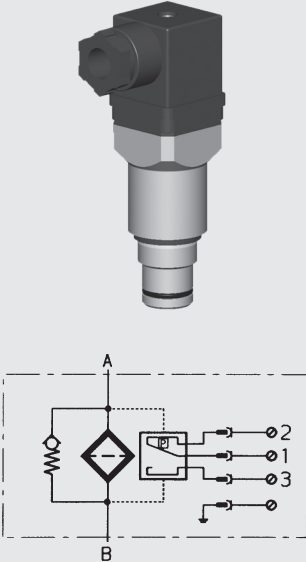


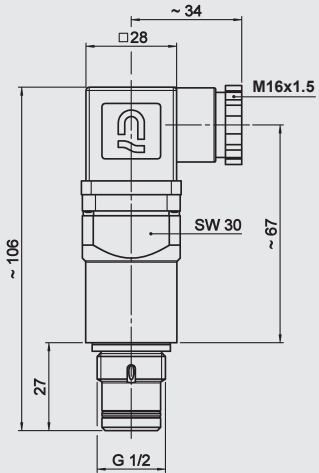
VD x C.x /-2GEXDIIC

|                                                                                     |                                          |                                                              |
|-------------------------------------------------------------------------------------|------------------------------------------|--------------------------------------------------------------|
|  | Type of indication                       | electrical switch                                            |
|                                                                                     | Weight                                   | from 600 g                                                   |
|                                                                                     | Pressure setting or indication range     | 2 bar -10%<br>5 bar -10%<br>8 bar ±10%                       |
|                                                                                     | Permitt. operating pressure              | 420 bar                                                      |
|                                                                                     | Permitt. temperature range               | -20 °C to +60 °C (setting)<br>(media temperature max. 75 °C) |
|                                                                                     | Thread                                   | G 1/2                                                        |
|                                                                                     | Max. torque                              | 100 Nm                                                       |
|                                                                                     | Switching type                           | Change-over                                                  |
|                                                                                     | Max. switching voltage                   | 250 V                                                        |
|                                                                                     | Electrical connection                    | Cable connection                                             |
|                                                                                     | Max. switching voltage at resistive load | 60 W =<br>100 VA ~                                           |
|                                                                                     | switching capacity                       | ohmic 3 A at 24 V =<br>ohmic 0.03 A to 5 A at 250 V ~        |
|                                                                                     | Protection class to DIN 40050            | IP 66                                                        |
|                                                                                     | ATEX designation                         | Ex II 2G Ex d IIC T6                                         |
|                                                                                     | Order example                            | VD 2 C.1 /-2GEXDIIC                                          |

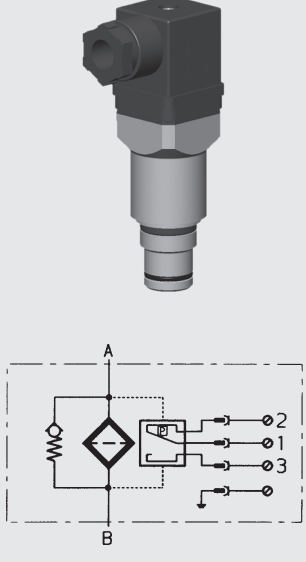


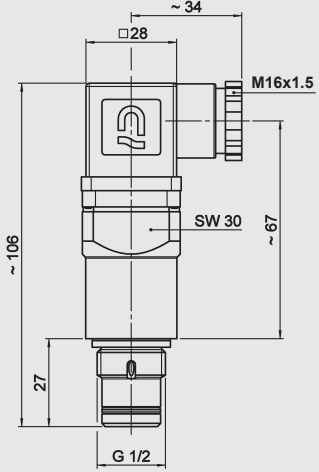
**VM x C.x (ATEX) Can be used on aluminium filters up to Zone 1 \***

|                                                                                  |                                          |                                                              |
|----------------------------------------------------------------------------------|------------------------------------------|--------------------------------------------------------------|
|  | Type of indication                       | electrical switch                                            |
|                                                                                  | Weight                                   | 120 g                                                        |
|                                                                                  | Pressure setting or indication range     | 2 bar -10%<br>5 bar -10%<br>8 bar ±10%                       |
|                                                                                  | Permitt. operating pressure              | 210 bar                                                      |
|                                                                                  | Permitt. temperature range               | -30 °C to +100 °C                                            |
|                                                                                  | Thread                                   | G 1/2                                                        |
|                                                                                  | Max. torque                              | 33 Nm                                                        |
|                                                                                  | Switching type                           | N/C or N/O<br>(change-over contacts)                         |
|                                                                                  | Max. switching voltage                   | *                                                            |
|                                                                                  | Electrical connection                    | Male connection M20<br>Female connector to DIN EN 175301-803 |
|                                                                                  | Max. switching voltage at resistive load | *                                                            |
|                                                                                  | switching capacity                       | *                                                            |
|                                                                                  | Protection class to DIN 40050            | IP 65 (only if the connector is wired and fitted correctly)  |
|                                                                                  | Order example                            | VM 5 C.0 /-2GBC-SO135                                        |



**VD x C.x (ATEX) Can be used on filters up to Zone 1 \***

|                                                                                   |                                          |                                                              |
|-----------------------------------------------------------------------------------|------------------------------------------|--------------------------------------------------------------|
|  | Type of indication                       | electrical switch                                            |
|                                                                                   | Weight                                   | 120 g                                                        |
|                                                                                   | Pressure setting or indication range     | 2 bar -10%<br>5 bar -10%<br>8 bar ±10%                       |
|                                                                                   | Permitt. operating pressure              | 420 bar                                                      |
|                                                                                   | Permitt. temperature range               | -30 °C to +100 °C                                            |
|                                                                                   | Thread                                   | G 1/2                                                        |
|                                                                                   | Max. torque                              | 100 Nm                                                       |
|                                                                                   | Switching type                           | N/C or N/O<br>(change-over contacts)                         |
|                                                                                   | Max. switching voltage                   | *                                                            |
|                                                                                   | Electrical connection                    | Male connection M20<br>Female connector to DIN EN 175301-803 |
|                                                                                   | Max. switching voltage at resistive load | *                                                            |
|                                                                                   | switching capacity                       | *                                                            |
|                                                                                   | Protection class to DIN 40050            | IP 65 (only if the connector is wired and fitted correctly)  |
|                                                                                   | Order example                            | VD 5 C.0 /-2GBC-SO135                                        |

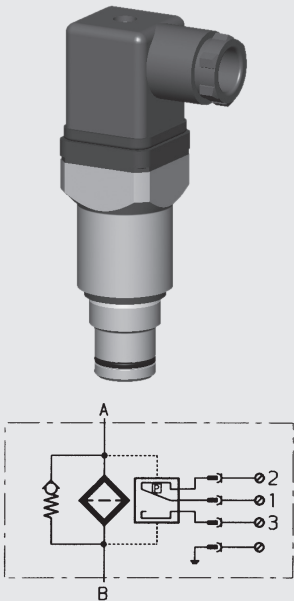
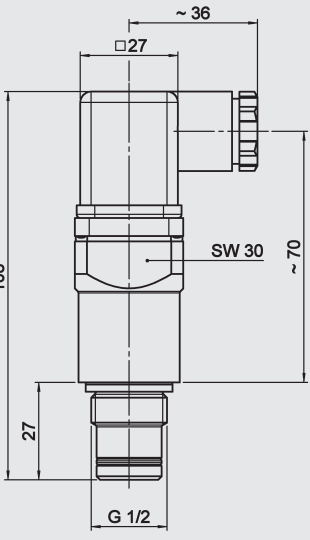


\* The clogging indicator is simple electrical operating equipment according to DIN EN 60079-14 and may only be used in intrinsically safe circuits (supplied with manufacturer's declaration and operating instructions).

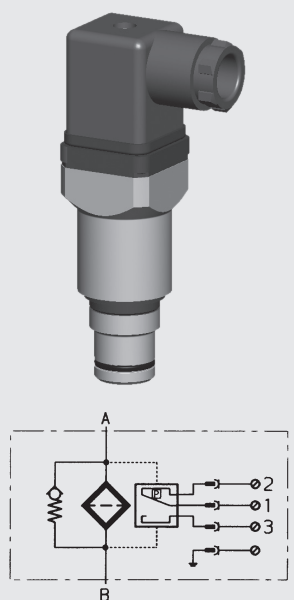
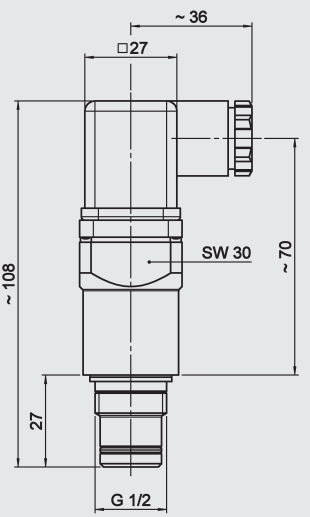
3.6 INDICATORS WITH UL OR CSA APPROVAL

3.6.1 DIFFERENTIAL PRESSURE

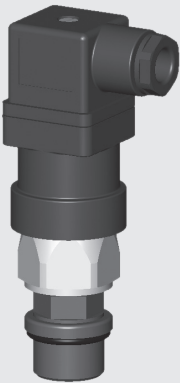
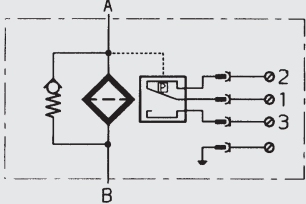
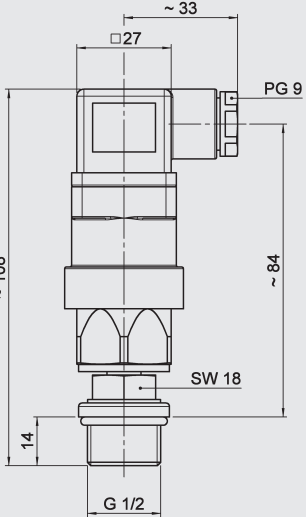
VM x C.x (UL, Standard 508)

|                                                                                  |                                          |                                                              |                                                                                     |
|----------------------------------------------------------------------------------|------------------------------------------|--------------------------------------------------------------|-------------------------------------------------------------------------------------|
|  | Type of indication                       | electrical switch                                            |  |
|                                                                                  | Weight                                   | 120 g                                                        |                                                                                     |
|                                                                                  | Pressure setting or indication range     | 2 bar -10%<br>5 bar -10%<br>8 bar ±10%                       |                                                                                     |
|                                                                                  | Permitt. operating pressure              | 210 bar                                                      |                                                                                     |
|                                                                                  | Permitt. temperature range               | -30 °C to +100 °C                                            |                                                                                     |
|                                                                                  | Thread                                   | G 1/2                                                        |                                                                                     |
|                                                                                  | Max. torque                              | 33 Nm                                                        |                                                                                     |
|                                                                                  | Switching type                           | N/C or N/O<br>(change-over contacts)                         |                                                                                     |
|                                                                                  | Max. switching voltage                   | 115 V                                                        |                                                                                     |
|                                                                                  | Electrical connection                    | Male connection M20<br>Female connector to DIN EN 175301-803 |                                                                                     |
|                                                                                  | Max. switching voltage at resistive load | 60 W =<br>100 VA ~                                           |                                                                                     |
|                                                                                  | switching capacity                       | ohmic 3 A at 24 V =                                          |                                                                                     |
|                                                                                  | Protection class to DIN 40050            | IP 65 (only if the connector is wired and fitted correctly)  |                                                                                     |
|                                                                                  | Order example                            | VM 5 C.0 /-CRUUS                                             |                                                                                     |

VD x C.x (UL, Standard 508)

|                                                                                   |                                          |                                                              |                                                                                      |
|-----------------------------------------------------------------------------------|------------------------------------------|--------------------------------------------------------------|--------------------------------------------------------------------------------------|
|  | Type of indication                       | electrical switch                                            |  |
|                                                                                   | Weight                                   | 120 g                                                        |                                                                                      |
|                                                                                   | Pressure setting or indication range     | 2 bar -10%<br>5 bar -10%<br>8 bar ±10%                       |                                                                                      |
|                                                                                   | Permitt. operating pressure              | 420 bar                                                      |                                                                                      |
|                                                                                   | Permitt. temperature range               | -30 °C to +100 °C                                            |                                                                                      |
|                                                                                   | Thread                                   | G 1/2                                                        |                                                                                      |
|                                                                                   | Max. torque                              | 100 Nm                                                       |                                                                                      |
|                                                                                   | Switching type                           | N/C or N/O<br>(change-over contacts)                         |                                                                                      |
|                                                                                   | Max. switching voltage                   | 115 V                                                        |                                                                                      |
|                                                                                   | Electrical connection                    | Male connection M20<br>Female connector to DIN EN 175301-803 |                                                                                      |
|                                                                                   | Max. switching voltage at resistive load | 60 W =<br>100 VA ~                                           |                                                                                      |
|                                                                                   | switching capacity                       | ohmic 3 A at 24 V =                                          |                                                                                      |
|                                                                                   | Protection class to DIN 40050            | IP 65 (only if the connector is wired and fitted correctly)  |                                                                                      |
|                                                                                   | Order example                            | VD 5 C.0 /-CRUUS                                             |                                                                                      |

3.6.2 RETURN LINE  
VR x C.x (CSA)

|                                                                                                                                                                    |                                          |                                                               |                                                                                     |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------|---------------------------------------------------------------|-------------------------------------------------------------------------------------|
|   | Type of indication                       | electrical switch                                             |  |
|                                                                                                                                                                    | Weight                                   | 340 g                                                         |                                                                                     |
|                                                                                                                                                                    | Pressure setting or indication range     | 2 bar -0.3 bar                                                |                                                                                     |
|                                                                                                                                                                    | Permitt. operating pressure              | 40 bar                                                        |                                                                                     |
|                                                                                                                                                                    | Permitt. temperature range               | -5 °C to +120 °C                                              |                                                                                     |
|                                                                                                                                                                    | Thread                                   | G 1/2                                                         |                                                                                     |
|                                                                                                                                                                    | Max. torque                              | 30 Nm                                                         |                                                                                     |
|                                                                                                                                                                    | Switching type                           | N/C or N/O (change-over contacts)                             |                                                                                     |
|                                                                                                                                                                    | Max. switching voltage                   | 230 V                                                         |                                                                                     |
|                                                                                                                                                                    | Electrical connection                    | Male connection PG 9<br>Female connector to DIN EN 175301-803 |                                                                                     |
|                                                                                                                                                                    | Max. switching voltage at resistive load | 250 W =<br>300 VA ~                                           |                                                                                     |
|                                                                                                                                                                    | switching capacity                       | ohmic 4 A at 24 V<br>ohmic 0.3 to 4 A at max. 230 V ~         |                                                                                     |
|                                                                                                                                                                    | Protection class to DIN 40050            | IP 65 (only if the connector is wired and fitted correctly)   |                                                                                     |
|                                                                                                                                                                    | Order example                            | VR 2 C.0 /-CSA                                                |                                                                                     |

## 4. MODEL CODE

VR 2 D . X /-V-L24

### 4.1 STANDARD CLOGGING INDICATORS

#### Type

- VMF return line indicator; connection G 1/8
- VR return line indicator; connection G 1/2
- VRD return line indicator; for differential pressure cavity
- VM differential pressure indicator; up to 210 bar operating pressure
- VD differential pressure indicator; up to 420 bar operating pressure
- VL differential pressure indicator; up to 25 bar operating pressure
- V02 differential pressure indicator; piped separately; up to 100 bar operating pressure

#### Pressure setting

see particular clogging indicator

#### Version

- B visual with automatic reset (for vertical installation only!)
- BF visual, mobile
- BM visual with manual reset
- C electrical
- CA electrical with AMP connector (Mark II)
- CD electrical with Deutsch connector (DT 04-2P)
- CJ electrical with AMP Junior Power Timer connector
- CM electrical with M12x1 connector
- CS electrical with AMP Superseal connector
- D visual/electrical
- E pressure gauge, horizontal
- ES pressure gauge, vertical
- F pressure switch
- FD pressure switch with Deutsch connector (DT 04-2P)
- FJ pressure switch with AMP Junior Power Timer connector
- FS pressure switch with AMP Superseal connector
- GC electronic
- GW electronic
- K pressure gauge, horizontal
- LE visual/mechanical with 100% switching contact
- LEM visual/mechanical with 100% switching contact and M12x1 connector
- LZ visual/mechanical with 75% and 100% switching contact
- M electrical, earth-switching
- R pressure gauge, horizontal
- RS pressure gauge, vertical
- UBM visual, negative pressure
- UE negative pressure gauge, horizontal
- UF negative pressure switch
- V visual/analogue
- VE visual/analogue with 100% switching contact
- VZ visual/analogue with 75% and 100% switching contact

#### Modification number

- X the latest version is always supplied

#### Supplementary details

- 30C cold start suppression of switch outputs up to 30 °C ±5 °C  
(only for C-, D-, LZ indicators; power supply only with direct current – max. 24 volts;  
C and D indicators only for VD and VM; D and LZ indicators only as N/O contact)
- L... lamp with appropriate voltage (24, 48, 110, 230 volts) ] only for
- LED 2 light-emitting diodes up to 24 volts ] version "D"
- OE N/C function
- SO135 indicator suitable for PLC control via gold crosspoint contacts
- W suitable for oil/water emulsions (HFA, HFC)
- V seal made from Viton (FKM), suitable for phosphate ester fluid (HFD-R) and biodegradable oils  
(**must be specified for version "GW"**)
- Addition: For VMF indicators B, LE, LZ and C/-EX2G a "/-V" must be added for a Viton version.  
For all other VMF versions, the standard is V and is not specified.

#### Supplementary details for "GC" type

- 113 N/O function pressure peak suppression up to 10 sec.  
cold start suppression of switching outputs  
(PNP technique, positive switching) up to 25 °C ] **Must be specified!**  
Others on request
- 123 N/C function pressure peak suppression up to 10 sec.  
cold start suppression of switching outputs  
(PNP technique positive switching) up to 25 °C ]
- 30C cold start suppression of switching outputs up to 30 °C (other temperatures on request)
- LED 3 LEDs (green, yellow, red) in terminal box
- PF floating switching outputs (due to relay in the plug)
- SP analogue signal: voltage output 1-10 V ] if SP or SQ are not specified
- SQ analogue signal: voltage output 4 to 20 mA (current source) ] "current sink" model supplied

#### Supplementary details to "GW" type

- 113 N/O function pressure peak suppression up to 10 sec.  
cold start suppression of switching outputs  
(PNP technique positive switching) up to 25 °C ] **Must be specified!**  
Others on request
- 123 N/C function pressure peak suppression up to 10 sec.  
cold start suppression of switching outputs  
(PNP technique positive switching) up to 25 °C ]

**Supplementary details for "LZ" type**

- AV plug and connector to AUDI, VW specification
- BO plug and connector to BMW, Opel, Ford specification
- BO-LEDas for BO, but with progressive LED strip
- CN electrical connection, 1 connector DIN 43651 with 3 LEDs (to CNOMO specification NF E 48-700)
- DB electrical connection, 1 connector to DIN 43651 with 3 LEDs (to Daimler-Benz and BMW specification)
- D4C plug and connector to Daimler-Chrysler specification with cold start suppression 30 °C

**Supplementary details to "ATEX" type**

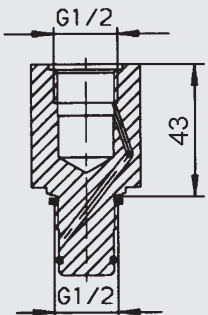
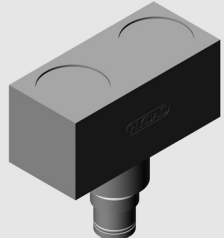
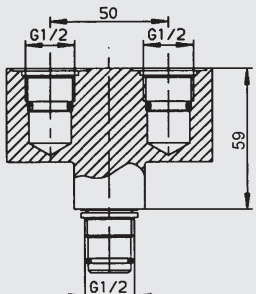
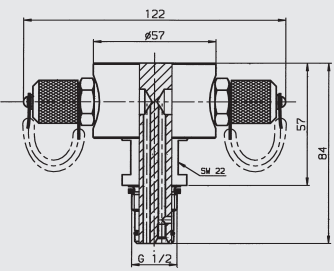
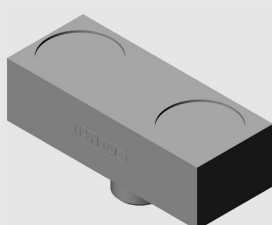
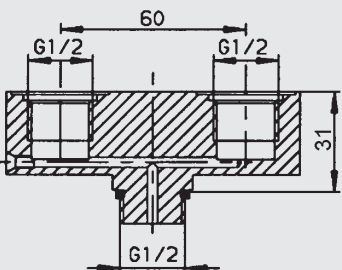
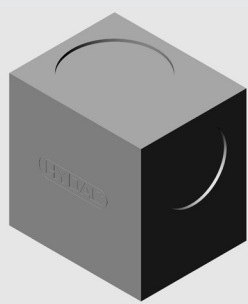
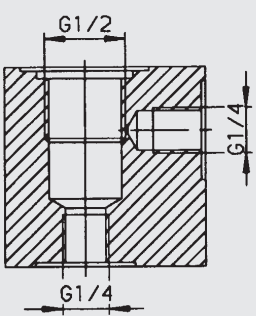
- 2GC for visual indicator type "B" with ATEX certificate
- 2GBC for electrical indicator type "C" with ATEX certificate (the switch used in the indicator is a passive component according to EN 50020 and can therefore be used in intrinsically safe circuits as simple apparatus in accordance with EN 60079-14)
- 2GEXDIIC for electrical indicator suitable for use in Zone 1 (Category 2), gas atmosphere, Category d (Flameproof Enclosure), Explosive subdivision IIC to ATEX directive
- EX2G Ex-protection type for the return line indicator type "C"

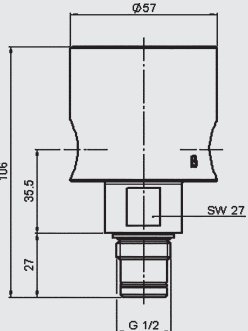
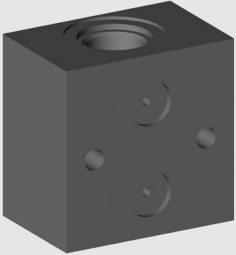
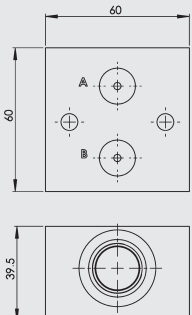
**Supplementary details for "UL" and "CSA" approval**

- CRUUS for electrical differential indicator type "C" with UL approval
- CSA for electrical return line indicator type "C" with CSA approval

## 5. ADAPTERS

### 5.1 TYPES

|                                                                                     |             |                                                                                                                                                                                                                     |                                                                                       |
|-------------------------------------------------------------------------------------|-------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
|    | Designation | ADAPTER VD-D-S.0                                                                                                                                                                                                    |    |
|                                                                                     | Part no.    | 00318736                                                                                                                                                                                                            |                                                                                       |
|                                                                                     | Description | Extending adapter for differential pressure cavity to HYDAC works standard HN 28-22                                                                                                                                 |                                                                                       |
|    | Designation | ADAPTER VD-D+D-S+S.0                                                                                                                                                                                                |    |
|                                                                                     | Part no.    | 00318732                                                                                                                                                                                                            |                                                                                       |
|                                                                                     | Description | Y-adapter to convert 1 differential pressure cavity into 2 differential pressure cavities according to HYDAC works standard HN 28-22.<br><br>Swivel-type on request!                                                |                                                                                       |
|   | Designation | ADAPTER VD-1/4+1/4-W+W.0 /-00404337                                                                                                                                                                                 |   |
|                                                                                     | Part no.    | 00404337                                                                                                                                                                                                            |                                                                                       |
|                                                                                     | Description | Test adapter for different pressure cavity according to HYDAC works standard HN 28-22.<br>To test the pressure before and after the filter element.<br><br>Also available without minimes couplings (on request)!   |                                                                                       |
|  | Designation | ADAPTER VR-R+R-S+S.0                                                                                                                                                                                                |  |
|                                                                                     | Part no.    | 00318741                                                                                                                                                                                                            |                                                                                       |
|                                                                                     | Description | Y-adapter to convert 1 return line cavity into 2 return line cavities (G ½ )<br><br>Swivel-type on request!                                                                                                         |                                                                                       |
|  | Designation | ADAPTER V ¼ I-D-S.0                                                                                                                                                                                                 |  |
|                                                                                     | Part no.    | 00318730                                                                                                                                                                                                            |                                                                                       |
|                                                                                     | Description | Connection adapter for piping clogging indicators separately with differential pressure cavity according to HYDAC works standard HN 28-22.<br><br>Two connections G ¼ (one before and one after the filter element) |                                                                                       |

|                                                                                   |             |                                                                                                                                                                   |                                                                                     |
|-----------------------------------------------------------------------------------|-------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
|  | Designation | ADAPTER VD-D+1/4+1/4-S+W+W.0                                                                                                                                      |   |
|                                                                                   | Part no.    | 00318744                                                                                                                                                          |                                                                                     |
|                                                                                   | Description | Extending adapter for differential pressure cavity according to HYDAC works standard HN 28-22. Also two connections, one before and one after the filter element. |                                                                                     |
|  | Designation | ADAPTER VF-D-S.0 /-RT                                                                                                                                             |  |
|                                                                                   | Part no.    | On request                                                                                                                                                        |                                                                                     |
|                                                                                   | Description | only for the following filters:<br>LFR, LPFR, MDFR, RFLR, RKMR, RMER, RMTR, RPER                                                                                  |                                                                                     |

## 5.2 MODEL CODE (= EXAMPLE)

### ADAPTER VD-D+1/4+1/4-S+W+W.X /-ESB

#### Connection

VD differential pressure indicator; connection G ½  
VR return line indicator; connection G ½  
V¼ differential pressure indicator; connection G ¼  
internal  
VF differential pressure indicator; flange type

#### Ports (several ports are possible!)

D differential pressure cavity G ½  
R return line cavity G ½  
MF cavity for pressure gauge and pressure switch  
1/4 cavity G ¼ for Minimes test points (M16 x 1.5)  
1/8 cavity G ⅛ for Minimes test points  
(plug-in connection)

#### Orientation of the ports

S vertical  
W horizontal

#### Type code

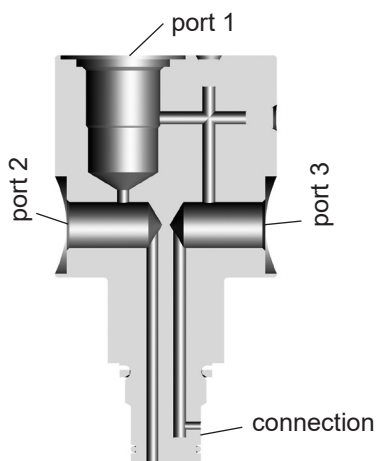
X the latest version is always supplied

#### Supplementary details

##### ESB swivel type

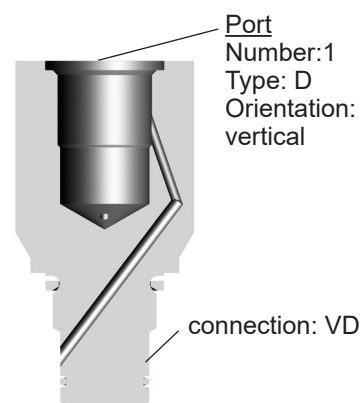
V seal in Viton (FPM), suitable for phosphate ester (HFD-R) and biodegradable oils

VD-D+1/4+1/4-S+W+W.0

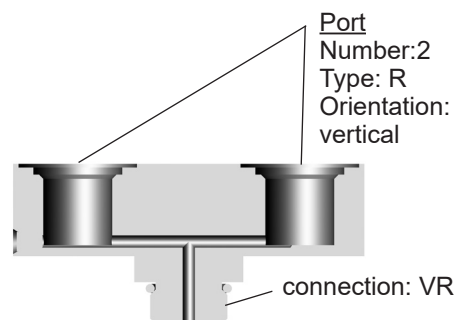


## 5.3 OTHER EXAMPLES

VD-D-S.0



VR-R+R-S+S.0



DESINA is a fully comprehensive system intended to bring standardization and decentralization to the field of fluid technology and to electrical installation of machinery and systems. The system engineering, automotive and supply industries have worked together to draw up specifications of the necessary components. DESINA makes use of tried-and-tested solutions, such as open bus systems, standard industrial plugs etc. By standardizing components, interfaces and connection systems, such as a hybrid field bus cable (Cu/LWL), a wide range of different field bus systems can be made compatible on a single physical base.

switch cabinet

4 x 1.5 mm<sup>2</sup> und 2 x LWL

"HAN-Brid"

M12 x 1

4 x 0.34 mm<sup>2</sup>

M12 x 1

5 x 1.5 mm<sup>2</sup>

"HAN-Q3"

TG LG

M 3~

"HAN-Q8 oder 10E"

M 3~

M 3~

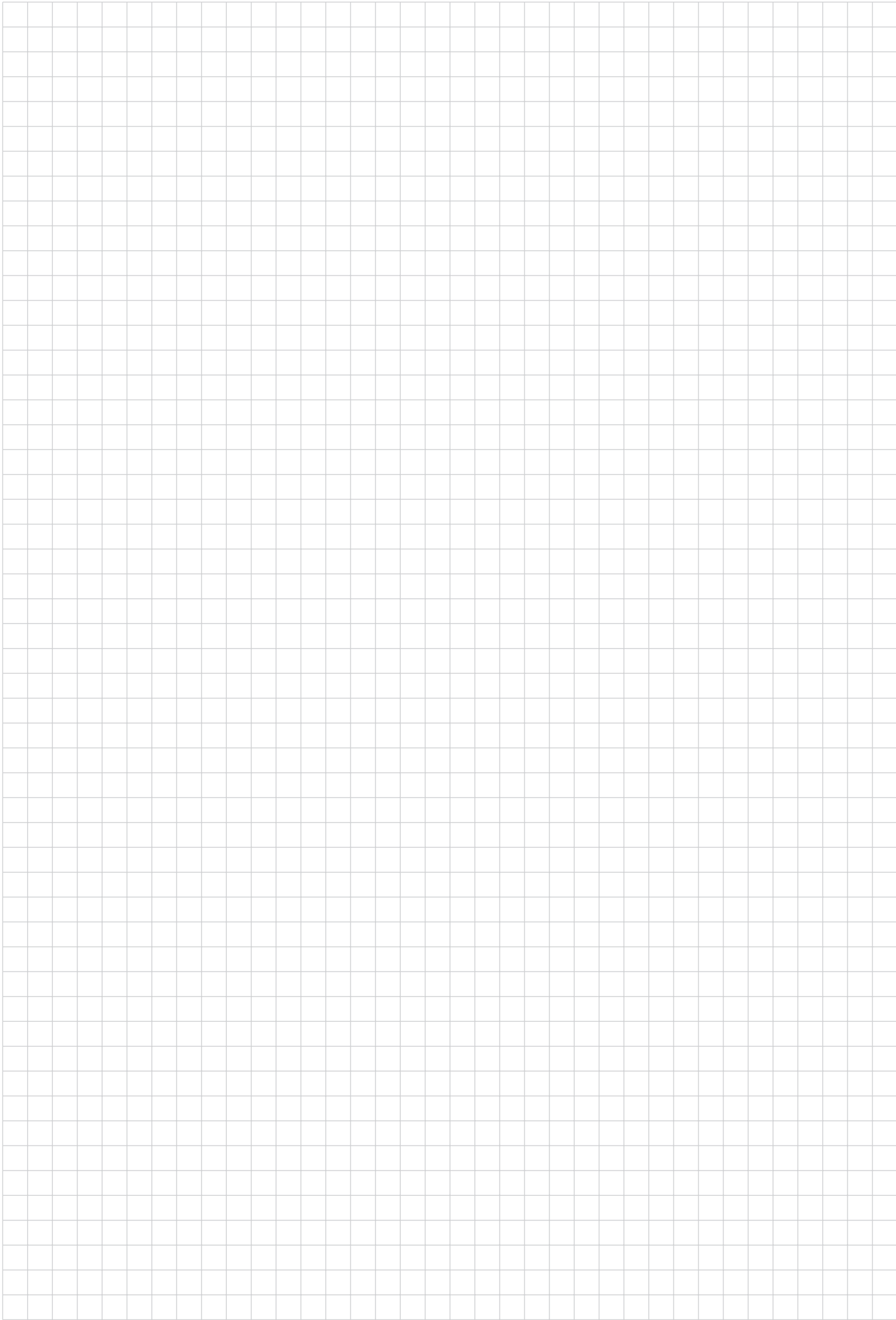
M 3~

The following clogging indicators are approved to DESINA specification:

VD 5 LZ.x /-D4C  
 VR 2.5 LZ.x /-D4C  
 VD 5 LZ.x /-BO  
 VR 2.5 LZ.x /-BO  
 VD 5 LZ.x /-AV  
 VR 2.5 LZ.x /-AV  
 VR 2.5 LZ.x /-GM



The DESINA logo is shown on the type code label of approved clogging indicators.



**NOTE**

The information in this brochure relates to the operating conditions and applications described.  
For applications or operating conditions not described, please contact the relevant technical department.  
Subject to technical modifications.