



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:

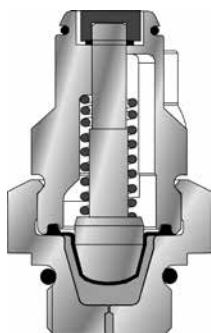
- The operator no longer has to estimate when the element is clogged.
- The unnecessary costs of changing the element too early are avoided.

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.

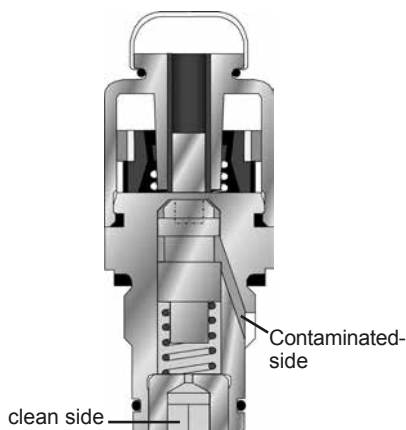


Differential pressure indicators

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, Deutsch and Junior Power Timer plugs.

ATEX indicators

These indicators are used in potentially explosive locations and are subject to the ATEX Equipment Directive 94/9/EC and the ATEX Operator Directive 1999/92/EC.



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.



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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 | | | | | ● | 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 | | | ● | 10 | ● | 210 |
| | FD | | | ● | 11 | | |
| | LEM | | | ● | 7 | ● | 420 |
| | M | | | | | ● | 210 |
| ATEX | B | | | ● | 7 | ● | 210/420 |
| | C | | | ● | 200 | ● | 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 DFF DFFX | DFDK DFDKN | DF MA/QE KP/MP | DFM | DFN DFNF | DFP DFPF | DFZ | ELF | FLN | FLND FMND | HDF HDFX | HDP | HFM | LF LFF | LFM | LFN LFNF |
|------|----|----|-----|-------------------|---------------|----------------------|-----|-------------|-------------|-----|-----------------|-----|--------------|-------------|-----|-----|-----------------|-----|-------------|
| B | | | | • | • | • | • | • | | | | • | • | • | | • | • | • | • |
| BF | | | | | | | | | | | | | | | | | | | |
| BM | | | | • | • | • | • | • | • | • | | • | • | • | | • | • | • | • |
| E | | | | | | | | | | | | | | | | | | | |
| ES | | | | | | | | | | | | | | | | | | | |
| K | • | • | • | | | | | | | | • | | | | | | | | |
| R | | | | | | | | | | | | | | | | | | | |
| UBM | • | • | • | | | | | | | | • | | | | | | | | |
| UE | | | | | | | | | | | • ¹⁾ | | | | | | • ¹⁾ | | |
| UED | | | | | | | | | | | | | | • | | | | | |
| V | | | | | | | | | | | | | | | | | | | |
| C | | | | • | • | • | • | • | • | • | | • | • | • | | • | • | • | • |
| D | | | | • | • | • | • | • | • | • | | • | • | • | | • | • | • | • |
| F | | | | | | | | | | | | | | | | | | | |
| LE | | | | • | • | • | • | • | • | • | | • | • | • | | • | • | • | • |
| LZ | | | | • | • | • | • | • | • | • | | • | • | • | | • | • | • | • |
| UF | | | | | | | | | | | • ¹⁾ | | | | | | • ¹⁾ | | |
| VE | | | | | | | | | | | | | | | | | | | |
| VZ | | | | | | | | | | | | | | | | | | | |
| GC | | | | • | • | • | • | • | • | • | | • | • | • | | • | • | • | • |
| GW | | | | | | | | | | | | | | | | | | | |
| CD | | | | • | • | • | • | • | • | • | | • | • | • | | • | • | • | • |
| CJ | | | | • | • | • | • | • | • | • | | • | • | • | | • | • | • | • |
| CM | | | | | | | | | | | | • | • | | | | • | • | • |
| FD | | | | | | | | | | | | | | | | | | | |
| 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 | | | • ²⁾ | • ²⁾ | | | | | • | • | | | • | • | • | | | | |
| ES | | | | | | | | | • | • | | | • | • | • | | | | |
| K | | | | | | | | | | | | | | | | | | | |
| R | | | | | | | | | | | | | | | | • | | | |
| UBM | | | | | | | | | | | | | | | | | | | |
| UE | • ¹⁾ | | • ¹⁾ | • ¹⁾ | | | | | | | • ¹⁾ | | | | | • | • | • | • |
| V | | | | | | | | | | | • | • | | | | | | | |
| C | • | • | | | • | • | • | • | • | • | • | • | • | • | • | • | | | |
| D | • | • | | | • | • | • | • | • | • | • | • | • | • | • | • | | | |
| F | | | • | • | | | | | • | • | | | • | • | • | • | | | |
| LE | • | • | | | • | • | • | • | • | • | • | • | • | • | • | • | | | |
| LZ | • | • | | | • | • | • | • | • | • | • | • | • | • | • | • | | | |
| UF | • ¹⁾ | | • ¹⁾ | • ¹⁾ | | | | | | | • ¹⁾ | | | | | • | • | • | • |
| VE | | | | | | | | | | | • | • | | | | | | | |
| VZ | | | | | | | | | | | • | • | | | | | | | |
| GC | • | • | | | • | | • | • | • | • | • | • | • | • | • | • | | | |
| GW | • | | | | | | • | • | | | • | • | | | | | | | |
| CD | • | • | | | • | | • | • | • | • | • | • | • | • | • | • | | | |
| CJ | • | • | | | • | | • | • | • | • | • | • | • | • | • | • | | | |
| CM | • | | | | | • | • | • | • | • | • | • | • | • | • | • | | | |
| FD | | | • | • | | | | | • | • | | | • | • | • | • | | | |
| M | • | | | | | • | | | | | | | | | | | | | |
| LEM | • | • | | | • | • | • | • | • | • | • | • | • | • | • | • | | | |

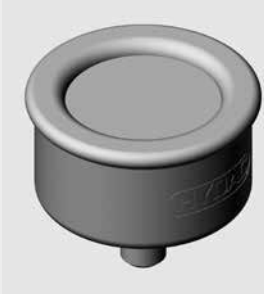
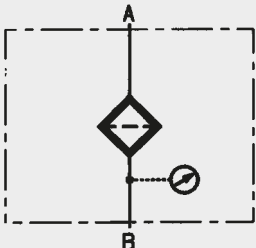
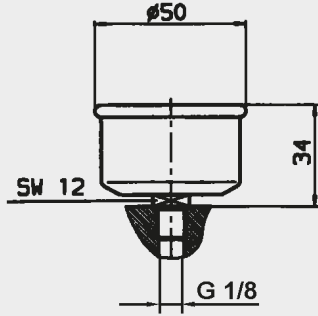

¹⁾ Can only be used for suction operation

²⁾ Use VMF 16 E.0 only


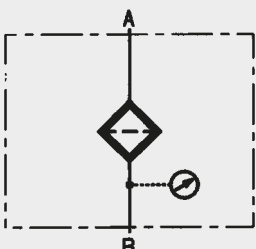
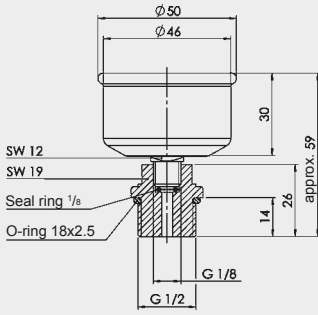

3. SPECIFICATIONS

3.1 VACUUM INDICATORS


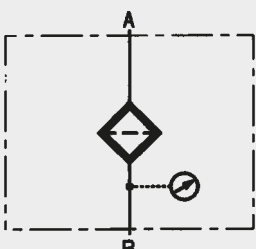
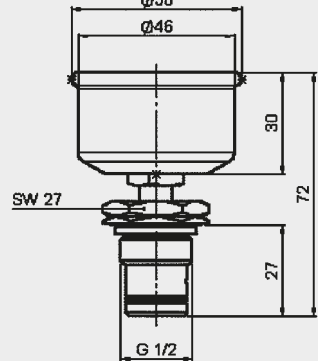

VMF x UE.x

| | | | |
|--|--|-----------------------------------|--|
|   | Type of indication | visual-analogue, scale indication |   |
| | Weight | 54 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 | 15 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 | | |


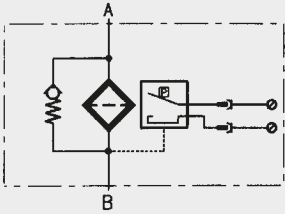
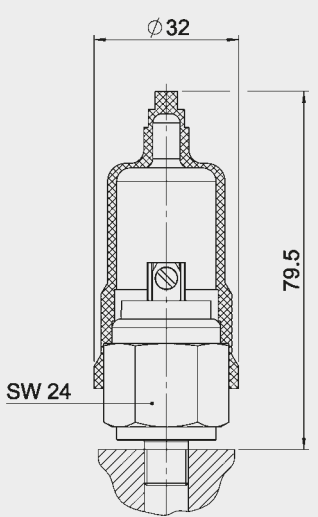
VR x UE.x

| | | | |
|---|--|-----------------------------------|---|
|   | 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 | | |


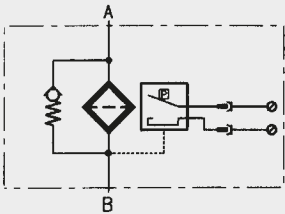
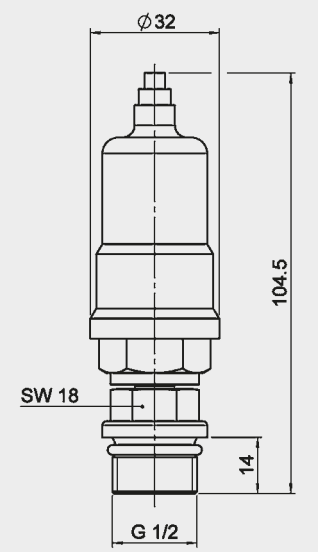
VRD x UE.x

| | | | |
|--|--|-----------------------------------|--|
|   | Type of indication | visual-analogue, scale indication |   |
| | Weight | 141 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 | | |


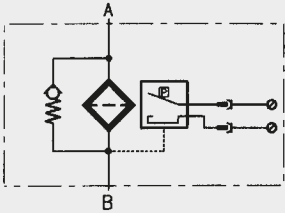
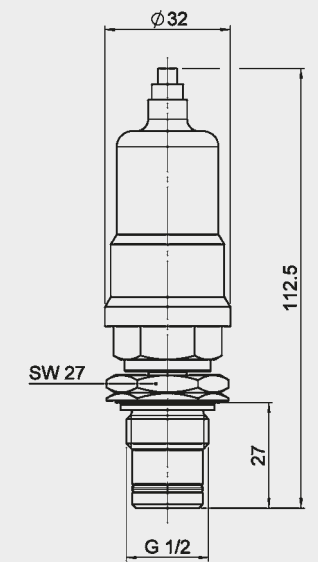
VMF x UF.x

| | | | |
|---|--|---|---|
|   | Type of indication | electrical switch |  |
| | Weight | 170 g | |
| | Pressure setting or indication range | -0.2 bar ± 0.1 bar | |
| | Permitt. operating pressure | 40 bar | |
| | Permitt. temperature range | -30 °C to +100 °C | |
| | Thread | G 1/8 | |
| | Max. torque | 15 Nm | |
| | Switching type | N/O contact | |
| | 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.0 | | |


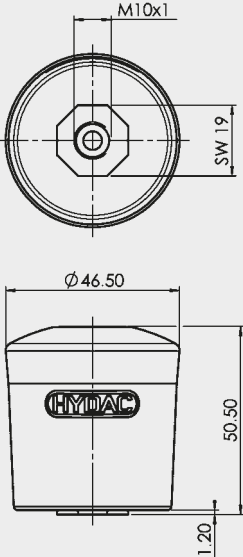
VR x UF.x

| | | | |
|--|--|---|--|
|   | Type of indication | electrical switch |  |
| | Weight | 170 g | |
| | Pressure setting or indication range | -0.2 bar ± 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 | |
| | 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.0 | | |


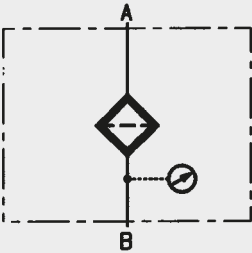
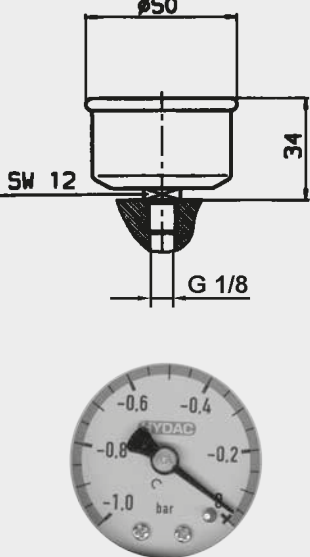
VRD x UF.x

| | | | |
|---|--|---|---|
|   | Type of indication | electrical switch |  |
| | Weight | 170 g | |
| | Pressure setting or indication range | -0.2 bar ± 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 | |
| | 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.0 | | |

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 | 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 0.035 UBM.0 | |

VMF x UED.x

| | | | |
|---|--|--|--|
|   | Type of indication | visual-analogue, scale indication (filled with silicone oil) |  |
| | Weight | 54 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 | 15 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 | 84 g | |
| | Pressure setting or indication range | 2 bar - 0.2 bar | |
| | Permitt. operating pressure | 7 bar | |
| | Permitt. temperature range | -30 °C to +100 °C | |
| | Thread | G 1/8 | |
| | 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 | VMF 2 B.1 | | |

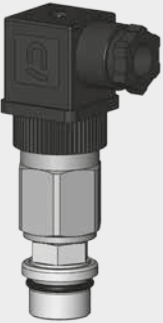
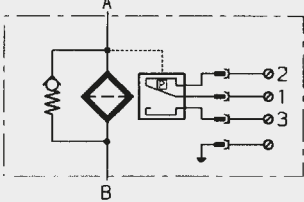
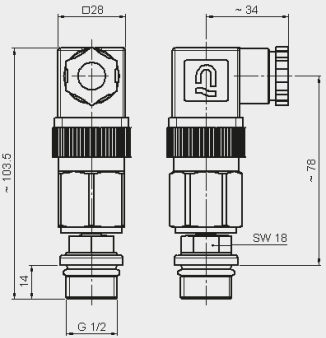
VR x B.x

| | | | |
|---------------|--|-------------------|--|
| | 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 | -30 °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 | | |


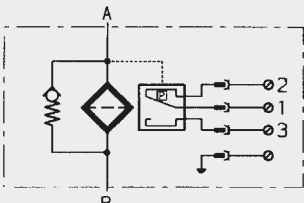
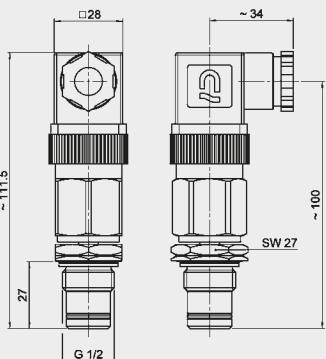
VMF x C.x

| | | | |
|---------------|--|---|--|
| | Type of indication | electrical switch | |
| | Weight | 270 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 | 15 Nm | |
| | Switching type | N/C or N/O (change-over contacts) | |
| | Max. switching voltage | 230 V | |
| | Electrical connection | Male connection M20 Female connector to DIN 43650 | |
| | 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 65 (only if the connector is wired and fitted correctly) | |
| Order example | VMF 2 C.1 | | |


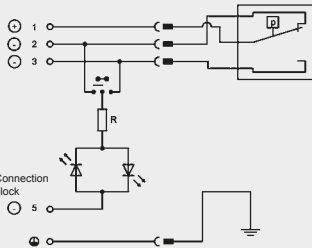
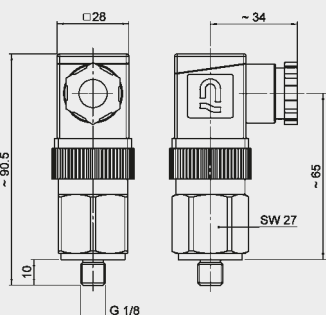
VR x C.x

| | | | |
|---|--|---|---|
|   | Type of indication | electrical switch |  |
| | Weight | 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 | 30 Nm | |
| | Switching type | N/C or N/O (change-over contacts) | |
| | Max. switching voltage | 230 V | |
| | Electrical connection | Male connection M20 Female connector to DIN 43650 | |
| | 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 65 (only if the connector is wired and fitted correctly) | |
| Order example | VR 2 C.1 | | |

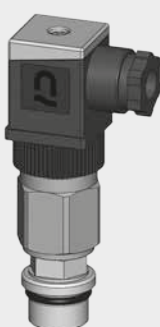
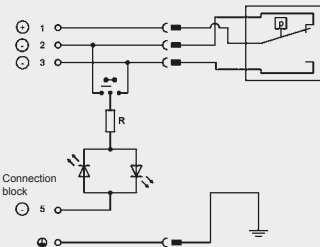
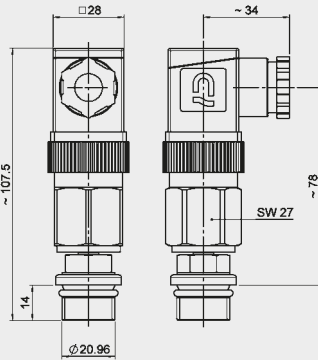
VRD x C.x

| | | | |
|--|--|---|--|
|   | Type of indication | electrical switch |  |
| | Weight | 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 (change-over contacts) | |
| | Max. switching voltage | 230 V | |
| | Electrical connection | Male connection M20 Female connector to DIN 43650 | |
| | 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 65 (only if the connector is wired and fitted correctly) | |
| Order example | VRD 2 C.1 | | |


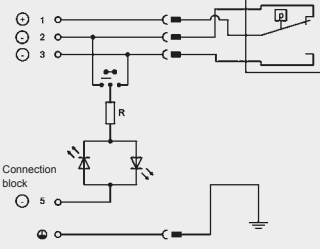
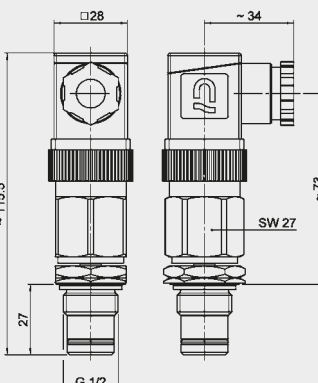
VMF x D.x /-L...

| | | | |
|---|--|---|---|
|   | Type of indication | visual indicator and electrical switch |  |
| | Weight | 300 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 | 15 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 Female connector to DIN 43650 | |
| | Max. switching voltage at resistive load | 250 W = 300 VA ~ | |
| | switching capacity | Ohmic 6 A at 230 V = 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 | | |


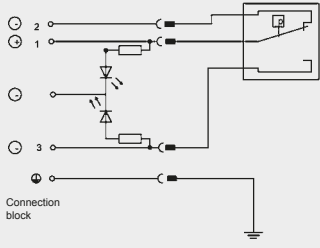
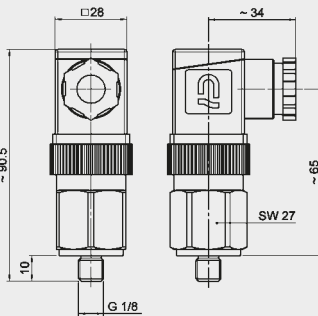
VR x D.x /-L...

| | | | |
|---|--|---|---|
|   | Type of indication | visual indicator and electrical switch |  |
| | Weight | 360 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 | 30 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 Female connector to DIN 43650 | |
| | 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 65 (only if the connector is wired and fitted correctly) | |
| Order example | VR 2 D.1 /-L110 | | |

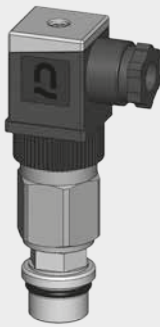
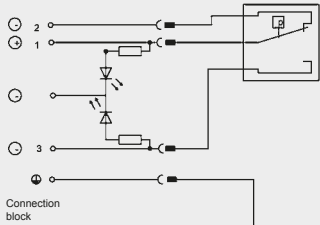
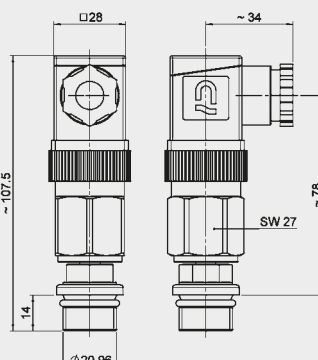
VRD x D.x /-L...

| | | | |
|--|--|---|--|
|   | Type of indication | visual indicator and electrical switch |  |
| | Weight | 360 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 Female connector to DIN 43650 | |
| | 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 65 (only if the connector is wired and fitted correctly) | |
| Order example | VRD 2 D.1 /-L110 | | |


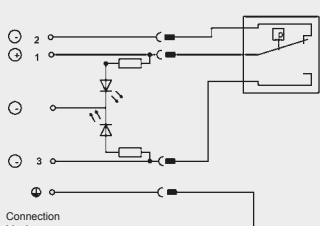
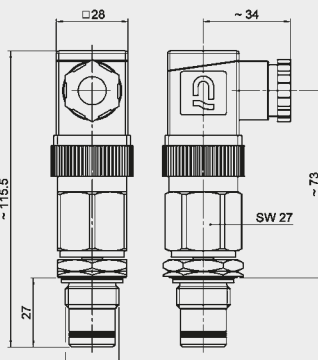
VMF x D.x /-LED

| | | | |
|---|--|---|---|
|   | Type of indication | visual indicator and electrical switch |  |
| | Weight | 300 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 | 15 Nm | |
| | Switching type | N/O contact | |
| | Max. switching voltage | 24 V | |
| | Electrical connection | Male connection M20 Female connector to DIN 43650 | |
| | 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 | | |


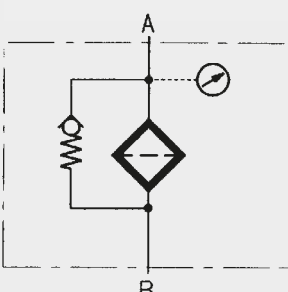
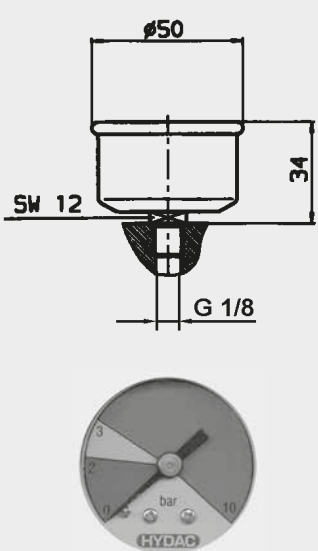
VR x D.x /-LED

| | | | |
|---|--|---|---|
|   | Type of indication | visual indicator and electrical switch |  |
| | Weight | 360 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 | 30 Nm | |
| | Switching type | N/O contact | |
| | Max. switching voltage | 24 V | |
| | Electrical connection | Male connection M20 Female connector to DIN 43650 | |
| | 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 | VR 2 D.1 /-LED | | |


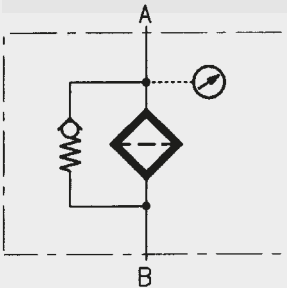
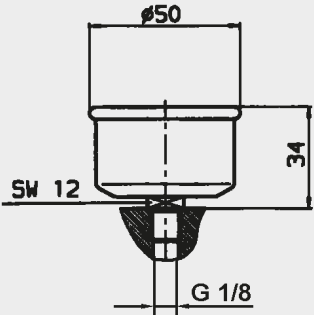

VRD x D.x /-LED

| | | | |
|--|--|---|--|
|   | Type of indication | visual indicator and electrical switch |  |
| | Weight | 360 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 Female connector to DIN 43650 | |
| | 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 | VRD 2 D.1 /-LED | | |


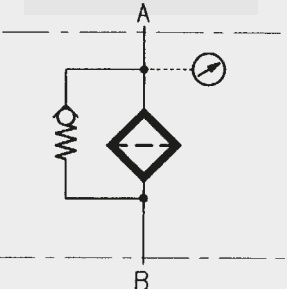
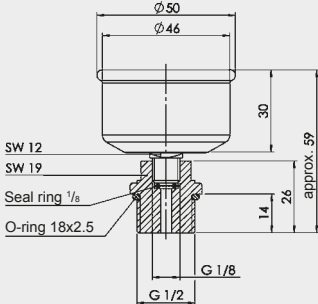

VMF x E.x

| | | | |
|---|--|-----------------------------------|---|
|   | 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 | 15 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 | | |


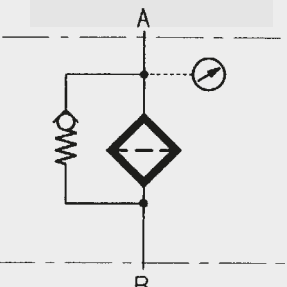
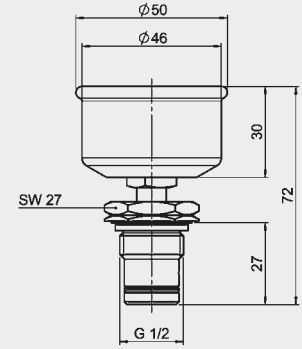

VMF 16 E.x

| | | | |
|---|--|-----------------------------------|--|
|   | Type of indication | visual-analogue, scale indication |   |
| | Weight | 54 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 | 15 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 | | |

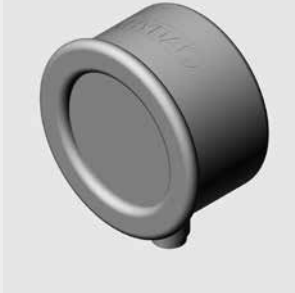
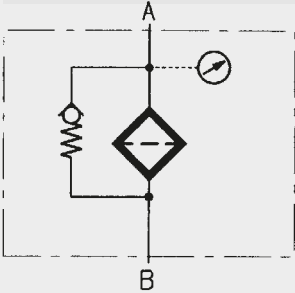
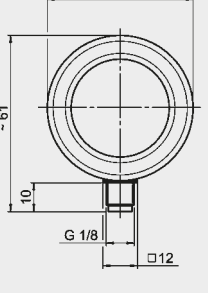
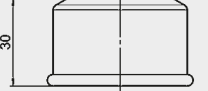

VR x E.x

| | | | |
|--|--|-----------------------------------|---|
|   | 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 | 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 2 E.0 | | |


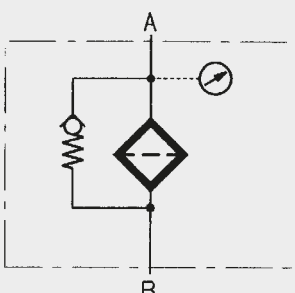
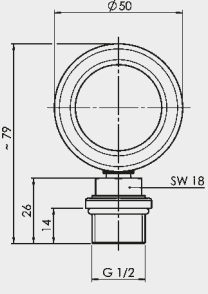


VRD x E.x

| | | | |
|---|--|-----------------------------------|--|
|   | 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 | | |


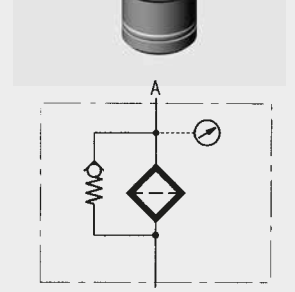
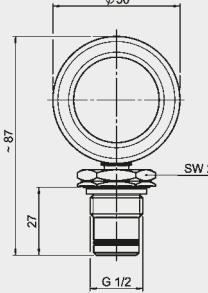
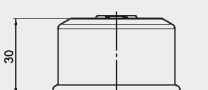

VMF x ES.x

| | | | |
|--|--|-----------------------------------|---|
|   | Type of indication | visual-analogue, scale indication |    |
| | Weight | 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 | 15 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 | | |


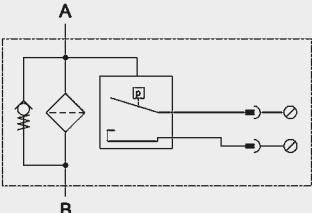
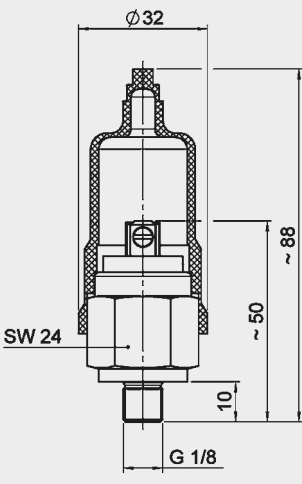
VR x ES.x

| | | | |
|---|--|-----------------------------------|--|
|   | Type of indication | visual-analogue, scale indication |    |
| | Weight | 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 | 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 2 ES.0 | | |


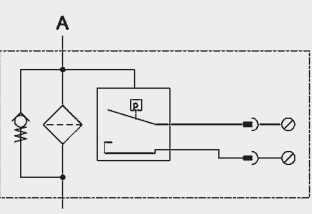
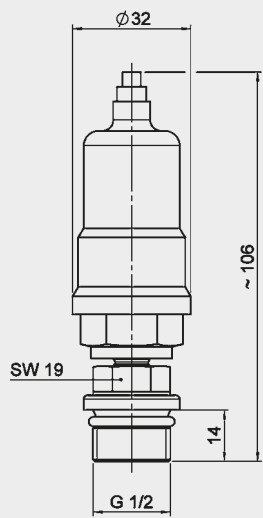
VRD x ES.x

| | | | |
|--|--|-----------------------------------|---|
|   | 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 ES.0 | | |


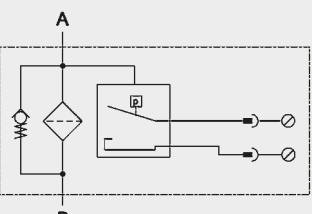
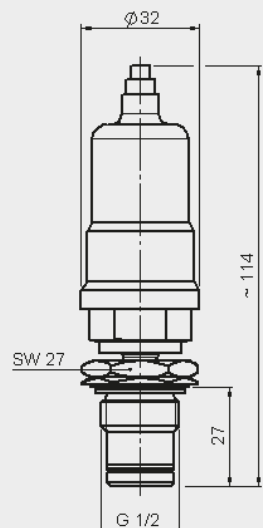
VMF x F.x

| | | | |
|---|--|--|---|
|   | Type of indication | electrical switch |  |
| | Weight | 70 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 | 15 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 | | |


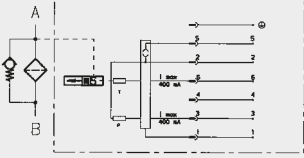
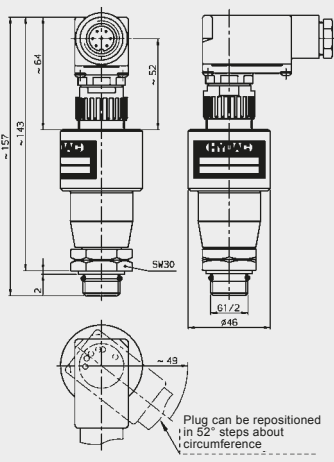
VR x F.x

| | | | |
|--|--|--|--|
|   | Type of indication | electrical switch |  |
| | Weight | 130 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 | 30 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 | | |


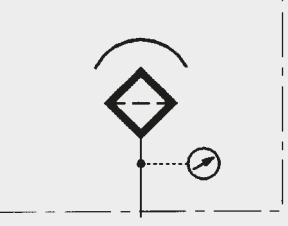
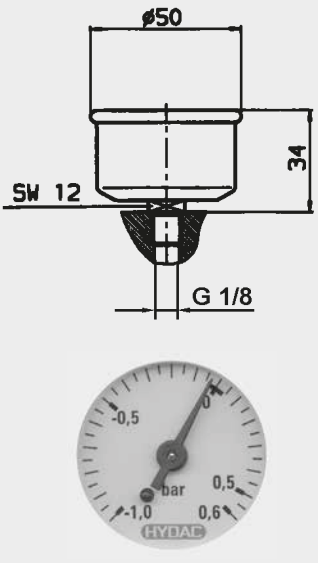
VRD x F.x

| | | | |
|---|--|--|---|
|   | Type of indication | electrical switch |  |
| | Weight | 130 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.0 | | |

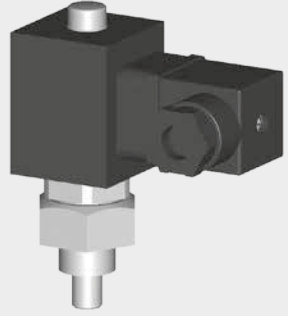
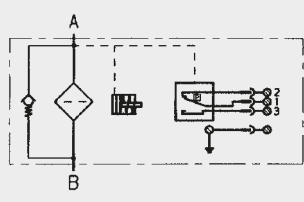
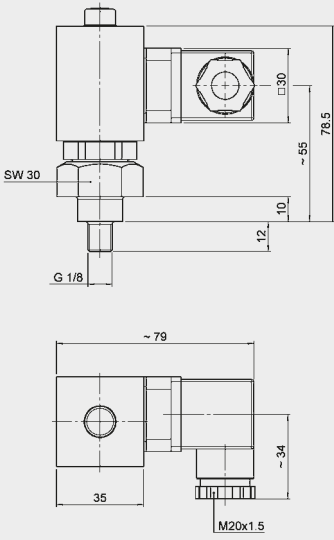
VR x GC.x

| | | | |
|---|--|--|---|
|   | Type of indication | Electronic/analogue (4-20 mA or 1-10 V) 1 electrical switching contact at 75% and at 100% of the pressure setting Analogue signal up to 20% of the 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 | -30 °C to +80 °C | |
| | Thread | G 1/2 | |
| | Max. torque | 15 Nm | |
| | Switching type | N/C or N/O, electronic 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 | |

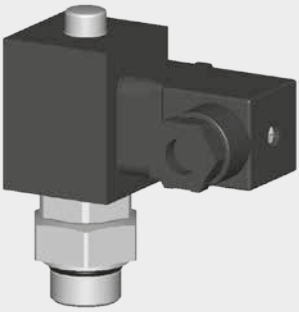
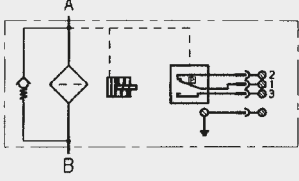
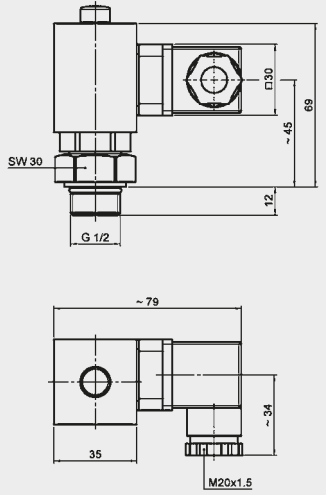
VMF x K.x

| | | | |
|---|--|--------------------------------------|--|
|   | Type of indication | visual-analogue, 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 | 15 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 | | |

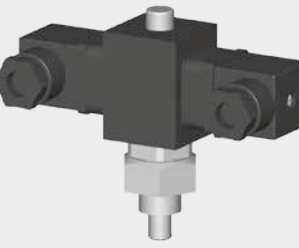
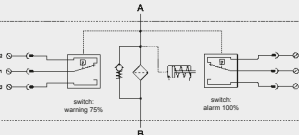
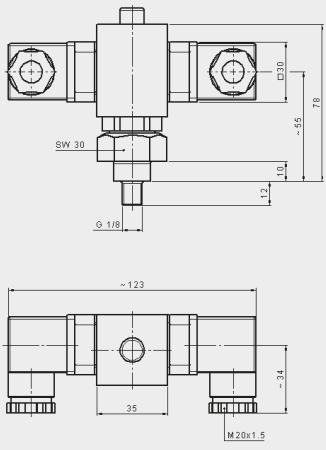
VMF x LE.x

| | | | |
|---|---|--|---|
|   | Type of indication | visual, red pin and electrical switch 1 switching contact at 100% of the pressure setting |  |
| | Weight | 120 g | |
| | Pressure setting or indication range | 2 bar - 0.2 bar | |
| | Permitt. operating pressure | 7 bar | |
| | Permitt. temperature range | -30 °C to +100 °C | |
| | Thread | G 1/8 | |
| | Max. torque | 15 Nm | |
| | Switching type | N/C or N/O contacts Reed contacts (change-over contacts) | |
| | Max. switching voltage | 115 V | |
| | Electrical connection | Male connection M20 Female connector to DIN 43650 | |
| | 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 (only if the connector is wired and fitted correctly) | | |
| Order example | VMF 2 LE.1 | | |

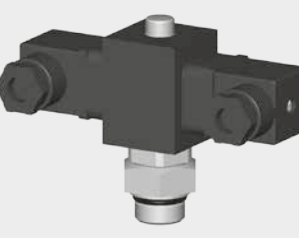
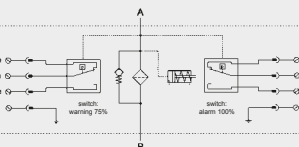
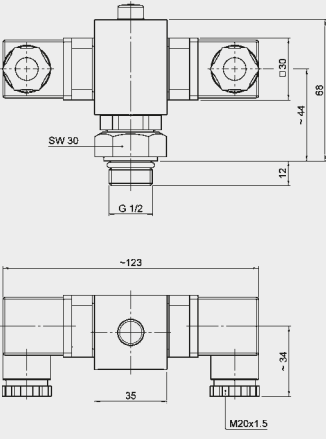
VR x LE.x

| | | | |
|--|--|--|---|
|   | Type of indication | visual, red pin and electrical switch 1 switching contact at 100% of the pressure setting |  |
| | Weight | 143 g | |
| | Pressure setting or indication range | 2 bar - 0.2 bar | |
| | Permitt. operating pressure | 7 bar | |
| | Permitt. temperature range | -30 °C to +100 °C | |
| | Thread | G 1/2 | |
| | Max. torque | 15 Nm | |
| | Switching type | N/C or N/O contacts Reed contacts (change-over contacts) | |
| | Max. switching voltage | 115 V | |
| | Electrical connection | Male connection M20 Female connector to DIN 43650 | |
| | 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 (only if the connector is wired and fitted correctly) | |
| Order example | VR 2 LE.1 | | |

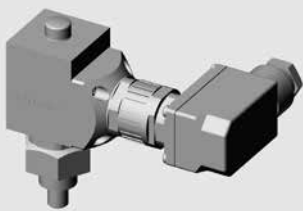
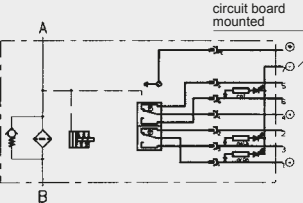
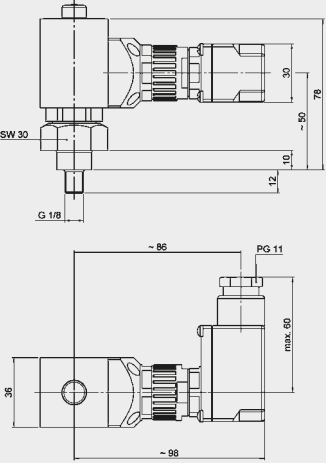
VMF x LZ.x

| | | | |
|---|--|---|--|
|   | 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 | 15 Nm | |
| | Switching type | N/C or N/O contacts Reed contacts (change-over contacts) | |
| | Max. switching voltage | 115 V | |
| | Electrical connection | Male connection M20 Female connector to DIN 43650 | |
| | 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 (only if the connector is wired and fitted correctly) | |
| Order example | VMF 2 LZ.1 | | |

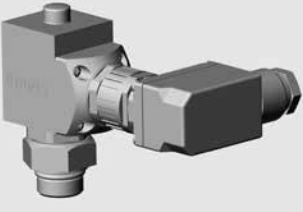
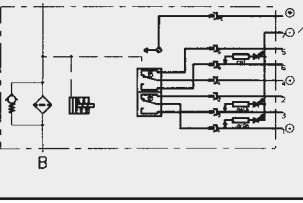
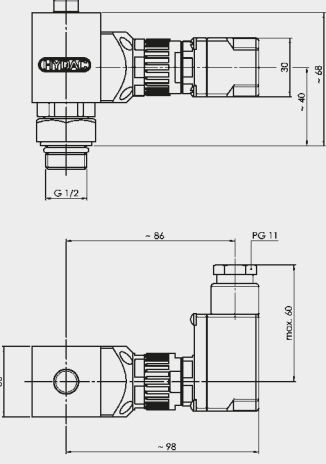
VR x LZ.x

| | | | |
|--|--|---|---|
|   | 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 Reed contacts (change-over contacts) | |
| | Max. switching voltage | 115 V | |
| | Electrical connection | Male connection M20 Female connector to DIN 43650 | |
| | 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 (only if the connector is wired and fitted correctly) | |
| Order example | VR 2 LZ.1 | | |

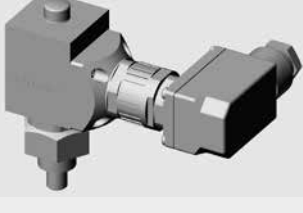
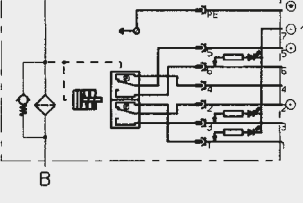
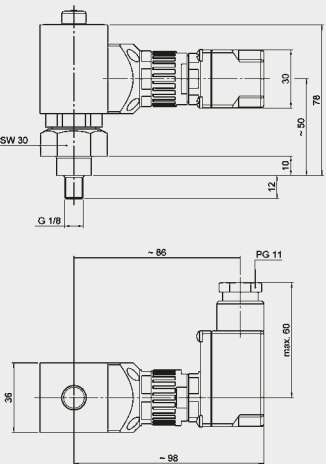
VMF x LZ.x /-DB

| | | | |
|--|--|--|---|
|   | Type of indication | visual, red pin and 1 electrical switching contact at 75% and at 100% of the pressure setting 1 green LED constantly lit 1 yellow LED lights from 75% 1 red LED lights from 100% Δp |  |
| | Weight | 170 g | |
| | Pressure setting or indication range | 2 bar - 0.2 bar | |
| | Permitt. operating pressure | 7 bar | |
| | Permitt. temperature range | -30 °C to +100 °C | |
| | Thread | G 1/8 | |
| | Max. torque | 15 Nm | |
| | Switching type | N/C or N/O contacts Reed contacts (change-over contacts) | |
| | Max. switching voltage | 24 V | |
| | Electrical connection | Male connection PG 11 Female connector to DIN 43651 | |
| | 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 (only if the connector is wired and fitted correctly) | |
| | Order example | VMF 2 LZ.1 /-DB | |

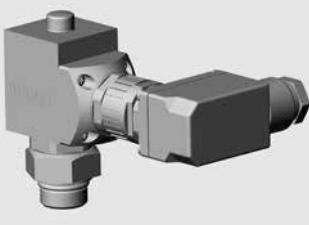
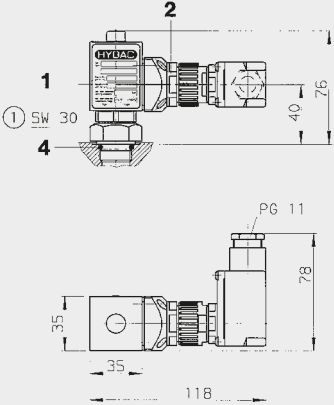
VR x LZ.x /-DB

| | | | |
|---|--|--|--|
|   | Type of indication | visual, red pin and 1 electrical switching contact at 75% and at 100% of the pressure setting 1 green LED constantly lit 1 yellow LED lights from 75% 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 | -30 °C to +100 °C | |
| | Thread | G 1/2 | |
| | Max. torque | 15 Nm | |
| | Switching type | N/C or N/O contacts Reed contacts (change-over contacts) | |
| | Max. switching voltage | 24 V | |
| | Electrical connection | Male connection PG 11 Female connector to DIN 43651 | |
| | 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 (only if the connector is wired and fitted correctly) | |
| | Order example | VR 2 LZ.1 /-DB | |


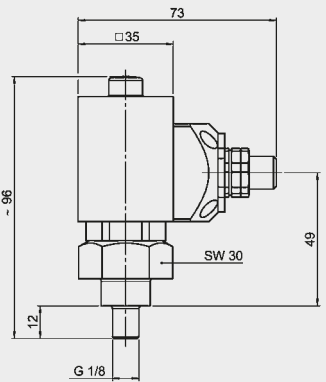
VMF x LZ.x /-CN

| | | | |
|--|--|---|---|
|   | Type of indication | visual, red pin and 1 electrical switching contact at 75% and at 100% of the pressure setting 1 green LED goes out at 75% 1 yellow LED lights from 75% 1 red LED lights from 100% Δp |  |
| | Weight | 170 g | |
| | Pressure setting or indication range | 2 bar - 0.2 bar | |
| | Permitt. operating pressure | 7 bar | |
| | Permitt. temperature range | -30 °C to +100 °C | |
| | Thread | G 1/8 | |
| | Max. torque | 15 Nm | |
| | Switching type | N/C or N/O contacts Reed contacts (change-over contacts) | |
| | Max. switching voltage | 24 V | |
| | Electrical connection | Male connection PG 11 Female connector to DIN 43651 | |
| | 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 (only if the connector is wired and fitted correctly) | |
| | Order example | VMF 2 LZ.1 /-CN | |


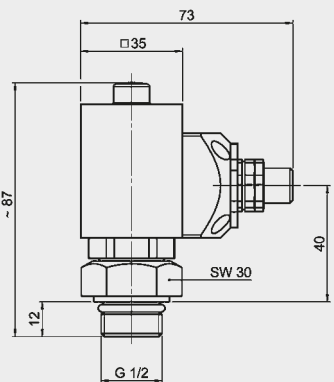
VR x LZ.x /-CN

| | | | |
|--|---|---|---|
|  | Type of indication | visual, red pin and 1 electrical switching contact at 75% and at 100% of the pressure setting 1 green LED goes out at 75% 1 yellow LED lights from 75% 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 | -30 °C to +100 °C | | |
| Thread | G 1/2 | | |
| Max. torque | 15 Nm | | |
| Switching type | N/C or N/O contacts Reed contacts (change-over contacts) | | |
| Max. switching voltage | 24 V | | |
| Electrical connection | Male connection PG 11 Female connector to DIN 43651 | | |
| 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 (only if the connector is wired and fitted correctly) | | |
| Order example | VR 2 LZ.1 /-CN | | |


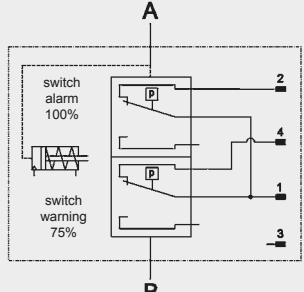
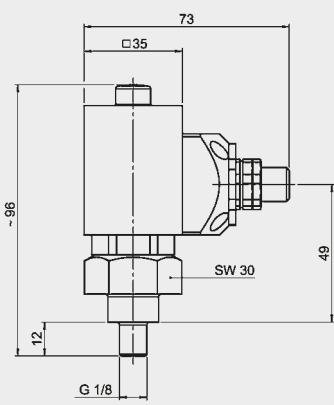
VMF x LZ.x /-BO

| | | | |
|--|--|---|--|
|  | Type of indication | visual, red pin 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 | 15 Nm | | |
| Switching type | N/O (75%) 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.1 /-BO | | |


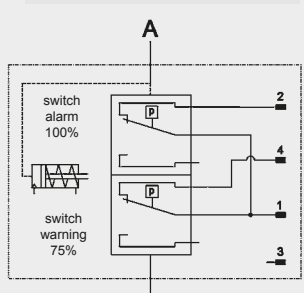
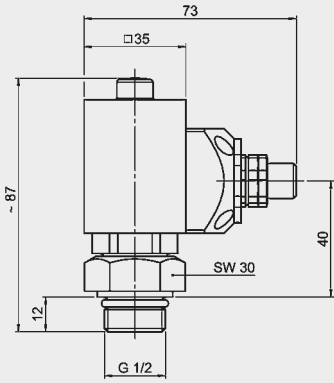
VR x LZ.x /-BO

| | | | |
|---|--|---|---|
|  | 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/O (75%) 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 | VR 2 LZ.1 /-BO | | |


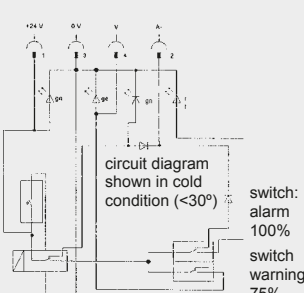
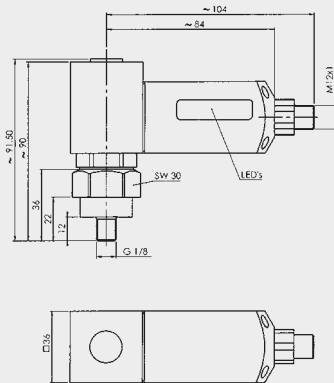
VMF x LZ.x /-AV

| | | | |
|---|--|---|---|
|   | 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 | 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 | VMF 2 LZ.1 /-AV | |


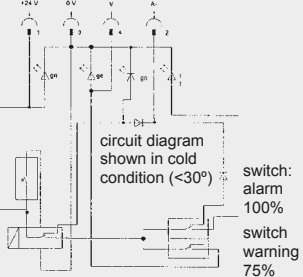
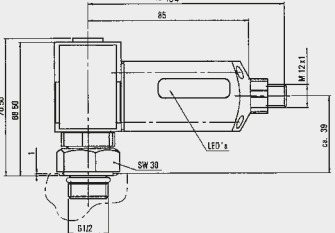
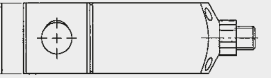
VR x LZ.x /-AV

| | | | |
|--|--|---|--|
|   | 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 | |


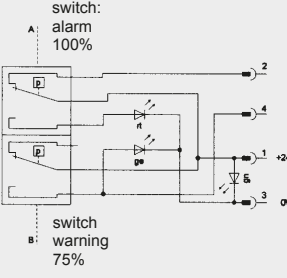
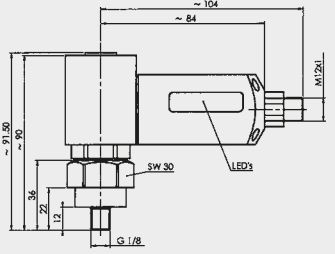

VMF x LZ.x /-D4C

| | | | |
|--|--|--|---|
|   | 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 2 green LED's light when below 30 °C 1 green LED lights from 30 °C 1 yellow LED lights from 75% 1 red LED 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 | 15 Nm | |
| | Switching type | N/O (75%), 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.1 /-D4C | |


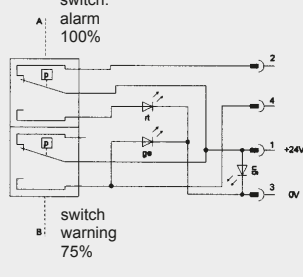
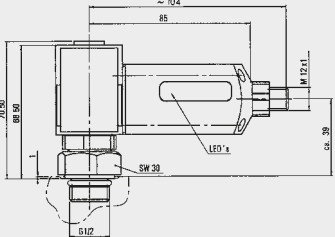

VR x LZ.x /-D4C

| | | | |
|---|--|--|--|
|   <p>circuit diagram shown in cold condition (<math><30^{\circ}</math>)</p> <p>switch: alarm 100%</p> <p>switch warning 75%</p> | 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. 2 green LED's light when below 30 °C 1 green LED lights from 30 °C 1 yellow LED lights from 75% 1 red LED lights from 100% Δp |   |
| | 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 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 /-D4C | |

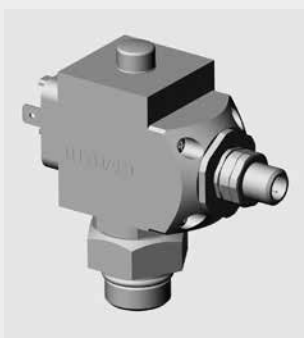
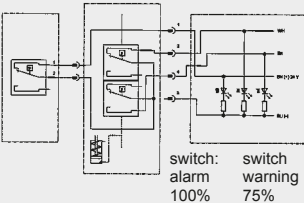
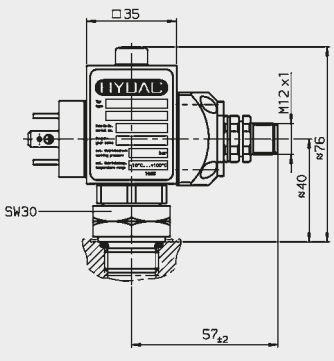
VMF x LZ.x /-BO-LED

| | | | |
|---|--|--|---|
|   <p>switch: alarm 100%</p> <p>switch warning 75%</p> | Type of indication | 1 electrical switching contact at 75% and at 100% of the pressure setting 1 green LED constantly lit 1 yellow LED lights from 75% 1 red LED 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 | 15 Nm | |
| | Switching type | N/O (75%), 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.1 /-BO-LED | |

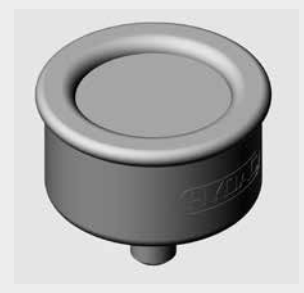
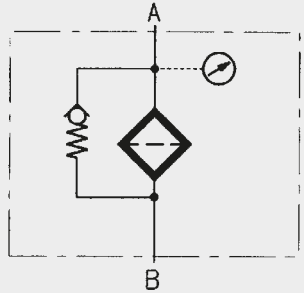
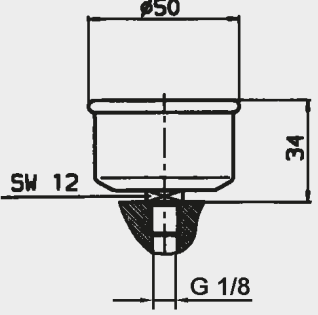

VR x LZ.x /-BO-LED

| | | | |
|--|--|--|--|
|   <p>switch: alarm 100%</p> <p>switch warning 75%</p> | Type of indication | 1 electrical switching contact at 75% and at 100% of the pressure setting 1 green LED constantly lit 1 yellow LED lights from 75% 1 red LED lights from 100% Δp |   |
| | 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 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 /-BO-LED | |


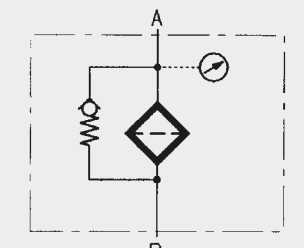
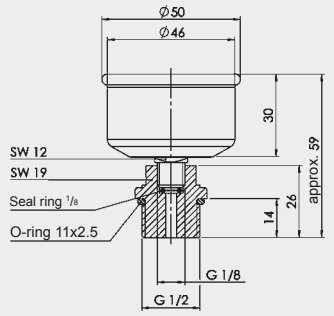

VR x LZ.x /-GM

| | | | |
|--|--|---|---|
|   | Type of indication | visual, red pin and 1 electrical switching contact at 75% and at 100% of the pressure setting 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 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 /-GM | |

VMF x R.x


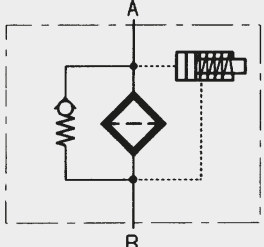
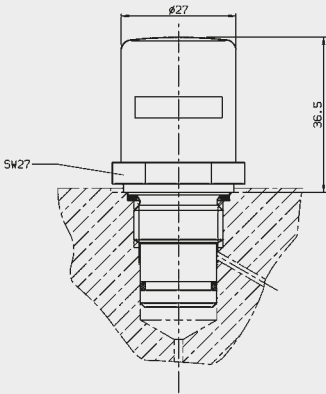
| | | | |
|---|--|-----------------------------------|---|
|   | Type of indication | visual-analogue, scale indication |   |
| | Weight | 54 g | |
| | Pressure setting or indication range | 0 to 10 bar | |
| | Permitt. operating pressure | 7 bar continuous | |
| | Permitt. temperature range | -20 °C to +60 °C | |
| | Thread | G 1/8 | |
| | Max. torque | 15 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


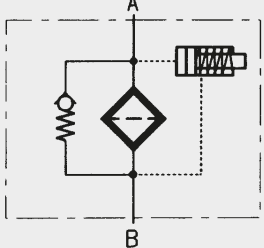
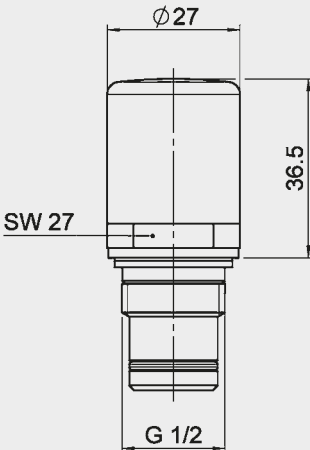
| | | | |
|--|--|-----------------------------------|--|
|   | Type of indication | visual-analogue, scale indication |   |
| | Weight | 125 g | |
| | Pressure setting or indication range | 0 to 10 bar | |
| | Permitt. operating pressure | 7 bar continuous | |
| | Permitt. temperature range | -20 °C to +60 °C | |
| | Thread | G 1/2 | |
| | Max. torque | 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 2 R.0 | | |

3.3 DIFFERENTIAL PRESSURE INDICATORS


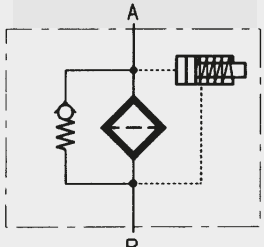
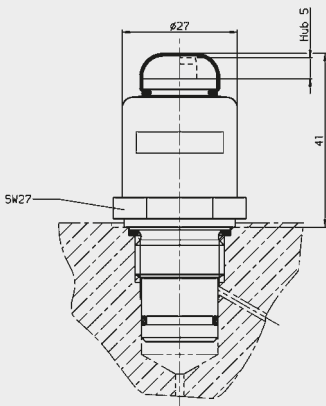
VM x B.x

| | | | |
|--|--|---|---|
|   | Type of indication | visual, red/green band Automatic reset |  |
| | Weight | 55 g | |
| | Pressure setting or indication range | 2 bar - 10% 5 bar - 10% 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 | |

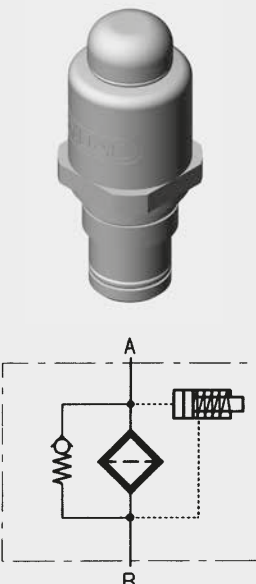
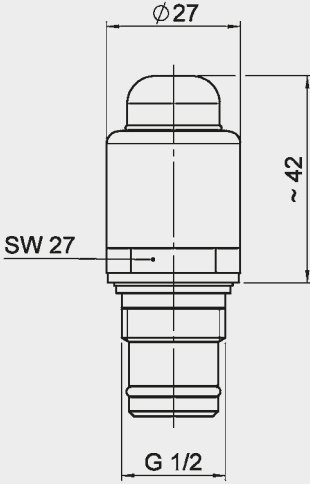
VD x B.x

| | | | |
|---|--|---|--|
|   | Type of indication | visual, red/green band Automatic reset |  |
| | Weight | 110 g | |
| | Pressure setting or indication range | 2 bar - 10% 5 bar - 10% 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 | |

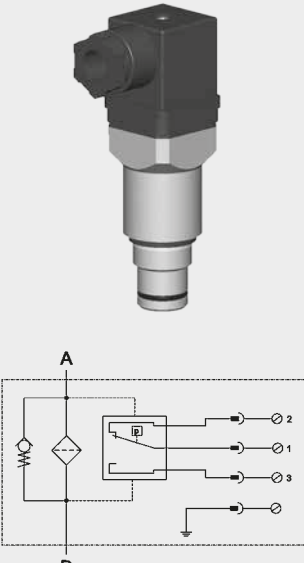
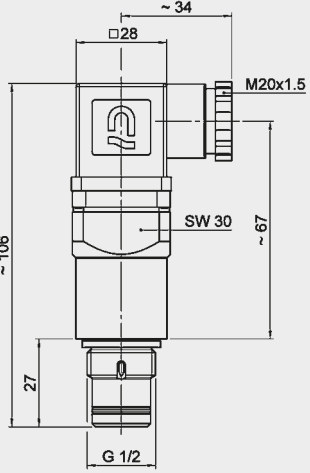
VM x BM.x

| | | | |
|--|--|---|---|
|   | Type of indication | visual, red/green band Manual reset |  |
| | Weight | 55 g | |
| | Pressure setting or indication range | 2 bar - 10% 5 bar - 10% 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 | |

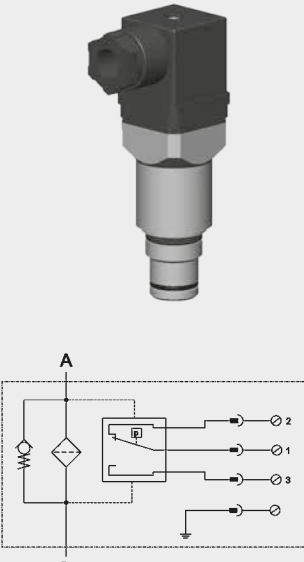
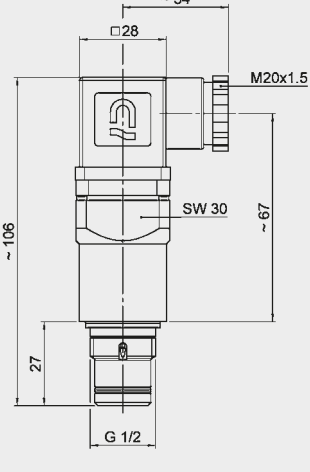
VD x BM.x

| | | | |
|---|--|--|---|
|  | Type of indication | visual, red/green band Manual reset |  |
| | Weight | 110 g | |
| | Pressure setting or indication range | 2 bar - 10 % 5 bar - 10% 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


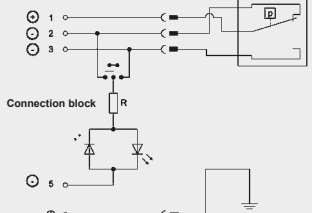
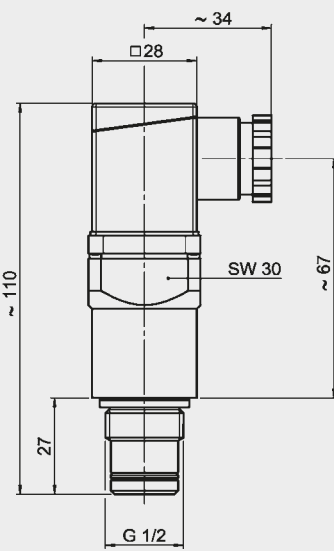
| | | | |
|---|--|---|--|
|  | Type of indication | electrical switch |  |
| | Weight | 120 g | |
| | Pressure setting or indication range | 2 bar - 10% 5 bar - 10% 8 bar ± 10% | |
| | Permitt. operating pressure | 210 bar | |
| | Permitt. temperature range | -30 °C to +100 °C | |
| | Thread | G 1/2 | |
| | Max. torque | 33 Nm | |
| | Switching type | N/C or N/O (change-over contacts) | |
| | Max. switching voltage | 230 V | |
| | Electrical connection | Male connection M20 Female connector to DIN 43650 | |
| | Max. switching voltage at resistive load | 60 W = 100 VA ~ | |
| | Switching capacity ¹⁾ | Ohmic 3 A at 24 V = 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


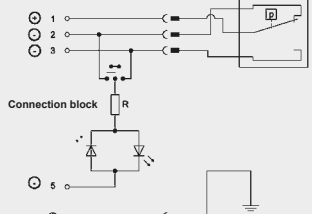
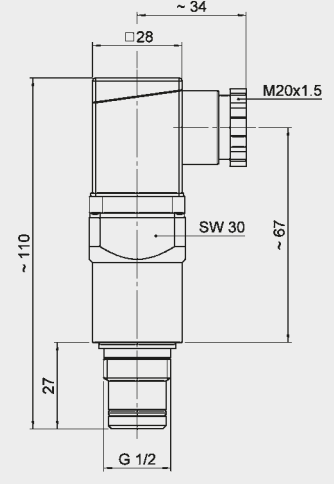
| | | | |
|--|--|---|---|
|  | Type of indication | electrical switch |  |
| | Weight | 220 g | |
| | Pressure setting or indication range | 5 bar - 10% 8 bar ± 10% | |
| | Permitt. operating pressure | 420 bar | |
| | Permitt. temperature range | -30 °C to +100 °C | |
| | Thread | G 1/2 | |
| | Max. torque | 100 Nm | |
| | Switching type | N/C or N/O (change-over contacts) | |
| | Max. switching voltage | 230 V | |
| | Electrical connection | Male connection M20 Female connector to DIN 43650 | |
| | Max. switching voltage at resistive load | 60 W = 100 VA ~ | |
| | Switching capacity ¹⁾ | Ohmic 3 A at 24 V = 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 | | |

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


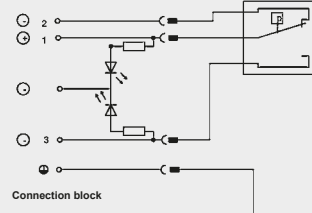
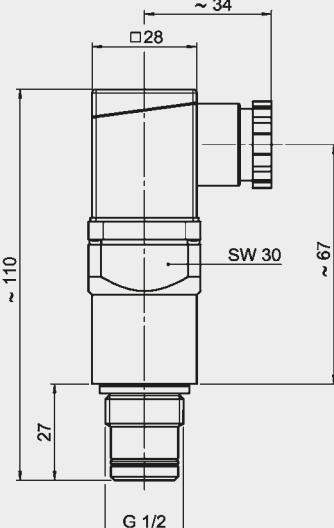
VM x D.x /-L...

| | | | |
|---|--|---|---|
|   | Type of indication | visual indicator and electrical switch |  |
| | Weight | 150 g | |
| | Pressure setting or indication range | 2 bar - 10% 5 bar - 10% 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 (change-over contacts) | |
| | Max. switching voltage | 24, 48, 115, 230 V (depending on the type of light insert) | |
| | Electrical connection | Male connection M20 Female connector to DIN 43650 | |
| | Max. switching voltage at resistive load | 60 W = 100 VA ~ | |
| | Switching capacity ¹⁾ | Ohmic 3 A at 24 V = 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...


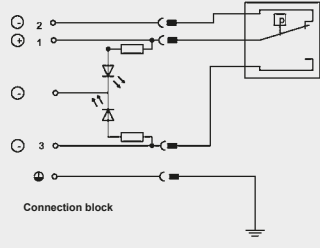
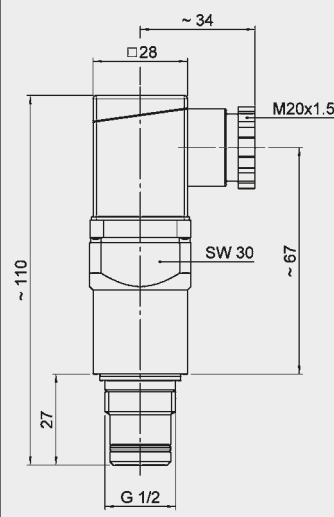
| | | | |
|--|--|---|--|
|   | Type of indication | visual indicator and electrical switch |  |
| | Weight | 250 g | |
| | Pressure setting or indication range | 2 bar -10% 5 bar - 10% 8 bar ± 10% | |
| | Permitt. operating pressure | 420 bar | |
| | Permitt. temperature range | -30 °C to +100 °C | |
| | Thread | G 1/2 | |
| | Max. torque | 100 Nm | |
| | Switching type | N/C or N/O (change-over contacts) | |
| | Max. switching voltage | 24, 48, 115, 230 V (depending on the type of light insert) | |
| | Electrical connection | Male connection M20 Female connector to DIN 43650 | |
| | Max. switching voltage at resistive load | 60 W = 100 VA ~ | |
| | Switching capacity ¹⁾ | Ohmic 3 A at 24 V = 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


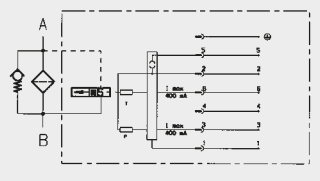
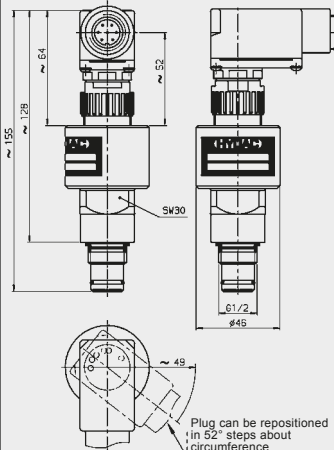
| | | | |
|---|--|---|---|
|   | Type of indication | visual indicator and electrical switch |  |
| | Weight | 150 g | |
| | Pressure setting or indication range | 2 bar - 10% 5 bar - 10% 8 bar ± 10% | |
| | Permitt. operating pressure | 210 bar | |
| | Permitt. temperature range | -30 °C to +100 °C | |
| | Thread | G 1/2 | |
| | Max. torque | 33 Nm | |
| | Switching type | N/C or N/O (change-over contacts) | |
| | Max. switching voltage | 24 V | |
| | Electrical connection | Male connection M20 Female connector to DIN 43650 | |
| | Max. switching voltage at resistive load | 60 W = 100 VA ~ | |
| | Switching capacity ¹⁾ | 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 | | |

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


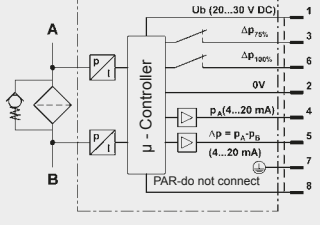
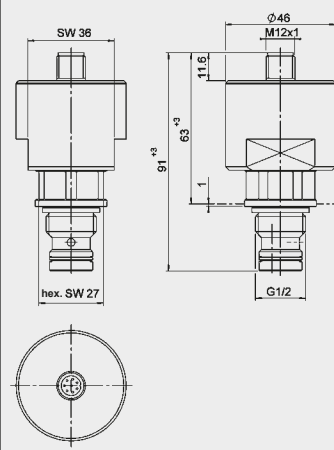
VD x D.x /-LED

| | | | |
|---|--|---|---|
|   | Type of indication | visual indicator and electrical switch |  |
| | Weight | 250 g | |
| | Pressure setting or indication range | 2 bar - 10% 5 bar - 10% 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 (change-over contacts) | |
| | Max. switching voltage | 24 V | |
| | Electrical connection | Male connection M20 Female connector to DIN 43650 | |
| | Max. switching voltage at resistive load | 60 W = 100 VA ~ | |
| | Switching capacity ¹⁾ | 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

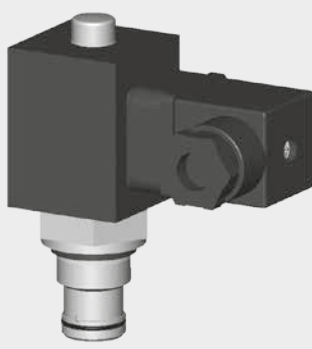
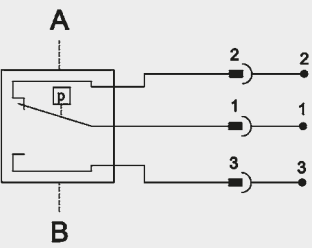
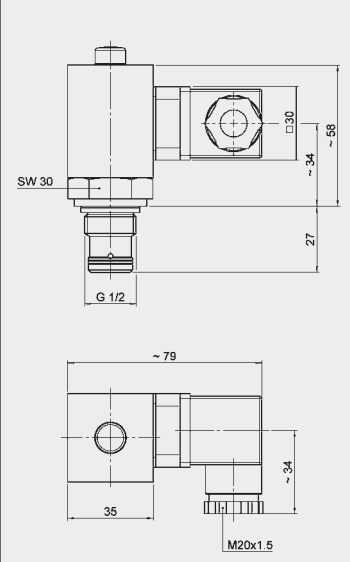
| | | | |
|--|--|--|---|
|   | Type of indicator | Electronic/analogue (4-20 mA or 1-10 V) 1 electrical switching contact at 75% and at 100% of the pressure setting Analogue signal up to 20% of the pressure setting constant 4mA or 1 V |  <p>Plug can be repositioned in 52° steps about circumference</p> |
| | Weight | 400 g | |
| | Pressure setting or indication range | 2 bar - 10% 5 bar - 10% 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 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 | VD 5 GC.0 /-LED-SQ-123 | |

VL x GW.x

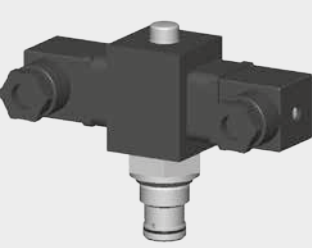
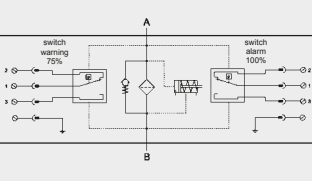
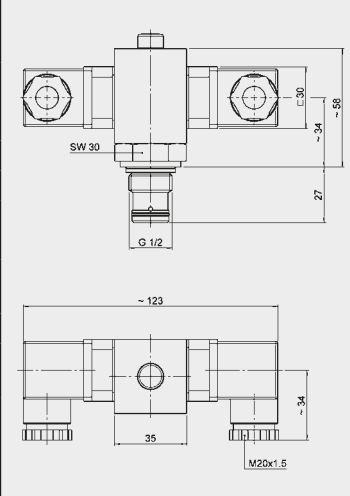
| | | | |
|---|--|--|---|
|   | Type of indication | Electronic/analogue (4-20 mA) for condition monitoring filters incl. bypass monitoring. 1 switching contact at 75% and at 100% of the pressure setting |  |
| | Weight | 157 g | |
| | Pressure setting p (switching contact 100%) | 2 bar ± 5% 3 bar ± 5% 5 bar ± 5% | |
| | Indication range Δp | 0 - 5 bar 0 - 5 bar 0 - 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...30V DC | |
| | Analogue outputs "press. before filter" & Δp | 4...20 mA (max. load 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 | |

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

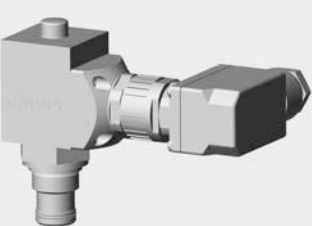
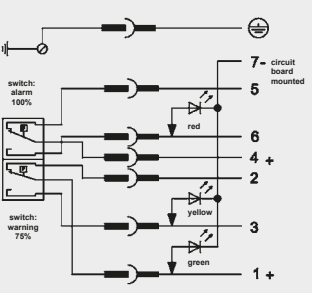
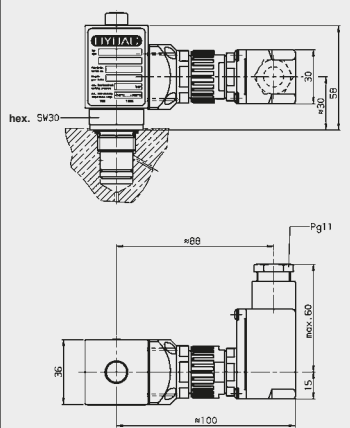
VD x LE.x

| | | | |
|---|--|--|---|
|  <p>A</p>  <p>B</p> | Type of indication | visual, red pin and electrical switch 1 switching contact at 100% of the pressure setting |  |
| | Weight | 198 g | |
| | Pressure setting or indication range | 2 bar - 10% 5 bar - 10% 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 Reed contacts (change-over contacts) | |
| | Max. switching voltage | 115 V | |
| | Electrical connection | Male connection M20 Female connector to DIN 43650 | |
| | 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 (only if the connector is wired and fitted correctly) | |
| | Order example | VD 5 LE.1 | |

VD x LZ.x

| | | | |
|--|--|---|--|
|  <p>A</p>  <p>B</p> | 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% 5 bar - 10% 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 Reed contacts (change-over contacts) | |
| | Max. switching voltage | 115 V | |
| | Electrical connection | Male connection M20 Female connector to DIN 43650 | |
| | 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 (only if the connector is wired and fitted correctly) | |
| | Order example | VD 5 LZ.1 | |


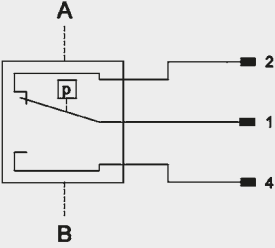
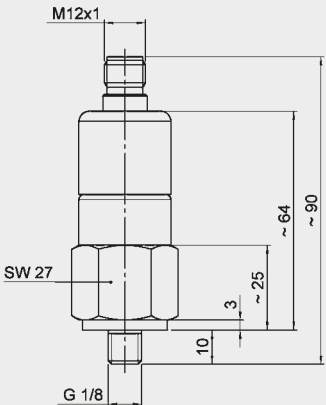
VD x LZ.x /-DB

| | | | |
|---|--|--|---|
|  <p>A</p>  <p>B</p> | Type of indication | visual, red pin and 1 electrical switching contact at 75% and at 100% of the pressure setting 1 green LED constantly lit 1 yellow LED lights from 75% 1 red LED lights from 100% Δp |  |
| | Weight | 245 g | |
| | Pressure setting or indication range | 2 bar - 10% 5 bar - 10% 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 Reed contacts (change-over contacts) | |
| | Max. switching voltage | 24 V | |
| | Electrical connection | Male connection PG 11 Female connector to DIN 43651 | |
| | 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 (only if the connector is wired and fitted correctly) | |
| | Order example | VD 5 LZ.1 /-DB | |


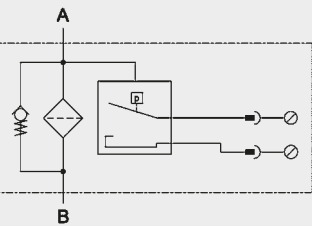
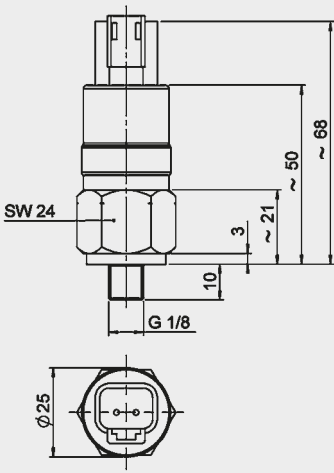
3.4 MOBILE INDICATORS

3.4.1 RETURN LINE


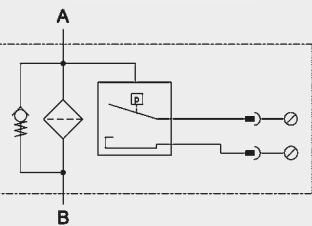
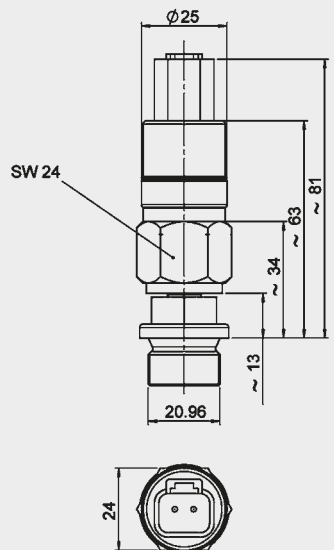
VMF x CM.x

| | | | |
|--|--|---|---|
|   | Type of indication | electrical switch |  |
| | Weight | 90 g | |
| | Pressure setting or indication range | 2 bar ± 0.3 bar | |
| | Permitt. operating pressure | 10 bar | |
| | Permitt. temperature range | -10 °C to +100 °C | |
| | Thread | G 1/8 | |
| | Max. torque | 15 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 | | |

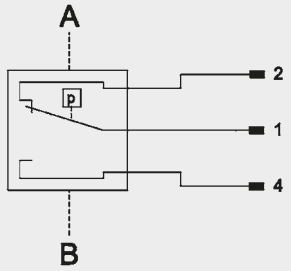
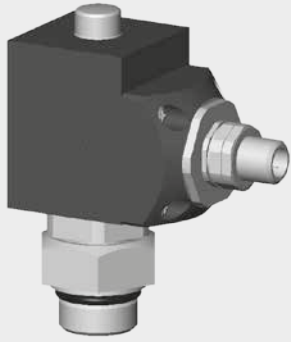
VMF x FD.x (plug connection: Deutsch DT 04-2P)

| | | | |
|--|--|---|--|
|   | Type of indication | electrical switch |  |
| | Weight | 70 g | |
| | Pressure setting or indication range | 2 bar ± 0.3 bar | |
| | Permitt. operating pressure | 11 bar continuous | |
| | Permitt. temperature range | -30 °C to +100 °C | |
| | Thread | G 1/8 | |
| | Max. torque | 15 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 | | |

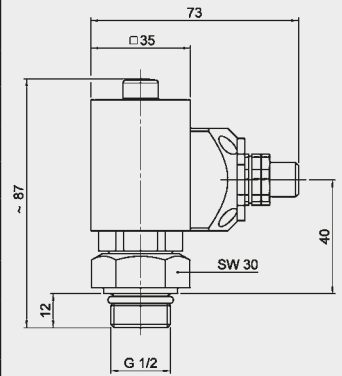
VR x FD.x (plug connection: Deutsch DT 04-2P)

| | | | |
|---|--|---|---|
|   | Type of indication | electrical switch |  |
| | Weight | 90 g | |
| | Pressure setting or indication range | 2 bar ± 0.3 bar | |
| | Permitt. operating pressure | 11 bar continuous | |
| | Permitt. temperature range | -30 °C to +100 °C | |
| | Thread | G 1/2 | |
| | Max. torque | 30 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


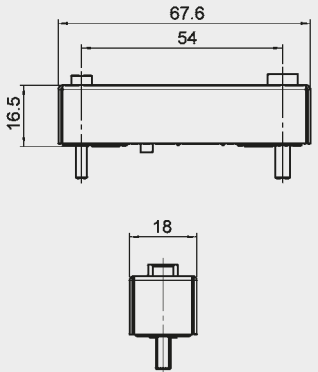


| | |
|---|--|
| Type of indication | visual, red pin and electrical switch 1 switching contact at 100% of the pressure setting |
| Weight | 140 g |
| Pressure setting or indication range | 2 bar -0.2 bar |
| Permitt. operating pressure | 7 bar |
| Permitt. temperature range | -10 °C to +100 °C |
| Thread | G 1/2 |
| Max. torque | 15 Nm |
| Switching type | N/C or N/O contacts Reed contacts (change-over contacts) |
| Max. switching voltage | 24V |
| 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 LEM.1 /-4M0 |


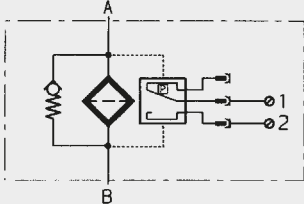
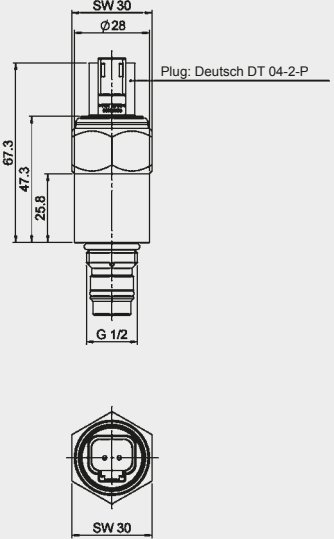


3.4.2 DIFFERENTIAL PRESSURE


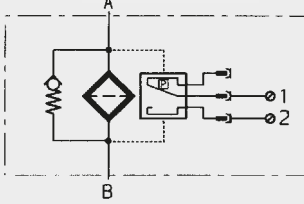
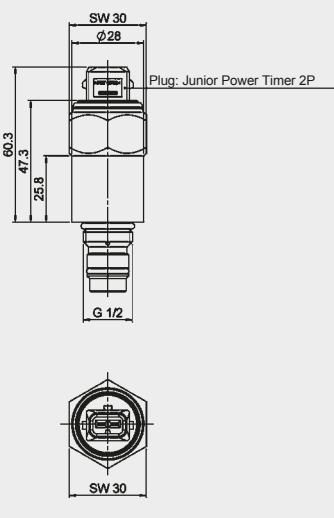
VL x BF.x

| | | | |
|--|--|------------------------------|---|
|  | Type of indication | visual |  |
| | Weight | 25 g | |
| | Pressure setting or indication range | 1 bar – 10% 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 | |


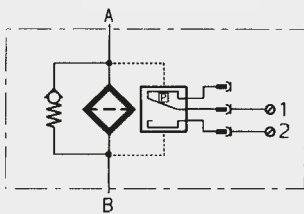
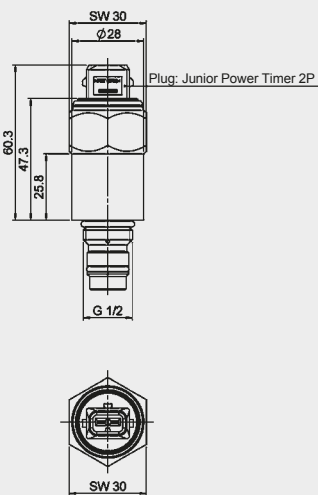
VM x CD.x (plug type: Deutsch DT 04-2P)

| | | | |
|--|---|--|--|
|   | Type of indication | electrical switch |  |
| | Weight | 100 g | |
| | Pressure setting or indication range | 2 bar - 10% 5 bar - 10% 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 = 100 VA ~ | |
| | switching capacity | Ohmic 3 A at 24 V = 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 | | |


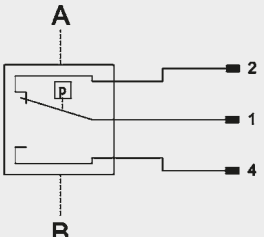
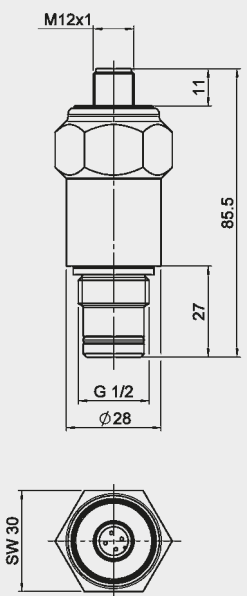
VM x CJ.x (plug type: Junior Power Timer)

| | | | |
|---|---|--|---|
|   | Type of indication | electrical switch |  |
| | Weight | 100 g | |
| | Pressure setting or indication range | 2 bar - 10% 5 bar - 10% 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 = 100 VA ~ | |
| | switching capacity | Ohmic 3 A at 24 V = 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 | | |


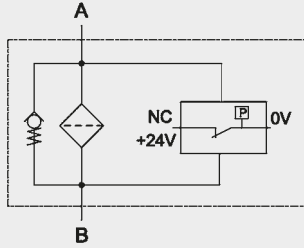
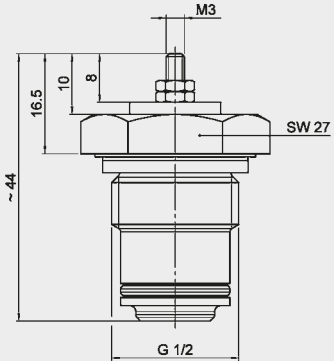
VM x CJ.x (plug type: Junior Power Timer)

| | | | |
|---|---|--|--|
|   | Type of indication | electrical switch |  <p>Plug: Junior Power Timer 2P</p> |
| | Weight | 200 g | |
| | Pressure setting or indication range | 2 bar - 10% 5 bar - 10% 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 = 100 VA ~ | |
| | switching capacity | Ohmic 3 A at 24 V = 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 | | |

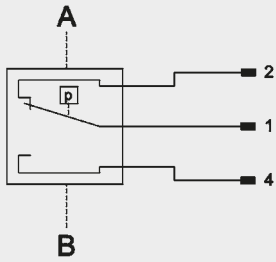
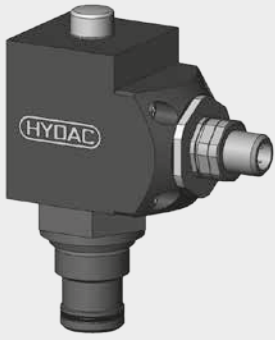
VM x CM.x

| | | | |
|---|---|--|--|
|   | Type of indication | electrical switch |  |
| | Weight | 70 g | |
| | Pressure setting or indication range | 2 bar - 10% 5 bar - 10% 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 (change-over contacts) | |
| | Max. switching voltage | 48 V | |
| | Electrical connection | Male connection M12 x 1 | |
| | 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 67 (only if the connector is wired and fitted correctly) | | |
| Order example | VM 2 CM.0 /-4M0 | | |

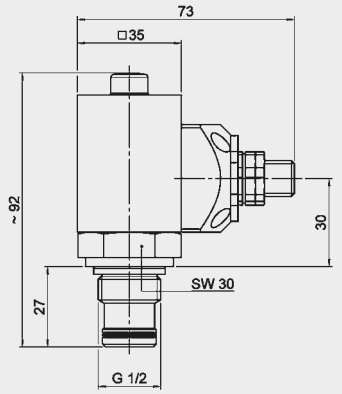
VM x M.x

| | | | |
|---|--|--------------------------------|---|
|   | 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 | - | |
| | switching capacity | - | |
| Protection class to DIN 40050 | terminals IP00 | | |
| Order example | VM 2 M.0 | | |

VD x LEM.x




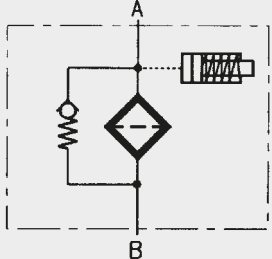
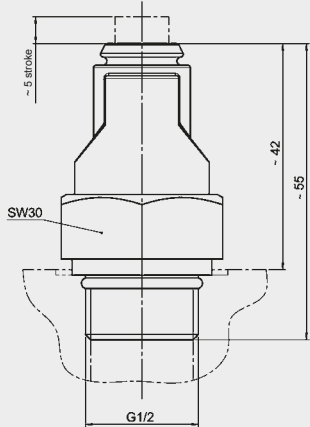
| | |
|--|--|
| Type of indication | visual, red pin and electrical switch 1 switching contact at 100% of the pressure setting |
| Weight | 350 g |
| Pressure setting or indication range | 2 bar – 10% 5 bar – 10% 8 bar – 10% |
| Permitt. operating pressure | 420 bar |
| Permitt. temperature range | -10 °C to +100 °C |
| Thread | G 1/2 |
| Max. torque | 50 Nm |
| Switching type | N/C or N/O contacts Reed contacts (change-over contacts) |
| Max. switching voltage | 24V |
| 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 | VD 5 LEM.1 /-4M0 |




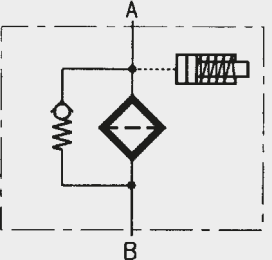
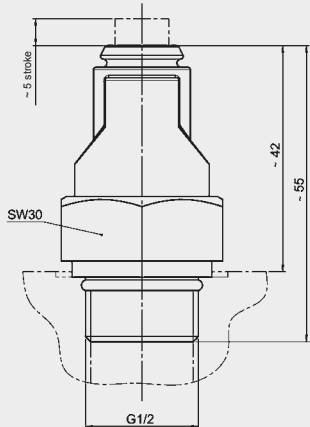
3.5 INDICATORS IN ACCORDANCE WITH ATEX DIRECTIVE

3.5.1 RETURN LINE


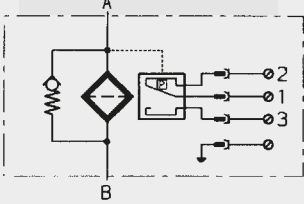
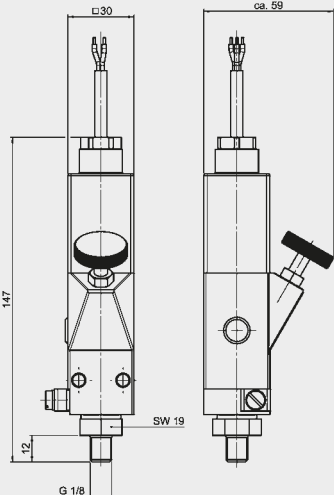
VR x B.x (ATEX) Can be used on aluminium filters up to Zone 1

| | | | |
|--|--|-------------------|---|
|   | 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 | -30 °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 | |


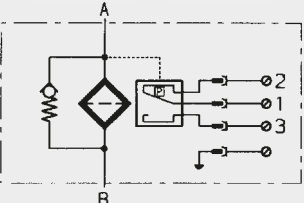
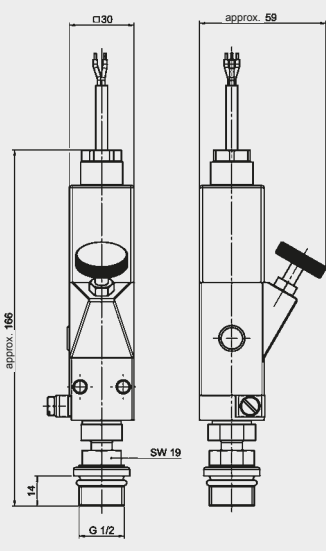
VR x B.x (ATEX) Can be used on steel/cast iron filters up to Zone 1

| | | | |
|---|--|----------------------|--|
|   | 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 | -30 °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 | |

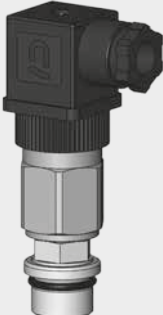
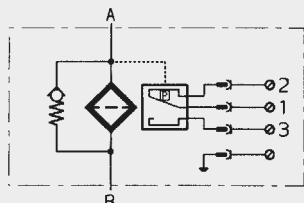
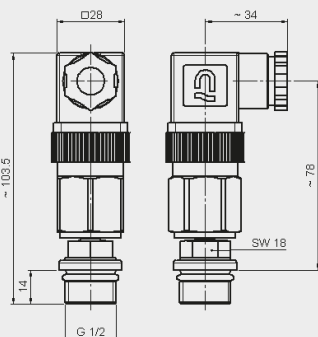
VMF x C.x /-Ex2G

| | | | |
|---|--|---|---|
|   | 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 | 15 Nm | |
| | Switching type | N/C or N/O (change-over contacts) | |
| | Max. switching voltage | 250 V | |
| | Electrical connection | Cable connection PG 9 Cable length 2 m | |
| | Max. switching voltage at resistive load | 62.5 W = 250 VA ~ | |
| | switching capacity | Ohmic 0.25 A at 250 V = Ohmic 1 A at 250 V ~ | |
| | Protection class to DIN 40050 | IP 65 | |
| | ATEX designation | Ⓔ II 2G EEx d IIC T6 / T5 | |
| Order example | VMF 2 C.0 /-Ex2G | | |

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 | 30 Nm | |
| | Switching type | N/C or N/O (change-over contacts) | |
| | Max. switching voltage | 250 V | |
| | Electrical connection | Cable connection PG 9 Cable length 2 m | |
| | Max. switching voltage at resistive load | 62.5 W = 250 VA ~ | |
| | switching capacity | Ohmic 0.25 A at 250 V = Ohmic 1 A at 250 V ~ | |
| | Protection class to DIN 40050 | IP 65 | |
| | ATEX designation | 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 | 30 Nm | |
| | Switching type | N/C or N/O (change-over contacts) | |
| | Max. switching voltage | * | |
| | Electrical connection | Male connection M20 Female connector to DIN 43650 | |
| | 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 Automatic reset | |
| | Weight | 110 g | |
| | Pressure setting or indication range | 5 bar - 10% 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 | |


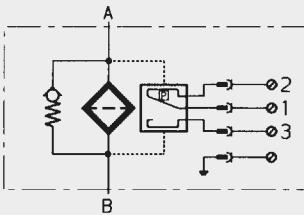
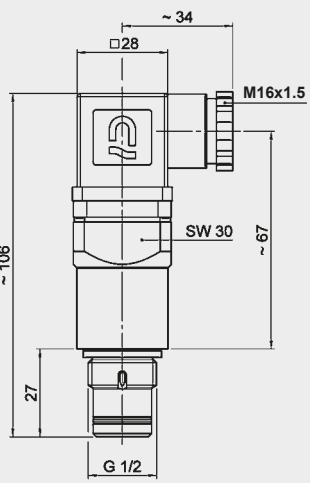
VD x B.x (ATEX) Can be used on filters up to Zone 1

| | | | |
|--|--|---|--|
| | Type of indication | visual, red/green band Automatic reset | |
| | Weight | 110 g | |
| | Pressure setting or indication range | 5 bar - 10% 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 | |


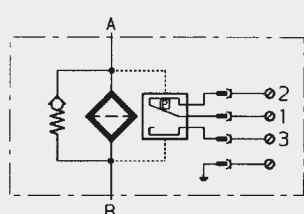
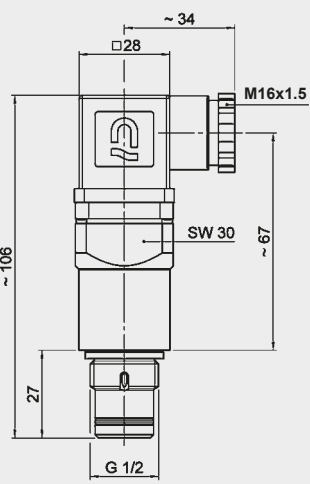
VD x C.x /-2GEXDIIC

| | | | |
|---------------|--|--|--|
| | Type of indication | electrical switch | |
| | Weight | from 600 g | |
| | Pressure setting or indication range | 2 bar - 10% 5 bar - 10% 8 bar ± 10% | |
| | Permitt. operating pressure | 420 bar | |
| | Permitt. temperature range | -20 °C to +60 °C (setting) (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 = 100 VA ~ | |
| | switching capacity | ohmic 3 A at 24 V = ohmic 0.03 A to 5 A at 250 V ~ | |
| | Protection class to DIN 40050 | IP 66 | |
| | ATEX designation | 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% 5 bar - 10% 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 (change-over contacts) | |
| | Max. switching voltage | * | |
| | Electrical connection | Male connection M20 Female connector to DIN 43650 | |
| | 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 | | |

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

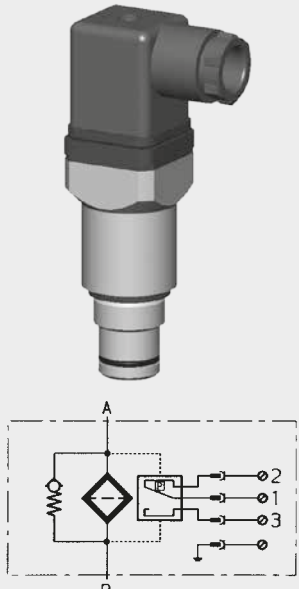
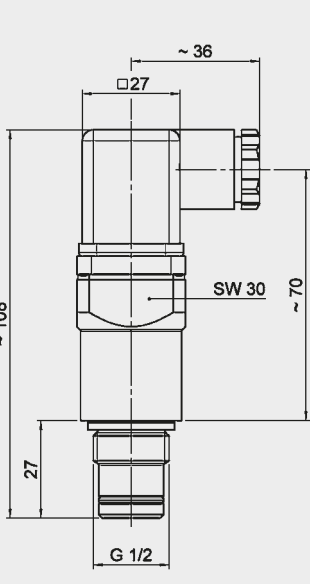
| | | | |
|--|--|---|--|
|   | Type of indication | electrical switch |  |
| | Weight | 120 g | |
| | Pressure setting or indication range | 2 bar - 10% 5 bar - 10% 8 bar ± 10% | |
| | Permitt. operating pressure | 420 bar | |
| | Permitt. temperature range | -30 °C to +100 °C | |
| | Thread | G 1/2 | |
| | Max. torque | 100 Nm | |
| | Switching type | N/C or N/O (change-over contacts) | |
| | Max. switching voltage | * | |
| | Electrical connection | Male connection M20 Female connector to DIN 43650 | |
| | 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).

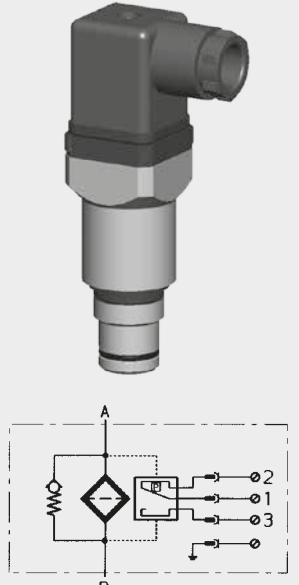
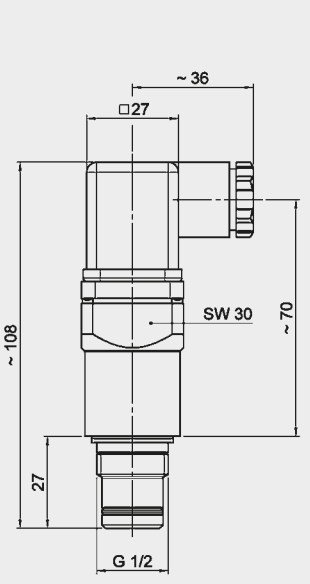
3.6 INDICATORS WITH UL OR CSA APPROVAL

3.6.1 DIFFERENTIAL PRESSURE

VM x C.x (UL, Standard 508)


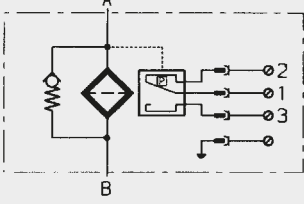
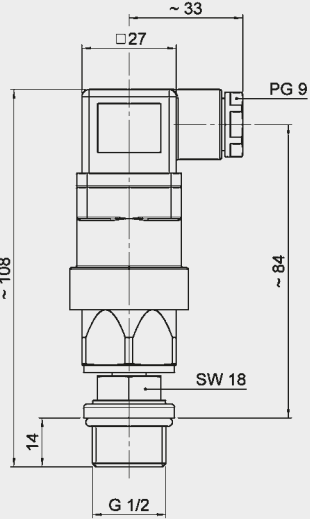
| | | | |
|--|--|---|---|
|  | Type of indication | electrical switch |  |
| | Weight | 120 g | |
| | Pressure setting or indication range | 2 bar - 10% 5 bar - 10% 8 bar ± 10% | |
| | Permitt. operating pressure | 210 bar | |
| | Permitt. temperature range | -30 °C to +100 °C | |
| | Thread | G 1/2 | |
| | Max. torque | 33 Nm | |
| | Switching type | N/C or N/O (change-over contacts) | |
| | Max. switching voltage | 115 V | |
| | Electrical connection | Male connection M20 Female connector to DIN 43650 | |
| | Max. switching voltage at resistive load | 60 W = 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% 5 bar - 10% 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 (change-over contacts) | |
| | Max. switching voltage | 115 V | |
| | Electrical connection | Male connection M20 Female connector to DIN 43650 | |
| | Max. switching voltage at resistive load | 60 W = 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 Female connector to DIN 43650 | |
| | Max. switching voltage at resistive load | 250 W = 300 VA ~ | |
| | switching capacity | ohmic 4 A at 24 V 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

Category

- 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 160 bar operating pressure

Pressure setting

see particular clogging indicator

Type

- B visual with automatic reset
- BF visual, mobile
- BM visual with manual reset
- C electrical
- CA electrical with AMP plug (Mark II)
- CD electrical with Deutsch plug (DT 04-2P)
- CJ electrical with Junior Power Timer
- CM electrical with M12x1 plug
- D visual/electrical
- E pressure gauge, horizontal
- ES pressure gauge, vertical
- F pressure switch
- FD pressure switch with Deutsch plug (DT 04-2P)
- GC electronic
- GW electronic
- H pressure switch
- K pressure gauge, horizontal
- LE visual-mechanical indicator with 100% switching contact
- LEM visual-mechanical indicator with 100% switching contact and M12x1 plug
- LZ visual mechanical with 75% and 100% switching contact
- M electrical, ground switching
- R pressure gauge, horizontal
- UBM visual, vacuum
- UE vacuum pressure gauge, horizontal
- UF vacuum 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 switching outputs up to 30 °C ±5 °C
(only for C, D, LZ indicators; DC voltage supply only – max. 24 Volt;
C and D indicators only for VD and VM; on D and LZ indicators, contacts must be wired N/O only)
- L... light with corresponding voltage (24, 48, 110, 230 Volt)] only for
LED 2 LEDs up to 24 Volt] type "D"
- OE N/C function
- SO135 indicator suitable for PLC controls due to Gold-Crosspoint contacts
- W suitable for oil/water emulsions (HFA, HFC)
- V seal in Viton (FPM), suitable for phosphate esters (HFD-R) and biodegradable oils
(**must be specified for type "GW"**)

Supplementary details for "GC" type

- 113 N/C 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 LED's (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...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


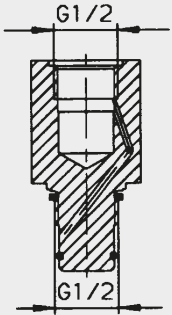

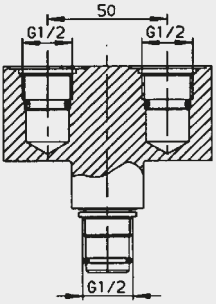

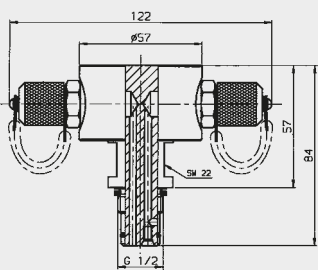
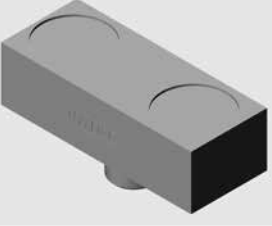
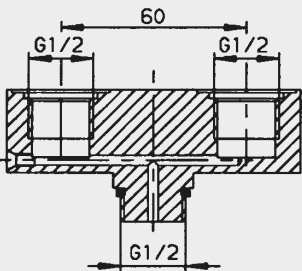

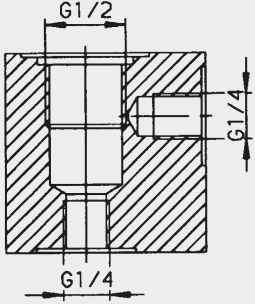
- 2GC for visual indicator type "B" with ATEX certificate
- 2GBC for electrical indicator type "C" with ATEX certificate (the switch used in the indicator is a passive component according to EN 50020 and can therefore be used in intrinsically safe circuits as simple apparatus in accordance with EN 60079-14)
- 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"


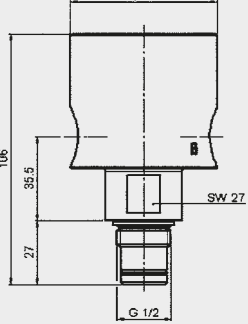
Supplementary details for "UL" and "CSA" approval

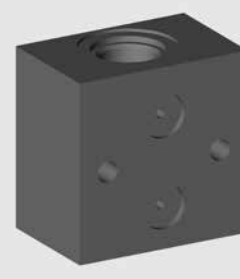
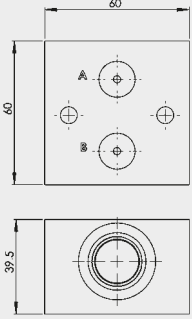
- CRUUS for electrical differential indicator type "C" with UL approval
- CSA for electrical return line indicator type "C" with CSA approval

5. ADAPTERS

5.1 TYPES

| | | | | | | | | |
|---|--|-------------|-------------------------------------|----------|----------|-------------|---|---|
|  | <table border="1"> <tr> <td>Designation</td> <td>ADAPTER VD-D-S.0</td> </tr> <tr> <td>Part no.</td> <td>00318736</td> </tr> <tr> <td>Description</td> <td>Extending adapter for differential pressure cavity to HYDAC works standard HN 28-22</td> </tr> </table> | 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-S.0 | | | | | | | |
| Part no. | 00318736 | | | | | | | |
| Description | Extending adapter for differential pressure cavity to HYDAC works standard HN 28-22 | | | | | | | |
|  | <table border="1"> <tr> <td>Designation</td> <td>ADAPTER VD-D+D-S+S.0</td> </tr> <tr> <td>Part no.</td> <td>00318732</td> </tr> <tr> <td>Description</td> <td>Y-adapter to convert 1 differential pressure cavity into 2 differential pressure cavities according to HYDAC works standard HN 28-22. Swivel-type on request!</td> </tr> </table> | 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. Swivel-type on request! |  |
| 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. Swivel-type on request! | | | | | | | |
|  | <table border="1"> <tr> <td>Designation</td> <td>ADAPTER VD-1/4+1/4-W+W.0 /-00404337</td> </tr> <tr> <td>Part no.</td> <td>00404337</td> </tr> <tr> <td>Description</td> <td>Test adapter for different pressure cavity according to HYDAC works standard HN 28-22. To test the pressure before and after the filter element. Also available without minimess couplings (on request)!</td> </tr> </table> | 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. To test the pressure before and after the filter element. Also available without minimess couplings (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. To test the pressure before and after the filter element. Also available without minimess couplings (on request)! | | | | | | | |
|  | <table border="1"> <tr> <td>Designation</td> <td>ADAPTER VR-R+R-S+S.0</td> </tr> <tr> <td>Part no.</td> <td>00318741</td> </tr> <tr> <td>Description</td> <td>Y-adapter to convert 1 return line cavity into 2 return line cavities (G 1/2) Swivel-type on request!</td> </tr> </table> | 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 1/2) Swivel-type 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 1/2) Swivel-type on request! | | | | | | | |
|  | <table border="1"> <tr> <td>Designation</td> <td>ADAPTER V 1/4 I-D-S.0</td> </tr> <tr> <td>Part no.</td> <td>00318730</td> </tr> <tr> <td>Description</td> <td>Connection adapter for piping clogging indicators separately with differential pressure cavity according to HYDAC works standard HN 28-22. Two connections G 1/4 (one before and one after the filter element)</td> </tr> </table> | Designation | ADAPTER V 1/4 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. Two connections G 1/4 (one before and one after the filter element) |  |
| Designation | ADAPTER V 1/4 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. Two connections G 1/4 (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: 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 1/2
- VR return line indicator; connection G 1/2
- V^{1/4} differential pressure indicator; connection G 1/4 internal
- VF differential pressure indicator; flange type

Ports (several ports are possible!)

- D differential pressure cavity G 1/2
- R return line cavity G 1/2
- MF cavity for pressure gauge and pressure switch
- 1/4 cavity G 1/4 for Minimes test points (M16 x 1.5)
- 1/8 cavity G 1/8 for Minimes test points (plug-in connection)

Orientation of the ports

- S vertical
- W horizontal

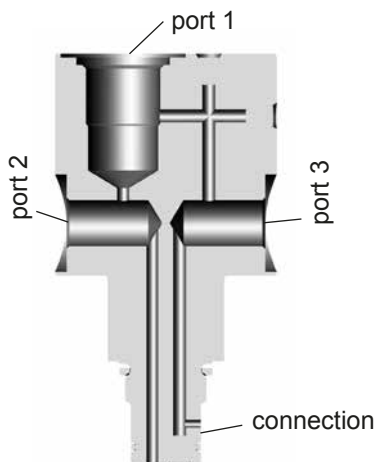
Type code

- X the latest version is always supplied

Supplementary details

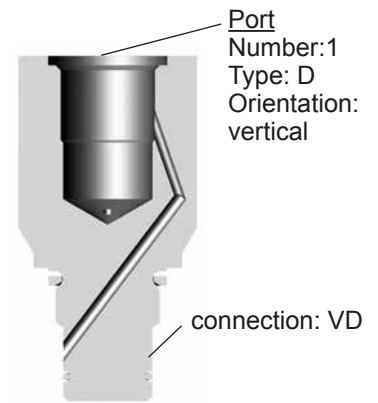
- ESB swivel type
- V seal in Viton (FPM), suitable for phosphate ester (HFD-R) and biodegradable oils

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

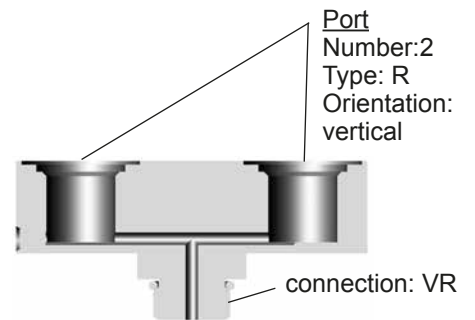


5.3 OTHER EXAMPLES

VD-D-S.0



VR-R+R-S+S.0

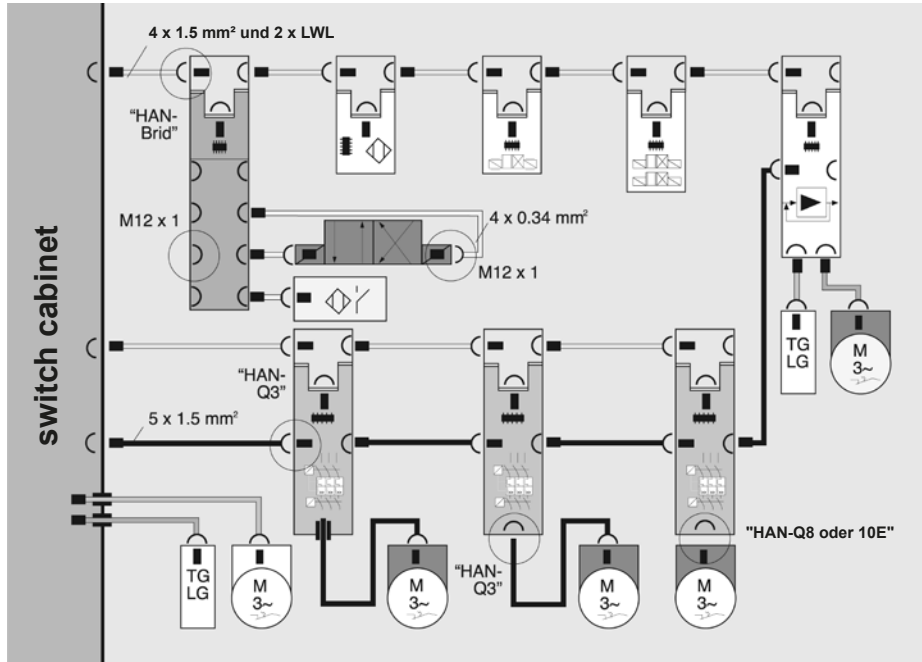


6. DESINA SPECIFICATION

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.

6.1. TOTAL CONCEPT FOR MACHINE TOOL INSTALLATION



6.2. CLOGGING INDICATORS

The following clogging indicators are approved to DESINA specification:

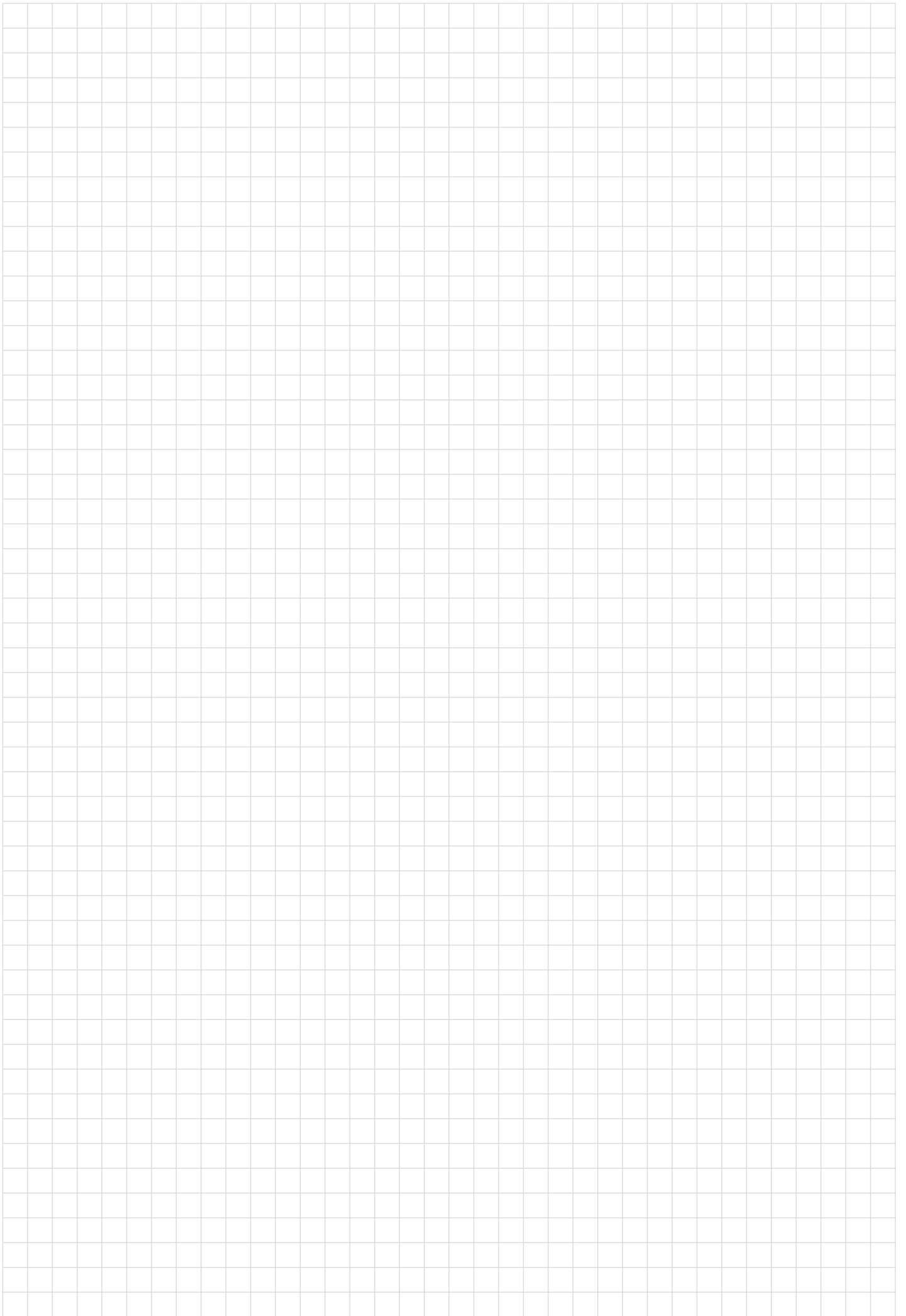
- VD 5 LZ.x /-D4C
- VR 2.5 LZ.x /-D4C
- VD 5 LZ.x /-BO
- VR 2.5 LZ.x /-BO
- VD 5 LZ.x /-AV
- VR 2.5 LZ.x /-AV
- VR 2.5 LZ.x /-GM

all with M 12 x 1 connector!



DESINA

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.

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