

## 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 most simple installation of the differential clogging indicator:
G ½" cavity (according to HYDAC works standard HN 28-22)
The differential pressure indicator type V02 is piped up separately.


### 1.4 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 | Return line indicator | Differential pressure indicator |
| :---: | :---: | :---: | :---: | :---: |
| Visual | B |  | $\bullet$ | $\bullet$ |
|  | BF |  |  | $\bullet$ |
|  | BM |  |  | $\bullet$ |
|  | E |  | $\bullet$ |  |
|  | ES |  | $\bullet$ |  |
|  | K | - |  |  |
|  | R |  | $\bullet$ |  |
|  | UBM | $\bullet$ |  |  |
|  | UE | $\bullet$ |  |  |
|  | UED | $\bullet$ |  |  |
|  | V |  |  | - |
| Electrical | C |  | $\bullet$ | $\bullet$ |
|  | D |  | - | $\bullet$ |
|  | F |  | $\bullet$ |  |
|  | LE |  | $\bullet$ | - |
|  | LZ |  | $\bullet$ | $\bullet$ |
|  | UF | $\bullet$ |  |  |
|  | VE |  |  | - |
|  | VZ |  |  | $\bullet$ |
| Electronic | GC |  | $\bullet$ | $\bullet$ |
|  | GW |  |  | $\bullet$ |
| Mobile | CD |  | $\bullet$ | $\bullet$ |
|  | CJ |  | $\bullet$ | $\bullet$ |
|  | CM |  | $\bullet$ | $\bullet$ |
|  | FD |  | $\bullet$ |  |
|  | LEM |  | $\bullet$ | $\bullet$ |
|  | M |  |  | $\bullet$ |
| ATEX | B |  | $\bullet$ | $\bullet$ |
|  | C |  | $\bullet$ | $\bullet$ |
| UL Approval (= CRUUS) | C |  |  | $\bullet$ |
|  | D |  |  | $\bullet$ |
| CSA Approval | C |  | $\bullet$ |  |

### 2.2 BY FILTER TYPE

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

| Type | BF | BL | BLT | $\begin{gathered} \hline \text { DF } \\ \text { DFF } \end{gathered}$ | DFDK | $\begin{array}{\|c\|} \hline \text { DF } \\ \text { MA/QE } \end{array}$ | DFM | $\begin{gathered} \hline \text { DFN } \\ \text { DFNF } \end{gathered}$ | $\begin{array}{\|c\|} \hline \text { DFP } \\ \text { DFPF } \\ \hline \end{array}$ | DFZ | ELF | FLN | $\begin{array}{l\|} \hline \text { FLND } \\ \text { FMND } \end{array}$ | $\begin{aligned} & \hline \text { HDF } \\ & \text { HDFF } \end{aligned}$ | HDP | HFM | $\begin{aligned} & \hline \text { LF } \\ & \text { LFF } \end{aligned}$ | LFM | $\begin{aligned} & \hline \text { LFN } \\ & \text { LFNF } \end{aligned}$ |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| B |  |  |  | $\bullet$ | $\bullet$ | $\bullet$ | $\bullet$ | $\bullet$ |  |  |  | $\bullet$ | $\bullet$ | $\bullet$ |  | $\bullet$ | $\bullet$ | $\bullet$ | $\bullet$ |
| BF |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| BM |  |  |  | $\bullet$ | $\bullet$ | $\bullet$ | $\bullet$ | $\bullet$ | $\bullet$ | $\bullet$ |  | $\bullet$ | $\bullet$ | $\bullet$ |  | $\bullet$ | $\bullet$ | $\bullet$ | $\bullet$ |
| E |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| ES |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| K | $\bullet$ | $\bullet$ | $\bullet$ |  |  |  |  |  |  |  | $\bullet$ |  |  |  |  |  |  |  |  |
| R |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| UBM | $\bullet$ | $\bullet$ | $\bullet$ |  |  |  |  |  |  |  | $\bullet$ |  |  |  |  |  |  |  |  |
| UE |  |  |  |  |  |  |  |  |  |  |  | -1) |  |  |  |  | -1) |  |  |
| UED |  |  |  |  |  |  |  |  |  |  |  |  |  |  | $\bullet$ |  |  |  |  |
| V |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| C |  |  |  | $\bullet$ | $\bullet$ | $\bullet$ | $\bullet$ | - | $\bullet$ | $\bullet$ |  | $\bullet$ | $\bullet$ | $\bullet$ |  | $\bullet$ | $\bullet$ | $\bullet$ | $\bullet$ |
| D |  |  |  | $\bullet$ | $\bullet$ | $\bullet$ | $\bullet$ | $\bullet$ | $\bullet$ | $\bullet$ |  | $\bullet$ | $\bullet$ | $\bullet$ |  | $\bullet$ | $\bullet$ | $\bullet$ | $\bullet$ |
| F |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| LE |  |  |  | $\bullet$ | $\bullet$ | $\bullet$ | $\bullet$ | $\bullet$ | $\bullet$ | $\bullet$ |  | $\bullet$ | $\bullet$ | $\bullet$ |  | $\bullet$ | $\bullet$ | $\bullet$ | $\bullet$ |
| LZ |  |  |  | $\bullet$ | $\bullet$ | $\bullet$ | $\bullet$ | $\bullet$ | $\bullet$ | $\bullet$ |  | $\bullet$ | $\bullet$ | $\bullet$ |  | $\bullet$ | $\bullet$ | $\bullet$ | $\bullet$ |
| UF |  |  |  |  |  |  |  |  |  |  |  | $\bullet$-1) |  |  |  |  | $\bullet$ 1) |  |  |
| VE |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| VZ |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| GC |  |  |  | $\bullet$ | $\bullet$ | $\bullet$ | $\bullet$ | $\bullet$ | $\bullet$ | $\bullet$ |  | $\bullet$ | $\bullet$ | $\bullet$ |  | $\bullet$ | $\bullet$ | $\bullet$ | $\bullet$ |
| GW |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| CD |  |  |  | $\bullet$ | $\bullet$ | $\bullet$ | $\bullet$ | $\bullet$ | $\bullet$ | $\bullet$ |  | $\bullet$ | $\bullet$ | $\bullet$ |  | $\bullet$ | $\bullet$ | $\bullet$ | $\bullet$ |
| CJ |  |  |  | $\bullet$ | $\bullet$ | $\bullet$ | $\bullet$ | $\bullet$ | $\bullet$ | $\bullet$ |  | $\bullet$ | $\bullet$ | $\bullet$ |  | $\bullet$ | $\bullet$ | $\bullet$ | $\bullet$ |
| CM |  |  |  |  |  |  |  |  |  |  |  | $\bullet$ | $\bullet$ |  |  |  | $\bullet$ | $\bullet$ | $\bullet$ |
| FD |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| M |  |  |  |  |  |  |  |  |  |  |  | $\bullet$ | $\bullet$ |  |  |  | $\bullet$ | $\bullet$ | $\bullet$ |
| LEM |  |  |  | $\bullet$ | $\bullet$ | - | - | $\bullet$ | - | $\bullet$ |  | $\bullet$ | $\bullet$ | $\bullet$ |  | $\bullet$ | $\bullet$ | $\bullet$ | $\bullet$ |


| Type | LPF | MDF | MF | MFD | MFM | MFX | NF | NFD | RF | RFD | RFL | RFLD | RFN | RFND | RFM | RKM | SF | SFF | SFM |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| B | $\bullet$ | $\bullet$ |  |  | $\bullet$ | $\bullet$ |  |  | $\bullet$ | $\bullet$ | $\bullet$ | $\bullet$ | $\bullet$ | $\bullet$ | $\bullet$ | $\bullet$ |  |  |  |
| BF | $\bullet$ |  |  |  |  | $\bullet$ |  |  |  |  |  |  |  |  |  |  |  |  |  |
| BM | - | - |  |  | - | $\bullet$ | - | - |  |  | - | - |  |  |  |  |  |  |  |
| E |  |  | $\bullet{ }^{2)}$ | -2) |  |  |  |  | - | $\bullet$ |  |  | $\bullet$ | $\bullet$ | $\bullet$ |  |  |  |  |
| ES |  |  |  |  |  |  |  |  | $\bullet$ | $\bullet$ |  |  | $\bullet$ | $\bullet$ | $\bullet$ |  |  |  |  |
| K |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| R |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | $\bullet$ |  |  |  |
| UBM |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| UE | -1) |  | -1) | -1) |  |  |  |  |  |  | $\bullet{ }^{11}$ |  |  |  |  | - | - | - | - |
| V |  |  |  |  |  |  |  |  |  |  | $\bullet$ | $\bullet$ |  |  |  |  |  |  |  |
| C | $\bullet$ | $\bullet$ |  |  | $\bullet$ | $\bullet$ | - | $\bullet$ | $\bullet$ | $\bullet$ | $\bullet$ | - | $\bullet$ | $\bullet$ | $\bullet$ | $\bullet$ |  |  |  |
| D | $\bullet$ | $\bullet$ |  |  | - | $\bullet$ | $\bullet$ | $\bullet$ | $\bullet$ | $\bullet$ | $\bullet$ | $\bullet$ | $\bullet$ | $\bullet$ | $\bullet$ | $\bullet$ |  |  |  |
| F |  |  | - | - |  |  |  |  | $\bullet$ | $\bullet$ |  |  | - | $\bullet$ | - | - |  |  |  |
| LE | - | $\bullet$ |  |  | $\bullet$ | $\bullet$ | $\bullet$ | $\bullet$ | $\bullet$ | $\bullet$ | $\bullet$ | - | $\bullet$ | $\bullet$ | $\bullet$ | $\bullet$ |  |  |  |
| LZ | $\bullet$ | $\bullet$ |  |  | $\bullet$ | $\bullet$ | $\bullet$ | $\bullet$ | $\bullet$ | $\bullet$ | $\bullet$ | $\bullet$ | $\bullet$ | - | $\bullet$ | $\bullet$ |  |  |  |
| UF | -1) |  | $\bullet 1)$ | -1) |  |  |  |  |  |  | $\bullet$ - |  |  |  |  | $\bullet$ | $\bullet$ | $\bullet$ | $\bullet$ |
| VE |  |  |  |  |  |  |  |  |  |  | $\bullet$ | $\bullet$ |  |  |  |  |  |  |  |
| VZ |  |  |  |  |  |  |  |  |  |  | $\bullet$ | $\bullet$ |  |  |  |  |  |  |  |
| GC | $\bullet$ | $\bullet$ |  |  | - |  | $\bullet$ | $\bullet$ | $\bullet$ | $\bullet$ | $\bullet$ | $\bullet$ | $\bullet$ | $\bullet$ | $\bullet$ | - |  |  |  |
| GW | $\bullet$ |  |  |  |  |  | $\bullet$ | $\bullet$ |  |  | $\bullet$ | $\bullet$ |  |  |  |  |  |  |  |
| CD | $\bullet$ | $\bullet$ |  |  | $\bullet$ |  | $\bullet$ | $\bullet$ | $\bullet$ | $\bullet$ | $\bullet$ | $\bullet$ | $\bullet$ | $\bullet$ | $\bullet$ | $\bullet$ |  |  |  |
| CJ | $\bullet$ | $\bullet$ |  |  | $\bullet$ |  | $\bullet$ | $\bullet$ | $\bullet$ | $\bullet$ | $\bullet$ | $\bullet$ | $\bullet$ | $\bullet$ | $\bullet$ | $\bullet$ |  |  |  |
| CM | $\bullet$ |  |  |  |  | $\bullet$ | $\bullet$ | $\bullet$ | $\bullet$ | $\bullet$ | $\bullet$ | $\bullet$ | $\bullet$ | $\bullet$ | $\bullet$ | $\bullet$ |  |  |  |
| FD |  |  | $\bullet$ | - |  |  |  |  | $\bullet$ | $\bullet$ |  |  | $\bullet$ | $\bullet$ | $\bullet$ | $\bullet$ |  |  |  |
| M | $\bullet$ |  |  |  |  | $\bullet$ |  |  |  |  |  |  |  |  |  |  |  |  |  |
| LEM | $\bullet$ | - |  |  | $\bullet$ | $\bullet$ | - | $\bullet$ | $\bullet$ | $\bullet$ | $\bullet$ | $\bullet$ | $\bullet$ | - | - | - |  |  |  |

${ }^{1)}$ 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 | 100 g | \$50 |
|  | Setting pressure or indication range | -1 bar to 0 bar |  |
|  | Permitt. operating pressure | -0.7 to 0 bar continuous | $\xrightarrow{\square}$ |
|  | Permitt. temperature range | $-20^{\circ} \mathrm{C}$ to $+60^{\circ} \mathrm{C}$ | $\pm$ |
|  | Thread | $\mathrm{G}^{1 / 1} 8$ | 5 L ¢ |
|  | Max. torque | 15 Nm | SH $12 \longrightarrow$ |
| $\cdots$ | Switching type | - |  |
|  | Max. switching voltage | - |  |
| $---{ }^{A}--\cdots$ | Electrical connection | - |  |
| $1$ | Max. switching voltage at resistive load | - |  |
|  | Switching capacity | - | - 0 |
| $1--1+-\infty$ | Protection class to DIN 40050 | - |  |
| B | Order example | VMF 1 UE. 0 |  |

VR x UE.x


## VRD x UE.x



VMF x UF.x
VMF x UF.x

## VR x UF.x

|  | Type of indication | electrical switch |  |
| :---: | :---: | :---: | :---: |
| 8 | Weight | 170 g |  |
|  | Pressure setting or indication range | -0.2 bar $\pm 0.1$ bar |  |
|  | Permitt. operating pressure | 20 bar |  |
|  | Permitt. temperature range | $-30^{\circ} \mathrm{C}$ to $+100^{\circ} \mathrm{C}$ |  |
|  | Thread | G $1 / 2$ |  |
|  | Max. torque | 30 Nm |  |
| - | Switching type | N/O contact | $1$ |
|  | Max. switching voltage | 48 V | ¢ |
|  | Electrical connection | threaded connection |  |
|  | Max. switching voltage at resistive load | $\begin{aligned} & 60 \mathrm{~W}= \\ & 100 \text { VA ~ } \end{aligned}$ | SW 18 |
| $\{\Leftrightarrow$ | Switching capacity | ohmic 2.5 A at $24 \mathrm{~V}=$ ohmic 2.5 A at $42 \mathrm{~V} \sim$ | $\pm$ |
|  | Protection class to DIN 40050 | IP 65, terminals IP 00 | G $1 / 2$ |
| B | Order example | VR 0.2 UF. 0 |  |

VRD x UF.x

|  | Type of indication | electrical switch |  |
| :---: | :---: | :---: | :---: |
|  | Weight | 170 g | ¢ 32 |
| $\cdots$ | Pressure setting or indication range | -0.2 bar $\pm 0.1$ bar | 十— |
|  | Permitt. operating pressure | 20 bar | , |
|  | Permitt. temperature range | $-30^{\circ} \mathrm{C}$ to $+100^{\circ} \mathrm{C}$ | $\square$ |
|  | Thread | G $1 / 2$ |  |
|  | Max. torque | 33 Nm |  |
|  | Switching type | N/O contact |  |
|  | Max. switching voltage | 48 V | $\stackrel{7}{7}$ |
| $\stackrel{\text { A }}{ }$ | Electrical connection | threaded connection | SW 27 |
|  | Max. switching voltage at resistive load | $\begin{aligned} & 60 \text { W = } \\ & 100 \text { VA ~ } \end{aligned}$ |  |
| $\}^{9}<-\sqrt{4}$ | Switching capacity | ohmic 2.5 A at $24 \mathrm{~V}=$ ohmic 2.5 A at 42 V ~ |  |
|  | Protection class to DIN 40050 | IP 65, terminals IP 00 | $\text { G } 1 / 2$ |
|  | Order example | VRD 0.2 UF. 0 |  |

VMF x UBM.x

|  | Type of indication | visual, yellow pin |  |
| :---: | :---: | :---: | :---: |
|  | Weight | 0.05 g |  |
|  | Pressure setting or indication range | -0.035 bar |  |
|  | Permitt. operating pressure | 1 bar |  |
|  | Permitt. temperature range | $-30^{\circ} \mathrm{C}$ to $+100^{\circ} \mathrm{C}$ |  |
|  | Thread | M10 $\times 1$ |  |
|  | 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 0.035 UBM. 0 |  |

VMF x UED. $x$


### 3.2 RETURN LINE INDICATORS

VMF x B.x


## VR x B.x



| Max. switching voltage | - |
| :--- | :--- |
| Electrical connection | - |
| Max. switching voltage <br> at resistive load | - |
| Switching capacity | - |
| Protection class to <br> DIN 40050 | - |
| Order example | VR 2 B.1 |



VMF x C.x

|  | Type of indication | electrical switch |
| :--- | :--- | :--- |
| Weight | 270 g |  |
|  | 2 Pressure setting or 0.3 bar |  |
| indication range |  |  |

VR x C.x


## VRD x C.x



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 | $-30^{\circ} \mathrm{C}$ to $+100{ }^{\circ} \mathrm{C}$ |  |  |
|  | Thread | G $1 / 8$ |  |  |
|  | Max. torque value | 15 Nm |  |  |
|  | Switching type | N/C or N/O (change-over contacts) |  |  |
|  | Max. switching voltage | 24, 48, 110, 230 V (depending on the type of light insert |  |  |
|  | Electrical connection | Male connection M20 <br> Female connector to DIN 43650 |  |  |
|  | Max. switching voltage at resistive load | $\begin{aligned} & 250 \mathrm{~W}= \\ & 300 \mathrm{VA} \sim \end{aligned}$ |  |  |
|  | Switching capacity | Ohmic 6 A at $230 \mathrm{~V}=$ Ohmic 0.03 to 6 A at max. $230 \mathrm{~V} \sim$ |  |  |
| block 5 $\qquad$ | 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．．．


VRD x D． $\mathrm{x} / \mathrm{L} . .$.


VMF x D．x／－LED

| $\cap$ | Type of indication | visual indicator and electrical switch | ${ }^{128}$ |  |
| :---: | :---: | :---: | :---: | :---: |
|  | Weight | 300 g |  |  |
|  | Pressure setting or indication range | 2 bar－ 0.3 bar |  |  |
|  | Permitt．operating pressure | 40 bar |  | $\sim 34$ |
|  | Permitt．temperature range | $-30^{\circ} \mathrm{C}$ to $+100^{\circ} \mathrm{C}$ |  | （1） |
|  | Thread | $\mathrm{G}^{1 / 8}$ |  | ® 一 |
|  | Max．torque value | 15 Nm |  | ， |
|  | Switching type | N／O contact |  | \％ |
|  | Max．switching voltage | 24 V |  | 思 |
|  | Electrical connection | Male connection M20 <br> Female connector to DIN 43650 |  | $\square$ |
| $0 \text { o 豙 }$ | Max．switching voltage at resistive load | $\begin{aligned} & 250 \mathrm{~W}= \\ & 300 \mathrm{VA} \sim \end{aligned}$ |  |  |
| －30 Lruc | Switching capacity | ohmic 6 A at $24 \mathrm{~V}=$ |  |  |
|  | Protection class to DIN 40050 | IP 65 （only if the connector is wired and fitted correctly） |  |  |
| $\underline{=}$ | Order example | VMF 2 D． 1 ／－LED |  |  |


|  | visual indicator and <br> electrical switch |
| :--- | :--- | :--- |
|  | 360 g |
| Weight | 2 bar -0.3 bar |
| Pressure setting or |  |
| indication range |  |

VRD x D.x /-LED

|  | visual indicator and <br> electrical switch |
| :--- | :--- | :--- |
|  | 360 g |
| Weight | $2 \mathrm{bar}-0.3$ bar |
| Pressure setting or <br> indication range | Permitt. operating pressure 40 bar <br> Permitt. temperature range $-30^{\circ} \mathrm{C}$ to $+100^{\circ} \mathrm{C}$ <br> Thread $\mathrm{G} 1 / 8$ <br> Max. torque value 33 Nm <br> Switching type $\mathrm{N} / \mathrm{O}$ contact <br> Max. switching voltage 24 V |

VMF x E.x



VR x E.x


| Type of indication | visual-analogue, <br> scale indication |
| :--- | :--- |
| Weight | 140 g |
| Pressure setting or <br> indication range | 0 bar to +10 bar |
| Permitt. operating pressure | 7 bar continuous |
| Permitt. temperature range | $-20^{\circ} \mathrm{C}$ to $+60^{\circ} \mathrm{C}$ |
| Thread | $\mathrm{G} 1 / 2$ |
| Max. torque value | 30 Nm |
| Switching type | - |
| Max. switching voltage | - |
| Electrical connection | - |
| Max. switching voltage <br> at resistive load | - |
| Switching capacity | - |
| Protection class to <br> DIN 40050 | - |
| Order example | VR 2 E.0 |



VRD x E.x



VR x ES. $x$

|  | visual-analogue, <br> scale indication |
| :--- | :--- | :--- |
|  | 120 g |
| Weight | 0 bar to +10 bar |
| Pressure setting or |  |
| indication range |  |$\quad$| Permitt. operating pressure | 7 bar continuous |
| :--- | :--- |
| Permitt. temperature range | $-20^{\circ} \mathrm{C}$ to $+60^{\circ} \mathrm{C}$ |
| Thread | $\mathrm{G} 1 / 2$ |
| Max. torque value | 30 Nm |
| Switching type | - |

VRD x ES.x

| Type of indication | visual-analogue, <br> scale indication |
| :--- | :--- |
| Weight | 120 g |
| Pressure setting or <br> indication range | 0 bar to +10 bar |
| Permitt. operating pressure | 7 bar continuous |
| Permitt. temperature range | $-20^{\circ} \mathrm{C}$ to $+60^{\circ} \mathrm{C}$ |
| Thread | $\mathrm{G} 1 / 2$ |
| Max. torque value | 33 Nm |
| Switching type | - |
| Max. switching voltage | - |
| Electrical connection | - |
| Max. switching voltage <br> at resistive load | - |
| Switching capacity | - |
| Protection class to <br> DIN 40050 | - |
| Order example | VRD 2 ES.0 |



DIN 40050
VRD 2 ES. 0



VR x F.x


VRD x F.x


VR x GC. $x$

|  | Type of indication | Electronic/analogue ( $4-20 \mathrm{~mA}$ or $1-10 \mathrm{~V}$ ) 1 electrical switching contact at $75 \%$ and at $100 \%$ of the pressure setting Analogue signal up to $20 \%$ of the pressure setting constant 4 mA or 1 V |  |
| :---: | :---: | :---: | :---: |
|  | Weight | 340 g |  |
|  | Pressure setting or indication range | 2 bar -10\% |  |
|  | Permitt. operating pressure | 7 bar |  |
|  | Permitt. temperature range | $-30^{\circ} \mathrm{C}$ to $+80^{\circ} \mathrm{C}$ |  |
|  | Thread | G $1 / 1$ |  |
|  | Max. torque value | 15 Nm |  |
|  | Switching type | N/C or N/O, electronic PNP positive switching (factory setting) |  |
| A --- | Max. switching voltage | Operating voltage 20-30 V DC |  |
| - | Electrical connection | 7 pole plug to DIN 43651; PG 11 |  |
| $\hat{y} \hat{y}$ | Max. switching voltage at resistive load | 12 W |  |
|  | Switching capacity | ohmic 0.4 A at $30 \mathrm{~V}=$ |  |
|  | 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


VMF x LE. $x$

|  | Type of indication | Visual, red pin and electrical switch 1 switching contact $100 \%$ of the pressure setting |
| :---: | :---: | :---: |
|  | Weight | 120 g |
| $10$ | Pressure setting or indication range | 2 bar - 0.2 bar |
|  | Permitt. operating pressure | 7 bar |
| - | Permitt. temperature range | $-30^{\circ} \mathrm{C}$ to $+100{ }^{\circ} \mathrm{C}$ |
|  | Thread | $\mathrm{G}^{1} 1 / 8$ |
| - | Max. torque value | 15 Nm |
| $1]$ | Switching type | N/C or N/O contacts <br> Reed contacts (change-over contacts) |
|  | Max. switching voltage | 115 V |
| A | Electrical connection | Male connection M20 <br> Female connector to DIN 43650 |
|  | Max. switching voltage at resistive load | $\begin{aligned} & 15 \mathrm{~W}= \\ & \max .15 \mathrm{VA} \sim \end{aligned}$ |
|  | Switching capacity | Ohmic 1 A at $15 \mathrm{~V}=$ 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. $x$


VMF x LZ.x


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 | $-10^{\circ} \mathrm{C}$ to $+100^{\circ} \mathrm{C}$ |
|  | Thread | G $1 / 2$ |
|  | Max. torque value | 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 <br> Female connector to DIN 43650 |
|  | Max. switching voltage at resistive load | $\begin{aligned} & 15 \mathrm{~W}= \\ & \max .15 \mathrm{VA} \sim \end{aligned}$ |
| $\because \because \text { 国 } \hat{\square}$ | Switching capacity | ohmic 1 A at $15 \mathrm{~V}=$ 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 |



VR x LZ.x /-DB


## VMF x LZ.x l-CN

|  | Type of indication | visual, red pin <br> and 1 electrical switching contact at $75 \%$ <br> and at $100 \%$ of the pressure setting <br> 1 green LED goes out at $75 \%$ <br> 1 yellow LED lights from $75 \%$ <br> 1 red LED lights from $100 \% \Delta p$ |
| :---: | :---: | :---: |
|  | Weight | 170 g |
| $\bigcirc$ | Pressure setting or indication range | 2 bar-0.2 bar |
|  | Permitt. operating pressure | 7 bar |
|  | Permitt. temperature range | $-30^{\circ} \mathrm{C}$ to $+100{ }^{\circ} \mathrm{C}$ |
|  | Thread | G $1 / 8$ |
|  | Max. torque value | 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 <br> Female connector to DIN 43651 |
|  | Max. switching voltage at resistive load | $\begin{aligned} & 15 \mathrm{~W}= \\ & \max .15 \mathrm{VA} \sim \end{aligned}$ |
|  | Switching capacity | Ohmic 1 A at $15 \mathrm{~V}=$ 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 I-CN |




VMF x LZ. $\mathrm{x} /-\mathrm{BO}$


## 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 | 120 g |  |  |
|  | Pressure setting or indication range | 2 bar (or 2.5 bar) - 10\% |  | 73 |
|  | Permitt. operating pressure | 7 bar |  | -35 |
|  | Permitt. temperature range | $-10^{\circ} \mathrm{C}$ to $+100^{\circ} \mathrm{C}$ |  | $\square$ |
|  | Thread | G $1 / 8$ |  |  |
|  | Max. torque value | 15 Nm |  |  |
|  | Switching type | N/C (75\% and 100\%) |  | 里 |
| $\xrightarrow[-1]{ }$ | Max. switching voltage | 24 V |  | - |
| (syyyy | Electrical connection | Male connection M12 $\times 1$ |  |  |
| - | Max. switching voltage at resistive load | $\begin{aligned} & 15 \mathrm{~W}= \\ & \max .15 \mathrm{VA} \sim \end{aligned}$ |  | ${ }_{61 / 8}{ }^{4}$ |
| swith: warming 早 | Switching capacity | Ohmic 1 A at $15 \mathrm{~V}=$ Ohmic 1 A at 15 V ~ |  |  |
|  | Protection class to DIN 40050 | IP 65 |  |  |
| B | Order example | VMF 2 LZ. 1 /-AV |  |  |

VR x LZ.x /-AV

|  | Visual, red pin <br> and 1 electrical switching contact at $75 \%$ <br> and at 100\% of the pressure setting |
| :--- | :--- | :--- | :--- |
|  | 145 g |

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 when operating temp. is below $30^{\circ} \mathrm{C}$. <br> 2 green LEDs light when below $30^{\circ} \mathrm{C}$ <br> 1 green LED lights from $30^{\circ} \mathrm{C}$ <br> 1 yellow LED lights from 75\% <br> 1 red LED lights from $100 \% \Delta p$ |
| :---: | :---: | :---: |
|  | Weight | 245 g |
|  | Pressure setting or indication range | 2.5 bar - 10\% |
|  | Permitt. operating pressure | 7 bar |
|  | Permitt. temperature range | $-10^{\circ} \mathrm{C}$ to $+100{ }^{\circ} \mathrm{C}$ |
|  | Thread | G $1 / 8$ |
|  | Max. torque value | 15 Nm |
|  | Switching type | $\begin{aligned} & \text { N/O (75\%) } \\ & \text { N/C (100\%) } \end{aligned}$ |
|  | Max. switching voltage | 24 V |
|  | Electrical connection | Male connection M12 x 1 |
| $\square\left[\begin{array}{l}\text { circuit diagram } \\ \text { shown in cold }\end{array}\right]$ switch: | Max. switching voltage at resistive load | $\begin{aligned} & 15 \mathrm{~W}= \\ & \max .15 \mathrm{VA} \mathrm{\sim} \end{aligned}$ |
| 2 condition (<30ㅇ) $\quad$switch: <br> alarm <br> $100 \%$$\|$ | Switching capacity | Ohmic 1 A at $15 \mathrm{~V}=$ Ohmic 1 A at 15 V ~ |
| $\square=\square \quad \begin{aligned} & \text { swith: } \\ & \text { warning }\end{aligned}$ | Protection class to DIN 40050 | IP 65 |
|  | Order example | VMF 2 LZ. 1 /-D4C |



VR x LZ.x /-D4C


VMF x LZ.x /-BO-LED


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




VMF x R.x


VR x R.x


| Type of indication | visual-analogue, <br> scale indication |  |
| :--- | :--- | :--- | :--- |
| Weight | 140 g |  |
| Pressure setting or <br> indication range | 0 to 10 bar |  |
| Permitt. operating pressure | 7 bar continuous |  |
| Permitt. temperature range | $-20^{\circ} \mathrm{C}$ to $+60^{\circ} \mathrm{C}$ |  |
| Thread | $\mathrm{G} 1 / 2$ |  |
| Max. torque value | 30 Nm |  |
| Switching type | - |  |
| Max. switching voltage | - |  |
| Electrical connection | - |  |
| Max. switching voltage <br> at resistive load | - |  |
| Switching capacity | - |  |
| Protection class to <br> DIN 40050 | - |  |
| Order example |  |  |

### 3.3 DIFFERENTIAL PRESSURE INDICATORS

## VM x B.x



## VD x B.x



## VM x BM.x




VM x C.x

| Type of indication | electrical switch |
| :--- | :--- |
| Weight | 120 g |
| Pressure setting or <br> indication range | $2 \mathrm{bar}-10 \%$ <br> $5 \mathrm{bar}-10 \%$ <br> $8 \mathrm{bar} \pm 10 \%$ |
| Permitt. operating pressure | 210 bar |

VD x C.x


[^0]

VD x D.x/-L...


## VM x D.x /-LED



[^1]

## VD x GC.x



## VL x GW.x



[^2]VD x LE.x


VD x LZ. $x$


VD 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 goes out at 75\% 1 yellow LED lights from 75\% 1 red LED lights from \(100 \% \Delta p\)``` |  |
| :---: | :---: | :---: | :---: |
|  | Weight | 245 g |  |
|  | Pressure setting or indication range | $2 \mathrm{bar}-10 \%$ $5 \mathrm{bar}-10 \%$ $8 \mathrm{bar}-10 \%$ |  |
|  | Permitt. operating pressure | 420 bar |  |
|  | Permitt. temperature range | $-30^{\circ} \mathrm{C}$ to $+100^{\circ} \mathrm{C}$ |  |
|  | Thread | G $1 / 2$ |  |
|  | Max. torque value | 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 | $\begin{aligned} & 15 \mathrm{~W}= \\ & \max .15 \mathrm{VA} \sim \end{aligned}$ |  |
|  | Switching capacity | Ohmic 1 A at $15 \mathrm{~V}=$ 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/-CN |  |

## VD x LZ.x /-BO



## VD x LZ.x l-AV



| Type of indication | Visual, red pin <br> and 1 electrical switching contact at $75 \%$ <br> and at $100 \%$ of the pressure setting |
| :--- | :--- |
| Weight | 197 g |
| Pressure setting or <br> indication range | $2 \mathrm{bar}-10 \%$ <br> $5 \mathrm{bar}-10 \%$ <br> $8 \mathrm{bar}-10 \%$ |
| Permitt. operating pressure | 420 bar |



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



## V02 x V.x




## V02 x VZ.x

| Type of indication | Visual/analogue indicator <br> and 1 electrical switching contact at <br> $75 \%$ and $100 \%$ of the pressure setting |
| :--- | :--- |
| Weight | 650 g |$|$| $0.8 \mathrm{bar} \pm 10 \%$ |
| :--- |
| $2.0 \mathrm{bar} \pm 10 \%$ |
| $4.3 \mathrm{bar} \pm 10 \%$ |

### 3.4 MOBILE INDICATORS

### 3.4.1 RETURN LINE

VMF x CM.x


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


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

|  | electrical switch |
| :--- | :--- | :--- | :--- |
| Wype of indication | 90 g |
| Pressure setting or <br> indication range | 2 bar $\pm 0.4$ bar |
| Permitt. operating pressure | 11 bar continuous |
| Permitt. temperature range | $-30^{\circ} \mathrm{C}$ to $+100^{\circ} \mathrm{C}$ |
| Thread | $\mathrm{G} 1 / 2$ |
| Max. torque | 30 Nm |
| Switching type | $\mathrm{N} / \mathrm{O}$ or $\mathrm{N} / \mathrm{C}$ |
| Max. switching voltage | 42 V |
| Electrical connection | Deutsch DT 04-2P |


|  | visual, red pin <br> and electrical switch <br> 1 switching contact at $100 \%$ of the <br> pressure setting |
| :--- | :--- | :--- | :--- |
|  | 140 g |

### 3.4.2 DIFFERENTIAL PRESSURE

VL x BF.x

|  | Type of indication | visual |
| :--- | :--- | :--- |
|  | 25 g |  |
|  | $1 \mathrm{bar}-10 \%$ |  |
| $2.5 \mathrm{bar}-10 \%$ |  |  |

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

|  | Type of indication | electrical switch |
| :--- | :--- | :--- |
| Weight | 100 g |  |
|  | Pressure setting or <br> indication range | bar $-10 \%$ <br> $5 \mathrm{bar}-10 \%$ <br> $8 \mathrm{bar} \pm 10 \%$ |
| Permitt. operating pressure | 210 bar |  |
| Permitt. temperature range | $-30^{\circ} \mathrm{C}$ to $+100^{\circ} \mathrm{C}$ |  |
| Thread | $\mathrm{G} 1 / 2$ |  |
| Max. torque value | 33 Nm |  |
| Switching type | $\mathrm{N} / \mathrm{O}$ or $\mathrm{N} / \mathrm{C}$ |  |
| Max. switching voltage | 230 V |  |
|  | -2 |  |

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

|  | Type of indication | electrical switch |
| :--- | :--- | :--- |
|  | Weight | 100 g |
| Pressure setting or |  |  |
| indication range | $2 \mathrm{bar}-10 \%$ <br> $5 \mathrm{bar}-10 \%$ <br> $8 \mathrm{bar} \pm 10 \%$ |  |
| Permitt. operating pressure |  |  |
| 210 bar |  |  |
| Permitt. temperature range | $-30^{\circ} \mathrm{C}$ to $+100^{\circ} \mathrm{C}$ |  |
| Thread | $\mathrm{G} 1 / 2$ |  |
| Max. torque value | 33 Nm |  |
| Switching type | $\mathrm{N} / \mathrm{O}$ or $\mathrm{N} / \mathrm{C}$ |  |
| Max. switching voltage | 230 V |  |
| Electrical connection | Junior Power Timer |  |

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

|  | Type of indication | electrical switch |
| :--- | :--- | :--- |
| Weight | 200 g |  |
| Pressure setting or |  |  |
| indication range |  |  |

## VM x CM. $x$

|  | Type of indication | electrical switch | M12×1. |
| :---: | :---: | :---: | :---: |
|  | Weight | 70 g |  |
|  | Pressure setting or indication range | $\begin{aligned} & 2 \text { bar - 10\% } \\ & 5 \text { bar }-10 \% \\ & 8 \text { bar } \pm 10 \% \end{aligned}$ |  |
|  | Permitt. operating pressure | 210 bar | $\square$ |
|  | Permitt. temperature range | $-10^{\circ} \mathrm{C}$ to $+100^{\circ} \mathrm{C}$ |  |
|  | Thread | G $1 / 2$ | $\stackrel{¢}{¢}$ |
|  | Max. torque value | 33 Nm |  |
|  | Switching type | N/C or N/O (change-over contacts) | ~ |
|  | Max. switching voltage | 24 V | 1 |
|  | Electrical connection | Male connection M12 $\times 1$ | $\underbrace{61 / 2}_{628}$ |
|  | Max. switching voltage at resistive load | $\begin{aligned} & 60 \mathrm{~W}= \\ & 100 \mathrm{VA} \sim \end{aligned}$ |  |
|  | Switching capacity | ohmic 2.5 A at $24 \mathrm{~V}=$ 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 |  |

VM x M.x



### 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


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 | $-30^{\circ} \mathrm{C}$ to $+100^{\circ} \mathrm{C}$ | 是 |
|  | Thread | G $1 / 2$ | 嬖 |
|  | Max. torque | 15 Nm | $\cdots$ |
|  | 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 $/-E x 2 G$



## 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 | $2 \mathrm{bar} \pm 0.3 \mathrm{bar}$ |  |  |
|  | Permitt. operating pressure | 40 bar |  |  |
|  | Permitt. temperature range | $-30^{\circ} \mathrm{C}$ to $+100^{\circ} \mathrm{C}$ |  |  |
|  | Thread | $\mathrm{G}^{1 / 2}$ | (1) | 田-直 |
|  | Max. torque | 30 Nm |  | - |
|  | Switching type | N/C or N/O (change-over contacts) | : | $\stackrel{m}{i}$ |
|  | Max. switching voltage | * |  | $\\| \perp$ |
| $A----\quad-\quad$ | Electrical connection | Male connection M20 <br> Female connector to DIN 43650 |  |  |
| $\square-2$ | Max. switching voltage at resistive load | * |  |  |
| $\xi^{0}<-\gg 01$ | Switching capacity | * |  |  |
| $--\prod_{B}----\infty$ | Protection class to DIN 40050 | IP 65 (only if the connector is wired and fitted correctly) |  |  |
|  | Order example | VR 2 C. 1 /-2GBC |  |  |

[^3]
### 3.5.2 DIFFERENTIAL PRESSURE

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



## 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 | $\begin{aligned} & 5 \text { bar - 10\% } \\ & 8 \text { bar } \pm 10 \% \\ & \hline \end{aligned}$ | ${ }_{627}$ |
|  | Permitt. operating pressure | 420 bar | - |
|  | Permitt. temperature range | $-30^{\circ} \mathrm{C}$ to $+100^{\circ} \mathrm{C}$ |  |
|  | Thread | G $1 / 2$ | \| |
|  | Max. torque value | 100 Nm | \% |
|  | Switching type | - | $\operatorname{snn}-\quad+1$ |
|  | Max. switching voltage | - |  |
|  | Electrical connection | - |  |
|  | Max. switching voltage at resistive load | - |  |
|  | Switching capacity | - |  |
|  | Protection class to DIN 40050 | - |  |
| B | Order example | VD 5 B. $1 /-2 \mathrm{GC}$ |  |

## VD x C.x /-2GEXDIIC

|  | Type of indication | electrical switch |
| :---: | :---: | :---: |
|  | Weight | from 600 g |
|  | Pressure setting or indication range | $\begin{aligned} & 2 \mathrm{bar}-10 \% \\ & 5 \mathrm{bar}-10 \% \\ & 8 \mathrm{bar} \pm 10 \% \\ & \hline \end{aligned}$ |
|  | Permitt. operating pressure | 420 bar |
|  | Permitt. temperature range | $-20^{\circ} \mathrm{C}$ to $+60^{\circ} \mathrm{C}$ |
|  | Thread | G $1 / 2$ |
|  | Max. torque value | 100 Nm |
|  | Switching type | Change-over |
| A | Max. switching voltage | 250 V |
| $\text { )- } 2$ | Electrical connection | Cable connection |
|  | Max. switching voltage at resistive load | $\begin{aligned} & 60 \text { W = } \\ & 100 \text { VA ~ } \end{aligned}$ |
| $\square \longrightarrow-3$ | Switching capacity | ohmic 3 A at $24 \mathrm{~V}=$ ohmic 0.03 A to 5 A at 250 V ~ |
| $\text { B } \quad \square-\left(\frac{1}{\theta}\right)$ | Protection class to DIN 40050 | IP 66 |
|  | Order example | VD 2 C. $1 /-2 G E X D I I C$ |



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


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


[^4]3.6 INDICATORS WITH UL OR CSA APPROVAL
3.6.1 DIFFERENTIAL PRESSURE

VM x C.x (UL)


VD x C.x (UL)


VM x D.x /-L... (UL)


| Type of indication | visual indicator and <br> electrical switch |
| :--- | :--- | :--- | :--- |
| Weight | 150 g |
| Pressure setting or |  |
| indication range |  | | $2 \mathrm{bar}-10 \%$ |
| :--- |
| $5 \mathrm{bar}-10 \%$ |
| $8 \mathrm{bar} \pm 10 \%$ |



### 3.6.2 RETURN LINE

## VR x C.x (CSA)



## 4. MODEL CODE

### 4.1 STANDARD CLOGGING INDICATORS

Typ
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
$\mathrm{X} \quad$ the latest version is always supplied
Supplementary details
30 C cold start suppression of switching outputs up to $30^{\circ} \mathrm{C} \pm 5^{\circ} \mathrm{C}$
(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/O function
pressure peak suppression up to 10 sec . cold start suppression of switching outputs (PNP technique, positive switching) up to $25^{\circ} \mathrm{C}$
123 N/C function pressure peak suppression up to 10 sec . cold start suppression of switching outputs (PNP technique positive switching) up to $25^{\circ} \mathrm{C}$

## Must be specified!

Others on request

## Supplementary details for "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 $25^{\circ} \mathrm{C}$
N/C function pressure peak suppression up to 10 sec . cold start suppression of switching outputs (PNP technique positive switching) up to $25^{\circ} \mathrm{C}$

Must be specified!
Others on request

## 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 $30^{\circ} \mathrm{C}$

## 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" or visual/electrical indicator type "D" with UL approval
CSA for electrical return line indicator type "C" with CSA approval
5. ADAPTERS

### 5.1 TYPES

|  | Designation | ADAPTER VD-D-S. 0 | G1/2 |
| :---: | :---: | :---: | :---: |
|  | Part no. | 00318736 |  |
|  | Description | Extending adapter for differential pressure cavity to HYDAC works standard HN 28-22 |  |


|  | Designation | ADAPTER VD-D+D-S+S.0 |
| :--- | :--- | :--- |
|  | Part no. | Y-adapter to convert 1 differential <br> pressure cavity into 2 differential <br> pressure cavities according to <br> HYDAC works standard HN 28-22. |


|  | ADAPTER VD-1/4+1/4-W+W.0/-00404337 |
| :--- | :--- | :--- | :--- |
|  | Designation <br> Part no. <br> Description <br> Test adapter for different pressure <br> cavity according to HYDAC works <br> standard HN 28-22. <br> To test the pressure before and after <br> the filter element. <br> Also available without minimess <br> couplings (on request)! |


|  | Designation | ADAPTER VR-R+R-S+S.0 |
| :--- | :--- | :--- |
|  | Part no. | 00318741 Y-adapter to convert 1 return line cavity |
|  |  |  |
|  | Sescription | Swivel-type on request! |


|  | Designation | ADAPTER V ¼ I-D-S. 0 |  |
| :---: | :---: | :---: | :---: |
|  | Part no. | 00318730 |  |
|  | Description | Connection adapter for piping clogging indicators separately with differential pressure cavity according to HYDAC works standard HN 28-22. |  |
|  |  | Two connections G $1 / 4$ (one before and one after the filter element) |  |



### 5.2 MODEL CODEL (= 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!) $\qquad$ port

D differntial 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 Minimess test points (M16 x 1.5)
$1 / 8$ cavity G $1 / 8$ for Minimess 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. 1 /-D4C
VR 2.5 LZ. 1 /-D4C
VD 5 LZ. 1 /-BO
VR 2.5 LZ. 1 /-BO
VD 5 LZ. 1 I-AV
VR 2.5 LZ. 1 /-AV
VR 2.5 LZ. 0 /-GM
all with M $12 \times 1$ connector!


## DESINA

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

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.


[^0]:    ${ }^{\text {1) }}$ Required amperage > 20 mA ; for lower amperages, order "-SO135" indicators (see Supplementary details).

[^1]:    ${ }^{\text {1) }}$ Required amperage > 20 mA ; for lower amperages, order "-SO135" indicators (see Supplementary details).

[^2]:    1) Required amperage > 20 mA ; for lower amperages, order "-SO135" indicators (see Supplementary details).
[^3]:    * 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).

[^4]:    * 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).

