



### Highlights

- High-precision measurement with excellent repeatability
- HT version for temperatures up to 150 °C (302 °F) with thermally insulated preamplifier (option)
- Variety of casing and sealing materials → Universally use for different measurement media
- Standard process connection via connecting plates → Quickly replaceable without lengthy interruptions to the process

# Technical data

| Technical data                          |                                                    |              |                             |             |                             |             |             |              |
|-----------------------------------------|----------------------------------------------------|--------------|-----------------------------|-------------|-----------------------------|-------------|-------------|--------------|
| Type                                    | VZ0.025                                            | VZ0.04       | VZ0.1                       | VZ0.2       | VZ0.4                       | VZ1         | VZ3         | VZ5          |
| Size                                    | 0.025                                              | 0.04         | 0.1                         | 0.2         | 0.4                         | 1           | 3           | 5            |
| Process connection                      | Via subplate with lateral female thread connection |              |                             |             |                             |             |             |              |
| Measuring range* [l/min]                | 0.008...2                                          | 0.02...4     | 0.04...8                    | 0.16...16   | 0.2...40                    | 0.4...80    | 0.6...160   | 1...250      |
| Measuring range* [l/h]                  | 0.48...120                                         | 1.2...240    | 2.4...480                   | 9.6...960   | 12...2,400                  | 24...4,800  | 36...9,600  | 60...15,000  |
| Measuring range* [GPM]                  | 0.002...0.53                                       | 0.005...1.06 | 0.01...2.1                  | 0.04...4.23 | 0.05...10.6                 | 0.11...21   | 0.16...42   | 0.26...66    |
| Measuring range* [GPH]                  | 0.13...31.7                                        | 0.32...63.5  | 0.6...127                   | 2.5...254   | 3.17...635                  | 6.3...1,270 | 9.5...2,540 | 15.9...3,968 |
| Geometric gear volume [cm³]             | 0.025                                              | 0.04         | 0.1                         | 0.245       | 0.4                         | 1.036       | 3           | 5.222        |
| Measuring accuracy                      | ±0.3 % of reading (≥20 mm²/s)                      |              |                             |             |                             |             |             |              |
| Repeatability                           | < 0.1 % under same conditions                      |              |                             |             |                             |             |             |              |
| Start of gear wheel rotation [l/min]    | 0.001                                              | 0.004        | 0.008                       | 0.01        | 0.01                        | 0.02        | 0.03        | 0.04         |
| Start of gear wheel rotation [l/h]      | 0.06                                               | 0.24         | 0.48                        | 0.6         | 0.6                         | 1.2         | 1.8         | 2.4          |
| Start of gear wheel rotation [GPM]      | 0.0003                                             | 0.001        | 0.002                       | 0.003       | 0.003                       | 0.005       | 0.008       | 0.01         |
| Start of gear wheel rotation [GPH]      | 0.016                                              | 0.06         | 0.13                        | 0.16        | 0.16                        | 0.32        | 0.48        | 0.63         |
| Viscosity of medium                     | 1...100 000 mm²/s                                  |              |                             |             |                             |             |             |              |
| Medium temperature range**              | FKM                                                |              | FEP                         |             | EPDM                        |             |             |              |
| → Standard                              | -15...120 °C (5...248 °F)                          |              | -30...120 °C (-22...248 °F) |             | -30...120 °C (-22...248 °F) |             |             |              |
| → Without preamplifier (for TD8250)     | 0...60 °C (32...140 °F)                            |              | 0...60 °C (32...140 °F)     |             | 0...60 °C (32...140 °F)     |             |             |              |
| → High temperature                      | -40...150 °C (-40...302 °F)                        |              | -40...150 °C (-40...302 °F) |             | -40...150 °C (-40...302 °F) |             |             |              |
| Ambient temperature range**             | FKM                                                |              | FEP                         |             | EPDM                        |             |             |              |
|                                         | -15...80 °C (5...176 °F)                           |              | -30...80 °C (-22...176 °F)  |             | -30...80 °C (-22...176 °F)  |             |             |              |
| Maximum pressure rating                 | 480 bar                                            | 480 bar      | 480 bar                     | 480 bar     | 480 bar                     | 480 bar     | 350 bar     | 350 bar      |
| Maximum pressure rating                 | 6962 psi                                           | 6962 psi     | 6962 psi                    | 6962 psi    | 6962 psi                    | 6962 psi    | 5076 psi    | 5076 psi     |
| Maximum foreign particle size           |                                                    |              |                             |             |                             |             |             |              |
| → Versions with ball bearing            | 20 µm                                              |              |                             |             |                             |             |             |              |
| → Versions with plain bearing           | 30 µm                                              |              |                             |             |                             |             |             |              |
| Degree of protection EN 60529           | IP65                                               |              |                             |             |                             |             |             |              |
| Output signals                          |                                                    |              |                             |             |                             |             |             |              |
| → Puls rate [pulses/l]                  | 40,000                                             | 25,000       | 10,000                      | 4,081.63    | 2,500                       | 965.25      | 333.33      | 191.5        |
| → Puls rate [pulses/gallon]             | 151,417.60                                         | 94,636.00    | 37,854.00                   | 15,450.77   | 9,463.60                    | 3,653.90    | 1,261.81    | 724.90       |
| → Resolution [ml/pulse]                 | 0.025                                              | 0.04         | 0.1                         | 0.245       | 0.4                         | 1.036       | 3           | 5.222        |
| → Signal shape                          | 2-channel, squarewave, PNP, pulse duty ratio 1:1   |              |                             |             |                             |             |             |              |
| Electrical data                         |                                                    |              |                             |             |                             |             |             |              |
| Electrical connection                   | Plug connector incl. cable socket                  |              |                             |             |                             |             |             |              |
| Power supply                            | 12...30 VDC / max. 90 mA                           |              |                             |             |                             |             |             |              |
| Power consumption [short-circuit proof] | 0.9 W                                              |              |                             |             |                             |             |             |              |

\* For media with high viscosity the measuring range is reduced. The max. pressure drop shouldn't exceeded 16 bar (230 psi) (see pressure drop diagrams).

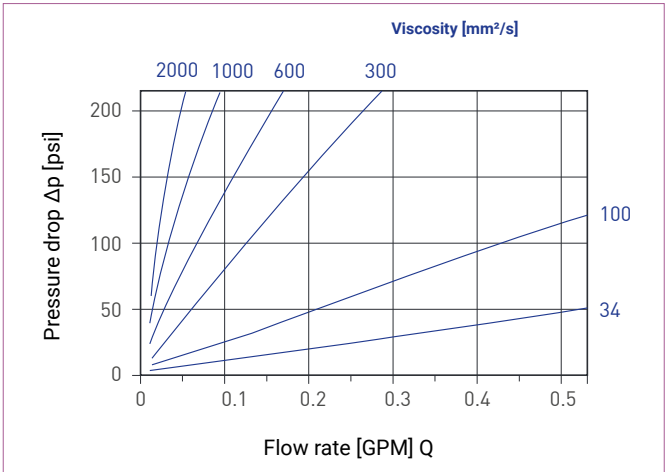
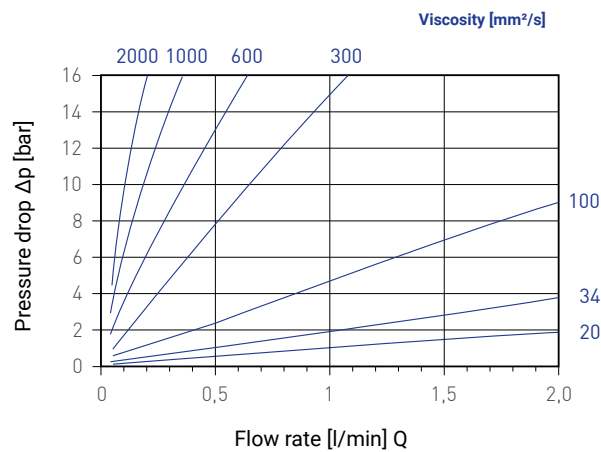
\*\* Depending on sealing material

## Options

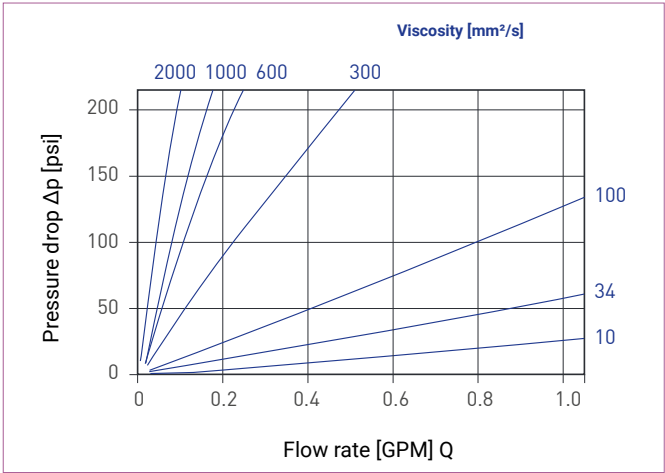
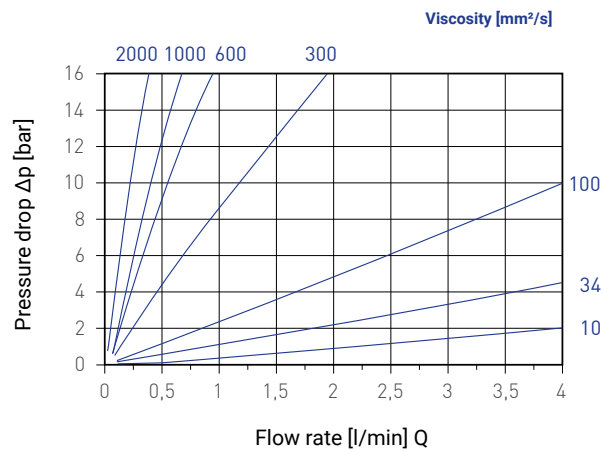
| Options  |                             |
|----------|-----------------------------|
| For type | On request                  |
| VZVA     | → Direct process connection |

# Typical pressure drop | VZ0.025 | VZ0.04 | VZ0.1

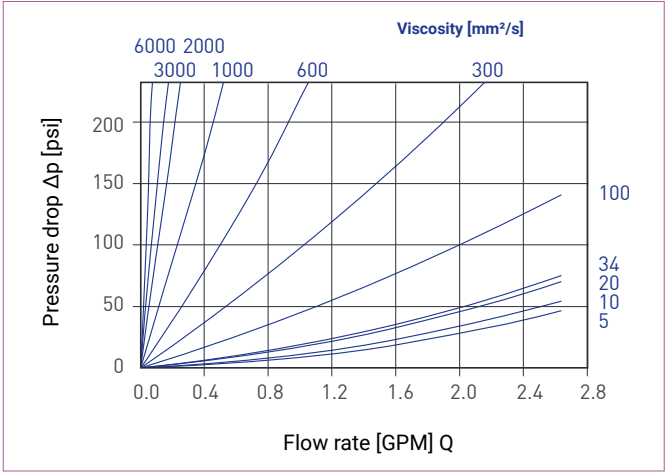
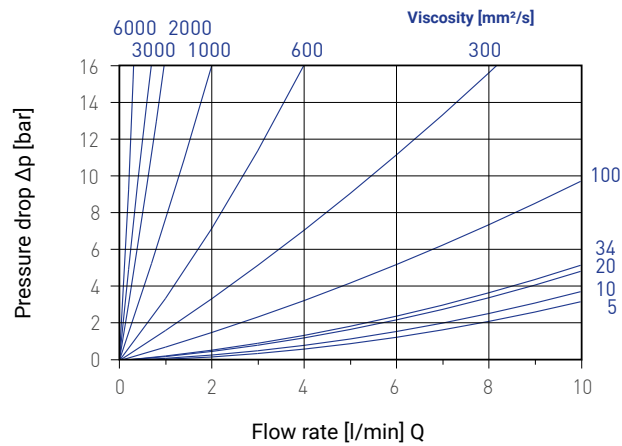
Typical pressure drop VZ0.025



Typical pressure drop VZ0.04

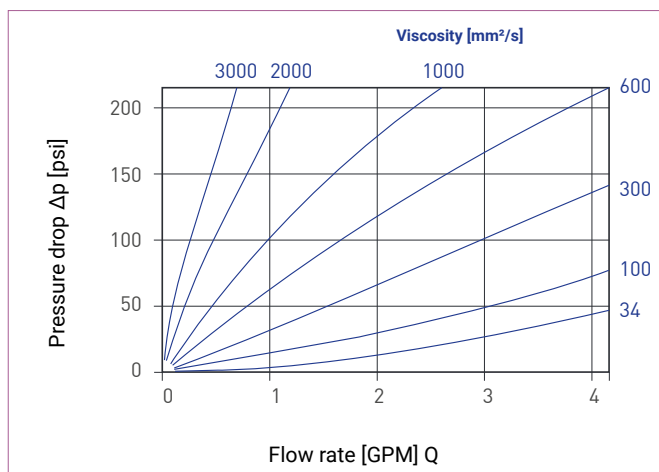
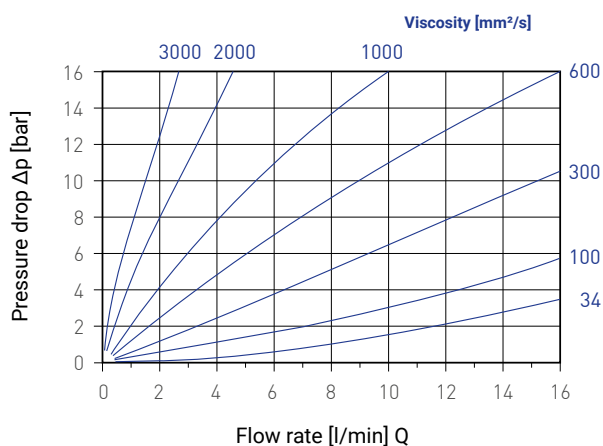


Typical pressure drop VZ0.1

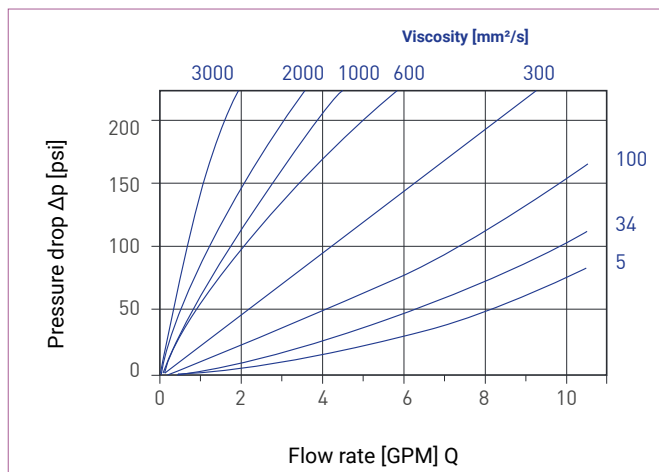
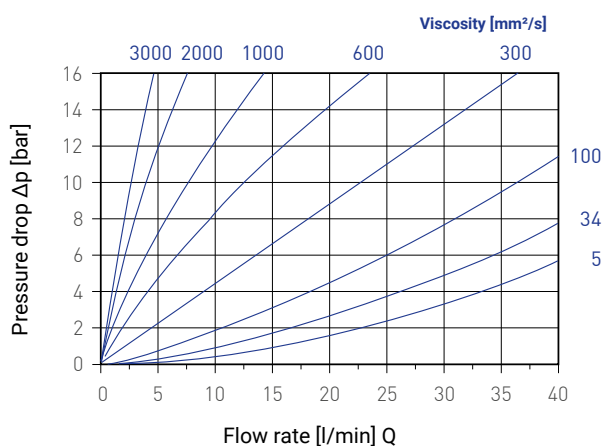


# Typical pressure drop | VZ0.2 | VZ0.4 | VZ1

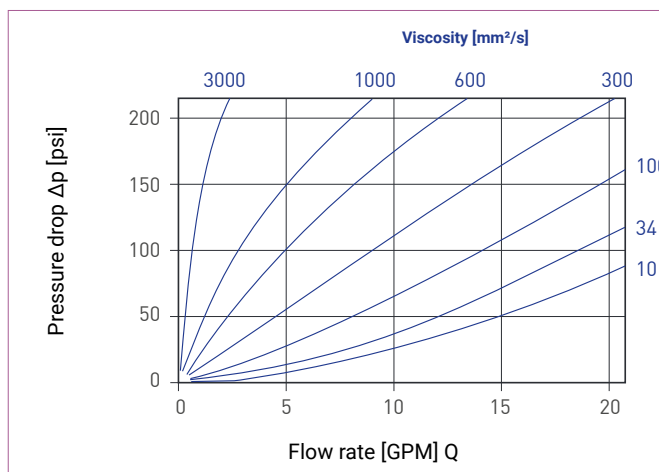
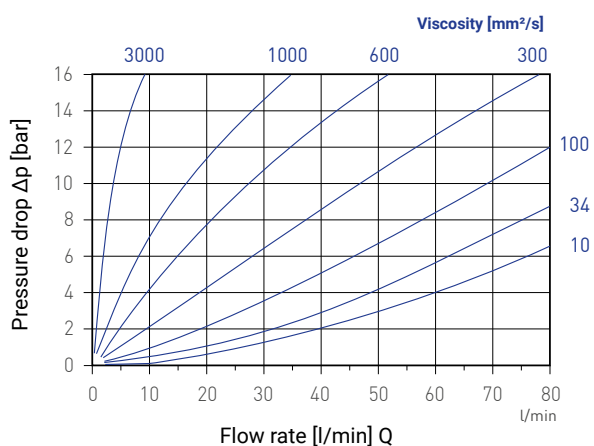
## Typical pressure drop VZ0.2



## Typical pressure drop VZ0.4

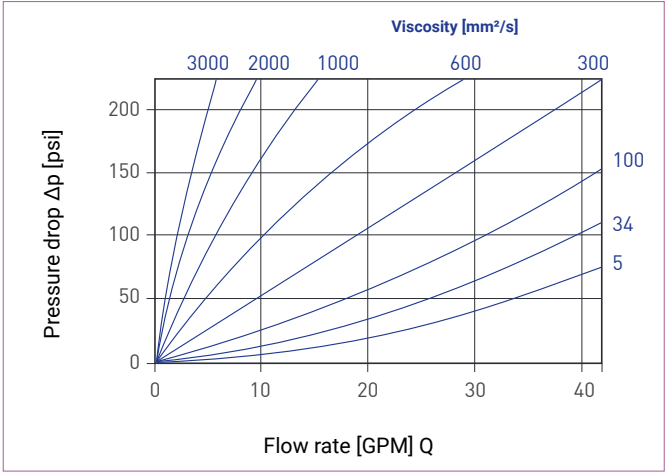
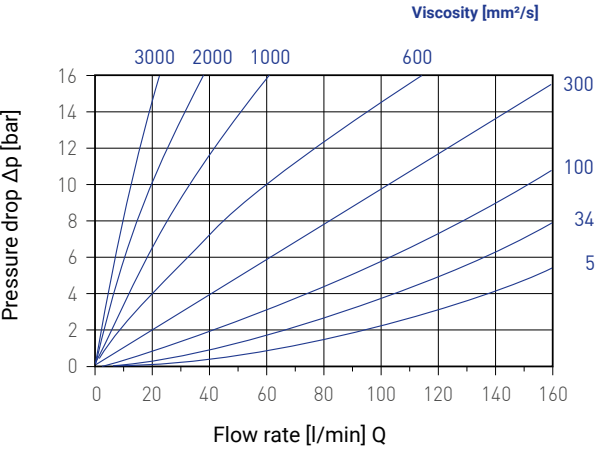


## Typical pressure drop VZ1

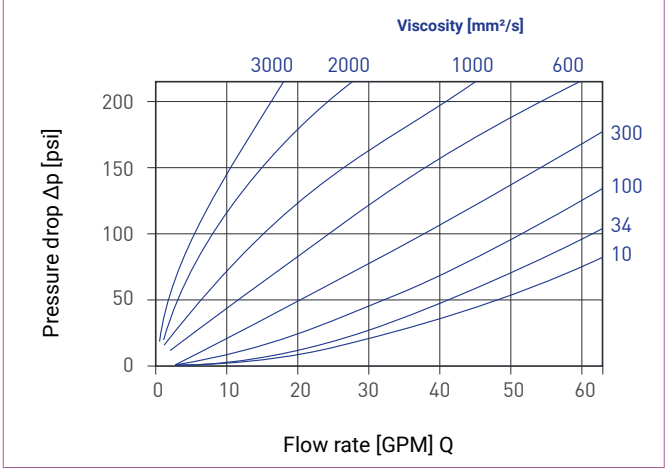
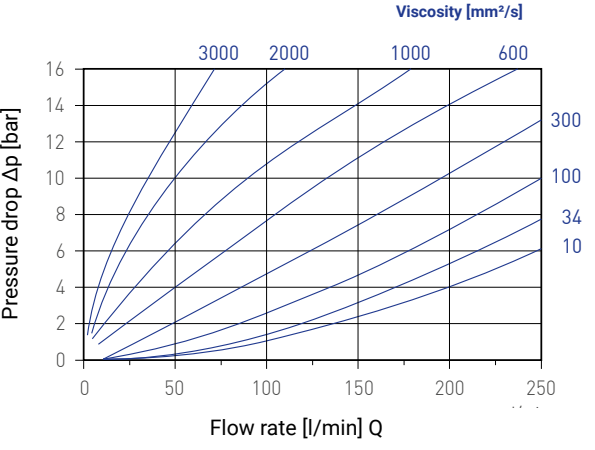


# Typical pressure drop | VZ3 | VZ5

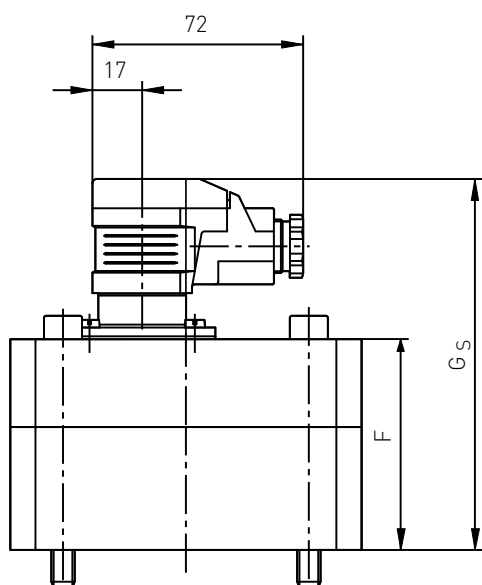
Typical pressure drop VZ3



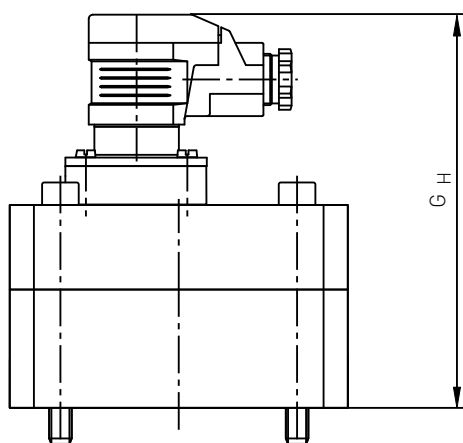
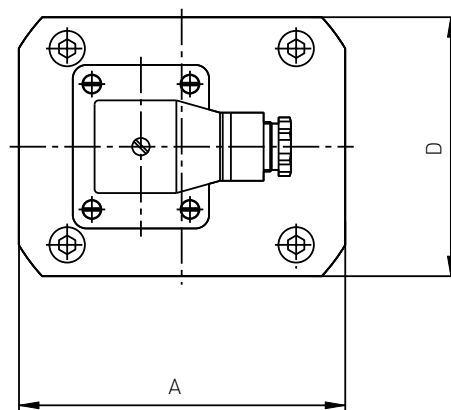
Typical pressure drop VZ5



## VZGG



Standard version



High temperature version

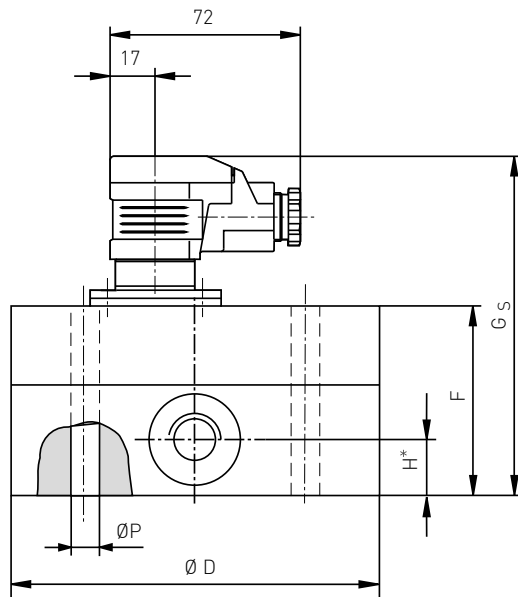
### Materials

|                    |                                                                             |
|--------------------|-----------------------------------------------------------------------------|
| <b>Housing</b>     | Ductile iron EN-GJS-400-15                                                  |
| <b>Gear wheels</b> | Steel 1.7139                                                                |
| <b>Bearings</b>    | Standard: Ball bearings stainless steel<br>Option: Hard metal plain bearing |
| <b>Seals</b>       | Standard: FKM<br>Option: EPDM, FEP                                          |

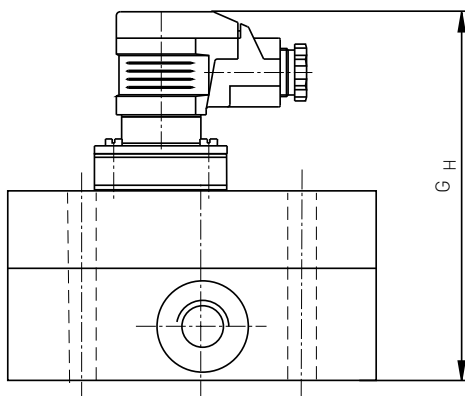
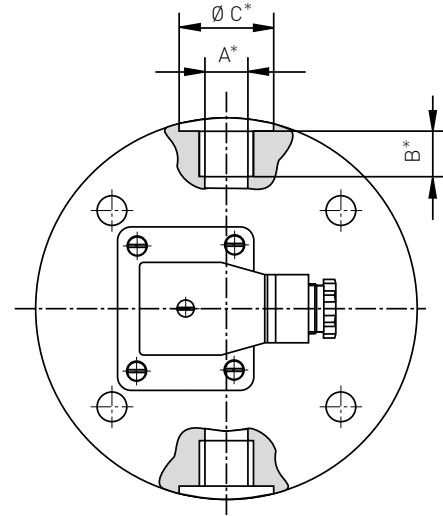
### Dimensions

| Type               | VZ0.025GG | VZ0.04GG | VZ0.1GG | VZ0.2GG | VZ0.4GG | VZ1GG | VZ3GG | VZ5GG |
|--------------------|-----------|----------|---------|---------|---------|-------|-------|-------|
| <b>A [mm]</b>      | 85        | 85       | 85      | 85      | 100     | 120   | 170   | 170   |
| <b>D [mm]</b>      | 60        | 60       | 60      | 60      | 90      | 95    | 120   | 120   |
| <b>F [mm]</b>      | 50        | 56       | 65      | 57      | 63      | 72    | 89    | 105   |
| <b>GS [mm]</b>     | 101       | 107      | 106     | 108     | 114     | 123   | 140   | 156   |
| <b>GH [mm]</b>     | 113       | 119      | 118     | 120     | 126     | 135   | 152   | 168   |
| <b>Weight [kg]</b> | 1.8       | 2        | 2.5     | 2       | 3.7     | 5.2   | 9     | 13    |

**VZVA**



### Standard version

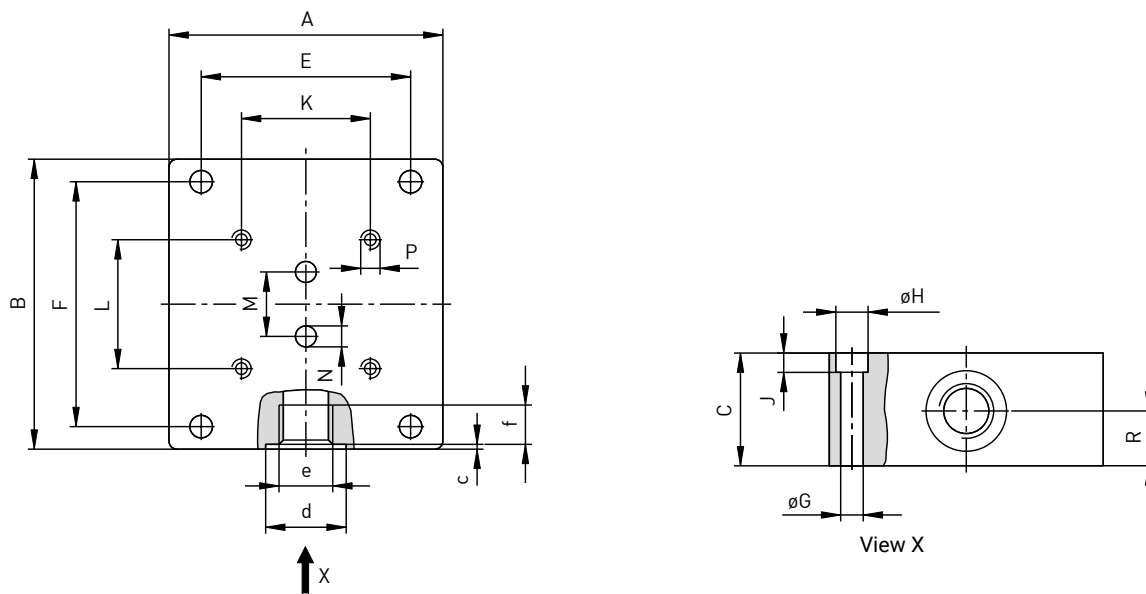


### High temperature version

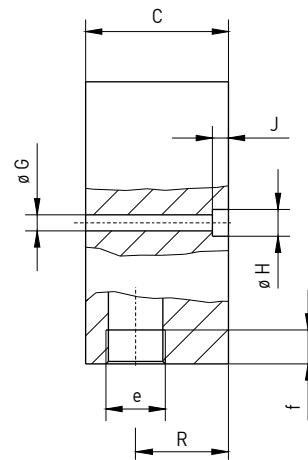
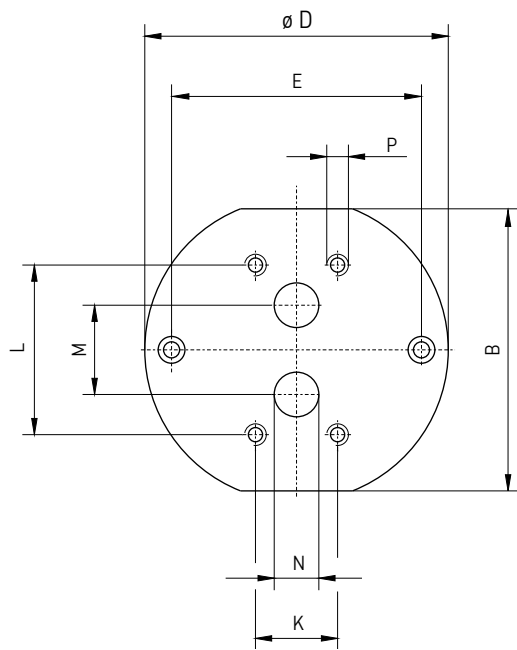
\* For direct process connection

| Material           |                                                                             |
|--------------------|-----------------------------------------------------------------------------|
| <b>Housing</b>     | Stainless steel 1.4404                                                      |
| <b>Gear wheels</b> | Stainless steel 1.4462                                                      |
| <b>Bearings</b>    | Standard: Ball bearings stainless steel<br>Option: Hard metal plain bearing |
| <b>Seals</b>       | Standard: FKM<br>Option: EPDM, FEP                                          |

| Dimensions                |           |          |         |         |       |       |       |
|---------------------------|-----------|----------|---------|---------|-------|-------|-------|
| Type                      | VZ0.025VA | VZ0.04VA | VZ0.1VA | VZ0.2VA | VZ1VA | VZ3VA | VZ5VA |
| D [mm]                    | 94        | 94       | 94      | 94      | 124   | 170   | 170   |
| F [mm]                    | 55        | 56       | 55      | 57      | 72    | 89    | 105   |
| GS [mm]                   | 106       | 107      | 106     | 108     | 123   | 140   | 156   |
| GH [mm]                   | 118       | 119      | 118     | 120     | 135   | 152   | 168   |
| Weight [kg]               | 3         | 3        | 3       | 3.1     | 7     | 15.9  | 18.7  |
| Direct process connection |           |          |         |         |       |       |       |
| A [mm]                    | G½        | G¼       | G¾      | G¾      | G½    | G 1   | G 1   |
| B [mm]                    | 9         | 13       | 13      | 13      | 15    | 19    | 19    |
| C [mm]                    | 17        | 21       | 25      | 25      | 29    | 42    | 42    |
| H [mm]                    | 15        | 15       | 20      | 16      | 22    | 30    | 30    |



| For type           | VZ0.025GG / VZ0.04GG / VZ0.1GG / VZ0.2GG | VZ0,4GG                    | VZ1GG                   | VZ3GG / VZ5GG           |
|--------------------|------------------------------------------|----------------------------|-------------------------|-------------------------|
| <b>A [mm]</b>      | 85                                       | 100                        | 100                     | 160                     |
| <b>B [mm]</b>      | 90                                       | 110                        | 120                     | 165                     |
| <b>C [mm]</b>      | 35                                       | 37                         | 37                      | 80                      |
| <b>c [mm]</b>      | 0.7                                      | 0,7                        | 0.7                     | 1                       |
| <b>d [mm]</b>      | 25                                       | 29                         | 29                      | 42                      |
| <b>E [mm]</b>      | 65                                       | 86                         | 80                      | 140                     |
| <b>e</b>           | G $\frac{3}{8}$                          | G $\frac{1}{2}$            | G $\frac{1}{2}$         | G 1                     |
| <b>F [mm]</b>      | 76                                       | 96                         | 106                     | 145                     |
| <b>f [mm]</b>      | 13                                       | 15                         | 15                      | 19                      |
| <b>G [mm]</b>      | 7                                        | 7                          | 7                       | 9                       |
| <b>H [mm]</b>      | 11                                       | 11                         | 11                      | 15                      |
| <b>J [mm]</b>      | 7                                        | 7                          | 7                       | 9                       |
| <b>K [mm]</b>      | 70                                       | 80                         | 84                      | 46                      |
| <b>L [mm]</b>      | 40                                       | 38                         | 72                      | 95                      |
| <b>M [mm]</b>      | 20                                       | 34                         | 35                      | 50                      |
| <b>N [mm]</b>      | 6,5                                      | 16                         | 12                      | 25                      |
| <b>P [mm]</b>      | M 6/14t                                  | M 8/18t                    | M 8/18t                 | M 12/24t                |
| <b>R [mm]</b>      | 17                                       | 18.5                       | 17.5                    | 28                      |
| <b>Weight [kg]</b> | 1.8                                      | 2.7                        | 2.9                     | 14                      |
| <b>Material</b>    | Ductile iron EN-GJL-250                  | Ductile iron EN-GJL-400-15 | Ductile iron EN-GJL-250 | Ductile iron EN-GJL-250 |



| For type           | VZ0.025VA / VZ0.04VA / VZ0.1VA / VZ0.2VA | VZ1VA   | VZ3VA / VZ5VA |
|--------------------|------------------------------------------|---------|---------------|
| <b>B [mm]</b>      | 85                                       | 116     | 158           |
| <b>C [mm]</b>      | 35                                       | 37      | 80            |
| <b>D [mm]</b>      | 94                                       | 124     | 170           |
| <b>E [mm]</b>      | 75                                       | 100     | 140           |
| <b>e</b>           | G 3/8                                    | G 1/2   | G 1           |
| <b>f [mm]</b>      | 13                                       | 15      | 19            |
| <b>G [mm]</b>      | 7                                        | 9       | 9             |
| <b>H [mm]</b>      | 11                                       | 15      | 15            |
| <b>J [mm]</b>      | 7                                        | 9       | 9             |
| <b>K [mm]</b>      | 70                                       | 84      | 46            |
| <b>L [mm]</b>      | 40                                       | 72      | 95            |
| <b>M [mm]</b>      | 20                                       | 35      | 50            |
| <b>N [mm]</b>      | 6.5                                      | 12      | 25            |
| <b>P [mm]</b>      | M 6/14t                                  | M 8/18t | M 12/24t      |
| <b>R [mm]</b>      | 18                                       | 19.5    | 52            |
| <b>Weight [kg]</b> | 1.7                                      | 3.2     | 13.9          |
| <b>Material</b>    | Stainless steel 1.4404                   |         |               |

## Article numbers

| Order code                            |                         |        |    |    |   |       |
|---------------------------------------|-------------------------|--------|----|----|---|-------|
| Type                                  | Size                    |        |    |    |   |       |
| VZ0.025                               | 0.025                   | VZ0025 |    |    |   |       |
| VZ0.04                                | 0.04                    | VZ004  |    |    |   |       |
| VZ0.1                                 | 0.1                     | VZ010  |    |    |   |       |
| VZ0.2                                 | 0.2                     | VZ020  |    |    |   |       |
| VZ0.4                                 | 0.4 (only ductile iron) | VZ040  |    |    |   |       |
| VZ1                                   | 1                       | VZ100  |    |    |   |       |
| VZ3                                   | 3                       | VZ300  |    |    |   |       |
| VZ5                                   | 5                       | VZ500  |    |    |   |       |
| Material                              |                         |        |    |    |   |       |
| Ductile iron                          |                         | GG     |    |    |   |       |
| Stainless steel                       |                         | VA     |    |    |   |       |
| Seals                                 |                         |        |    |    |   |       |
| FKM                                   |                         | V3     |    |    |   |       |
| EPDM                                  |                         | E3     |    |    |   |       |
| FEP                                   |                         | P3     |    |    |   |       |
| Process connection                    |                         |        |    |    |   |       |
| Via subplates                         |                         |        | 2  |    |   |       |
| Direct (only for stainless steel)     |                         |        | 1  |    |   |       |
| Preamplifier                          |                         |        |    |    |   |       |
| Integrated                            |                         |        |    | IO |   |       |
| Without preamplifier, for TD8250      |                         |        |    | KO |   |       |
| Isolated for high temperature version |                         |        |    | EO |   |       |
| Bearings                              |                         |        |    |    |   |       |
| Ball bearings stainless steel         |                         |        |    |    |   | OS    |
| Hard metal plain bearing              |                         |        |    |    |   | PS    |
| Example order number                  |                         | VZ0025 | GG | V3 | 2 | IO OS |

| Order code                       |  |       |    |  |  |       |
|----------------------------------|--|-------|----|--|--|-------|
| Subplates appropriate to         |  |       |    |  |  |       |
| VZ0.025 / VZ0.04 / VZ0.1 / VZ0.2 |  | AP004 |    |  |  | 0380S |
| VZ0.4 (only ductile iron)        |  | AP040 |    |  |  | 0120S |
| VZ1                              |  | AP100 |    |  |  | 0120S |
| VZ3 / VZ5                        |  | AP500 |    |  |  | 1000S |
| Material                         |  |       |    |  |  |       |
| Ductile iron                     |  |       | GG |  |  |       |
| Stainless steel                  |  |       | VA |  |  |       |
| Example order number             |  | AP004 | GG |  |  | 0380S |