

Technical Data.

Flow Meter.



Архангельск (8182)63-90-72  
Астана (7172)727-132  
Астрахань (8512)99-46-04  
Барнаул (3852)73-04-60  
Белгород (4722)40-23-64  
Брянск (4832)59-03-52  
Владивосток (423)249-28-31  
Волгоград (844)278-03-48  
Вологда (8172)26-41-59  
Воронеж (473)204-51-73  
Екатеринбург (343)384-55-89  
Иваново (4932)77-34-06

Ижевск (3412)26-03-58  
Иркутск (395)279-98-46  
Казань (843)206-01-48  
Калининград (4012)72-03-81  
Калуга (4842)92-23-67  
Кемерово (3842)65-04-62  
Киров (8332)68-02-04  
Краснодар (861)203-40-90  
Красноярск (391)204-63-61  
Курск (4712)77-13-04  
Липецк (4742)52-20-81  
Киргизия (996)312-96-26-47

Магнитогорск (3519)55-03-13  
Москва (495)268-04-70  
Мурманск (8152)59-64-93  
Набережные Челны (8552)20-53-41  
Нижний Новгород (831)429-08-12  
Новокузнецк (3843)20-46-81  
Новосибирск (383)227-86-73  
Омск (3812)21-46-40  
Орел (4862)44-53-42  
Оренбург (3532)37-68-04  
Пенза (8412)22-31-16  
Казахстан (772)734-952-31

Пермь (342)205-81-47  
Ростов-на-Дону (863)308-18-15  
Россия (495)268-04-70  
Рязань (4912)46-61-64  
Самара (846)206-03-16  
Санкт-Петербург (812)309-46-40  
Саратов (845)249-38-78-78  
Севастополь (8692)22-31-93  
Симферополь (3652)67-13-56  
Смоленск (4812)29-41-54  
Сочи (862)225-72-31  
Ставрополь (8652)20-65-13

Сургут (3462)77-98-35  
Тверь (4822)63-31-35  
Томск (3822)98-41-53  
Тула (4872)74-02-29  
Тюмень (3452)66-21-18  
Ульяновск (8422)24-23-59  
Уфа (347)229-48-12  
Хабаровск (4212)92-98-04  
Челябинск (351)202-03-61  
Череповец (8202)49-02-64  
Ярославль (4852)69-52-93

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## Float-type flow meter

| DN | Inches | da | Measuring range H <sub>2</sub> O | M 335 / M 350 | M 123 | M 10-13 |
|----|--------|----|----------------------------------|---------------|-------|---------|
| 10 | 3/8    | 16 | 1.5-15                           |               | ■ ●   | ◆       |
| 10 | 3/8    | 16 | 2.5-25                           |               | ■ ●   | ◆       |
| 10 | 3/8    | 16 | 5-50                             |               | ■ ●   | ◆       |
| 10 | 3/8    | 16 | 10-100                           |               | ■ ●   | ◆       |
| 15 | 1/2    | 20 | 8-80                             |               | ■ ●   |         |
| 15 | 1/2    | 20 | 15-150                           |               | ■ ●   |         |
| 15 | 1/2    | 20 | 20-200                           |               | ■ ●   |         |
| 25 | 1      | 32 | 15-150                           |               | ■ ●   |         |
| 25 | 1      | 32 | 30-300                           |               | ■ ●   |         |
| 25 | 1      | 32 | 50-500                           | ▲ ■ ●         | ■ ●   |         |
| 25 | 1      | 32 | 100-1,000                        | ▲ ■ ●         | ■ ●   |         |
| 32 | 1 1/4  | 40 | 150-1,500                        | ▲ ■ ●         |       |         |
| 32 | 1 1/4  | 40 | 250-2,500                        | ▲ ■ ●         |       |         |
| 40 | 1 1/2  | 50 | 200-2,000                        | ▲ ■ ●         |       |         |
| 40 | 1 1/2  | 50 | 300-3,000                        | ▲ ■ ●         |       |         |
| 40 | 1 1/2  | 50 | 600-6,000                        | ▲ ■ ●         |       |         |
| 50 | 2      | 63 | 600-6,000                        | ▲ ■ ●         |       |         |
| 50 | 2      | 63 | 1,500-15,000                     | ▲ ■ ●         |       |         |
| 65 | 2 1/2  | 75 | 2,000-20,000                     | ▲ ■ ●         |       |         |
| 65 | 2 1/2  | 75 | 3,000-30,000                     | ▲ ■ ●         |       |         |
| 65 | 2 1/2  | 75 | 8,000-60,000                     | ▲ ■ ●         |       |         |

|            | Connection type                                                                      | Sealing elements | Float                  | Connection                         |
|------------|--------------------------------------------------------------------------------------|------------------|------------------------|------------------------------------|
| Standard   | PVC adhesive socket                                                                  | EPDM             | PVDF                   | M 10-13<br>R 1/4" female thread    |
| on request | PP-/PE-/PVDF fusion socket<br>PP-/PE-/PVDF butt fusion spigot<br>Va/Tg female thread | FPM (Viton)      | Va 1.4571<br>(M 10-13) | M 11+13 also<br>R 5/8" male thread |

### Key to symbols

- ▲ PA (polyamide Trogamid)
- PSU (polysulphone)
- PVC
- ◆ PMMA (polymethylmethacrylate "Plexiglas")

Va 1.4571

Tg Malleable cast iron

## Flow meter M335/M350

Measuring ranges 50–60,000 l/h



### Function

The flow meter M335/M350 operates on the float principle and is used for flow rate measurements in closed pipelines. The medium flows through the vertically installed flow meter from bottom to top. This raises the float and shows the current flow rate on the scale on the measuring device. The read-off edge corresponds to the largest diameter of the float.

M335/M350 flow meters come as standard with a water scale and a % scale, and two setpoint indicators.

### Special features:

- Fracture-proof and corrosion-resistant
- Radially removable
- Special adhesive scales for liquid and gaseous media
- Holder for accessories (limit value contacts)
- Measuring tube carries the DN label, and also the measuring range and material
- PVDF floats and stops as standard
- Measuring ranges 50–60,000 l/h

#### Materials

| Measuring tube | max. temp.<br>at 1 bar | Float           | Top and bottom<br>inserts | O-ring      |
|----------------|------------------------|-----------------|---------------------------|-------------|
| PA             | +60 °C                 | PVDF (standard) | PVDF                      | EPDM        |
| PVC            | +40 °C                 |                 |                           | FPM (Viton) |
| PSU            | +100 °C*               |                 |                           |             |

Operating pressure: max. PN 10 at 20 °C

\*only with PVDF screw connection

#### Connection possibilities

| Socket                            | Spigot             | Plastic female thread | Metal female thread |
|-----------------------------------|--------------------|-----------------------|---------------------|
| PVC adhesive socket<br>(standard) | PP fusion spigot   | PVC                   | Stainless steel V4A |
| PP fusion socket                  | PVDF fusion spigot | PP                    | Malleable cast iron |
| PVDF fusion socket                | PE fusion spigot   | PVDF                  |                     |

#### Pressure loss

| Measuring range l/h | 50–500 | 100–1,000 | 150–1,500 | 250–2,500 | 200–2,000 | 300–3,000 |
|---------------------|--------|-----------|-----------|-----------|-----------|-----------|
| Pressure loss mbar  | 22.84  | 22.84     | 22.84     | 22.84     | 24.99     | 24.99     |

| Measuring range l/h | 600–6,000 | 1,000–10,000 | 1,500–15,000 | 2,000–20,000 | 3,000–30,000 | 8,000–60,000 |
|---------------------|-----------|--------------|--------------|--------------|--------------|--------------|
| Pressure loss mbar  | 24.99     | 24.99        | 28.23        | 45.67        | 45.67        | 47.24        |

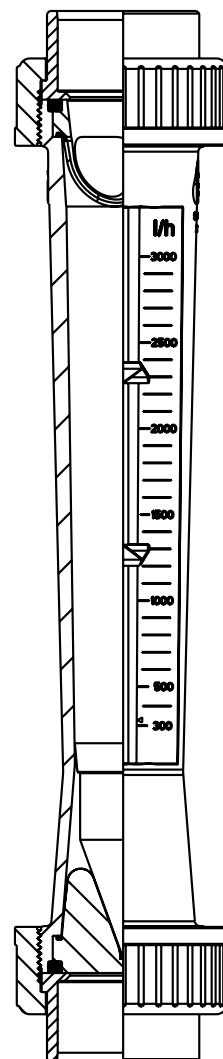
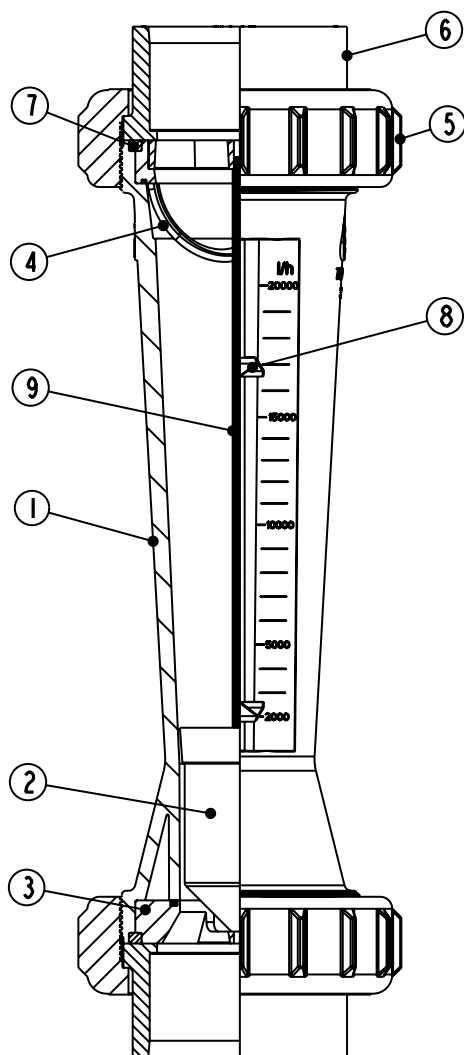
#### Measuring accuracy Accuracy Class 4 as defined by VDE/DIN 3513 Page 2

| Flow in %                          | 10    | 20   | 30   | 40   | 50   | 60   | 70   | 80   | 90   | 100  |
|------------------------------------|-------|------|------|------|------|------|------|------|------|------|
| Total measured value<br>error in % | 13.00 | 8.00 | 6.33 | 5.50 | 5.00 | 4.67 | 4.43 | 4.25 | 4.11 | 4.00 |
| Total limit value error<br>in %    | 1.3   | 1.6  | 1.9  | 2.2  | 2.5  | 2.9  | 3.1  | 3.4  | 3.7  | 4.0  |

### Individual parts

| Pos. | Designation                     | Qty. | Material           |
|------|---------------------------------|------|--------------------|
| 1    | Measuring tube                  | 1    | PA, PVC, PSU, PVDF |
| 2    | Float                           | 1    | PVDF               |
| 3    | Insert, bottom                  | 1    | PVDF               |
| 4    | Insert, top                     | 1    | PVDF               |
| 5    | Union nut                       | 2    | PVC, PP, PVDF      |
| 6    | Insertion part (socket, spigot) | 2    | PVC, PP, PVDF      |
| 7    | O-ring                          | 2    | EPDM, FPM          |
| 8    | Setpoint indicator              | 2    | PS                 |
| 9    | Guide rod                       | 1    | PEEK*              |

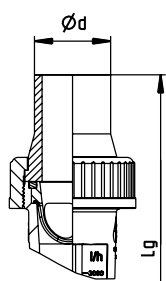
\*from DN 50 1,500–15,000 l/h



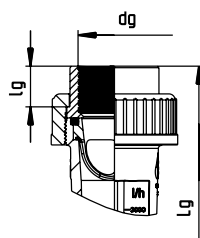
## Dimensions and weights

| Type M 335                                   | Dimensions in mm |                |         |                 |     |                 |     |                |                |     |                |           |                |                |             |                |                |                 |                | Weight in kg/unit. approx. |                  |
|----------------------------------------------|------------------|----------------|---------|-----------------|-----|-----------------|-----|----------------|----------------|-----|----------------|-----------|----------------|----------------|-------------|----------------|----------------|-----------------|----------------|----------------------------|------------------|
| Measuring range l/h H <sub>2</sub> O         |                  |                |         |                 |     | Adhesive socket |     |                | Fusion socket  |     |                | Spigot PP |                |                | Spigot PVDF |                |                | Threaded socket |                |                            | PA<br>PSU<br>PVC |
|                                              | DN               | d <sub>a</sub> | G       | d <sub>ii</sub> | L   | d <sub>m</sub>  | z   | L <sub>m</sub> | d <sub>m</sub> | z   | L <sub>m</sub> | d         | L <sub>g</sub> | S<br>SDR<br>11 | d           | L <sub>g</sub> | S<br>SDR<br>33 | d <sub>g</sub>  | L <sub>g</sub> | l <sub>g</sub>             |                  |
| 50–500<br>100–1,000                          | 25               | 32             | 1 1/2 " | 60              | 335 | 32              | 341 | 385            | 32             | 345 | 381            | 32        | 455            | 2.9            | 32          | 443            | 2.4            | 1 "             | 385            | 17                         | 0.52             |
| 150–1,500<br>250–2,500                       | 32               | 40             | 2 "     | 72              | 335 | 40              | 341 | 393            | 40             | 345 | 385            | 40        | 461            | 3.7            | 40          | 461            | 2.4            | 1 1/4 "         | 393            | 19                         | 0.60             |
| 200–2,000<br>300–3,000<br>600–6,000          | 40               | 50             | 2 1/4 " | 83              | 335 | 50              | 341 | 403            | 50             | 345 | 391            | 50        | 467            | 4.6            | 50          | 459            | 3              | 1 1/2 "         | 403            | 23                         | 1.22             |
| 600–6,000<br>1,000–10,000<br>1,500–15,000    | 50               | 63             | 2 3/4 " | 103             | 335 | 63              | 341 | 417            | 63             | 345 | 399            | 63        | 473            | 5.8            | 63          | 461            | 3              | 2 "             | 417            | 23                         | 1.68             |
| 2,000–20,000<br>3,000–30,000<br>8,000–60,000 | 65               | 75             | 3 1/2 " | 122             | 335 | 75              | 341 | 429            | 75             | 345 | 407            | 75        | 587            | 6.9            | 75          | 453            | 3.6            | 2 1/2 "         | –              | –                          | 2.90             |

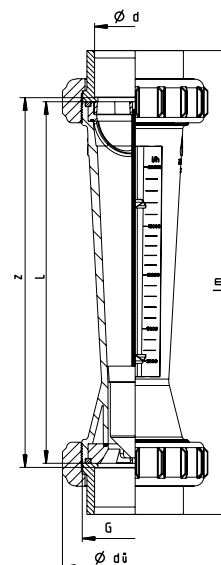
| Type M 350                                   | Dimensions in mm |                |        |                |     |                 |     |                |                |     |                |           |                |          |             |                |          |                 |                |                | Weight in kg/unit. approx. |
|----------------------------------------------|------------------|----------------|--------|----------------|-----|-----------------|-----|----------------|----------------|-----|----------------|-----------|----------------|----------|-------------|----------------|----------|-----------------|----------------|----------------|----------------------------|
| Measuring range l/h H <sub>2</sub> O         |                  |                |        |                |     | Adhesive socket |     |                | Fusion socket  |     |                | Spigot PP |                |          | Spigot PVDF |                |          | Threaded socket |                |                |                            |
|                                              | DN               | d <sub>a</sub> | G      | d <sub>ü</sub> | L   | d <sub>m</sub>  | z   | L <sub>m</sub> | d <sub>m</sub> | z   | L <sub>m</sub> | d         | L <sub>g</sub> | S SDR 11 | d           | L <sub>g</sub> | S SDR 33 | d <sub>g</sub>  | L <sub>g</sub> | l <sub>g</sub> | PA PSU PVC                 |
| 50–500<br>100–1,000                          | 25               | 32             | 1 1/2" | 60             | 350 | 32              | 356 | 400            | 32             | 360 | 396            | 32        | 460            | 2.9      | 32          | 458            | 2.4      | 1"              | 400            | 17             | 0.52                       |
| 150–1,500<br>250–2,500                       | 32               | 40             | 2"     | 72             | 350 | 40              | 356 | 408            | 40             | 360 | 400            | 40        | 476            | 3.7      | 40          | 476            | 2.4      | 1 1/4"          | 408            | 19             | 0.60                       |
| 200–2,000<br>300–3,000<br>600–6,000          | 40               | 50             | 2 1/4" | 83             | 350 | 50              | 356 | 418            | 50             | 360 | 406            | 50        | 482            | 4.6      | 50          | 474            | 3        | 1 1/2"          | 418            | 23             | 1.22                       |
| 600–6,000<br>1,000–10,000<br>1,500–15,000    | 50               | 63             | 2 3/4" | 103            | 350 | 63              | 356 | 432            | 63             | 360 | 414            | 63        | 488            | 5.8      | 63          | 476            | 3        | 2"              | 432            | 23             | 1.8                        |
| 2,000–20,000<br>3,000–30,000<br>8,000–60,000 | 65               | 75             | 3 1/2" | 122            | 350 | 75              | 356 | 444            | 75             | 360 | 422            | 75        | 602            | 6.9      | 75          | 468            | 3.6      | 2 1/2"          | 444            | –              | 2.90                       |



Screw connection  
with fusion spigot



Screw connection  
with threaded  
socket



**Article Numbers**

|    |    |                     | Type M335           |                              | Type M350           |                              |
|----|----|---------------------|---------------------|------------------------------|---------------------|------------------------------|
|    |    | Measuring Tube      | PA                  |                              | PA                  |                              |
| da | DN | Measuring Range l/h | Float PVDF Art. No. | Float PVDF/magnetic Art. No. | Float PVDF Art. No. | Float PVDF/magnetic Art. No. |
| 32 | 25 | 50-500              | 77084               | 77097                        | 79700               | 79713                        |
| 32 | 25 | 100-1.000           | 77085               | 77098                        | 79701               | 79714                        |
| 40 | 32 | 150-1.500           | 77086               | 77099                        | 79702               | 79715                        |
| 40 | 32 | 250-2.500           | 77087               | 77100                        | 79703               | 79716                        |
| 50 | 40 | 200-2.000           | 77088               | 77101                        | 79704               | 79717                        |
| 50 | 40 | 300-3.000           | 77089               | 77102                        | 79705               | 79718                        |
| 50 | 40 | 600-6.000           | 77090               | 77103                        | 79706               | 79719                        |
| 63 | 50 | 600-6.000           | 77091               | 77104                        | 79707               | 79720                        |
| 63 | 50 | 1.000-10.000        | 77092               | 77105                        | 79708               | 79721                        |
| 63 | 50 | 1.500-15.000        | 77093               | 77106                        | 79709               | 79722                        |
| 75 | 65 | 2.000-20.000        | 77094               | 77107                        | 79710               | 79723                        |
| 75 | 65 | 3.000-30.000        | 77095               | 77108                        | 79711               | 79724                        |
| 75 | 65 | 8.000-60.000        | 77096               | 77109                        | 79712               | 79725                        |

|    |    | Measuring Tube | PSU   |       | PSU   |       |
|----|----|----------------|-------|-------|-------|-------|
| 32 | 25 | 50-500         | 77162 | 77175 | 79778 | 79791 |
| 32 | 25 | 100-1.000      | 77163 | 77176 | 79779 | 79792 |
| 40 | 32 | 150-1.500      | 77164 | 77177 | 79780 | 79793 |
| 40 | 32 | 250-2.500      | 77165 | 77178 | 79781 | 79794 |
| 50 | 40 | 200-2.000      | 77166 | 77179 | 79782 | 79795 |
| 50 | 40 | 300-3.000      | 77167 | 77180 | 79783 | 79796 |
| 50 | 40 | 600-6.000      | 77168 | 77181 | 79784 | 79797 |
| 63 | 50 | 600-6.000      | 77169 | 77182 | 79785 | 79798 |
| 63 | 50 | 1.000-10.000   | 77170 | 77183 | 79786 | 79799 |
| 63 | 50 | 1.500-15.000   | 77171 | 77184 | 79787 | 79800 |
| 75 | 65 | 2.000-20.000   | 77172 | 77185 | 79788 | 79801 |
| 75 | 65 | 3.000-30.000   | 77173 | 77186 | 79789 | 79802 |
| 75 | 65 | 8.000-60.000   | 77174 | 77187 | 79790 | 79803 |

|    |    | Measuring Tube | PVC   |       | PVC   |       |
|----|----|----------------|-------|-------|-------|-------|
| 32 | 25 | 50-500         | 77240 | 77253 | 79856 | 79869 |
| 32 | 25 | 100-1.000      | 77241 | 77254 | 79857 | 79870 |
| 40 | 32 | 150-1.500      | 77242 | 77255 | 79858 | 79871 |
| 40 | 32 | 250-2.500      | 77243 | 77256 | 79859 | 79872 |
| 50 | 40 | 200-2.000      | 77244 | 77257 | 79860 | 79873 |
| 50 | 40 | 300-3.000      | 77245 | 77258 | 79861 | 79874 |
| 50 | 40 | 600-6.000      | 77246 | 77259 | 79862 | 79875 |
| 63 | 50 | 600-6.000      | 77247 | 77260 | 79863 | 79876 |
| 63 | 50 | 1.000-10.000   | 77248 | 77261 | 79864 | 79877 |
| 63 | 50 | 1.500-15.000   | 77249 | 77262 | 79865 | 79878 |
| 75 | 65 | 2.000-20.000   | 77250 | 77263 | 79866 | 79879 |
| 75 | 65 | 3.000-30.000   | 77251 | 77264 | 79867 | 79880 |
| 75 | 65 | 8.000-60.000   | 77252 | 77265 | 79868 | 79881 |

### Special scales

| Measuring range      | Air 0 bar  |                     | Air 1 bar  |                     | Air 2 bar  |                     | Air 3 bar  |                     |
|----------------------|------------|---------------------|------------|---------------------|------------|---------------------|------------|---------------------|
| H <sub>2</sub> O l/h | Art. No.   | N m <sup>3</sup> /h | Art. No.   | N m <sup>3</sup> /h | Art. No.   | N m <sup>3</sup> /h | Art. No.   | N m <sup>3</sup> /h |
| 50–500               | 00.005.526 | 1.5–14              | 00.005.602 | 3–20                | 00.005.615 | 3–24                | 00.005.628 | 3–28                |
| 100–1,000            | 00.005.527 | 2.5–29              | 00.005.603 | 4–41                | 00.005.616 | 5–50                | 00.005.629 | 5–58                |
| 150–1,500            | 00.005.528 | 4–45                | 00.005.604 | 6–63                | 00.005.617 | 7–77                | 00.005.630 | 8–90                |
| 250–2,500            | 00.005.529 | 7–79                | 00.005.605 | 10–111              | 00.005.618 | 12–136              | 00.005.631 | 14–158              |
| 200–2,000            | 00.005.530 | 6–58                | 00.005.606 | 9–82                | 00.005.619 | 11–100              | 00.005.632 | 12–116              |
| 300–3,000            | 00.005.531 | 9–108               | 00.005.607 | 13–152              | 00.005.620 | 16–186              | 00.005.633 | 18–216              |
| 600–6,000            | 00.005.532 | 17–174              | 00.005.608 | 24–246              | 00.005.621 | 30–301              | 00.005.634 | 34–348              |
| 600–6,000            | 00.005.533 | 17–175              | 00.005.609 | 24–247              | 00.005.622 | 30–302              | 00.005.635 | 34–350              |
| 1,000–10,000         | 00.005.534 | 29–301              | 00.005.610 | 41–425              | 00.005.623 | 51–520              | 00.005.636 | 58–602              |
| 1,500–15,000         | 00.005.535 | 53–405              | 00.005.611 | 75–572              | 00.005.624 | 92–700              | 00.005.637 | 106–810             |
| 2,000–20,000         | 00.005.536 | 55–545              | 00.005.612 | 78–770              | 00.005.625 | 96–942              | 00.005.638 | 110–1,090           |
| 3,000–30,000         | 00.005.537 | 80–758              | 00.005.613 | 113–1,072           | 00.005.626 | 139–1,311           | 00.005.639 | 160–1,516           |
| 8,000–60,000         | 00.005.538 | –                   | 00.005.614 | –                   | 00.005.627 | –                   | 00.005.640 | –                   |

| Measuring range      | Air 4 bar  |                     | Air 5 bar  |                     | Air 6 bar  |                     | Air 7 bar  |                     |
|----------------------|------------|---------------------|------------|---------------------|------------|---------------------|------------|---------------------|
| H <sub>2</sub> O l/h | Art. No.   | N m <sup>3</sup> /h | Art. No.   | N m <sup>3</sup> /h | Art. No.   | N m <sup>3</sup> /h | Art. No.   | N m <sup>3</sup> /h |
| 50–500               | 00.005.641 | 4–31                | 00.005.654 | 4–34                | 00.005.667 | 5–37                | 00.005.680 | 5–39                |
| 100–1,000            | 00.005.642 | 6–65                | 00.005.655 | 7–71                | 00.005.668 | 7–76                | 00.005.681 | 8–82                |
| 150–1,500            | 00.005.643 | 9–100               | 00.005.656 | 10–110              | 00.005.669 | 11–119              | 00.005.682 | 12–127              |
| 250–2,500            | 00.005.644 | 16–177              | 00.005.657 | 18–193              | 00.005.670 | 19–209              | 00.005.683 | 20–223              |
| 200–2,000            | 00.005.645 | 14–130              | 00.005.658 | 15–142              | 00.005.671 | 16–153              | 00.005.684 | 17–164              |
| 300–3,000            | 00.005.646 | 21–241              | 00.005.659 | 23–264              | 00.005.672 | 24–286              | 00.005.685 | 26–305              |
| 600–6,000            | 00.005.647 | 39–389              | 00.005.660 | 42–426              | 00.005.673 | 45–461              | 00.005.686 | 49–492              |
| 600–6,000            | 00.005.648 | 39–392              | 00.005.661 | 42–428              | 00.005.674 | 45–463              | 00.005.687 | 49–495              |
| 1,000–10,000         | 00.005.649 | 65–674              | 00.005.662 | 72–737              | 00.005.675 | 77–797              | 00.005.688 | 83–851              |
| 1,500–15,000         | 00.005.650 | 119–907             | 00.005.663 | 130–992             | 00.005.676 | 141–1,073           | 00.005.689 | 150–1,146           |
| 2,000–20,000         | 00.005.651 | 124–1,220           | 00.005.664 | 135–1,335           | 00.005.677 | 146–1,444           | 00.005.690 | 156–1,542           |
| 3,000–30,000         | 00.005.652 | 180–1,697           | 00.005.665 | 197–1,857           | 00.005.678 | 212–2,008           | 00.005.691 | 227–2,145           |
| 8,000–60,000         | 00.005.653 | –                   | 00.005.666 | –                   | 00.005.679 | –                   | 00.005.692 | –                   |

| Measuring range      | Air 8 bar  |                     | HCl 30–33% |              | NaOH 30%   |              | NaOH 50%   |            |
|----------------------|------------|---------------------|------------|--------------|------------|--------------|------------|------------|
| H <sub>2</sub> O l/h | Art. No.   | N m <sup>3</sup> /h | Art. No.   | l/h          | Art. No.   | l/h          | Art. No.   | l/h        |
| 50–500               | 00.005.693 | 4.5–42              | 00.005.539 | 20–405       | 00.005.552 | 4–226        | 00.005.565 | 1–55       |
| 100–1,000            | 00.005.694 | 7.5–87              | 00.005.540 | 55–866       | 00.005.553 | 15–600       | 00.005.566 | 3–192      |
| 150–1,500            | 00.005.695 | 12–135              | 00.005.541 | 90–1,340     | 00.005.554 | 30–970       | 00.005.567 | 6–365      |
| 250–2,500            | 00.005.696 | 21–237              | 00.005.542 | 165–2,310    | 00.005.555 | 70–1,800     | 00.005.568 | 15–770     |
| 200–2,000            | 00.005.697 | 18–174              | 00.005.543 | 115–1,660    | 00.005.556 | 35–1,240     | 00.005.569 | 8–520      |
| 300–3,000            | 00.005.698 | 27–324              | 00.005.544 | 190–3,050    | 00.005.557 | 75–2,370     | 00.005.570 | 15–1,170   |
| 600–6,000            | 00.005.699 | 51–522              | 00.005.545 | 420–4,900    | 00.005.558 | 230–4,000    | 00.005.571 | 50–2,270   |
| 600–6,000            | 00.005.700 | 51–525              | 00.005.546 | 430–5,090    | 00.005.559 | 240–4,700    | 00.005.572 | 55–2,300   |
| 1,000–10,000         | 00.005.701 | 87–903              | 00.005.547 | 750–9,460    | 00.005.560 | 475–7,340    | 00.005.573 | 140–4,340  |
| 1,500–15,000         | 00.005.702 | 159–1,215           | 00.005.548 | 1,415–11,570 | 00.005.561 | 1,030–10,330 | 00.005.574 | 420–5,820  |
| 2,000–20,000         | 00.005.703 | 165–1,635           | 00.005.549 | 1,500–17,300 | 00.005.562 | 915–11,720   | 00.005.575 | 245–7,590  |
| 3,000–30,000         | 00.005.704 | 240–2,274           | 00.005.550 | 2,175–24,120 | 00.005.563 | 1,195–16,040 | 00.005.576 | 400–11,120 |
| 8,000–60,000         | 00.005.705 | –                   | 00.005.551 | –            | 00.005.564 | –            | 00.005.577 | –          |

### Special scales as requested by the customer

Details required: Medium, spec. weight in g/cm<sup>3</sup>, viscosity in cP or mPas, operating temperature in °C, desired measuring range in l/h.

### Application instructions for special scales

When applying special scales later, ensure that the marking ◀ on the scale corresponds with the one on the measuring tube.



### Accessories

Limit value contact Z40 min.

Limit value contact Z42 max.

For further information, refer to the separate data sheets.

### Installation and assembly instructions

- Install the flow meter into the pipeline system vertically and without tension.
- Provide an inlet and outlet section,  
Inlet approx. 10 x DN, outlet approx. 5 x DN.

### Notes on operation

- Avoid pressure surges, as these can damage the unit.
- Exercise caution when installing. The measuring tube must not come into contact with solvent.
- Before start-up, make sure that the connected parts are sufficiently tightened.
- The union nuts must not be mixed up on a measuring tube made from the material PVDF. The overall length also does not correspond to the dimensions table.

We reserve the right to make technical changes in the interest of improvement.

### Special scales H<sub>2</sub>O with other units of measurement

| Measuring range Series M 335/ M 350 |       |              |           |                   |           |
|-------------------------------------|-------|--------------|-----------|-------------------|-----------|
| d mm                                | DN mm | l/h          | l/min     | m <sup>3</sup> /h | US GPM    |
| 32                                  | 25    | 50–500       | 0.8–8     | 0.05–0.5          | 0.22–2.2  |
| 32                                  | 25    | 100–1,000    | 1.7–17    | 0.1–1             | 0.44–4.4  |
| 40                                  | 32    | 150–1,500    | 2.5–25    | 0.15–1.5          | 0.66–6.6  |
| 40                                  | 32    | 250–2,500    | 4–41      | 0.25–2.5          | 1.1–11    |
| 50                                  | 40    | 200–2,000    | 3.3–33    | 0.2–2             | 0.66–6.6  |
| 50                                  | 40    | 300–3,000    | 5–50      | 0.3–3             | 1.32–13.2 |
| 50                                  | 40    | 600–6,000    | 10–100    | 0.6–6             | 2.64–26.4 |
| 63                                  | 50    | 600–6,000    | 10–100    | 0.6–6             | 2.64–26.4 |
| 63                                  | 50    | 1,000–10,000 | 16–166    | 1–10              | 4.4–44.02 |
| 63                                  | 50    | 1,500–15,000 | 25–250    | 1.5–15            | 6.6–66.04 |
| 75                                  | 65    | 2,000–20,000 | 33–330    | 2–20              | 8.8–88    |
| 75                                  | 65    | 3,000–30,000 | 50–500    | 3–30              | 13.2–132  |
| 75                                  | 65    | 8,000–60,000 | 133–1,000 | 8–60              | 35.2–264  |

### Pressure corr. table for gases: Calibration pressure 0 bar

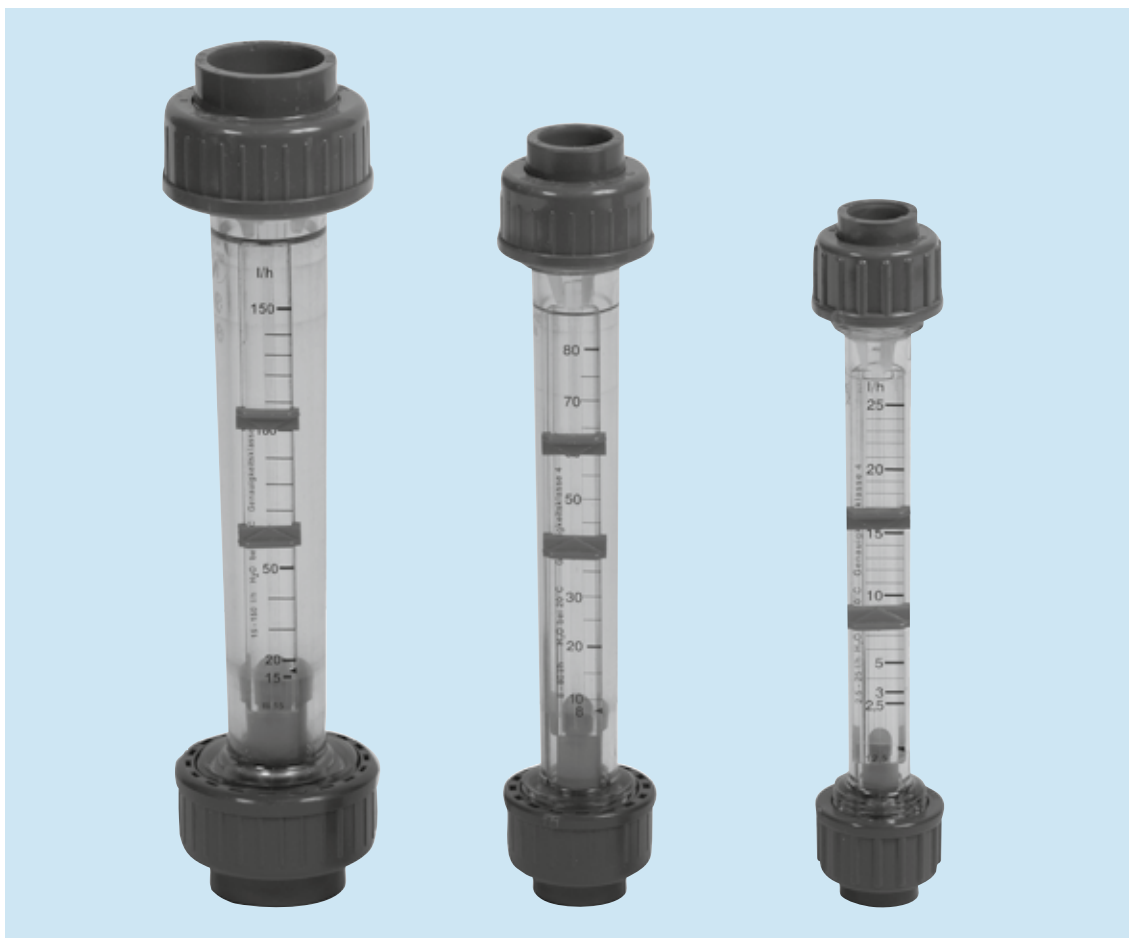
| Operating pressure bar | Factor x display value | Operating pressure bar | Factor x display value |
|------------------------|------------------------|------------------------|------------------------|
| 0.0                    | 1.000                  | 3.0                    | 2.000                  |
| 0.2                    | 1.095                  | 4.0                    | 2.240                  |
| 0.4                    | 1.184                  | 5.0                    | 2.450                  |
| 0.6                    | 1.265                  | 6.0                    | 2.650                  |
| 0.8                    | 1.340                  | 7.0                    | 2.830                  |
| 1.0                    | 1.414                  | 8.0                    | 3.000                  |
| 1.5                    | 1.580                  | 9.0                    | 3.165                  |
| 2.0                    | 1.730                  | 10.0                   | 3.320                  |

This table is used to correct values displayed for gases by the flow meter if the operating pressure deviates from the pressure used as a basis for the calibration. The values displayed on the flow meter are simply multiplied by the factor corresponding to the operating pressure.

We supply special scales for operating pressures of between 1 and 8 bar (see Page 10).

## Flow meter M 123

Measuring ranges 15 – 1,000 l/h



### Function

The M 123 flow meter works on the float principle and is used to measure the flow rate in closed pipelines. The medium flows through the vertically installed flow meter from bottom to top. This raises the float and shows the current flow rate on the scale on the measuring device. The read-off edge corresponds to the largest diameter of the float.

M 123 flow meters have a water scale and 2 setpoint indicators as standard.

### Special features:

- Fracture-proof and corrosion-resistant
- Radially removable
- Adhesive special scales, for liquid and gaseous media
- Holder for accessories (limit value contacts)
- Measuring tube carries the DN label, and also the measuring range and material
- PVDF floats and stops as standard
- Measuring ranges 1.5 – 1,000 l/h
- Less space required thanks to short overall length

## Materials

| Measuring Tube | Max. Temp. at 1 bar | Float | Insert, Top and Bottom | O-ring |
|----------------|---------------------|-------|------------------------|--------|
| PVC            | + 60 °C             | PVDF  | PVDF                   | EPDM   |
| PSU            | + 100 °C            |       |                        | FPM    |
| PVDF           | + 140 °C            |       |                        |        |

## Connection Possibilities

| Socket                         | Spigot             | Plastic Female Thread | Metal Female Thread |
|--------------------------------|--------------------|-----------------------|---------------------|
| PVC adhesive socket (standard) | PP fusion spigot   | PVC                   | Stainless steel V4A |
| PP fusion socket               | PVDF fusion spigot | PP                    | Malleable cast iron |
| PVDF fusion socket             | PE fusion spigot   | PVDF                  |                     |

## Pressure Loss

| Water l/h             | 1,5-15 | 2,5-25 | 5-50 | 10-100 | 8-80 | 15-150 | 20-200 | 15-150 | 30-300 | 50-500 | 100-1.000 |
|-----------------------|--------|--------|------|--------|------|--------|--------|--------|--------|--------|-----------|
| Pressure Loss (mm WC) | 46,0   | 46,0   | 46,0 | 46,0   | 44,7 | 44,7   | 44,7   | 82,8   | 82,8   | 82,8   | 82,8      |

Operating pressure: max. PN 10 at 20 °C

## Measuring Accuracy Accuracy Class 4 as defined by VDE/DIN 3513 Page 2

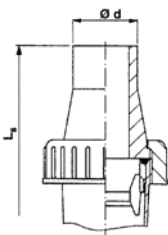
| Flow in %                       | 10    | 20   | 30   | 40   | 50   | 60   | 70   | 80   | 90   | 100  |
|---------------------------------|-------|------|------|------|------|------|------|------|------|------|
| Total measured value error in % | 13,00 | 8,00 | 6,33 | 5,50 | 5,00 | 4,67 | 4,43 | 4,25 | 4,11 | 4,00 |
| Total limit value error in %    | 1,3   | 1,6  | 1,9  | 2,2  | 2,5  | 2,9  | 3,1  | 3,4  | 3,7  | 4,0  |

## Article Numbers

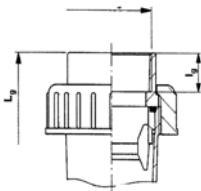
|    |    |                     | Type M123           |                              |                     |                              |
|----|----|---------------------|---------------------|------------------------------|---------------------|------------------------------|
|    |    |                     | PSU                 |                              | PVC                 |                              |
| da | DN | Measuring Range l/h | Float PVDF Art. No. | Float PVDF/magnetic Art. No. | Float PVDF Art. No. | Float PVDF/magnetic Art. No. |
| 16 | 10 | 1,5-15              | 73471               | 73648                        | 74161               | 74183                        |
| 16 | 10 | 2,5-25              | 73472               | 73649                        | 74162               | 74184                        |
| 16 | 10 | 5-50                | 73473               | 73650                        | 74163               | 74185                        |
| 16 | 10 | 10-100              | 73474               | 73651                        | 74164               | 74186                        |
| 20 | 15 | 8-80                | 73475               | 73652                        | 74165               | 74187                        |
| 20 | 15 | 15-150              | 73476               | 73653                        | 74166               | 74188                        |
| 20 | 15 | 20-200              | 73477               | 73654                        | 74167               | 74189                        |
| 32 | 25 | 15-150              | 73478               | 73655                        | 74168               | 74190                        |
| 32 | 25 | 30-300              | 73479               | 73656                        | 74169               | 74191                        |
| 32 | 25 | 50-500              | 73480               | 73657                        | 74170               | 74192                        |
| 32 | 25 | 100-1.000           | 73481               | 73658                        | 74171               | 74193                        |

Individual parts

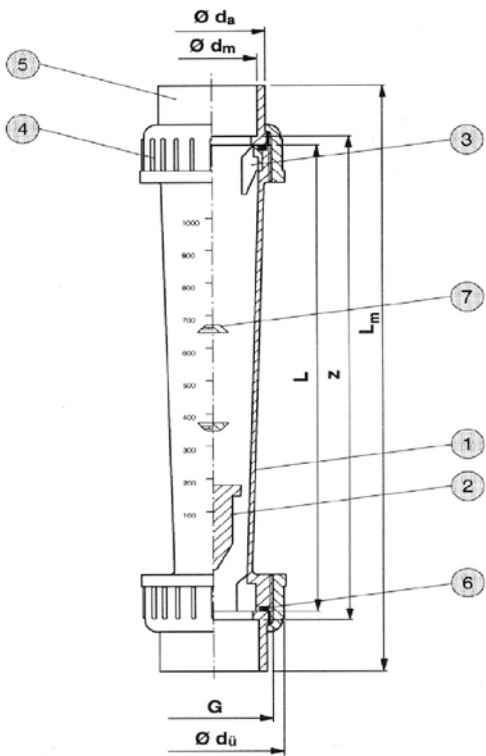
| Pos. | Designation        | Qty. | Material       |
|------|--------------------|------|----------------|
| 1    | Measuring tube     | 1    | PSU, PVC, PVDF |
| 2    | Float              | 1    | PVDF           |
| 3    | Insert, top        | 2    | PVDF           |
| 4    | Union nut          | 2    | PVC, PP, PVDF  |
| 5    | Insertion part     | 2    | PVC, PP, PVDF  |
| 6    | O-ring             | 2    | EPDM, FPM      |
| 7    | Setpoint indicator | 2    | PS             |



Screw connection  
with fusion spigot



Screw connection  
with threaded socket



Dimensions and weights

| Dimensions in mm                        |    |                |        |     |                 |     |                |                |     |                |           |                |     |                 |                |                | Weight in<br>kg/unit |
|-----------------------------------------|----|----------------|--------|-----|-----------------|-----|----------------|----------------|-----|----------------|-----------|----------------|-----|-----------------|----------------|----------------|----------------------|
| Measuring range<br>l/h H <sub>2</sub> O |    |                |        |     | Adhesive socket |     |                | Fusion socket  |     |                | Spigot PP |                |     | Threaded socket |                |                | PSU                  |
|                                         | DN | d <sub>u</sub> | G      | L   | d <sub>m</sub>  | z   | L <sub>m</sub> | d <sub>m</sub> | z   | L <sub>m</sub> | d         | L <sub>s</sub> | s   | d <sub>g</sub>  | L <sub>g</sub> | I <sub>g</sub> |                      |
| 1.5–15<br>2.5–25<br>5–50<br>10–100      | 10 | 35             | 3/4"   | 165 | 16              | 171 | 199            | 15.5           | 175 | 201            |           |                |     | 3/8"            | 199            | 11             | 0.08                 |
| 8–80<br>15–150<br>20–200                | 15 | 43             | 1"     | 185 | 20              | 191 | 223            | 19.5           | 195 | 223            | 20        | 293            | 1.9 | 1/2"            | 223            | 13             | 0.13                 |
| 15–150<br>30–300<br>50–500<br>100–1,000 | 25 | 60             | 1 1/2" | 200 | 32              | 206 | 250            | 31.5           | 210 | 246            | 32        | 320            | 3.0 | 1"              | 250            | 17             | 0.24                 |

## Special scales

| Measuring range      | Air 0 bar  |                     | Air 1 bar  |                     | Air 2 bar  |                     | Air 3 bar  |                     |
|----------------------|------------|---------------------|------------|---------------------|------------|---------------------|------------|---------------------|
| H <sub>2</sub> O l/h | Art. No.   | N m <sup>3</sup> /h | Art. No.   | N m <sup>3</sup> /h | Art. No.   | N m <sup>3</sup> /h | Art. No.   | N m <sup>3</sup> /h |
| 1.5–15               | 00.000.998 | 0.10–0.55           | 00.001.050 | 0.15–0.80           | 00.001.051 | 0.17–0.9            | 00.001.052 | 0.20–1.1            |
| 2.5–25               | 00.001.059 | 0.2–0.95            | 00.001.060 | 0.25–1.3            | 00.001.061 | 0.3–1.6             | 00.001.062 | 0.4–1.9             |
| 5–50                 | 00.001.070 | 0.5–1.9             | 00.001.071 | 0.7–2.7             | 00.001.072 | 0.8–3.4             | 00.001.073 | 1.0–3.8             |
| 10–100               | 00.001.081 | 0.8–3.0             | 00.001.082 | 1.0–4.2             | 00.001.083 | 1.2–5.4             | 00.001.084 | 1.4–6.4             |
| 8–80                 | 00.001.092 | 0.6–2.8             | 00.001.093 | 0.8–4               | 00.001.094 | 1.0–5.0             | 00.001.095 | 1.2–5.6             |
| 15–150               | 00.001.103 | 1.4–5.6             | 00.001.104 | 2–8                 | 00.001.105 | 2–10                | 00.001.106 | 3–12                |
| 20–200               | 00.001.114 | 1.5–7.0             | 00.001.115 | 2–10                | 00.001.116 | 3–13                | 00.001.117 | 3–15                |
| 15–150               | 00.001.125 | 1.0–6.5             | 00.001.126 | 1–9                 | 00.001.127 | 1.5–11              | 00.001.128 | 2–13                |
| 30–300               | 00.001.136 | 1.5–11              | 00.001.137 | 2–15                | 00.001.138 | 2.5–18              | 00.001.139 | 3–22                |
| 50–500               | 00.001.147 | 3–18                | 00.001.148 | 4–25                | 00.001.149 | 5–30                | 00.001.150 | 5–35                |
| 100–1,000            | 00.001.158 | 6–30                | 00.001.159 | 8–44                | 00.001.160 | 10–54               | 00.001.161 | 12–62               |

| Measuring range      | Air 4 bar  |                     | Air 5 bar  |                     | Air 6 bar  |                     | Air 7 bar  |                     |
|----------------------|------------|---------------------|------------|---------------------|------------|---------------------|------------|---------------------|
| H <sub>2</sub> O l/h | Art. No.   | N m <sup>3</sup> /h | Art. No.   | N m <sup>3</sup> /h | Art. No.   | N m <sup>3</sup> /h | Art. No.   | N m <sup>3</sup> /h |
| 1.5–15               | 00.001.053 | 0.25–1.20           | 00.001.054 | 0.25–1.3            | 00.000.999 | 0.26–1.45           | 00.001.055 | 0.30–1.5            |
| 2.5–25               | 00.001.063 | 0.4–2.1             | 00.001.064 | 0.5–2.4             | 00.001.065 | 0.5–2.5             | 00.001.066 | 0.5–2.7             |
| 5–50                 | 00.001.074 | 1.2–4.2             | 00.001.075 | 1.2–4.6             | 00.001.076 | 1.2–5.0             | 00.001.077 | 1.4–5.4             |
| 10–100               | 00.001.085 | 1.6–7.0             | 00.001.086 | 1.6–7.4             | 00.001.087 | 2.0–8.0             | 00.001.088 | 2–8.8               |
| 8–80                 | 00.001.096 | 1.4–6.4             | 00.001.097 | 1.4–7.0             | 00.001.098 | 1.5–7.5             | 00.001.099 | 1.5–8.0             |
| 15–150               | 00.001.107 | 3–13                | 00.001.108 | 3–14                | 00.001.109 | 3.5–15              | 00.001.110 | 3.5–16.5            |
| 20–200               | 00.001.118 | 4–17                | 00.001.119 | 4–18                | 00.001.120 | 4–20                | 00.001.121 | 5–21                |
| 15–150               | 00.001.129 | 2–14.5              | 00.001.130 | 2–16                | 00.001.131 | 2–17                | 00.001.132 | 2.5–18              |
| 30–300               | 00.001.140 | 3–24                | 00.001.141 | 4–26                | 00.001.142 | 4–28                | 00.001.143 | 4–30                |
| 50–500               | 00.001.151 | 6–40                | 00.001.152 | 6–44                | 00.001.153 | 8–48                | 00.001.154 | 8–50                |
| 100–1,000            | 00.001.162 | 12–70               | 00.001.163 | 15–75               | 00.001.164 | 15–80               | 00.001.165 | 15–85               |

| Measuring range      | Air 8 bar  |                     | Air 9 bar  |                     | Air 10 bar |                     |
|----------------------|------------|---------------------|------------|---------------------|------------|---------------------|
| H <sub>2</sub> O l/h | Art. No.   | N m <sup>3</sup> /h | Art. No.   | N m <sup>3</sup> /h | Art. No.   | N m <sup>3</sup> /h |
| 1.5–15               | 00.001.056 | 0.3–1.6             | 00.001.057 | 0.3–1.7             | 00.001.058 | 0.35–1.8            |
| 2.5–25               | 00.001.067 | 0.6–2.9             | 00.001.068 | 0.6–3.0             | 00.001.069 | 0.6–3.2             |
| 5–50                 | 00.001.078 | 1.4–5.8             | 00.001.079 | 1.6–6.0             | 00.001.080 | 1.6–6.4             |
| 10–100               | 00.001.089 | 2.0–9.0             | 00.001.090 | 2–10                | 00.001.091 | 2–10                |
| 8–80                 | 00.001.100 | 1.5–8.5             | 00.001.101 | 2.0–9.0             | 00.001.102 | 2.0–9.5             |
| 15–150               | 00.001.111 | 4–17                | 00.001.112 | 4–18                | 00.001.113 | 4–19                |
| 20–200               | 00.001.122 | 5–23                | 00.001.123 | 5–23                | 00.001.124 | 5–25                |
| 15–150               | 00.001.133 | 2.5–19.5            | 00.001.134 | 3–20                | 00.001.135 | 3–21                |
| 30–300               | 00.001.144 | 4–33                | 00.001.145 | 5–34                | 00.001.146 | 5–35                |
| 50–500               | 00.001.155 | 8–54                | 00.001.156 | 8–56                | 00.001.157 | 10–60               |
| 100–1,000            | 00.001.166 | 20–90               | 00.001.167 | 20–95               | 00.001.168 | 20–100              |

## Limit value contact Z<sub>40</sub> min. and Z<sub>42</sub> max.

For float-type flow meters M<sub>335</sub>/M<sub>350</sub>/M<sub>123</sub>

### Use

The limit value contacts Z<sub>40</sub> and Z<sub>42</sub> are used for external monitoring of limited flow values on our float-type flow meters. They are pushed onto the guide located on the flow measuring device and can be set to any desired value of the corresponding scale.

### Function

A solenoid installed in the float closes or opens a reed contact permanently cast in the limit value contact. The switching function is bistable. This means that the switching state is maintained even if the solenoid float moves away from the contact.

### Switching states

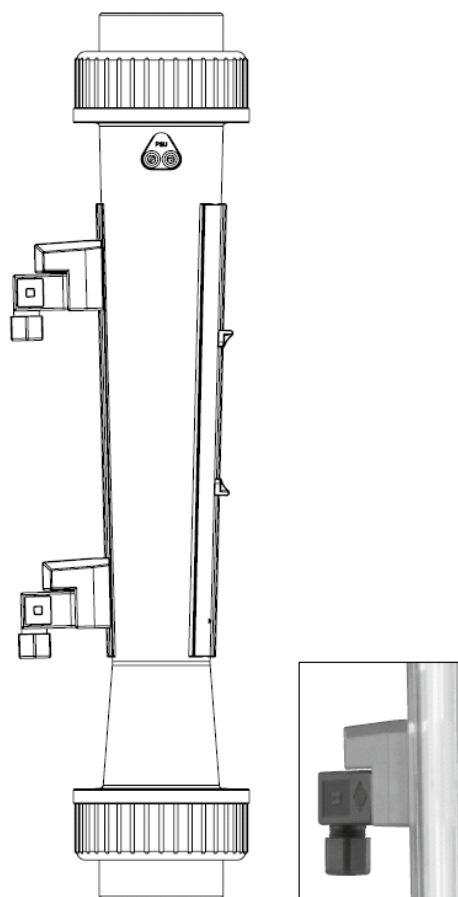
|                     | Float above | Float below |
|---------------------|-------------|-------------|
| Z <sub>40</sub> min | open        | closed      |
| Z <sub>42</sub> max | closed      | open        |

### Attention

When retrofitting limit value contacts, ensure that the standard float is replaced with a solenoid float. The solenoid float is clearly identified by a "M" on the top.

### Technical data

|                                 |                              |
|---------------------------------|------------------------------|
| Switching voltage*              | max. 230 V~                  |
| Switching rating*               | max. 10 W/12 VA              |
| Switching current*              | max. 0.5 A                   |
| Contact resistance              | < 200 mOhm                   |
| Leakage resistance              | > 10 <sup>11</sup> Ohm       |
| Permissible ambient temperature | 0 to +55 °C                  |
| Protection type                 | in acc. with DIN 40050-IP 65 |
| Switching hysteresis            | 1–2 mm float travel          |



### Order numbers

|                      |            |
|----------------------|------------|
| Z <sub>40</sub> min. | 17.100.686 |
| Z <sub>42</sub> max. | 17.100.687 |

We reserve the right to make technical changes in the interest of improvement.

\* Even a brief overshoot is not permitted. This is uncontrollable with inductive or capacitive peaks, e.g. with contactors or solenoid valves. It is therefore recommended to use a limit value switch or a contact protection relay.

Subject to errors of typesetting, misprints and modifications. Illustrations are generic and for reference only.

Архангельск (8182)63-90-72  
Астана (7172)727-132  
Астрахань (8512)99-46-04  
Барнаул (3852)73-04-60  
Белгород (4722)40-23-64  
Брянск (4832)59-03-52  
Владивосток (423)249-28-31  
Волгоград (844)278-03-48  
Вологда (8172)26-41-59  
Воронеж (473)204-51-73  
Екатеринбург (343)384-55-89  
Иваново (4932)77-34-06

Ижевск (3412)26-03-58  
Иркутск (395)279-98-46  
Казань (843)206-01-48  
Калининград (4012)72-03-81  
Калуга (4842)92-23-67  
Кемерово (3842)65-04-62  
Киров (8332)68-02-04  
Краснодар (861)203-40-90  
Красноярск (391)204-63-61  
Курск (4712)77-13-04  
Липецк (4742)52-20-81  
Киргизия (996)312-96-26-47

Магнитогорск (3519)55-03-13  
Москва (495)268-04-70  
Мурманск (8152)59-64-93  
Набережные Челны (8552)20-53-41  
Нижний Новгород (831)429-08-12  
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