# Mini - Overtank - Level Indicators 1016-Mini

# Mini - Overtank - Level Indicators 1016-Mini
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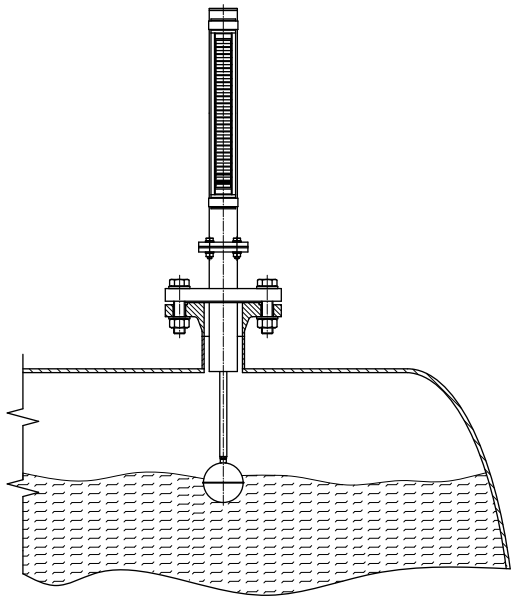
## Instructions for instrument selection in the catalogue

So that the customer gets the best equipment solution according to his requirements, we recommend this simple procedure using the following pages:

- Define the dimension of the fitting or interface (e.g. thread G2“, DIN-flange DN25/PN16, etc.)
- Determine the electrical connection (e.g. terminal box, cable entry, plug, etc.)
- Find out the operating conditions, min. and max. operating pressure, temperature and specific gravity of the media at the max. operating temperature.
- With the size of the fitting and material of the instrument, a guide specification can be selected on pages 312 to 319.
- The full and final specification can now be generated by reference to the „type key“ on pages 326-328.
- With the type description and the technical operating conditions a price quotation can be made or the instrument can be ordered.
- Specification of the requested approval.

# Mini - Overtank - Level Indicators 1016-Mini
# Description and function

The mini overtank level indicator forms an integral part of a pressure vessel. A chamber is mounted on the top of a tank or container by means of a process connection. Inside the chamber of the mini overtank level indicator is a magnetic system, which is connected to a transmission rod. The concentrated magnetic field produced by the permanent magnet gives a precise reading for the level of liquid in the chamber. A signal is transmitted by the magnetic field through the wall of the chamber to an externally mounted indicator, as well as to recording and switchgear elements.



**Magnetic Roller Indicators**
are used for displaying the level visually. Small plastic or aluminium rollers with inlaid bar magnets are held in an aluminium or stainless steel profile bar. Depending on the level in the chamber, these rollers turn from white to red as the level rises and from red to white as the level falls. The level inside the vessel can thus be indicated continually without requiring any outside power source.

**Level Sensors**
are used for the electrical continuous remote indicator of levels. The magnetic field of the permanent magnet in the cylindrical float acts through the wall to activate very small reed contacts that continually register the measurement voltage on a resistance measurement chain. This measurement voltage is proportional to the level (3-wire potentiometer circuit). The resolution of the reed contacts is produced with spacings of 5, 10 and 15mm. When used in connection with a control unit, the resistance value can be converted into a standardized analogous signal.

**Magnetic Switches**
are used as limit value switches for various filling levels. The permanent magnet in the cylindrical float activates a potential-free bistable reed contact. Completely contactless, it sends out a binary signal that can be used as a „full/empty“, a „pump on/off“ or a „valve open/close“ signal. However, reed contacts are also ideally suited for forwarding signals directly to SPS control units.

## Technical advantages

- Simple, robust and unbreakable design
- Pressure- and gas-proof separation between the measurement and the indicator chambers
- Detection and indication of the filling levels of aggressive, combustible, poisonous, hot , turbulent and severely contaminated media
- Guaranteed operation of the magnetic roller indicator without requiring an auxiliary power source, even in the case of power system failures
- Usable in all fields of industry tanks to the use of a wide range of corrosion-proof materials
- Designs available for pressure ranges from a vacuum up to 16 bar
- Designs available for temperature ranges from -40°C to +150°C
- Designs available for density as of 350 kg/m³

# Mini - Overtank - Level Indicators 1016-Mini
# Certificates / Approvals

**Certificates**

### SCHWEIZERISCHER VEREIN FÜR QUALITÄTS- UND MANAGEMENTSYSTEME
Certified according to ISO 9000 rev. 2000

### SWISS TECHNICAL SERVICES AG
Approval as production factory, welding examination and procedure qualification incl. restamping certificate for the production of pressure tanks according to SVTI-regulation 501, 201

**Approvals**

The company Heinrich Kübler AG can manufacture mini overtank level indicators to most national and industrial approvals. Therefore a wide range of instruments with approvals requirements can be produced according to customer's requests.

### TECHNISCHER ÜBERWACHUNGSVEREIN DEUTSCHLAND (PED)
Approval as production factory for manufacture of pressure tanks according to AD HP 0, PED Pressure Equipment Directive 97/23/EG

### SOCIETE NATIONALE DE CERTIFICATION ET D'HOMOLOGATION (ATEX)
Approval for the production of mini-overtank-level indicators according to EU-Directive 94/9/EG

# Mini - Overtank - Level Indicators 1016-Mini
# Approvals

As an innovative manufacturer of instruments for level control, we can offer to our customers systems according to different directives. The types of approval, applications and limits of use can be taken from the following specifications.

**Approvals**

## Ex

A large number of mini-overtank-level indicators from our standard range, or to customer requests, can be built according to the ATEX-Directive 94/9/EG with the protection types EEx ia IIC T3 to T6, according to the corresponding electrical components in EEx d T4 to T6 or dust Ex/D. By the combination of the instruments with the type key the catalogue shows with the Ex hexagonal logo which components can be used for Ex-instruments.

**Medium temperature:**

| EEx ia-instruments | |
|---|---|
| T3 | 180 °C |
| T4 | 130 °C |
| T5 | 95 °C |
| T6 | 80 °C |

| EEx d-instruments | |
|---|---|
| T4 | 120 °C |
| T5 | 95 °C |
| T6 | 80 °C |

## PED

Under the Pressure Equipment Directive 97/23/EG, any pressure vessel or instrument used within a pressurised system at 0,5 bar or above, has to conform to various categories. Depending on the design data or customer needs, manufacture of instruments is to either of the categories below.

| Category II | |
|---|---|
| Module | A1 |

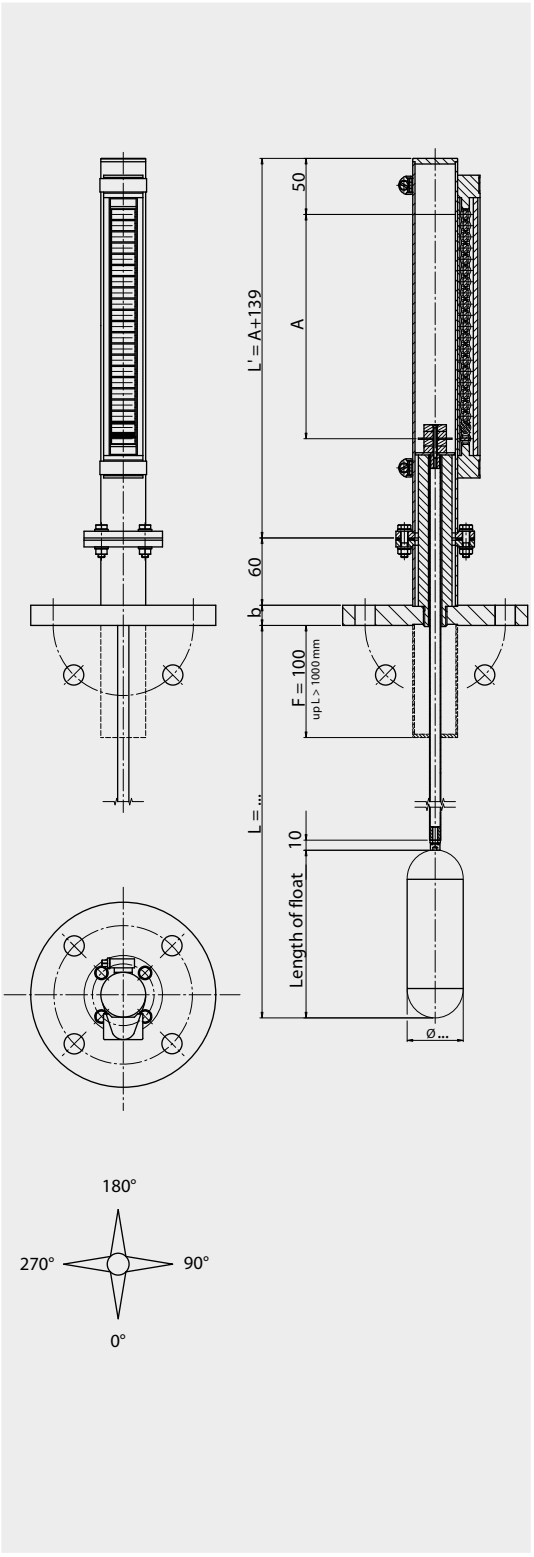
| Category IV | |
|---|---|
| Module | B+D |

# Mini - Overtank - Level Indicators 1016-Mini
# Stainless steel to PN16

## Technical data

**UNA - .. / .. - L .. - V .. - .. - .. S ..**
**UMG - .. / .. - .. - .. - .. K .. - L .. - V .. - .. - .. S ..**

| | |
|---|---|
| **Material:** | 1.4301 / 304<br>1.4306 / 304L<br>1.4404 / 316 L<br>1.4435 / 316 L<br>1.4571 / 316 Ti |
| **Chamber:** | ø 40 x 2 mm |
| **Chamber end top:** | - Flat top |
| **Process connections:** | - Flange acc. to DIN<br>- Flange acc. to Ansi<br>- Tri-clamp flange<br>- ... |
| **Length of instrument:** | L = 400 mm ... 5000 mm |
| **Indicating range:** | A = L - float length - (F) |
| **Magnetic roller indicator:** | - MNA<br>- MNAV<br>- MNKV<br>- MNAN |
| **Scale:** | - ../SK /../SG / ../VSG |
| **Magnetic switch:** | - See page 322 |
| **Level sensor:** | - See pages 323-324 |
| **Insulation thickness:** | - 30 mm<br>- 60 mm |
| **Approvals:** | - See pages 310-311 |
| **Float:** | - Acc. to table p. 314-319 |
| **Interface:** | - Acc. to protocol |




## Operating parameters

| | |
|---|---|
| **Temperature:** | -40 °C ... +150 °C |
| **Pressure:** | -1 ... 16 bar |
| **Specific gravity:** | ≥ 400 kg/m³ |
| **Accuracy:** | 5 mm |
| **Repeatability:** | +/- 2 mm |

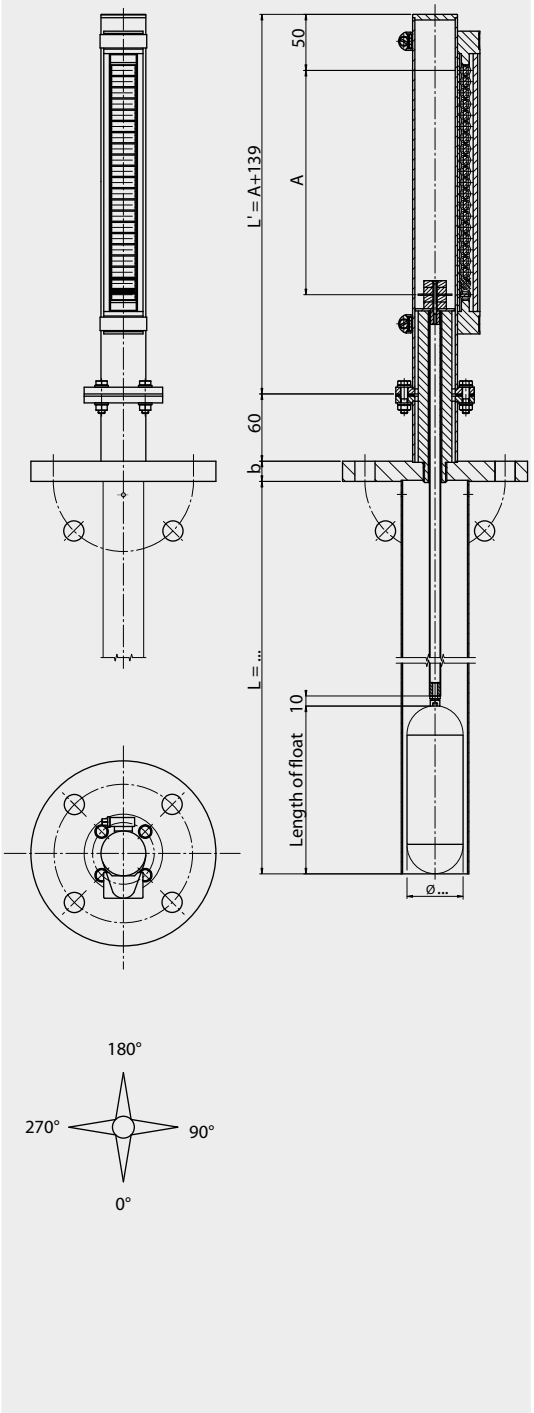
**Type combination see type key Mini - Overtank - Level Indicators**

# Mini - Overtank - Level Indicators 1016-Mini
# Stainless steel to PN16 with protection tube

## Technical data

**UNA - .. / .. - L .. - V .. - .. - .. S .. - SR ..**
**UMG - .. / .. - .. - .. - .. K .. - L .. - V .. - .. - .. S .. - SR ..**

| | |
|---|---|
| **Material:** | 1.4301 / 304<br>1.4306 / 304L<br>1.4404 / 316 L<br>1.4435 / 316 L<br>1.4571 / 316 Ti |
| **Chamber:** | ø 40 x 2 mm |
| **Chamber end top:** | - Flat top |
| **Protection tube:** | ø 60 mm<br>ø 88 mm<br>ø114 mm |
| **Process connections:** | - Flange acc. to DIN<br>- Flange acc. to Ansi<br>- Tri-clamp flange<br>- ... |
| **Length of instrument:** | L = 400 mm ... 5000 mm |
| **Indicating range:** | A = L - float length |
| **Magnetic roller indicator:** | - MNA<br>- MNAV<br>- MNKV<br>- MNAN |
| **Scale:** | - ../SK /../SG / ../VSG |
| **Magnetic switch:** | - See page 322 |
| **Level sensor:** | - See pages 323-324 |
| **Insulation thickness:** | - 30 mm<br>- 60 mm |
| **Approvals:** | - See pages 310-311 |
| **Float:** | - Acc. to table p.314-319 |
| **Interface:** | - Acc. to protocol |

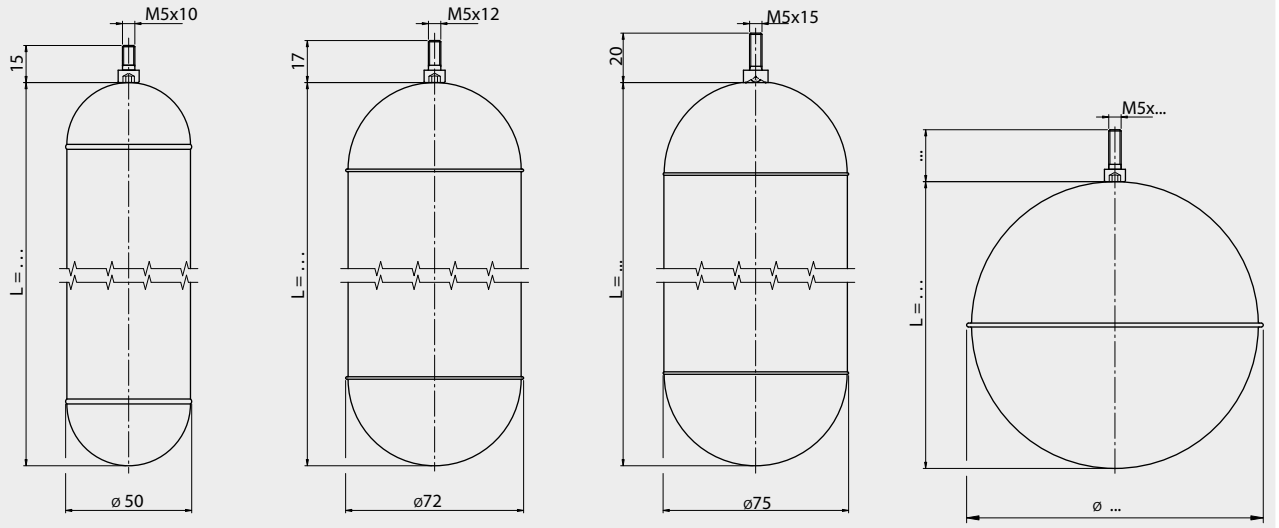



## Operating parameters

| | |
|---|---|
| **Temperature:** | -40 °C ... +150°C |
| **Pressure:** | -1 ... 16 bar |
| **Specific gravity:** | ≥ 400 kg/m³ |
| **Accuracy:** | 5 mm |
| **Repeatability:** | +/- 2 mm |

**Type combination see type key Mini - Overtank - Level Indicators**

# Mini - Overtank - Level Indicators 1016-Mini
# Float without magnetic system




ZVS 50/250
ZVS 50/350
ZTS 50/250
ZTS 50/350

ZVS 72/250

ZTS 75/300

SV 98
SV 105
SV 120
SV 200

## Cylindrical float

| Type | Material | Cylinder ø [mm] | Length [mm] | Max. operating pressure [bar] | Max. operating temp. [°C] | Weight [g] | Min. flange | Plate thickness |
|---|---|---|---|---|---|---|---|---|
| **ZVS50/250** | **St. steel** | 50 | 250 | 16 | 200 | 184 | DN 50/PN16 | 0.6/0.5 |
| **ZVS50/350** | **St. steel** | 50 | 350 | 16 | 200 | 258 | DN 50/PN16 | 0.6/0.5 |
| **ZVS72/250** | **St. steel** | 72 | 250 | 10 | 200 | 325 | DN 80/PN16 | 0.8/0.6 |
| **ZTS50/250** | **Titanium** | 50 | 250 | 10 | 150 | 122 | DN 50/PN10 | 0.71/0.7 |
| **ZTS50/350** | **Titanium** | 50 | 350 | 10 | 150 | 174 | DN 50/PN10 | 0.71/0.7 |
| **ZTS75/300** | **Titanium** | 75 | 300 | 1 | 150 | 210 | DN 100/PN10 | 0.71/0.7 |

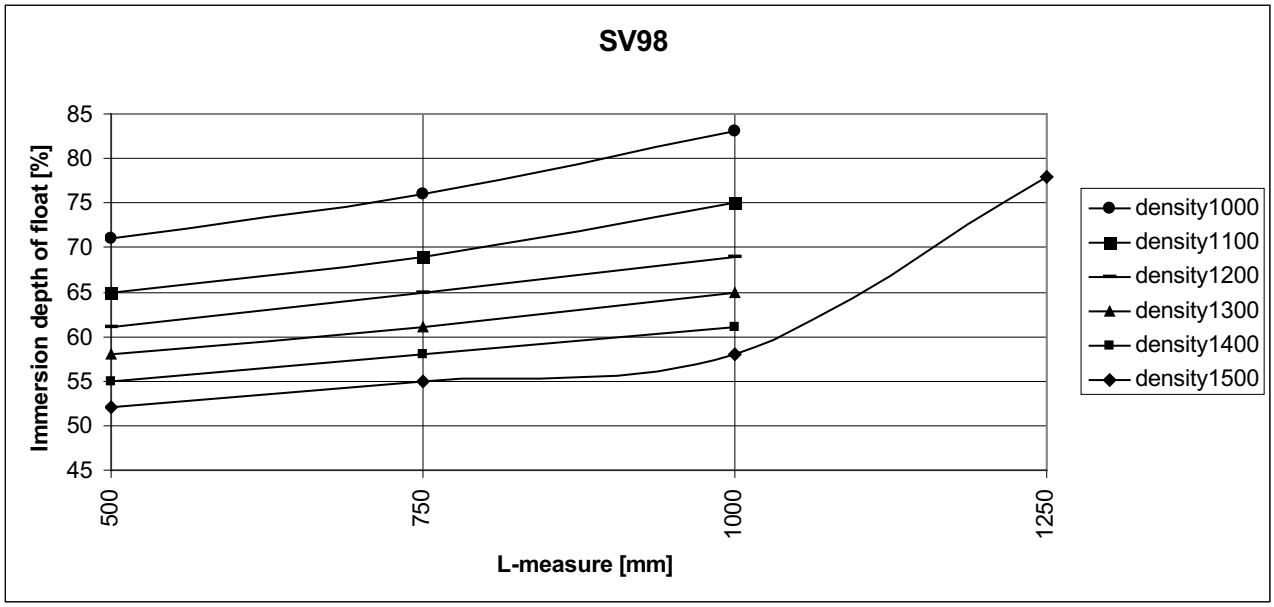
## Spherical float

| Type | Material | Sphere ø [mm] | Length [mm] | Max. operating pressure [bar] | Max. operating temp [°C] | Weight[g] | Min. flange | Plate thickness |
|---|---|---|---|---|---|---|---|---|
| **SV98** | **St. steel** | 98/95 | 95 | 16 | 200 | 180 | DN100/PN16 | 0.8 |
| **SV105** | **St. steel** | 105/102 | 102 | 25 | 200 | 257 | DN100/PN25 | 1.0 |
| **SV120** | **St. steel** | 120/116 | 116 | 16 | 200 | 235 | DN125/PN16 | 0.7 |
| **SV200** | **St. steel** | 205/200 | 200 | 6 | 200 | 788 | DN200/PN10 | 0.8 |

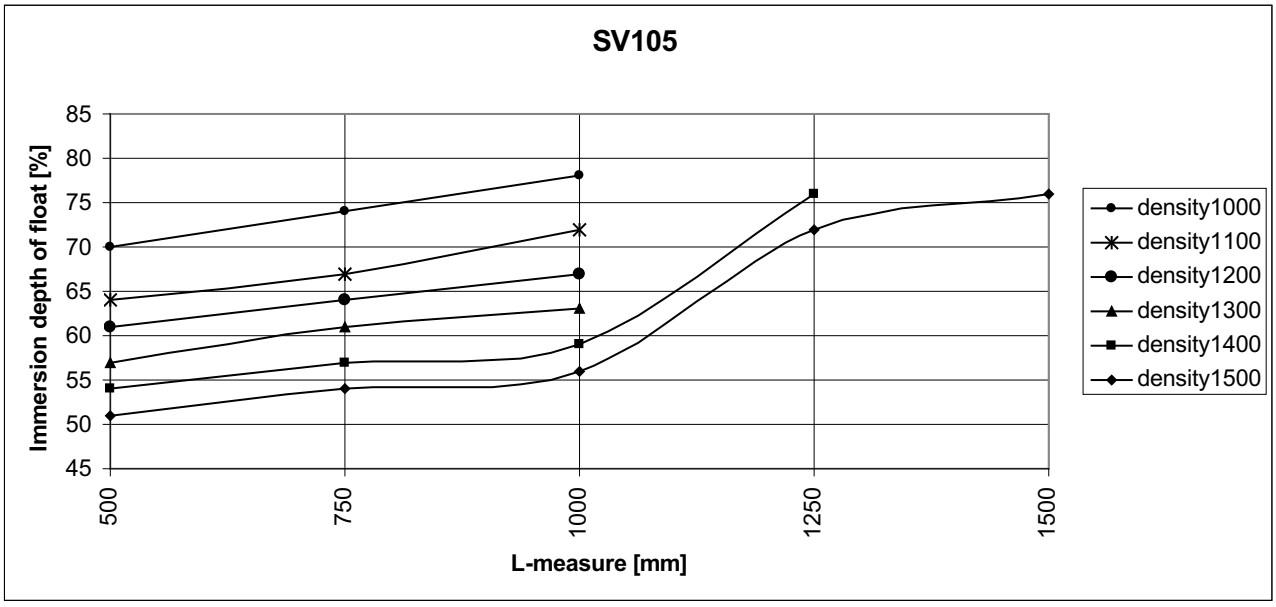
**Specifications subject to change**

# Mini - Overtank - Level Indicators 1016-Mini
# Spherical float in Stainless steel

## Spherical float type SV 98

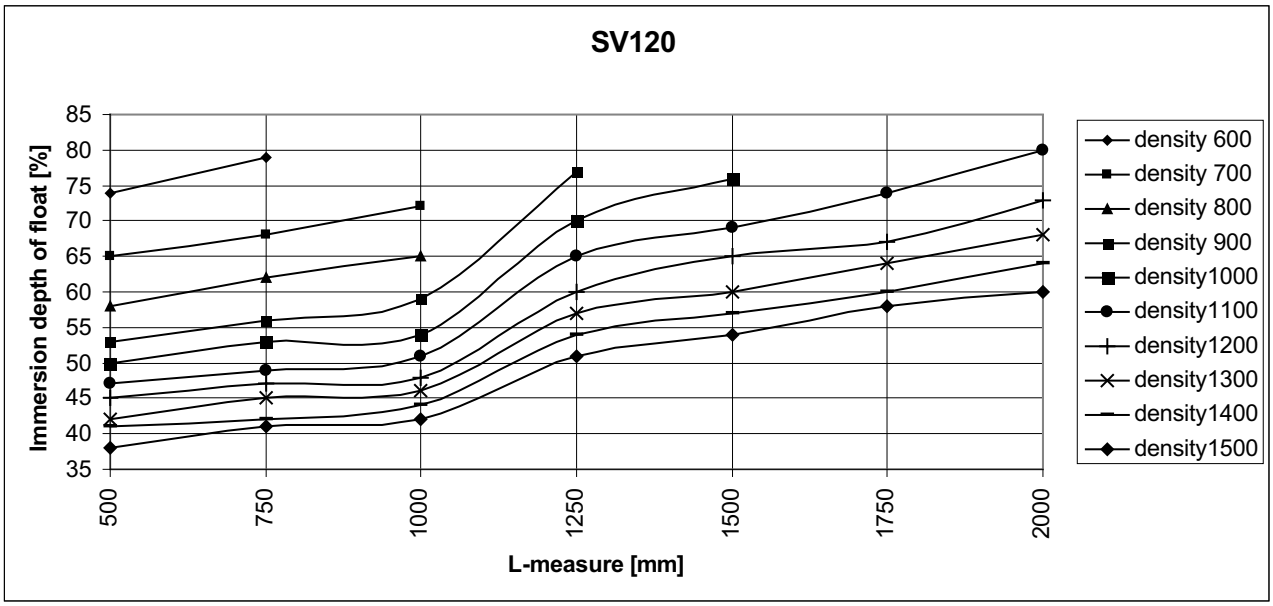



## Spherical float type SV 105

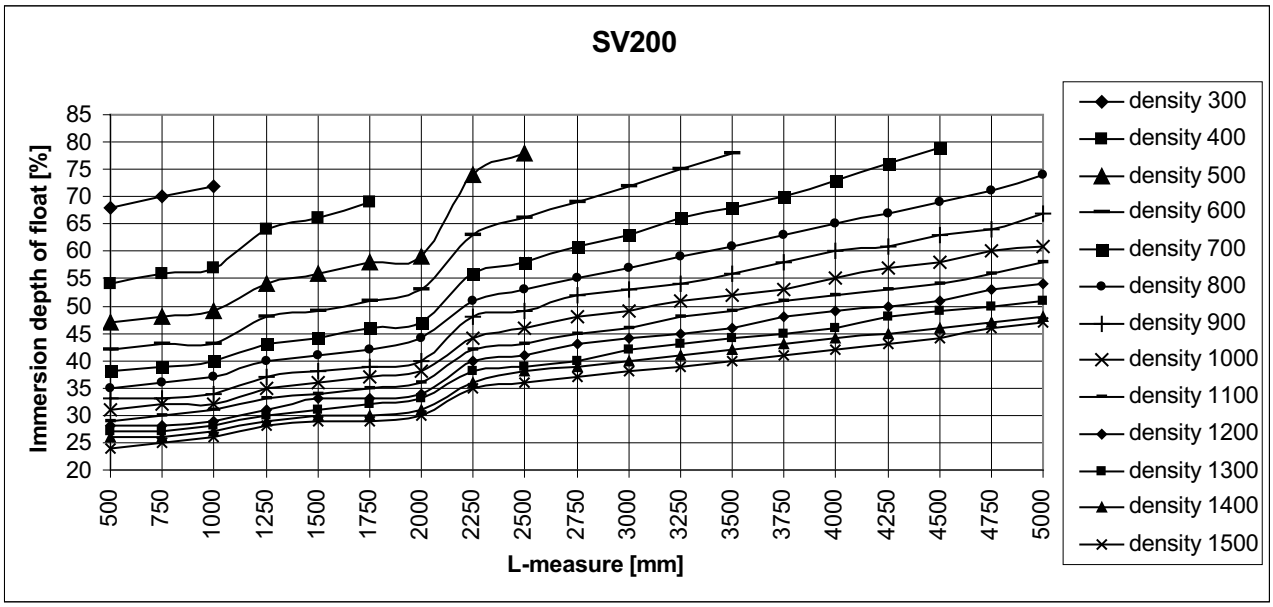


# Mini - Overtank - Level Indicators 1016-Mini
# Spherical float in Stainless steel

## Spherical float type SV 120

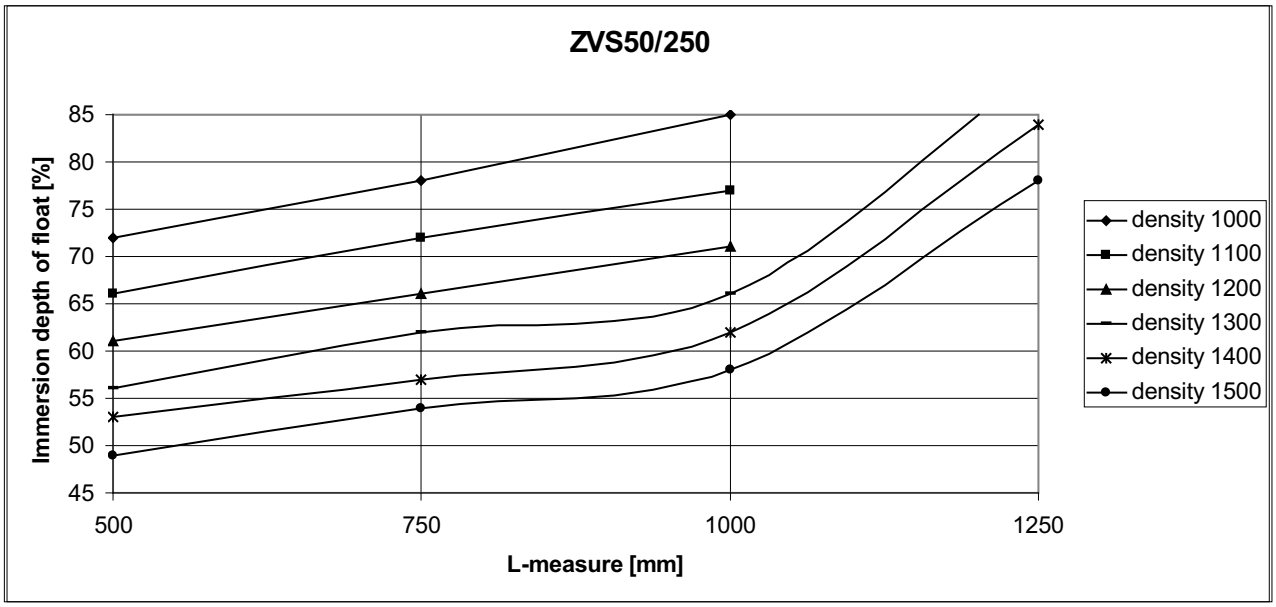



## Spherical float type SV 200

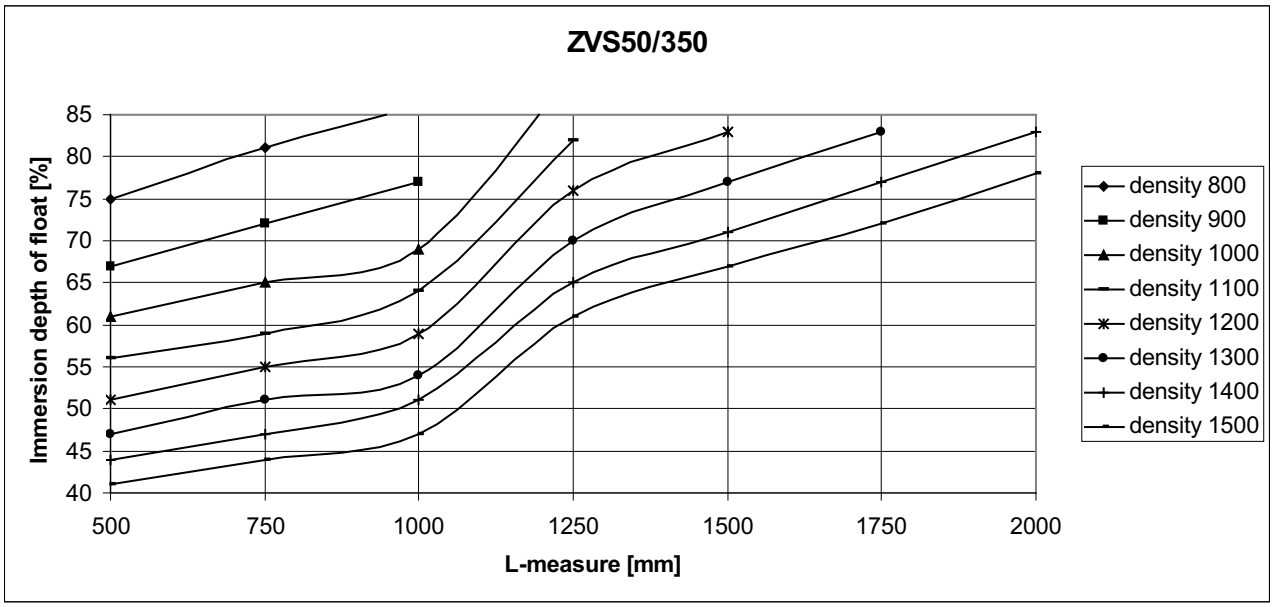


# Mini - Overtank - Level Indicators 1016-Mini
# Cylindrical float in Stainless steel

## Cylindrical float type ZVS 50/250

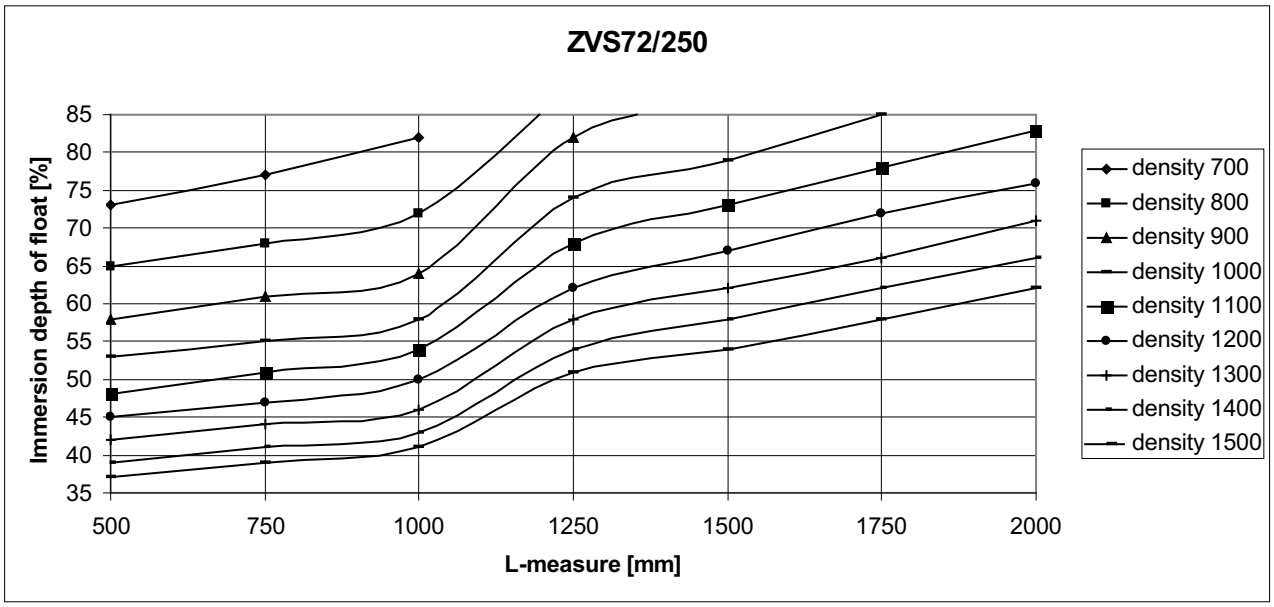



## Cylindrical float type ZVS 50/350

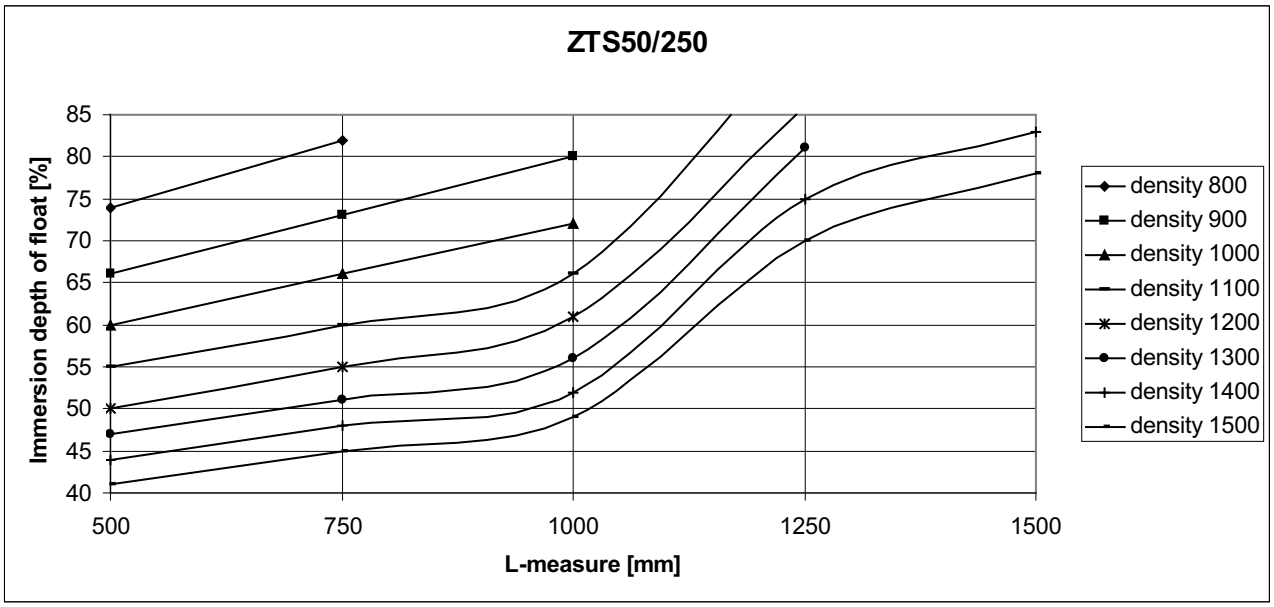


# Mini - Overtank - Level Indicators 1016-Mini
# Cylindrical float in Stainless steel and Titanium

## Cylindrical float type ZVS 72/250

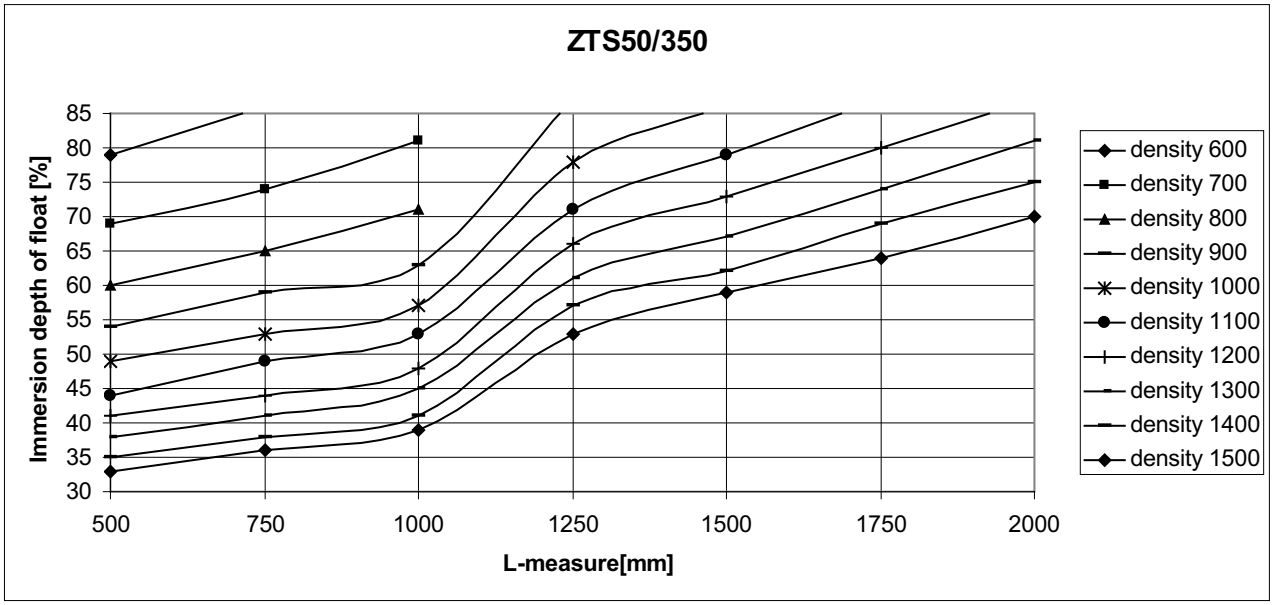



## Cylindrical float type ZTS 50/250

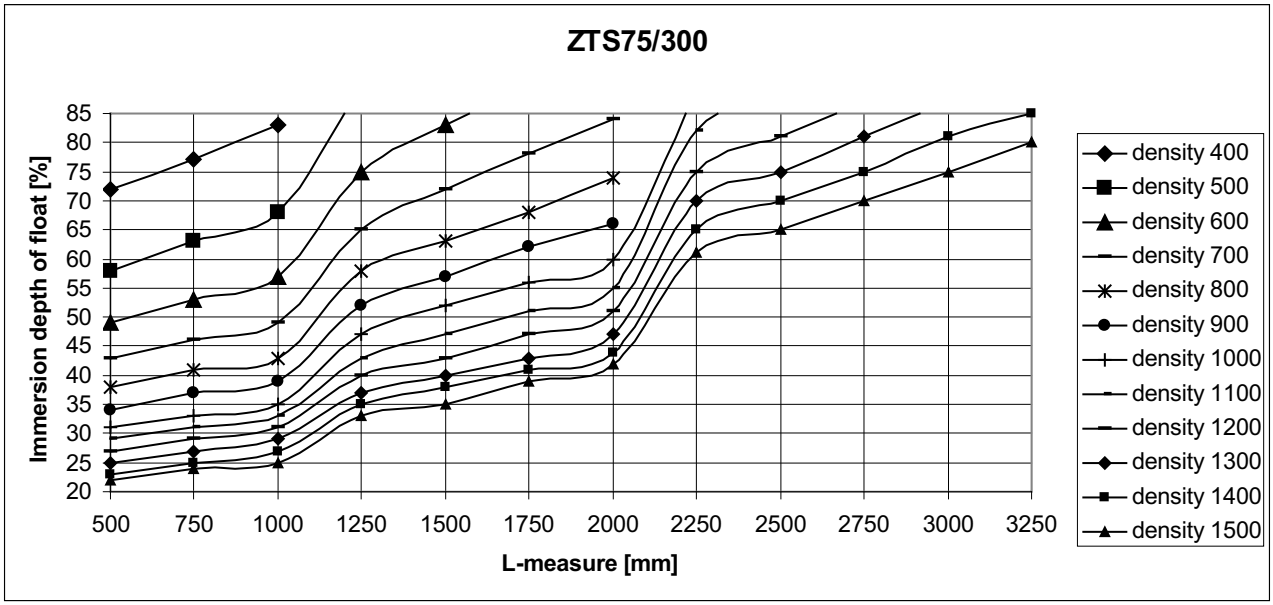


# Mini - Overtank - Level Indicators 1016-Mini
# Cylindrical float in Titanium

## Cylindrical float type ZTS 50/350




## Cylindrical float type ZTS 75/300



# Mini - Overtank - Level Indicators 1016-Mini
# Magnetic roller indicator

## Magnetic roller indicator MNA - M ..

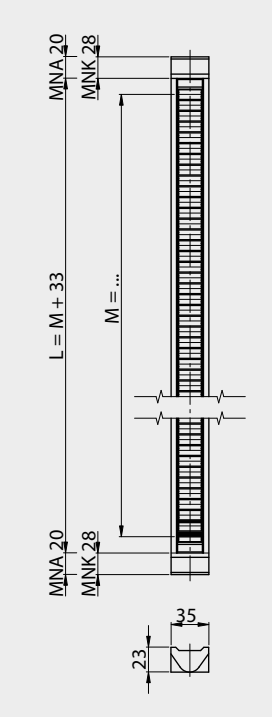
Housing:
- aluminium anodized

Indicator rolls MNA:
- material: pocan
- colours: white / red

Cover:
- macrolon (standard)
- glass

Ambient temperature:
- MNA -40 °C ... +150 °C

Protection rating:
- IP 64 (optional IP 67)




## Magnetic roller indicator MNAV - M ..

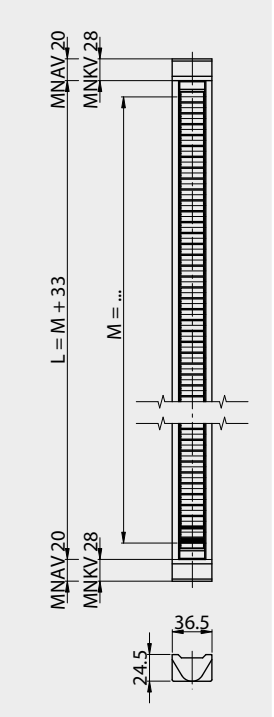
Housing:
- stainless steel

Indicator rolls MNAV:
- material: pocan
- colours: white / red

Cover:
- macrolon (standard)
- glass

Ambient temperature:
- MNAV -40 °C ... +150 °C

Protection rating:
- IP 64 (optional IP 67)




## Magnetic roller indicator MNAN - M ..

Housing:
- aluminium anodized

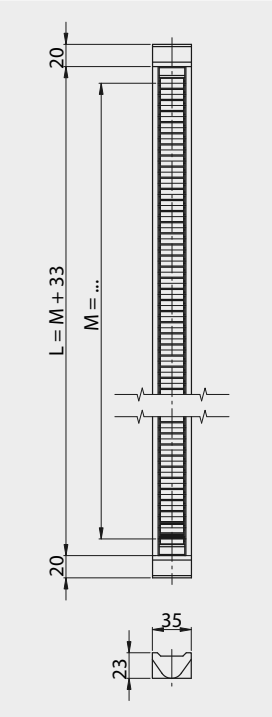
Indicator rolls MNAN:
- material: pocan
- colours: white / red

Shock proof design:
- rollers turning max. 180°

Cover:
- macrolon (standard)
- glass

Ambient temperature:
- MNAN -40 °C ... +150 °C

Protection rating:
- IP 64 (optional IP 67)




**Type combination see type key Mini - Overtank - Level Indicators**

# Mini - Overtank - Level Indicators 1016-Mini
# Scale

## Scale .. / SK

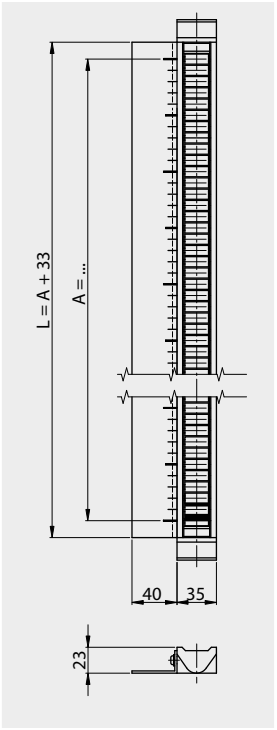
Angle profile:
- aluminium

Width:
- 40 mm

Scale:
- adhesive foil

Separation:
- in cm

Ambient temperature:
- max. +80 °C




## Scale .. / SG

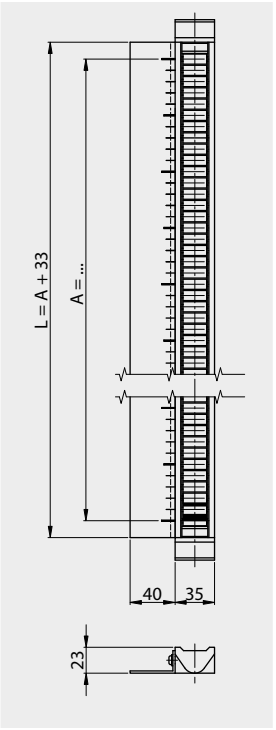
Angle profile:
- aluminium

Width:
- 40 mm

Scale:
- engraved

Separation:
- acc. to specification

Ambient temperature:
- max. +150 °C




## Scale .. / VSG

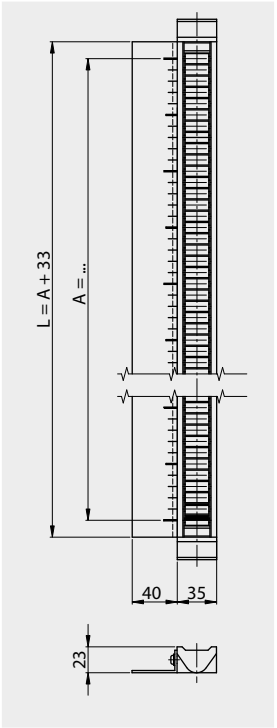
Angle profile:
- Stainless steel

Width:
- 40 mm

Scale:
- engraved

Separation:
- acc. to specification

Ambient temperature:
- max. +150 °C




**Type combination see type key Mini - Overtank - Level Indicators**

# Mini - Overtank - Level Indicators 1016-Mini
# Magnetic switch

## Technical data

Housing:
- anodised aluminium

Contact function:
- change over

Switching action:
- bistable

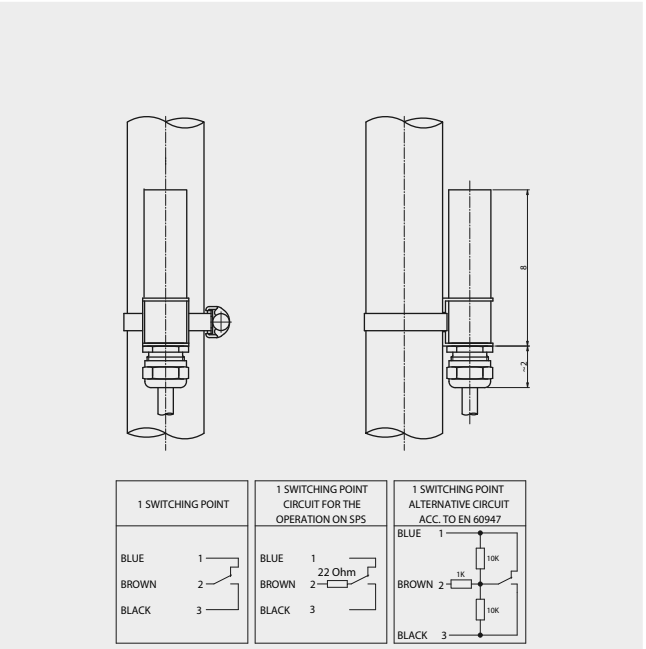
Switching capacity:
- 230 V AC or DC / 30 VA / 0.5 A

Protection rating:
- IP65

Ambient temperature:
- with PVC-cable max. +80 °C

Options:
- with code addition .. / R
  with 22 Ohm protection resistor
- with code addition .. / N (acc.to Namur EN 60947)

**RUM - AL - .. PVC**




## Technical data

Housing:
- anodised aluminium

Contact function:
- change over

Switching action:
- bistable

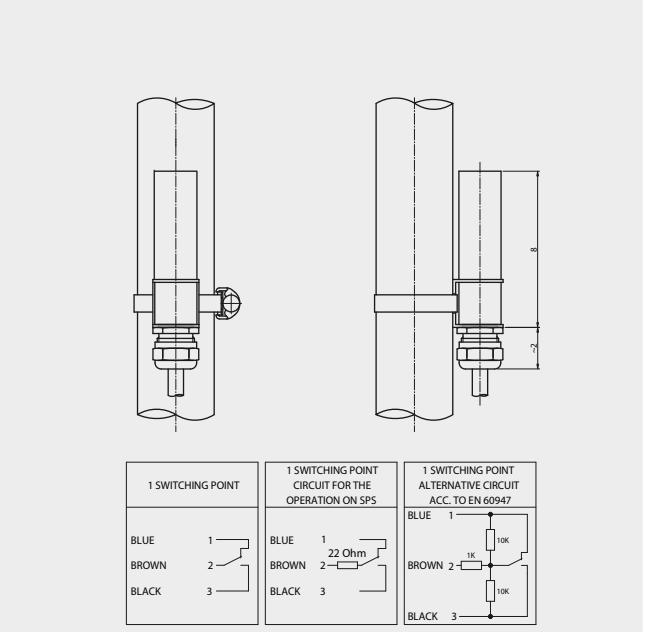
Switching capacity:
- 230 V AC or DC / 30 VA / 0.5A

Protection rating:
- IP65

Ambient temperature:
- with Silicone-cable max. +150 °C

Options:
- with code addition .. / R
  with 22 Ohm protection resistor
- with code addition .. / N (acc.to Namur EN 60947)

**RUM - AL - .. Sil**



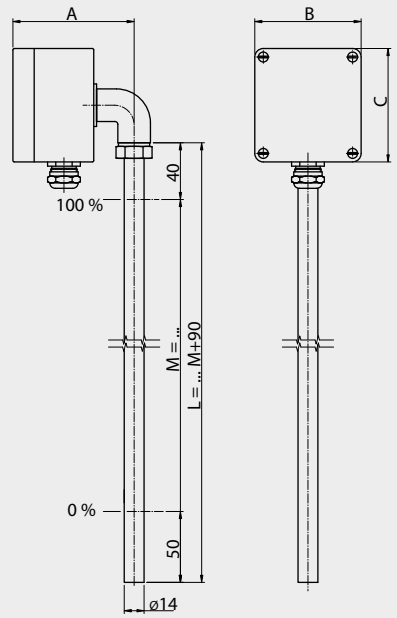

**Type combination see type key Mini - Overtank - Level Indicators**

# Mini - Overtank - Level Indicators 1016-Mini
# Level sensor

## Technical data

**AL - .. - VK .. - M**

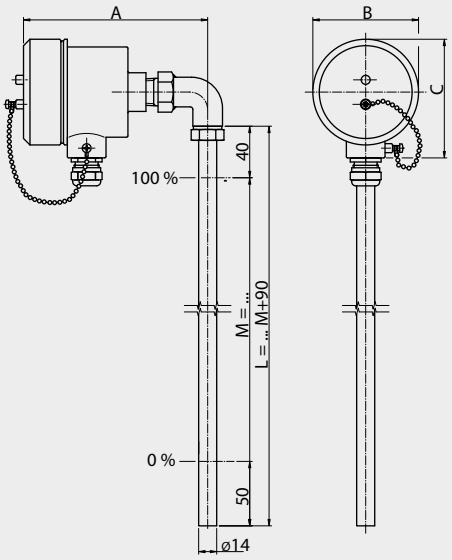
| | |
|---|---|
| **Terminal box:** | Aluminium<br>**A 105:** 80 x 75 x 57<br>**A 101:** 64 x 58 x 34 |
| **Dimensions:** | **A 105**<br>A = 85.5 mm<br>B = 75-0 mm<br>C = 89.0 mm<br><br>**A 101**<br>A = 62.5 mm<br>B = 50.0 mm<br>C = 68.0 mm |
| **Measuring chain tube:** | ø 14 mm |
| **Resolution:** | 5.0 mm -30 °C ... +130 °C<br>10.0 mm -30 °C ... +130 °C<br>15.0 mm -30 °C ... +130 °C<br>5.0 mm (HTF) -30 °C ... +150 °C<br>10.0 mm (HTF) -30 °C ... +150 °C<br>15.0 mm (HTF) -30 °C ... +150 °C |
| **Control unit:** | TP5343A/B<br>TP5350A/B<br>TD5335A/B<br>XT-42-SI |




## Technical data

**AV - .. - VK .. - M ..**

| | |
|---|---|
| **Terminal box:** | Stainless steel<br>92 x 82 x 95 mm |
| **Cable gland:** | Brass nickel-plated |
| **Dimensions:** | A = ~145 mm<br>B = ~ 82 mm<br>C = ~ 92 mm |
| **Measuring chain tube:** | ø 14 mm |
| **Resolution:** | 5.0 mm -30 °C ... +130 °C<br>10.0 mm -30 °C ... +130 °C<br>15.0 mm -30 °C ... +130 °C<br>5.0 mm (HTF) -30 °C ... +150 °C<br>10.0 mm (HTF) -30 °C ... +150 °C<br>15.0 mm (HTF) -30 °C ... +150 °C |
| **Control unit:** | TP5343A/B<br>TP5350A/B<br>TD5335A/B<br>XT-42-SI |
| **Option:** | Cable gland in stainless steel |

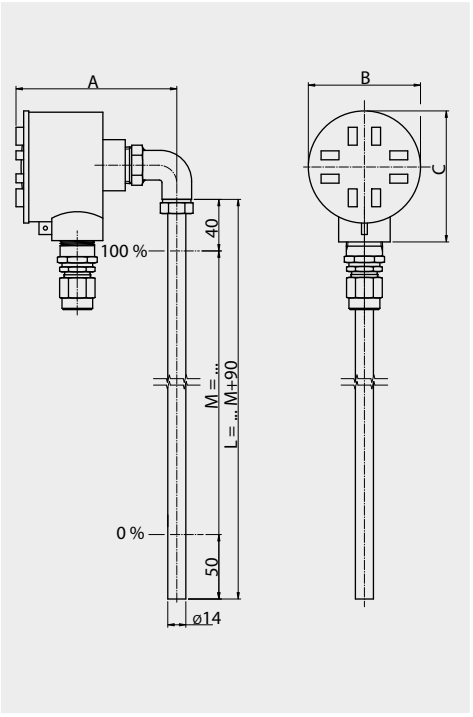



**Type combination see type key Mini - Overtank - Level Indicators**

# Mini - Overtank - Level Indicators 1016-Mini
# Level sensor

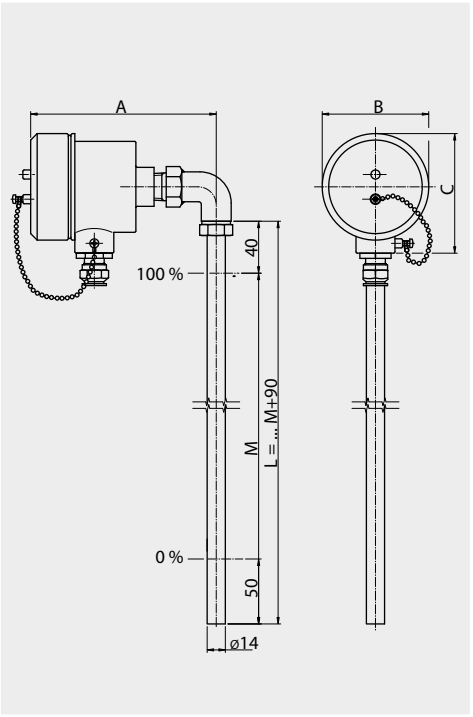
| Technical data | |
|---|---|
| **Terminal box:** | Aluminium<br>102 x 87 x 85 mm |
| **Dimensions:** | A = ~125 mm<br>B = ~ 87 mm<br>C = ~102 mm |
| **Measuring chain tube:** | ø 14 mm |
| **Resolution:** | 5.0 mm -30 °C ... +120 °C<br>10.0 mm -30 °C ... +120 °C<br>15.0 mm -30 °C ... +120 °C |
| **Control unit:** | TP5343A/B<br>TP5350A/B<br>TD5335A/B<br>XT-42-SI |
| **Ambient temperature EExd:** | +85 °C |

**ALDC - .. - VK .. - M .. - EExd**




| Technical data | |
|---|---|
| **Terminal box:** | Stainless steel<br>92 x 82 x 95 mm |
| **Cable gland:** | Brass nickel-plated (standard) |
| **Dimensions:** | A = ~145 mm<br>B = ~ 82 mm<br>C = ~ 92 mm |
| **Measuring chain tube:** | ø 14 mm |
| **Resolution:** | 5.0 mm -30 °C ... +120 °C<br>10.0 mm -30 °C ... +120 °C<br>15.0 mm -30 °C ... +120 °C |
| **Control unit:** | TP5343A/B<br>TP5350A/B<br>TD5335A/B<br>XT-42-SI |
| **Option:** | Cable gland in stainless steel |
| **Ambient temperature EExd:** | +40 °C |

**AVD - .. - VK .. - M .. - EExd**

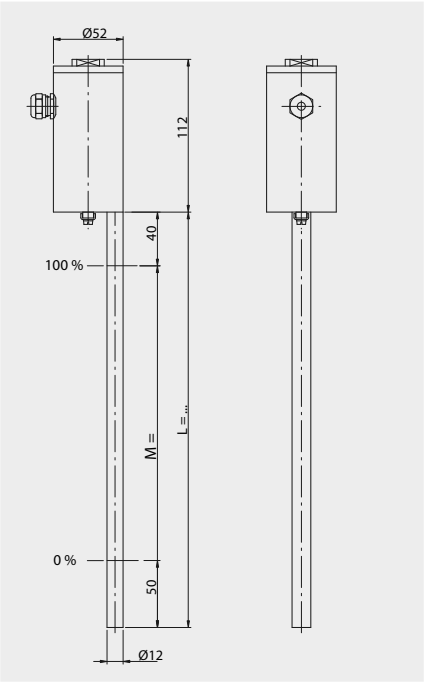



**Type combination see type key Mini - Overtank - Level Indicators**

# Mini - Overtank - Level Indicators 1016-Mini
# Level sensor Magnetostrictive

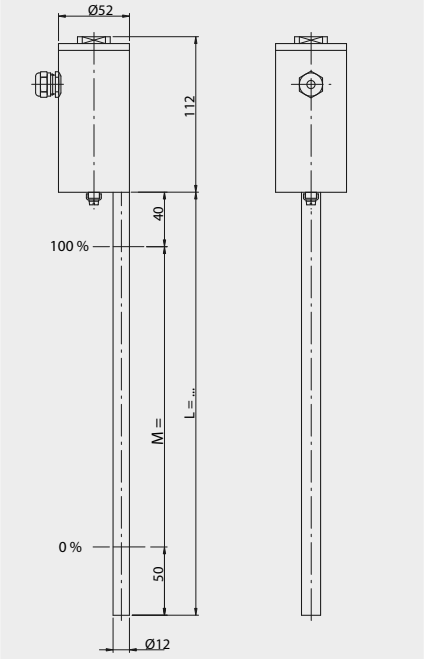
| Technical data | |
|---|---|
| **Terminal box:** | Ø 52 x 112 mm |
| **Dimensions:** | A= 52 mm<br>B= 52 mm<br>C= 112 mm |
| **Screwed cable gland:** | M16 x 1.5 mm |
| **Length of instrument:** | 200 ... 6000 mm |
| **Resolution:** | 0.1 mm -40 °C ... +125 °C<br>0.1 mm -200 °C ... +150 °C |
| **Electrical connections:** | 2-wire connection<br>(Option HART®) |
| **Electrical power supply:** | 10 ... 30 V DC / 4 ... 20 mA |
| **Ambient temperature:** | -40 °C ... +85 °C |
| **Measuring range:** | free adjustable |
| **System of protection:** | IP68 |
| **Material:** | Stainless steel |

**AMU - M ...**




| Technical data | |
|---|---|
| **Terminal box:** | Ø 52 x 112 mm |
| **Dimensions:** | A= 52 mm<br>B= 52 mm<br>C= 112 mm |
| **Screwed cable gland:** | M16 x 1.5 mm |
| **Length of instrument:** | 200 ... 6000 mm |
| **Resolution:** | Hazardous area 0 + 1<br>0.1 mm -20°C ... +60 °C<br><br>Hazardous area 2<br>0.1 mm -20 °C ... +60 °C<br>0.1 mm (HT) -20 °C ... +150 °C |
| **Electrical connections:** | 2-wire connection<br>(Option HART®) |
| **Electrical power supply:** | 10 ... 30 V DC / 4 ... 20 mA |
| **Ambient temperature:** | -20 °C ... +85 °C |
| **Measuring range:** | free adjustable |
| **System of protection:** | IP68 |
| **Material:** | Stainless steel |
| **Approvals:** | TÜV Atex 1772 X, II ½ G EExia T2 - T6 |

**AMU - M ... - Ex**




**Type combination see type key Mini - Overtank - Level Indicators**

# Mini - Overtank - Level Indicators 1016-Mini
# Type key

| Code 1 | Key 1 | | ATEX |
|---|---|---|---|
| | UNA - | Overtank - Level Indicators | |
| | UMG - | Overtank - Level Indicators with level sensor | |

| Code 2 | Key 1 | Design process connections | | | ATEX |
|---|---|---|---|---|---|
| | .. / .. / .. - | Flange norm | 1. nom. width | 2. nom. pressure | 3. form |
| | | DIN | DN 6 .. 500 | PN 6 .. 400 | C, F, N,B .. |
| | | ANSI | 1/2" .. 24" | 150 lbs .. 2500 | SF, RTJ, RF.. |
| | | JIS B 2010 | 2" .. 20" | 5K .. 63K | A .. T |
| | | BSI BS 4504 | DN 10 .. 500 | PN 2.5 .. 400 | |
| | | S | Special flange with outside diameter mm | | |
| | G .. - | GM thread female .." | | | |
| | | GN thread male .." | | | |
| | NPT .. - | NPTM thread female .." | | | |
| | | NPTN thread male .." | | | |
| | SE .. - | Welding ends .." | | | |
| | OS - | Without lateral connections | | | |

| Code 3 | Key 1 | Electrical connection for level sensor | ATEX |
|---|---|---|---|
| | AL - | Aluminium terminal box | |
| | AV - | Stainless steel terminal box | |
| | ALDC - | Aluminium terminal box EExd explosion proof | |
| | ALD - | Aluminium terminal box EExd explosion proof | |
| | AVD - | Stainless steel terminal box EExd explosion proof | |
| | AP - | Terminal box polyester | |
| | AB - | Terminal box ABS | |
| | E - | Connection cable | |
| | U .. - | Connection mountend on bottom (with appropriate electrical connection) | |
| | .. - | Various | |

**Type combination**

| Code | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
|---|---|---|---|---|---|---|---|---|---|---|
| Key | 1 | 1 | 1/2/3 | 1 | 1 | 1/2 | 1/2 | 1 | 1 | 1 |
| Example | UMG - | 50/16/C - | AL-VK5 - | L500- | V40 - | MNA - | - | ZTS250 - | - | Ex |

# Mini - Overtank - Level Indicators 1016-Mini
# Type key

| Code 3 | Key 2 | Control unit in terminal box | ATEX |
|---|---|---|---|
| | ZMU - | XT-42-SI | |
| | ZMUP - | 956045 | |
| | ZMUL - | 2251 | |
| | TP - | TP 5333B | |
| | TPA - | TP 5333A | |
| | TP43 - | TP 5343B | |
| | TP43A - | TP 5343A | |
| | TP50 - | TP 5350B | |
| | TP50A - | TP 5350A | |
| | TD - | TD 5335B | |
| | TDA - | TD 5335A | |
| | AMU - | AMU | |
| | .. - | Various | |

| | Key 3 | Design resolution in stainless steel tube | ATEX |
|---|---|---|---|
| | VK5 - | Resolution 5.00 mm | |
| | VK5 (HTF) - | Resolution 5.00 mm high temperature | |
| | VK10 - | Resolution 10.00 mm | |
| | VK10 (HTF) - | Resolution 10.00 mm high temperature | |
| | VK15 - | Resolution 15.00 mm | |
| | VK15 (HTF) - | Resolution 15.00 mm high temperature | |
| | .. - | Various | |

| Code 4 | Key 1 | Length of instrument in mm | ATEX |
|---|---|---|---|
| | - L .. - | Length of instrument in mm | |

| Code 5 | Key 1 | Material of the chamber and diameter | ATEX |
|---|---|---|---|
| | .. V40 - | Stainless steel 1.4404 / 1.4435 / 1.4571 | |
| | .. B40 - | Stainless steel 1.4301 / 1.4306 (standard) | |
| | .. - | Various | |

| Code 6 | Key 1 | Design with magnetic roller indicator | ATEX |
|---|---|---|---|
| | MNA / .. - | Aluminium profile with plastic rollers | |
| | MNAN / .. - | Aluminium profile with plastic rollers shock proof | |
| | MNAV / .. - | Stainless steel profile with plastic rollers | |

**Type combination**

| Code | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
|---|---|---|---|---|---|---|---|---|---|---|
| Key | 1 | 1 | 1/2/3 | 1 | 1 | 1/2 | 1/2 | 1 | 1 | 1 |
| Example | UMG - | 50/16/C- | AL-VK5 - | L500 - | V40 - | MNA - | - | ZTS250 - | - | Ex |

# Mini - Overtank - Level Indicators 1016-Mini
# Type key

| Code 6 | Key 2 | Scale for mounting onto magnetic roller indicator | ATEX |
|---|---|---|---|
| | .. / SK - | Aluminium scale with adhesive foil, separation in cm | |
| | .. / SG - | Aluminium engraved, separation acc.to specification | |
| | .. / VSG - | Stainless steel engraved, separation acc.to specification | |

| Code 7 | Key 1 | Quantity of magnetic switches | ATEX |
|---|---|---|---|
| | .. / RUM - AL - | Aluminium housing | |

| | Key 2 | Cable connection with legth in m | ATEX |
|---|---|---|---|
| | .. PVC - | .. Polyvinylchloride PVC (PVC-grey) | |
| | .. PVC-blau - | .. Polyvinylchloride PVC (PVC-blue) | |
| | .. Sil - | .. Silicone | |
| | .. PUR - | .. Pur (partly oil resisting) | |
| | .. FEP - | .. Teflon | |
| | .. Lit - | .. Insulated stranded wire | |
| | .. NiLit - | .. Insulated nickel stranded wire with glass insulation | |
| | .. Radox - | .. Radox | |
| | .. - | .. Various | |
| | Options | | |
| | .. / CY | Shielded cable | |
| | .. / ÖL | Oil resisting cable | |

| Code 8 | Key 1 | Float and float diameter / length in mm | ATEX |
|---|---|---|---|
| | ZVS .. - | Stainless steel cylindrical | |
| | SV .. - | Stainless steel spherical | |
| | ZTS .. - | Titanium cylindrical | |
| | .. - | Various | |

| Code 9 | Key 1 | Protection tube designs | ATEX |
|---|---|---|---|
| | - SR60 - | Diameter 60 mm | |
| | - SR88 - | Diameter 88 mm | |
| | - SR114 - | Diameter 114 mm | |

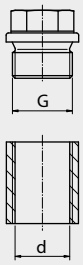
| Code 10 | Key 1 | Approvals and options | ATEX |
|---|---|---|---|
| | Ex | Intrinsically safe design acc.to EExia | |
| | EExd | Explosion proof design acc.to EExd | |
| | Ex/D | Intrinsically safe design acc.to EExia | |
| | EExd/D | Explosion proof design acc.to EExd | |

**Type combination**

| Code | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
|---|---|---|---|---|---|---|---|---|---|---|
| Key | 1 | 1 | 1/2/3 | 1 | 1 | 1/2 | 1/2 | 1 | 1 | 1 |
| Example | UMG - | 50/16/C - | AL-VK5 - | L500- | V40 - | MNA - | - | ZTS250 - | - | Ex |

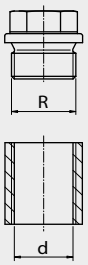
# Mini - Overtank - Level Indicators 1016-Mini
# Design process connections

## Thread G ..."



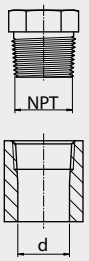

| Size | Diameter G [mm] | Core ø d [mm] | Bore [mm] |
|---|---|---|---|
| 1/8" | 9.7 | 8.5 | 8.0 |
| 1/4" | 13.2 | 11.4 | 11.0 |
| 3/8" | 16.7 | 14.9 | 14.5 |
| 1/2" | 21.0 | 18.9 | 18.0 |
| 3/4" | 26.5 | 24.1 | 23.5 |
| 1" | 33.3 | 30.2 | 29.5 |
| 1 1/2" | 47.8 | 44.9 | 44.0 |
| 2" | 59.7 | 56.6 | 56.0 |

## Thread R ..."



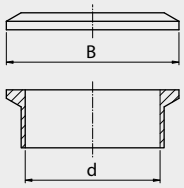

| Size | Diameter R [mm] | Core ø d [mm] | Bore [mm] |
|---|---|---|---|
| 1/8" | 9.7 | 8.5 | 8.0 |
| 1/4" | 13.2 | 11.4 | 11.0 |
| 3/8" | 16.7 | 14.9 | 14.5 |
| 1/2" | 21.0 | 18.6 | 18.0 |
| 3/4" | 26.5 | 24.1 | 23.5 |
| 1" | 33.3 | 30.2 | 29.5 |
| 1 1/2" | 47.8 | 44.8 | 44.0 |
| 2" | 59.7 | 56.6 | 56.0 |

## Thread NPT ..."




| Size | Diameter NPT [mm] | Core ø d [mm] | Bore [mm] |
|---|---|---|---|
| 1/8" | 9.6 | 8.4 | 8.5 |
| 1/4" | 12.8 | 11.2 | 11.0 |
| 3/8" | 16.2 | 14.6 | 14.5 |
| 1/2" | 19.9 | 18.2 | 18.0 |
| 3/4" | 25.6 | 23.4 | 23.0 |
| 1" | 31.8 | 29.8 | 29.0 |
| 1 1/2" | 46.8 | 44.2 | 44.0 |
| 2" | 58.6 | 56.4 | 56.0 |

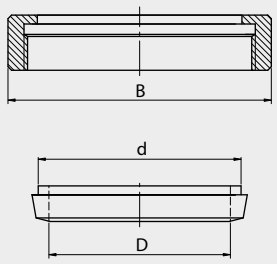
## Flange Tri - Clamp DIN 32676




| Size | Diameter B [mm] | Inside ø d [mm] | Bore [mm] |
|---|---|---|---|
| DN15 | 34.0 | 16.0 | 15.0 |
| DN20 | 34.0 | 20.0 | 19.0 |
| DN25 | 50.5 | 26.0 | 25.0 |
| DN50 | 64.0 | 50.0 | 48.0 |
| DN65 | 91.0 | 66.0 | 64.0 |
| DN80 | 106.0 | 81.0 | 79.0 |
| DN100 | 119.0 | 100.0 | 98.0 |

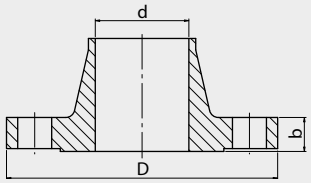
# Mini - Overtank - Level Indicators 1016-Mini
# Design process connections

## Tube connection DIN 11851



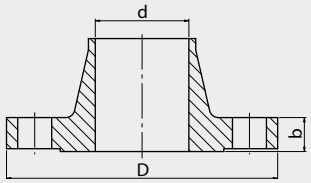

| Size | Bore ø d [mm] | Inside ø D [mm] | Union nut B [mm] |
|---|---|---|---|
| DN10 | 18 | 10 | 38 |
| DN15 | 24 | 16 | 44 |
| DN20 | 30 | 20 | 54 |
| DN25 | 35 | 26 | 63 |
| DN40 | 48 | 38 | 78 |
| DN50 | 61 | 50 | 92 |
| DN65 | 79 | 66 | 112 |
| DN80 | 93 | 81 | 127 |
| DN100 | 114 | 100 | 148 |

## Flange DIN 16 bar DIN 2633




| Size | Flange ø D [mm] | Inside ø d [mm] | Flange thickness b [mm] |
|---|---|---|---|
| DN10 | 90 | 13.6 | 14 |
| DN15 | 95 | 17.3 | 14 |
| DN20 | 105 | 22.3 | 16 |
| DN25 | 115 | 28.5 | 16 |
| DN40 | 150 | 43.1 | 16 |
| DN50 | 165 | 54.5 | 18 |
| DN65 | 185 | 70.3 | 18 |
| DN80 | 200 | 82.5 | 20 |
| DN100 | 220 | 107.1 | 20 |

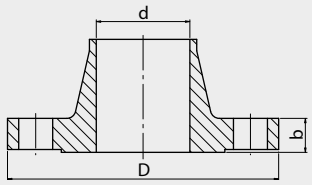
## Flange Ansi 150 lbs B 16.5




| Size | Flange ø D [mm] | Inside ø d [mm] | Flange thickness b [mm] |
|---|---|---|---|
| ½" | 88.9 | 15.7 | 11.2 |
| ¾" | 98.6 | 20.8 | 12.7 |
| 1" | 108.0 | 26.7 | 14.2 |
| 1½" | 127.0 | 40.9 | 17.5 |
| 2" | 152.4 | 52.6 | 19.1 |
| 2½" | 177.8 | 62.7 | 22.4 |
| 3" | 190.5 | 78.0 | 23.9 |
| 4" | 228.6 | 102.4 | 23.9 |

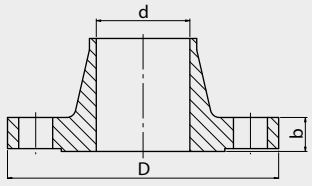
# Mini - Overtank - Level Indicators 1016-Mini
# Design process connections

**Flange DIN 40 bar DIN 2635**




| Size | Flange ø D [mm] | Inside ø d [mm] | Flange thickness b [mm] |
|---|---|---|---|
| DN10 | 90 | 13.6 | 16 |
| DN15 | 95 | 17.3 | 16 |
| DN20 | 105 | 22.3 | 18 |
| DN25 | 115 | 28.5 | 18 |
| DN40 | 150 | 43.1 | 18 |
| DN50 | 165 | 54.5 | 20 |
| DN65 | 185 | 70.3 | 22 |
| DN80 | 200 | 82.5 | 24 |
| DN100 | 235 | 107.1 | 24 |

**Flange Ansi 300 lbs B 16.5**




| Size | Flange ø D [mm] | Inside ø d [mm] | Flange thickness b [mm] |
|---|---|---|---|
| ½" | 95.2 | 15.7 | 14.2 |
| ¾" | 117.3 | 20.8 | 15.7 |
| 1" | 124.0 | 26.7 | 17.5 |
| 1½" | 155.4 | 40.9 | 20.6 |
| 2" | 165.1 | 52.6 | 22.4 |
| 2½" | 190.5 | 62.7 | 25.4 |
| 3" | 209.6 | 78.0 | 28.4 |
| 4" | 254.0 | 102.4 | 31.8 |