

**Český metrologický institut**

Notifikovaná osoba č 1383, Okružní 31  
638 00 Brno

## EC-TYPE EXAMINATION CERTIFICATE

**Number: TCM 142/10 – 4736**

Issued by: **Český metrologický institut**  
**Okružní 31**  
**638 00 Brno**  
**Czech Republic**

**Notified Body No. 1383**

In accordance with: point 3 of annex 2 to Government Order No. 464/2005 Coll. (annex B of the Directive 2004/22/EC) from 19 October 2005 that lays down technical requirements on measuring instruments and implements in Czech Republic Directive 2004/22/EC of the European Parliament and of the Council.

Manufacturer: **Ningbo Water Meter Co. LTD.**  
(Applicant) **No. 99, Lane 268, Beihai Road**  
**Ningbo 315033**  
**China**

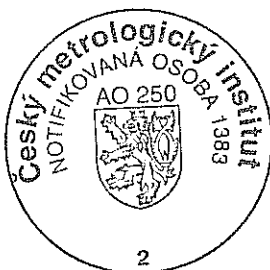
In respect of: **water meter - woltman**  
**type: WP-SDC**  
**Accuracy class: 2**  
**Temperature class: T30 or T50**

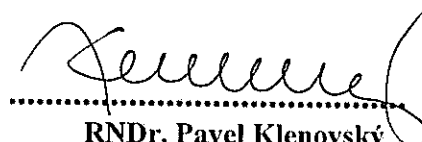
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Description: Essential characteristics, approved conditions and special conditions, if any, are described in this certificate. This certificate contains 11 pages.

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**RNDr. Pavel Klenovský**  
Notified Body No.1383

## 1. Measuring device description

The woltman water meters type WP-SDC are designed to measure, memorise and display the volume at metering conditions of water passing through the measurement transducer in the sense of the Directive of the European Parliament and of the Council no. 2004/22/EC of measuring instruments, as amended.

The water meters type WP-SDC is horizontal Woltman meter. The water meters type WP-SDC consist of a iron, brass or bronze casted body with connecting flanges or groove connection, a interchangeable wet measuring unit with adjusting device and a dry mechanical indicating device or super dry mechanical indicating device (Copper Can Calculator). There is water meter flange cover connecting by screws and sealed by silicon o-ring on the measuring unit.

The measuring unit consist of a inlet flow straightner with stainless steel shaft with tungsten carbide end, a plastic turbine with two composite axial bearings and two radial sapphire bearings, an outlet flow straightner with stainless steel shaft with tungsten carbide end, a transmission shaft with a magnetic coupling formed by two or four cube shape magnets protected by shaft tube, water meter flange cover, an adjusting screw sealed by silicon o-ring with adjusting slide, a dry indicating device (Plastic or Copper Can Calculator), plastic cup with rotary plate, bracket with cupper can or plastic register, plastic sealed ring with plastic cover.

The water meters type WP-SDC are equipped with a dry (Plastic Calculator) or super dry (Copper Can Calculator) indicating device formed by:

- numbered rollers with six drums and two rotary pointers
- numbered rollers with six drums and two rotary pointers and one circular scale
- numbered rollers with six drums and three rotary pointers

There is star wheel with six arms which can be used for rapid testing in mechanical indicating device.

The water meters type WP-SDC can be equipped by reed impulse transmitter which can be used for remote reading.

The water meters type WP-SDC shall be installed to operate in horizontal or vertical position with up and down flow direction and with the indicating device positioned at the top or on site.

The water meters type WP-SDC shall be designate by these trademarks:



Water meters type WP-SDC are manufactured according to assembly drawings of manufacturer No. ZN1.631.015, 92 from 3/2010 for water meters type WP-SDC DN 40 to 50, No. ZN1.631.016, 17, 28, 29, 93, 94, 95, 96 from 3/2010 for water meters type WP-SDC DN 65 to 125, No. ZN1.631.018, 019, 97, 98 from 3/2010 for water meters type WP-SDC DN 150 to 200, No. ZN1.631.020, 021, 99, 100 from 3/2010 for water meters type WP-SDC DN 250 to 350, No. ZN1.631.022, 023, 101, 102 from 3/2010 for water meters type WP-SDC DN 400 to 500.

## 2. Basic technical data

Basic technical data of water meters type WP-SDC from DN 40 to 125:

|                                                      |                     |                     |                     |                     |                    |                    |
|------------------------------------------------------|---------------------|---------------------|---------------------|---------------------|--------------------|--------------------|
| Nominal diameter (DN) [mm]:                          | 40                  | 50                  | 65                  | 80                  | 100                | 125                |
| Overload flowrate ( $Q_4$ ) [m <sup>3</sup> /h]:     | ≤ 31.3              | ≤ 50.0              | ≤ 78.8              | ≤ 78.8              | ≤ 125              | ≤ 200              |
| Permanent flowrate ( $Q_3$ ) [m <sup>3</sup> /h]:    | ≤ 25.0 <sup>1</sup> | ≤ 40.0 <sup>1</sup> | ≤ 63.0 <sup>1</sup> | ≤ 63.0 <sup>1</sup> | ≤ 100 <sup>1</sup> | ≤ 160 <sup>1</sup> |
| Transitional flowrate ( $Q_2$ ) [m <sup>3</sup> /h]: | ≥ 0.800             | ≥ 0.800             | ≥ 1.26              | ≥ 1.26              | ≥ 2.00             | ≥ 3.20             |
| Minimum flowrate ( $Q_1$ ) [m <sup>3</sup> /h]:      | ≥ 0.500             | ≥ 0.500             | ≥ 0.788             | ≥ 0.788             | ≥ 1.25             | ≥ 2.00             |
| Ratio $Q_3 / Q_1$ :                                  | ≤ 50 <sup>2</sup>   | ≤ 80 <sup>2</sup>   |                     |                     |                    |                    |
| Ratio $Q_2 / Q_1$ :                                  | 1.6                 |                     |                     |                     |                    |                    |
| Ratio $Q_4 / Q_3$ :                                  | 1.25                |                     |                     |                     |                    |                    |

|                                                                            |                                                                                              |       |        |        |        |       |
|----------------------------------------------------------------------------|----------------------------------------------------------------------------------------------|-------|--------|--------|--------|-------|
| Accuracy class:                                                            | 2                                                                                            |       |        |        |        |       |
| Maximum permissible error for the lower flowrate zone (MPE <sub>l</sub> ): | ± 5 %                                                                                        |       |        |        |        |       |
| Maximum permissible error for the upper flowrate zone (MPE <sub>u</sub> ): | ± 2 % for water having a temperature ≤ 30 °C<br>± 3 % for water having a temperature > 30 °C |       |        |        |        |       |
| Temperature class:                                                         | T30 and T50                                                                                  |       |        |        |        |       |
| Water pressure classes:                                                    | MAP 16                                                                                       |       |        |        |        |       |
| Pressure-loss classes:                                                     | ΔP 10                                                                                        | ΔP 16 | ΔP 10  | ΔP 10  | ΔP 10  | ΔP 16 |
| Indicating range (6+2) [m <sup>3</sup> ]:                                  | 999 999                                                                                      |       |        |        |        |       |
| Resolution of the indicating device [m <sup>3</sup> ]:                     | 0.001                                                                                        |       |        |        |        |       |
| Indicating range (6+2+1) [m <sup>3</sup> ]:                                | 999 999                                                                                      |       |        |        |        |       |
| Resolution of the indicating device [m <sup>3</sup> ]:                     | 0.0005                                                                                       |       |        |        |        |       |
| Indicating range (6+3) [m <sup>3</sup> ]:                                  | 999 999                                                                                      |       |        |        |        |       |
| Resolution of the indicating device [m <sup>3</sup> ]:                     | 0.0005                                                                                       |       |        |        |        |       |
| Resolution of the device for the rapid testing [pulse/L]:                  | 1.093                                                                                        | 1.093 | 0.5814 | 0.5814 | 0.3825 | 0.306 |
| Flow profile sensitivity classes:                                          | U10 D5                                                                                       |       |        |        |        |       |
| Orientation limitation:                                                    | V and H                                                                                      |       |        |        |        |       |
| Minimum length L [mm]:                                                     | 260                                                                                          | 200   | 200    | 200    | 250    | 250   |
| Maximum length L [mm]:                                                     | 300                                                                                          | 335   | 260    | 413    | 483    | 250   |
| Connection type:                                                           | Flange or Groove Connection                                                                  |       |        |        |        |       |
| Reed switch power supply ( $U_{\max}$ / $I_{\max}$ ):                      | max. 24 V / 0.01 A                                                                           |       |        |        |        |       |
| Reed switch K-faktor [impulse / L]:                                        | 0.1, 0.01 and 0.001                                                                          |       |        |        |        |       |

<sup>1</sup> The value of  $Q_3$  shall be chosen from the R5 line of ISO 3:1973.

<sup>2</sup> The ratio  $Q_3 / Q_1$  shall be chosen from the R10 line from ISO 3:1973 and this value shall be higher than 10.

Basic technical data of water meters type WP-SDC from DN 150 to 350:

|                                                                            |                                                                                              |                    |                    |                     |                     |
|----------------------------------------------------------------------------|----------------------------------------------------------------------------------------------|--------------------|--------------------|---------------------|---------------------|
| Nominal diameter (DN) [mm]:                                                | 150                                                                                          | 200                | 250                | 300                 | 350                 |
| Overload flowrate ( $Q_4$ ) [m <sup>3</sup> /h]:                           | ≤ 313                                                                                        | ≤ 500              | ≤ 788              | ≤ 1250              | ≤ 1251              |
| Permanent flowrate ( $Q_3$ ) [m <sup>3</sup> /h]:                          | ≤ 250 <sup>1</sup>                                                                           | ≤ 400 <sup>1</sup> | ≤ 630 <sup>1</sup> | ≤ 1000 <sup>1</sup> | ≤ 1000 <sup>1</sup> |
| Transitional flowrate ( $Q_2$ ) [m <sup>3</sup> /h]:                       | ≥ 5.00                                                                                       | ≥ 8.00             | ≥ 12.6             | ≥ 20.0              | ≥ 20.0              |
| Minimum flowrate ( $Q_1$ ) [m <sup>3</sup> /h]:                            | ≥ 3.13                                                                                       | ≥ 5.00             | ≥ 7.88             | ≥ 12.5              | ≥ 12.5              |
| Ratio $Q_3 / Q_1$ :                                                        | ≤ 80 <sup>2</sup>                                                                            |                    |                    |                     |                     |
| Ratio $Q_2 / Q_1$ :                                                        | 1.6                                                                                          |                    |                    |                     |                     |
| Ratio $Q_4 / Q_3$ :                                                        | 1.25                                                                                         |                    |                    |                     |                     |
| Accuracy class:                                                            | 2                                                                                            |                    |                    |                     |                     |
| Maximum permissible error for the lower flowrate zone (MPE <sub>l</sub> ): | ± 5 %                                                                                        |                    |                    |                     |                     |
| Maximum permissible error for the upper flowrate zone (MPE <sub>u</sub> ): | ± 2 % for water having a temperature ≤ 30 °C<br>± 3 % for water having a temperature > 30 °C |                    |                    |                     |                     |
| Temperature class:                                                         | T30 and T50                                                                                  |                    |                    |                     |                     |
| Water pressure classes:                                                    | MAP 16                                                                                       |                    |                    |                     |                     |
| Pressure-loss classes:                                                     | ΔP 10                                                                                        | ΔP 10              | ΔP 10              | ΔP 10               | ΔP 10               |
| Indicating range (6+2) [m <sup>3</sup> ]:                                  | 9 999 999                                                                                    |                    |                    |                     |                     |
| Resolution of the indicating device [m <sup>3</sup> ]:                     | 0.01                                                                                         |                    |                    |                     |                     |
| Indicating range (6+2+1) [m <sup>3</sup> ]:                                | 9 999 999                                                                                    |                    | 99 999 999         |                     |                     |
| Resolution of the indicating device [m <sup>3</sup> ]:                     | 0.005                                                                                        |                    | 0.05               |                     |                     |

|                                                           |                             |         |            |         |         |
|-----------------------------------------------------------|-----------------------------|---------|------------|---------|---------|
| Indicating range (6+3) [m <sup>3</sup> ]:                 | 9 999 999                   |         | 99 999 999 |         |         |
| Resolution of the indicating device [m <sup>3</sup> ]:    | 0.005                       |         | 0.05       |         |         |
| Resolution of the device for the rapid testing [pulse/L]: | 0.06442                     | 0.04073 | 0.01377    | 0.01122 | 0.01122 |
| Flow profile sensitivity classes:                         | U10 D5                      |         |            |         |         |
| Orientation limitation:                                   | V and H                     |         |            |         |         |
| Minimum length L [mm]:                                    | 300                         | 350     | 450        | 500     | 500     |
| Maximum length L [mm]:                                    | 560                         | 508     | 450        | 500     | 500     |
| Connection type:                                          | Flange or Groove Connection |         |            |         |         |
| Reed switch power supply ( $U_{\max}$ / $I_{\max}$ ):     | max. 24 V / 0.01 A          |         |            |         |         |
| Reed switch K-faktor [impulse / L]:                       | 0.01, 0.001 and 0.0001      |         |            |         |         |

<sup>1</sup> The value of  $Q_3$  shall be chosen from the R5 line of ISO 3:1973.

<sup>2</sup> The ratio  $Q_3 / Q_1$  shall be chosen from the R10 line from ISO 3:1973 and this value shall be higher than 10.

Basic technical data of water meters type WP-SDC from DN 400 to 500:

|                                                                            |                                                                                              |                     |
|----------------------------------------------------------------------------|----------------------------------------------------------------------------------------------|---------------------|
| Nominal diameter (DN) [mm]:                                                | 400                                                                                          | 500                 |
| Overload flowrate ( $Q_4$ ) [m <sup>3</sup> /h]:                           | ≤ 2000                                                                                       | ≤ 3125              |
| Permanent flowrate ( $Q_3$ ) [m <sup>3</sup> /h]:                          | ≤ 1600 <sup>1</sup>                                                                          | ≤ 2500 <sup>1</sup> |
| Transitional flowrate ( $Q_2$ ) [m <sup>3</sup> /h]:                       | ≥ 32.0                                                                                       | ≥ 50.0              |
| Minimum flowrate ( $Q_1$ ) [m <sup>3</sup> /h]:                            | ≥ 20.0                                                                                       | ≥ 31.3              |
| Ratio $Q_3 / Q_1$ :                                                        | ≤ 80 <sup>2</sup>                                                                            |                     |
| Ratio $Q_2 / Q_1$ :                                                        | 1.6                                                                                          |                     |
| Ratio $Q_4 / Q_3$ :                                                        | 1.25                                                                                         |                     |
| Accuracy class:                                                            | 2                                                                                            |                     |
| Maximum permissible error for the lower flowrate zone (MPE <sub>l</sub> ): | ± 5 %                                                                                        |                     |
| Maximum permissible error for the upper flowrate zone (MPE <sub>u</sub> ): | ± 2 % for water having a temperature ≤ 30 °C<br>± 3 % for water having a temperature > 30 °C |                     |
| Temperature class:                                                         | T30 and T50                                                                                  |                     |
| Water pressure classes:                                                    | MAP 16                                                                                       |                     |
| Pressure-loss classes:                                                     | ΔP 10                                                                                        | ΔP 10               |
| Indicating range (6+2) [m <sup>3</sup> ]:                                  | 99 999 999                                                                                   |                     |
| Resolution of the indicating device [m <sup>3</sup> ]:                     | 0.1                                                                                          |                     |
| Indicating range (6+2+1) [m <sup>3</sup> ]:                                | 99 999 999                                                                                   |                     |
| Resolution of the indicating device [m <sup>3</sup> ]:                     | 0.05                                                                                         |                     |
| Indicating range (6+3) [m <sup>3</sup> ]:                                  |                                                                                              |                     |
| Resolution of the indicating device [m <sup>3</sup> ]:                     | 0.05                                                                                         |                     |
| Resolution of the device for the rapid testing [pulse/L]:                  | 0.006190                                                                                     | 0.003702            |
| Flow profile sensitivity classes:                                          | U10 D5                                                                                       |                     |
| Orientation limitation:                                                    | V and H                                                                                      |                     |
| Minimum length L [mm]:                                                     | 500                                                                                          | 500                 |
| Maximum length L [mm]:                                                     | 600                                                                                          | 800                 |
| Connection type:                                                           | Flange or Groove Connection                                                                  |                     |
| Reed switch power supply ( $U_{\max}$ / $I_{\max}$ ):                      | max. 24 V / 0.01 A                                                                           |                     |
| Reed switch K-faktor [impulse / L]:                                        | 0.001, 0.0001 and 0.00001                                                                    |                     |

<sup>1</sup> The value of  $Q_3$  shall be chosen from the R5 line of ISO 3:1973.

<sup>2</sup> The ratio  $Q_3 / Q_1$  shall be chosen from the R10 line from ISO 3:1973 and this value shall be



### 3. Test

Technical tests of the water meters type WP-SDC were performed in compliance with the International Recommendation OIML R 49 Edition 2006 (E) with conformity to EN 14154-1:2005+A1:2007, Test Report No. 6015-PT-A0040-10 from June 3.2010.

### 4. The measuring device data

The water meters type WP-SDC shall be clearly and indelibly marked with the following information:

- The "CE" marking and supplementary metrology marking
- Number of EC-type examination certificate
- Name or trademark of manufacturer
- Year of manufacturer (last two digit) and serial number (as near as possible to the indicating device)
- Measuring device type
- Unit of measurement ( $\text{m}^3$ )
- Accuracy class 2
- Numerical value  $Q_3$  in  $\text{m}^3/\text{h}$  ( $Q_3 \times \times$ )
- The ratio  $Q_3 / Q_1$ , ( $R \times \times$ )
- The temperature class ( $T \times \times$ )
- The maximum admissible pressure (MAP  $\times \times$ )
- The pressure loss class ( $\Delta P \times \times$ )
- Classes on sensitivity to irregularities in velocity field ( $U \times D \times$ )
- Orientation limitation (H / V)
- Direction of flow arrow on both sides of the meter body

There are additional data required if the water meter is equipped with impulse transmitter:

- Output signals for ancillary devices (type / levels)
- External power supply requirements (voltage – frequency)

### 5. Sealing

The connection of water meter body and water meter flange cover and water meter flange cover and plastic ring of indicating device and adjusting screw cover if separate has to be sealed. The location of seal is described in Figure 3.

Figure 1: The water meter type WP-SDC with Cooper Can Register – view:

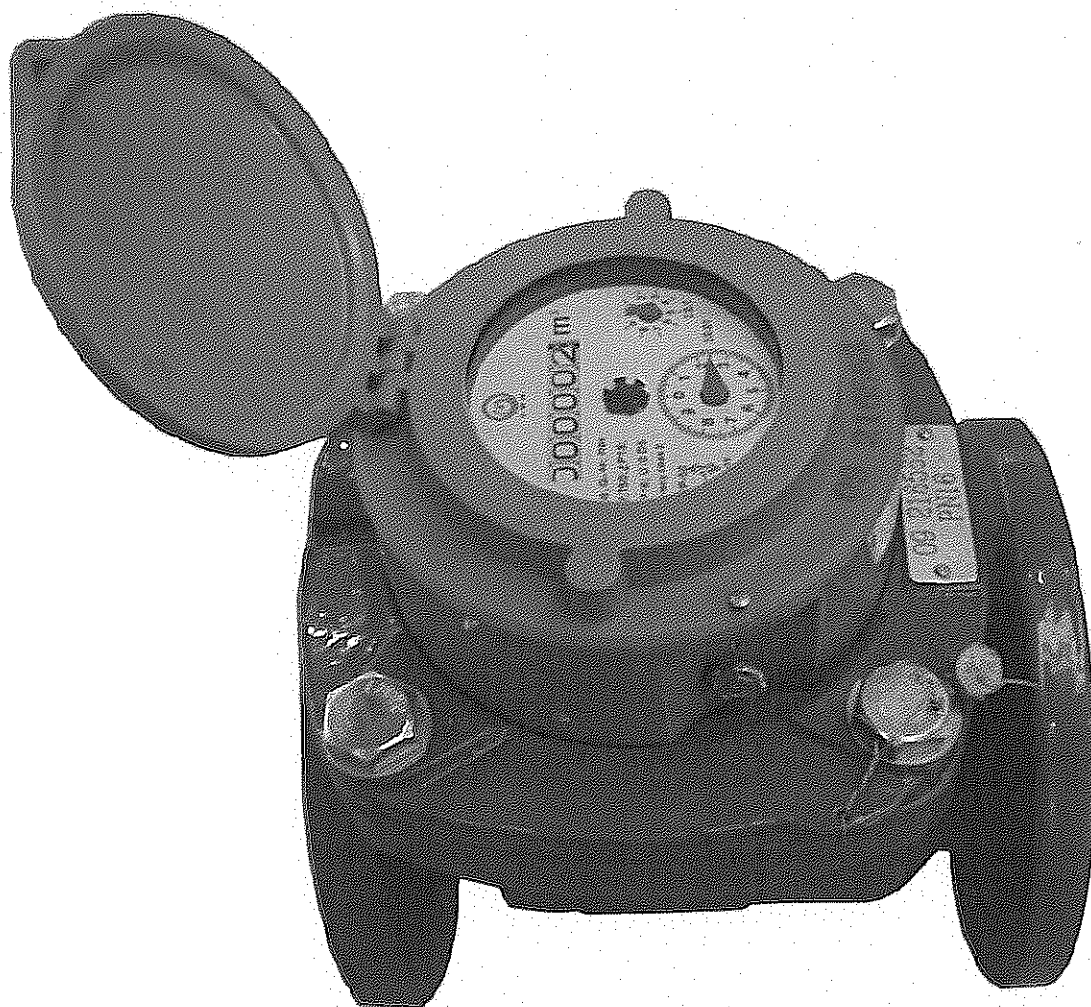
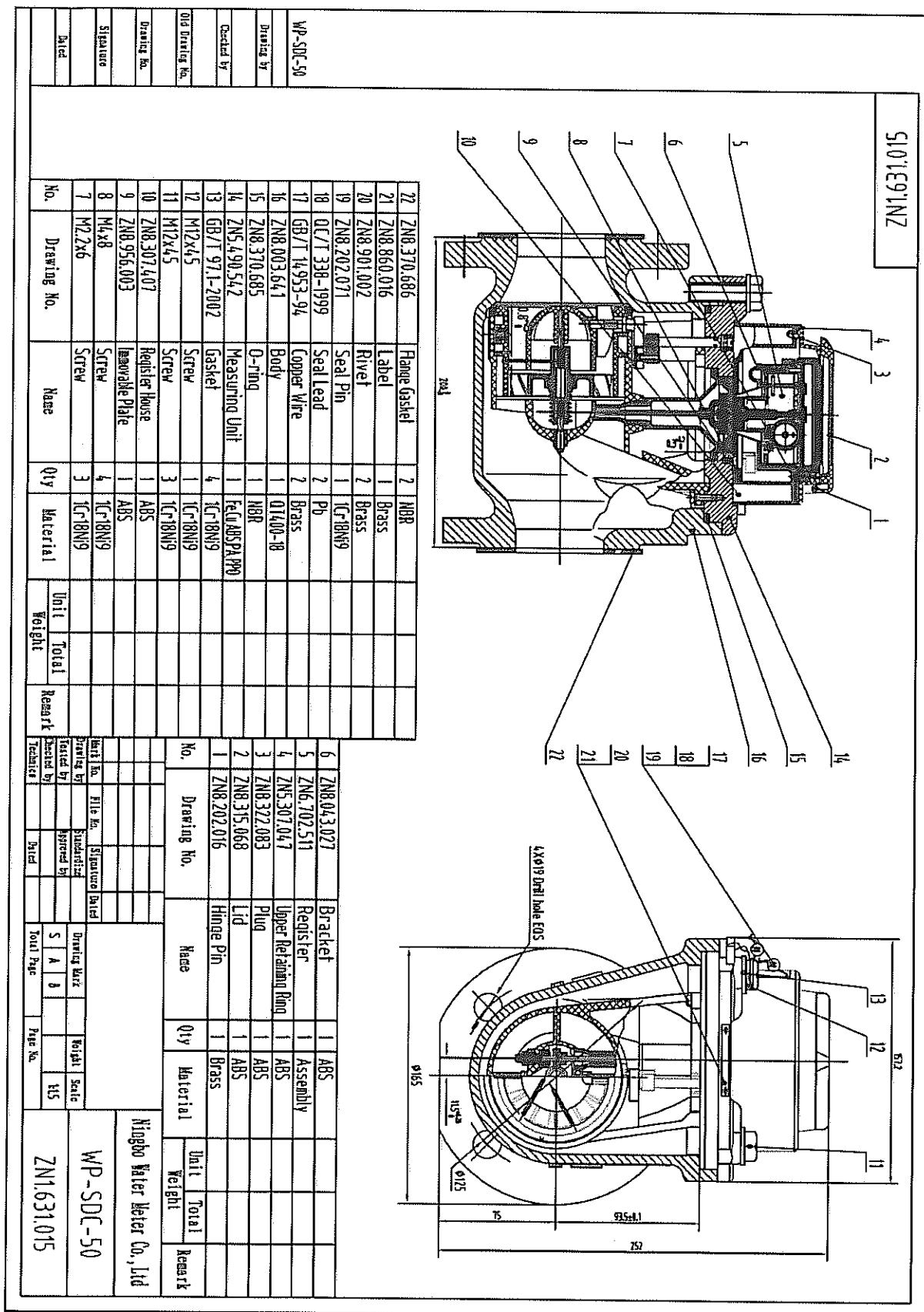


Figure 2: The water meter type WP-SDC DN 50 with Plastic Register – view:



Figure 3: The water meter type WP-SDC DN 50 with Cooper Can Register assembly drawings:



| No. |                | Drawing No.    |   | Name        |  | Qty |  | Material |  | Unit |  | Total |  | Remark |  |
|-----|----------------|----------------|---|-------------|--|-----|--|----------|--|------|--|-------|--|--------|--|
| No. |                | Drawing No.    |   | Name        |  | Qty |  | Material |  | Unit |  | Total |  | Remark |  |
| 19  | ZN8.370.686    | Flange Gasket  | 2 | HBR         |  |     |  |          |  |      |  |       |  |        |  |
| 18  | ZN8.860.016    | Label          | 1 | Brass       |  |     |  |          |  |      |  |       |  |        |  |
| 17  | ZN8.901.002    | Rivet          | 2 | Brass       |  |     |  |          |  |      |  |       |  |        |  |
| 16  | ZN8.202.071    | Seal Pin       | 1 | ICr18Ni9    |  |     |  |          |  |      |  |       |  |        |  |
| 15  | OC/T 338-1999  | Seal Lead      | 2 | Pb          |  |     |  |          |  |      |  |       |  |        |  |
| 14  | GB/T 14953-94  | Copper Wire    | 2 | Brass       |  |     |  |          |  |      |  |       |  |        |  |
| 13  | ZN8.003.641    | Body           | 1 | Q1400-18    |  |     |  |          |  |      |  |       |  |        |  |
| 12  | ZN8.370.685    | O-ring         | 1 | NBR         |  |     |  |          |  |      |  |       |  |        |  |
| 11  | ZN5.490.542    | Measuring Unit | 1 | FeCuAlSiPb0 |  |     |  |          |  |      |  |       |  |        |  |
| 10  | GB/T 97.1-2002 | Gasket         | 4 | ICr18Ni9    |  |     |  |          |  |      |  |       |  |        |  |
| 9   | M12x45         | Screw          | 1 | ICr18Ni9    |  |     |  |          |  |      |  |       |  |        |  |
| 8   | M12x45         | Screw          | 3 | ICr18Ni9    |  |     |  |          |  |      |  |       |  |        |  |
| 7   | ZN8.307.269    | Register House | 1 | ABS         |  |     |  |          |  |      |  |       |  |        |  |

| No. |             | Drawing No.     |   | Name     |  | Qty |  | Material |  | Unit |  | Total |  | Remark |  |
|-----|-------------|-----------------|---|----------|--|-----|--|----------|--|------|--|-------|--|--------|--|
| 6   | ZN8.956.003 | Immovable Plate | 1 | ABS      |  |     |  |          |  |      |  |       |  |        |  |
| 5   | M4x8        | Screw           | 4 | ICr18Ni9 |  |     |  |          |  |      |  |       |  |        |  |
| 4   | ZN6.702.280 | Register        | 1 | Assembly |  |     |  |          |  |      |  |       |  |        |  |
| 3   | ZN8.307.270 | Retaining Ring  | 1 | ABS      |  |     |  |          |  |      |  |       |  |        |  |
| 2   | ZN8.315.182 | Lid             | 1 | ABS      |  |     |  |          |  |      |  |       |  |        |  |
| 1   | ZN8.202.064 | Hinge Pin       | 1 | Brass    |  |     |  |          |  |      |  |       |  |        |  |

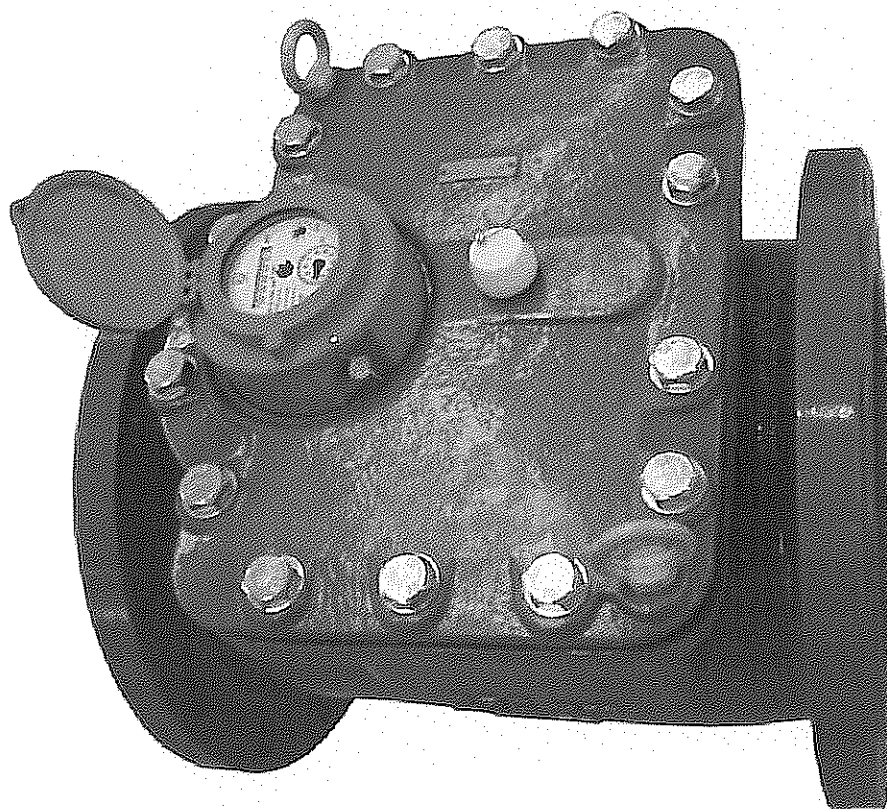
| No. |             | Drawing No.     |   | Name     |  | Qty |  | Material |  | Unit |  | Total |  | Remark |  |
|-----|-------------|-----------------|---|----------|--|-----|--|----------|--|------|--|-------|--|--------|--|
| 6   | ZN8.956.003 | Immovable Plate | 1 | ABS      |  |     |  |          |  |      |  |       |  |        |  |
| 5   | M4x8        | Screw           | 4 | ICr18Ni9 |  |     |  |          |  |      |  |       |  |        |  |
| 4   | ZN6.702.280 | Register        | 1 | Assembly |  |     |  |          |  |      |  |       |  |        |  |
| 3   | ZN8.307.270 | Retaining Ring  | 1 | ABS      |  |     |  |          |  |      |  |       |  |        |  |
| 2   | ZN8.315.182 | Lid             | 1 | ABS      |  |     |  |          |  |      |  |       |  |        |  |
| 1   | ZN8.202.064 | Hinge Pin       | 1 | Brass    |  |     |  |          |  |      |  |       |  |        |  |

| No. |             | Drawing No.     |   | Name     |  | Qty |  | Material |  | Unit |  | Total |  | Remark |  |
|-----|-------------|-----------------|---|----------|--|-----|--|----------|--|------|--|-------|--|--------|--|
| 6   | ZN8.956.003 | Immovable Plate | 1 | ABS      |  |     |  |          |  |      |  |       |  |        |  |
| 5   | M4x8        | Screw           | 4 | ICr18Ni9 |  |     |  |          |  |      |  |       |  |        |  |
| 4   | ZN6.702.280 | Register        | 1 | Assembly |  |     |  |          |  |      |  |       |  |        |  |
| 3   | ZN8.307.270 | Retaining Ring  | 1 | ABS      |  |     |  |          |  |      |  |       |  |        |  |
| 2   | ZN8.315.182 | Lid             | 1 | ABS      |  |     |  |          |  |      |  |       |  |        |  |
| 1   | ZN8.202.064 | Hinge Pin       | 1 |          |  |     |  |          |  |      |  |       |  |        |  |

Figure 3: The sealing of the water meter type WP-SDC:



WP-SDC DN 50 to 200



WP-SDC DN 250 to 500

Figure 4: The dial plates of the water meter type WP-SDC DN 40:

