Czech Metrology Institute
Notified Body No. 1383, Okružní 31
638 00 Brno

EC-TYPE EXAMINATION CERTIFICATE

Number: TCM 142/10 – 4758

Addition 1

This addition replaces all previous versions of this certificate in full wording.

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

In respect of: **water meter - volumetric**
type: PD-SDC
Accuracy class: 2
Temperature class: T30 and T50

Valid until: **12 October 2020**

Document number: **0115-CS-A036-10**

Description: Essential characteristics, approved conditions and special conditions, if any, are described in this certificate. This certificate contains 16 pages.

Date of issue: 5 August 2011

Český metrologický institut NOTIFIKOVANÁ OSOBA AO 250 1383

RNDr. Pavel Klenovský
Notified Body No.1383

1. Measuring device description

The volumetric water meters type PD-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 PD-SDC are positive displacement meters with rotary piston.

The water meters type PD-SDC(E3) consist of a brass or bronze casted body with connecting threads and inlet strainer, a wet measuring unit, a dry mechanical indicating device (Plastic Can Calculator) with a glass disc a brass or plastic head ring with a plastic cover or super dry mechanical indicating device (Copper Can Calculator) with brass or plastic head ring with a plastic cover.

The water meters type PD-SDC(E4) consist of a brass or bronze casted or plastic body with connecting threads and inlet strainer, a wet measuring unit, a pressure plate, a o ring, a gasket, a screwed plate a dry mechanical indicating device or super dry mechanical indicating device (Copper Can Calculator) and clamp on plastic cover.

The water meters type PD-SDC(E6) consist of a brass or bronze casted body with connecting threads and inlet strainer, a wet measuring unit, a o-ring, a register chamber, a dry mechanical indicating device and brass head ring with a plastic cover.

The water meters type PD-SDC(E8) consist of a brass or bronze casted body with connecting threads and inlet strainer, o-ring, a wet measuring unit, pressure plate, gaskets, a screwed plate, a dry mechanical indicating device or super dry mechanical indicating device (Copper Can Calculator) and clamp on plastic cover.

The water meters type PD-SDC(T) consist of a brass or bronze casted body with connecting screw, an impact ring, a wet measuring unit, pressure plate, o-ring, gasket, screwed plate, a dry mechanical indicating device or super dry mechanical indicating device (Copper Can Calculator) and clamp on plastic cover. If needed the meter is equipped with a brass or bronze casted base with threads connecting the meter to a pipe, a screw connecting the meter body to the base, gasket and o-ring.

The measuring unit consists of an internal strainer, a piston chamber with plastic shaft with stainless steel holder, a bush, a plate, a piston with stainless steel shaft, a piston chamber cover, an o-ring, a transmission shaft with magnetic holder.

The mechanical indicating device, dry (Plastic Calculator) or super dry (Copper Can Calculator), can be formed by numbered rollers with five drums and four rotary pointers, or eight drums and one rotary pointer. There is star wheel with six arms which can be used for rapid testing in mechanical indicating device.

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

The water meters type PD-SDC shall be installed to operate in arbitrary positions.
The water meters type PD-SDC shall be designate by these trademarks:

NWM NWM <宁波>® <NB>®

Water meters type PD-SDC are manufactured according to technical documentation of manufacturer

Q/ZNJ 17005-2010 Annex 1 from 1.10.2010 including the assembly drawings of manufacturer No. ZN1 632.009,010,019; ZN1 632.015,022,025; ZN1 632.087,088; ZN1 632.070/089; ZN1 632.020,021.

2. Basic technical data

Basic technical data of water meters type PD-SDC:

Nominal diameter (DN) [mm]:	15	20	25
Overload flowrate (Q_4) [m^3/h]:	≤ 3.13	≤ 5.00	≤ 7.88
Permanent flowrate (Q_3) [m^3/h]:	≤ 2.50 [1]	≤ 4.00 [1]	≤ 6.30 [1]
Transitional flowrate (Q_2) [m^3/h]:	≥ 0.0100	≥ 0.0160	≥ 0.0252
Minimum flowrate (Q_1) [m^3/h]:	≥ 0.0063	≥ 0.0100	≥ 0.0158
Ratio Q_3 / Q_1:	≤ 400 [2]		
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_l):	± 5 %		
Maximum permissible error for the upper flowrate zone (MPE_u):	± 2 % for water having a temperature ≤ 30 °C ± 3 % for water having a temperature > 30 °C		
Temperature class:	T30 and T50		
Water pressure classes:	MAP 16		
Pressure-loss classes:	ΔP 63		
Indicating range [m^3]:	99 999		
Resolution of the indicating device [m^3]:	0.00002		
Resolution of the device for the rapid testing [pulse/L]:	71.185	40.264	26.745
Flow profile sensitivity classes:	U0 D0		
Orientation limitation:	Arbitrary orientation		
Length L [mm]:	110 - 190	154 - 190	168 - 260
Connection type– Screw thread size:	G¾B or G1B	G1B	G1¼B or G1½B
Reed switch power supply (U_{max} / I_{max}):	max. 24 V / 0.01 A		
Reed switch K-faktor [impulse / L]:	1, 0.1, 0.01 and 0.001		

[1] The value of Q_3 shall be chosen from the R5 line of ISO 3:1973.

[2] 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.

3. Test

Technical tests of the water meters type PD-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-A0044-10 from 11th October 2010 and No. 6015-PT-P0091-11 from 29th June 2011.

4. The measuring device data

The water meters type PD-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 (m^3)
- Accuracy class 2
- Numerical value Q_3 in m^3/h (Q_3 ×.×)
- The ratio Q_3 / Q_1, (R××)
- The temperature class (T××)
- The maximum admissible pressure (MAP ××)
- The pressure loss class (ΔP ××)

- Classes on sensitivity to irregularities in velocity field (U× D×)
- 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 brass head ring has to be sealed on water meters types PD-SDC (E3) and PD-SDC (E6).
The connection of water meter body and indicating device has to be sealed by plastic cover on water meters types PD-SDC (E4), PD-SDC (E8) and PD-SDC (T). This plastic cover has to be identified by safeguarding marks.
The connection of the water meter body and the base has to be sealed for water meter type PD-SDC (T).
The connection of water meter body and reed impulse transmitter has to be sealed, if equipped.
The location of seal is described in Figures 13 – 15.

Figure 1: The water meter type PD-SDC (E3) – view:

Figure 2: The water meter type PD-SDC (E4) – view:

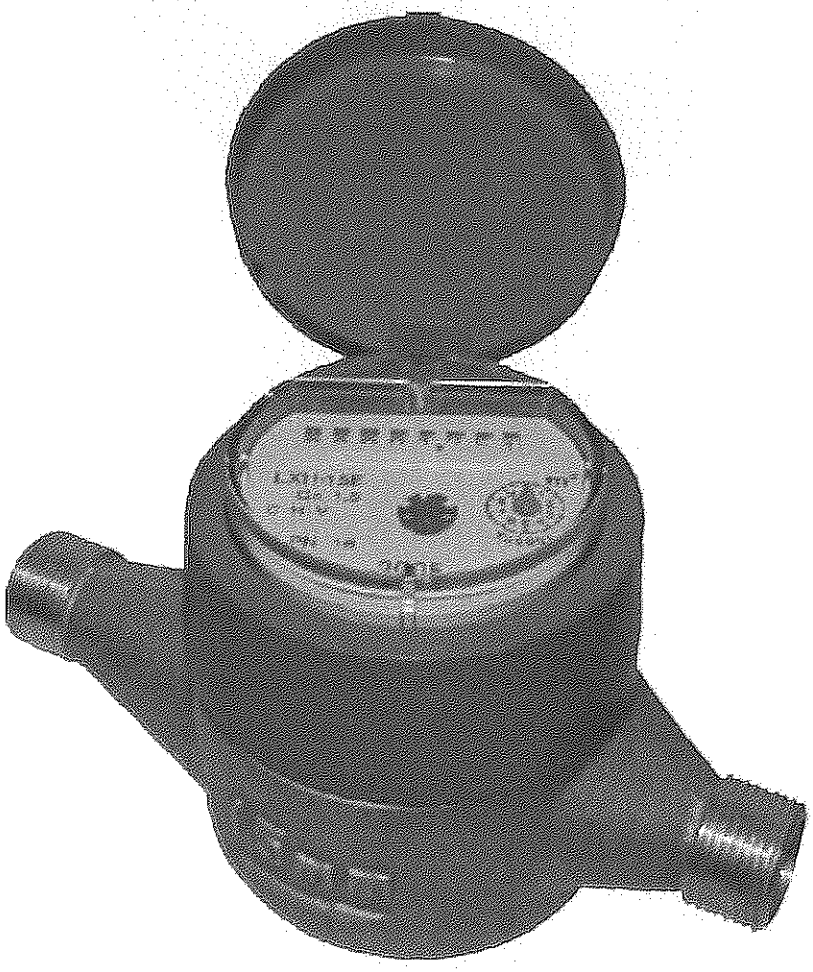


Figure 3: The water meter type PD-SDC (E4) with Super Dry Register (Cooper Can) – view:

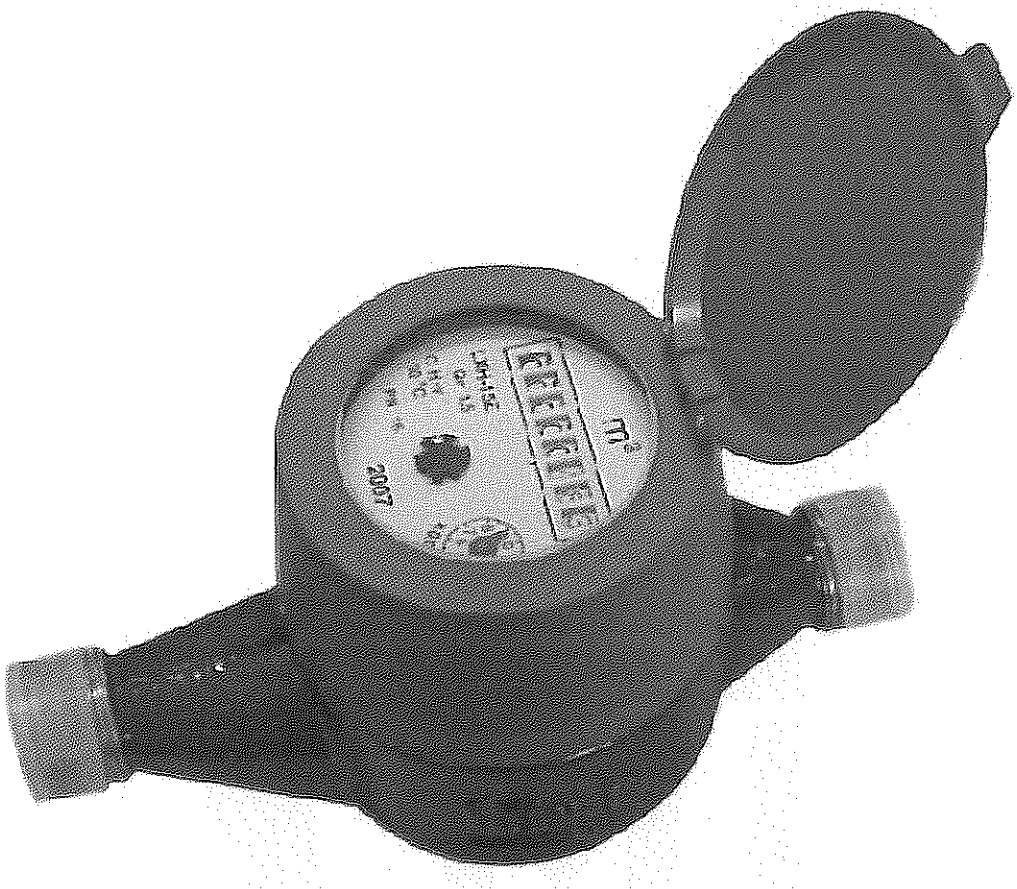


Figure 4: The water meter type PD-SDC (E4) with plastic body – view:

Figure 5: The water meter type PD-SDC (E6) – view:

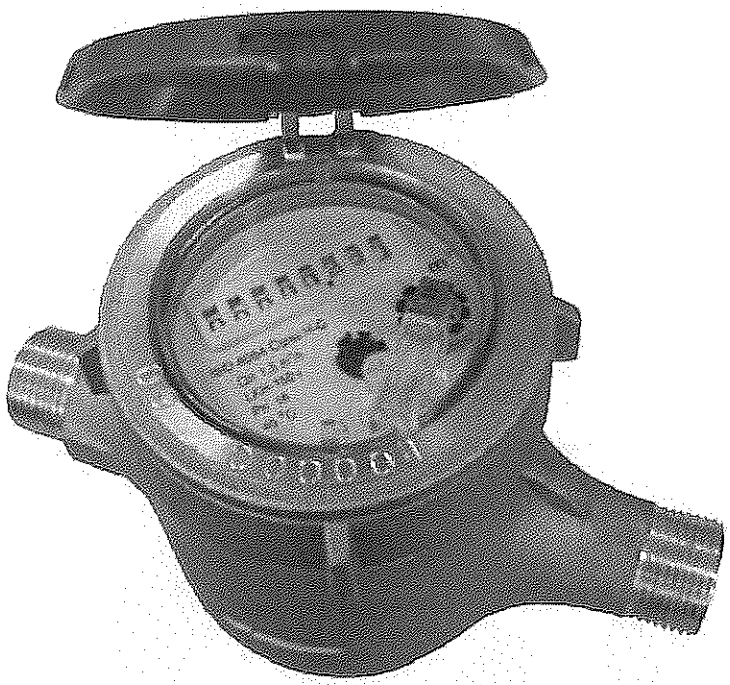
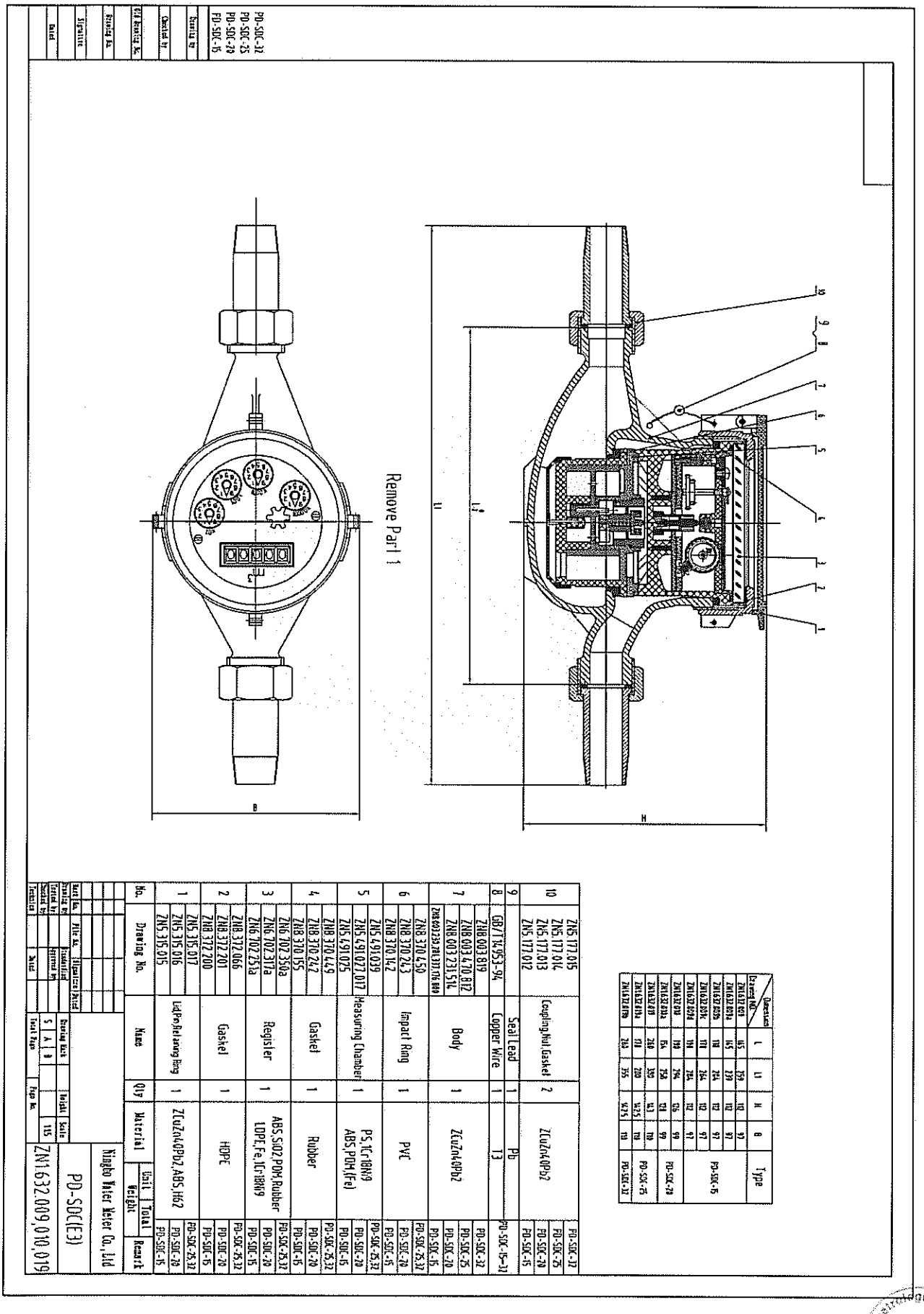


Figure 6: The water meter type PD-SDC (E8) – view:

Figure 7: The water meter type PD-SDC (T) – view:

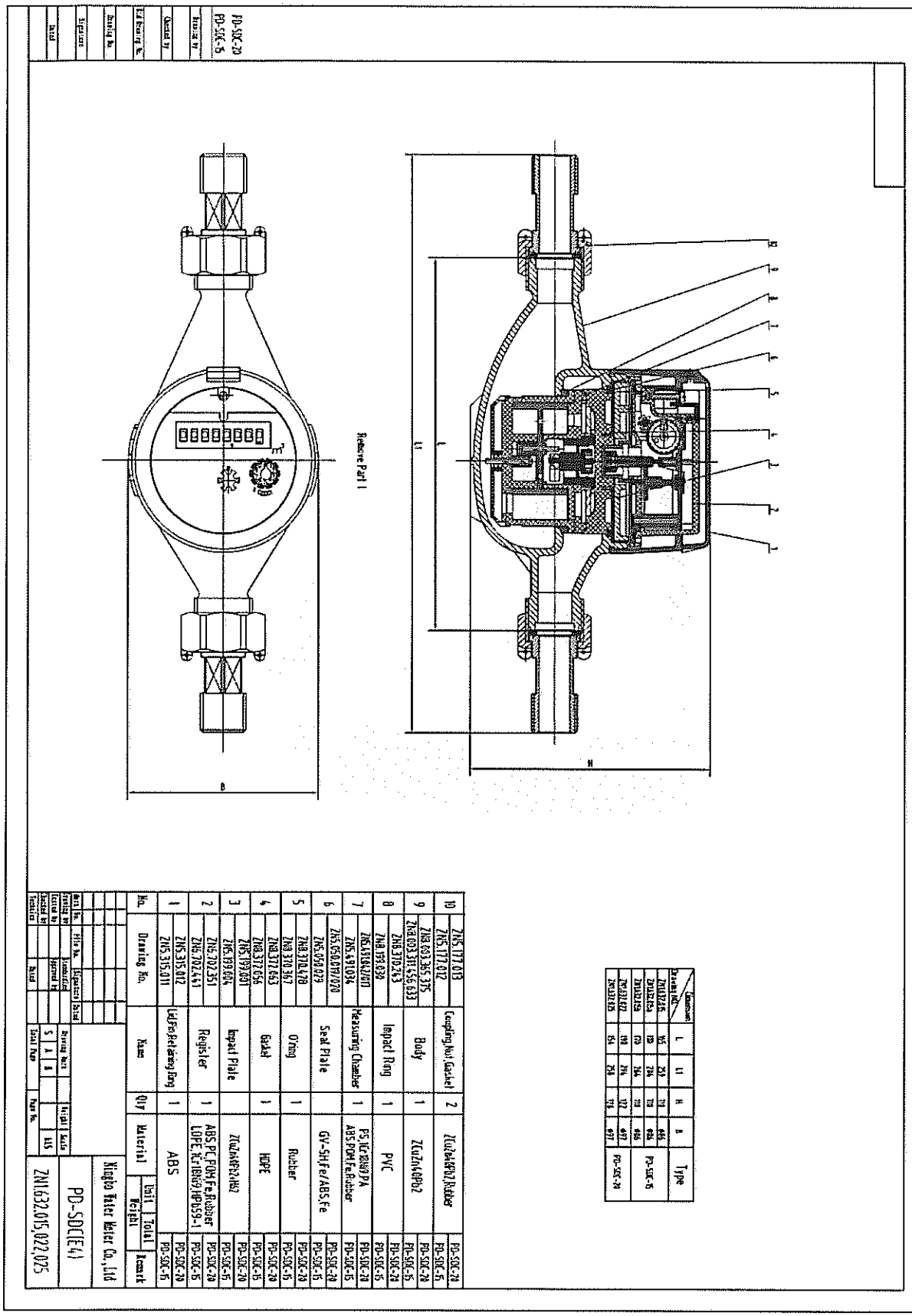
Figure 8: The water meter type PD-SDC (E3) assembly drawings:



Dimensions / Type	L	L1	H	B	Type
ZN1.632.001	165	159	97	97	PD-SDC-15
ZN1.632.001A	165	239	97	97	
ZN1.632.025	178	234	112	97	
ZN1.632.025A	178	234	112	97	
ZN1.632.002	190	294	126	99	PD-SDC-20
ZN1.632.002A	254	358	134	99	
ZN1.632.003	260	359	143	109	PD-SDC-25
ZN1.632.003A	310	420	175	118	PD-SDC-32

No.	Drawing No.	Name	Q'ty	Material	Unit Weight	Total	Remark
10	ZN5.177.015 ZN5.177.014 ZN5.177.013 ZN5.177.012	Coupling Nut Gasket	2	ZCuZn40Pb2			PD-SDC-32 PD-SDC-25 PD-SDC-20 PD-SDC-15
9		Seal Lead	1	Pb			PD-SDC-15~32
8	GB/T14.953-94	Copper Wire	1	T3			
7	ZN8.003.819 ZN8.003.470.012 ZN8.003.231.514	Body	1	ZCuZn40Pb2			PD-SDC-32 PD-SDC-25 PD-SDC-20 PD-SDC-15
6	ZN8.370.450 ZN8.370.243 ZN8.370.142	Impact Ring	1	PVC			PD-SDC-32 PD-SDC-20 PD-SDC-15
5	ZN5.491.039 ZN5.491.027.017 ZN5.491.075	Measuring Chamber	1	PS,1Cr18Ni9 ABS,PDM,(Fe)			PD-SDC-15~32 PD-SDC-20 PD-SDC-15
4	ZN8.370.449 ZN8.370.247	Gasket	1	Rubber			PD-SDC-32 PD-SDC-20
3	ZN8.370.155 ZN6.702.350a ZN6.702.317a ZN6.702.225a	Register	1	ABS,SiO2,PDM,Rubber 1DPE,Fe,1Cr18Ni9			PD-SDC-15~32 PD-SDC-20 PD-SDC-15 PD-SDC-25,32
2	ZN8.372.066 ZN8.372.701	Gasket	1	HDPE			PD-SDC-20 PD-SDC-15
1	ZN8.372.200 ZN5.315.017 ZN5.315.016 ZN5.315.015	Lid,Pin,Retaining Ring	1	ZCuZn40Pb2,ABS,H62			PD-SDC-15~32 PD-SDC-25,32 PD-SDC-20 PD-SDC-15

Figure 9: The water meter type PD-SDC (E4) assembly drawings:



Dimension / Drawing No.	L	L1	H	B	Type
ZNI632.015	165	203	211	166	PD-SDC-15
ZNI632.016	190	234	238	166	
ZNI632.017	190	234	238	166	
ZNI632.018	220	264	238	166	
ZNI632.019	220	264	238	166	
ZNI632.020	190	234	272	197	PD-SDC-20
ZNI632.021	220	264	272	197	
ZNI632.022	254	294	272	197	
ZNI632.023	254	294	272	197	
ZNI632.024	254	294	272	197	
ZNI632.025	254	294	272	197	
ZNI632.026	254	294	272	197	
ZNI632.027	254	294	272	197	
ZNI632.028	254	294	272	197	
ZNI632.029	254	294	272	197	
ZNI632.030	254	294	272	197	
ZNI632.031	254	294	272	197	
ZNI632.032	254	294	272	197	
ZNI632.033	254	294	272	197	
ZNI632.034	254	294	272	197	
ZNI632.035	254	294	272	197	
ZNI632.036	254	294	272	197	
ZNI632.037	254	294	272	197	
ZNI632.038	254	294	272	197	
ZNI632.039	254	294	272	197	
ZNI632.040	254	294	272	197	
ZNI632.041	254	294	272	197	
ZNI632.042	254	294	272	197	
ZNI632.043	254	294	272	197	
ZNI632.044	254	294	272	197	
ZNI632.045	254	294	272	197	
ZNI632.046	254	294	272	197	
ZNI632.047	254	294	272	197	
ZNI632.048	254	294	272	197	
ZNI632.049	254	294	272	197	
ZNI632.050	254	294	272	197	
ZNI632.051	254	294	272	197	
ZNI632.052	254	294	272	197	
ZNI632.053	254	294	272	197	
ZNI632.054	254	294	272	197	
ZNI632.055	254	294	272	197	
ZNI632.056	254	294	272	197	
ZNI632.057	254	294	272	197	
ZNI632.058	254	294	272	197	
ZNI632.059	254	294	272	197	
ZNI632.060	254	294	272	197	
ZNI632.061	254	294	272	197	
ZNI632.062	254	294	272	197	
ZNI632.063	254	294	272	197	
ZNI632.064	254	294	272	197	
ZNI632.065	254	294	272	197	
ZNI632.066	254	294	272	197	
ZNI632.067	254	294	272	197	
ZNI632.068	254	294	272	197	
ZNI632.069	254	294	272	197	
ZNI632.070	254	294	272	197	
ZNI632.071	254	294	272	197	
ZNI632.072	254	294	272	197	
ZNI632.073	254	294	272	197	
ZNI632.074	254	294	272	197	
ZNI632.075	254	294	272	197	
ZNI632.076	254	294	272	197	
ZNI632.077	254	294	272	197	
ZNI632.078	254	294	272	197	
ZNI632.079	254	294	272	197	
ZNI632.080	254	294	272	197	
ZNI632.081	254	294	272	197	
ZNI632.082	254	294	272	197	
ZNI632.083	254	294	272	197	
ZNI632.084	254	294	272	197	
ZNI632.085	254	294	272	197	
ZNI632.086	254	294	272	197	
ZNI632.087	254	294	272	197	
ZNI632.088	254	294	272	197	
ZNI632.089	254	294	272	197	
ZNI632.090	254	294	272	197	
ZNI632.091	254	294	272	197	
ZNI632.092	254	294	272	197	
ZNI632.093	254	294	272	197	
ZNI632.094	254	294	272	197	
ZNI632.095	254	294	272	197	
ZNI632.096	254	294	272	197	
ZNI632.097	254	294	272	197	
ZNI632.098	254	294	272	197	
ZNI632.099	254	294	272	197	
ZNI632.100	254	294	272	197	

No.	Drawing No.	Name	Qty	Material	Unit Weight	Total Weight	Remark
10	ZNS.177.013	Coupling Nut, Gasket	2	ZCuZn40Pb2,Rubber			PD-SDC-20
	ZNS.177.012						PD-SDC-15
9	ZNB.693.385.375	Body	1	ZCuZn40Pb2			PD-SDC-20
	ZNB.693.381.456.633						PD-SDC-15
8	ZNB.370.743	Impact Ring	1	PVC			PD-SDC-20
	ZNB.193.634						PD-SDC-15
7	ZNS.491.034	Measuring Chamber	1	PS,NGr(R80)PA ABS,POM,Fe,Rubber			PD-SDC-20
	ZNS.491.034						PD-SDC-15
6	ZNS.650.019/020	Seal Plate		GV-Sn,Fe/ABS,Fe			PD-SDC-20
	ZNS.650.029						PD-SDC-15
5	ZNB.370.478	O'ring	1	Rubber			PD-SDC-20
	ZNB.370.367						PD-SDC-15
4	ZNB.372.656	Gasket	1	HDPE			PD-SDC-20
	ZNS.193.601						PD-SDC-15
3	ZNS.193.604	Impact Plate		ZCuZn40Pb2,HW2			PD-SDC-20
	ZNS.202.351						PD-SDC-15
2	ZNS.702.441	Register	1	ABS,PC,POM,Fe,Rubber LDPE,NGr(R80),HPB59-1			PD-SDC-20
	ZNS.315.012		1				PD-SDC-15
1	ZNS.315.011	Lid,Fe,Retaining Ring	1	ABS			PD-SDC-20
	ZNS.315.011						PD-SDC-15

Mat'l No. | File No. | Signature | Dated
Drawing No. | Standardized
Checked by | Approved by
Tested at
Revised

Drawing Mass: Mat'l | Scale
S | A | B
Total Dwg | Page No. | 1/1

Figure 10: The water meter type PD-SDC (E6) assembly drawings:

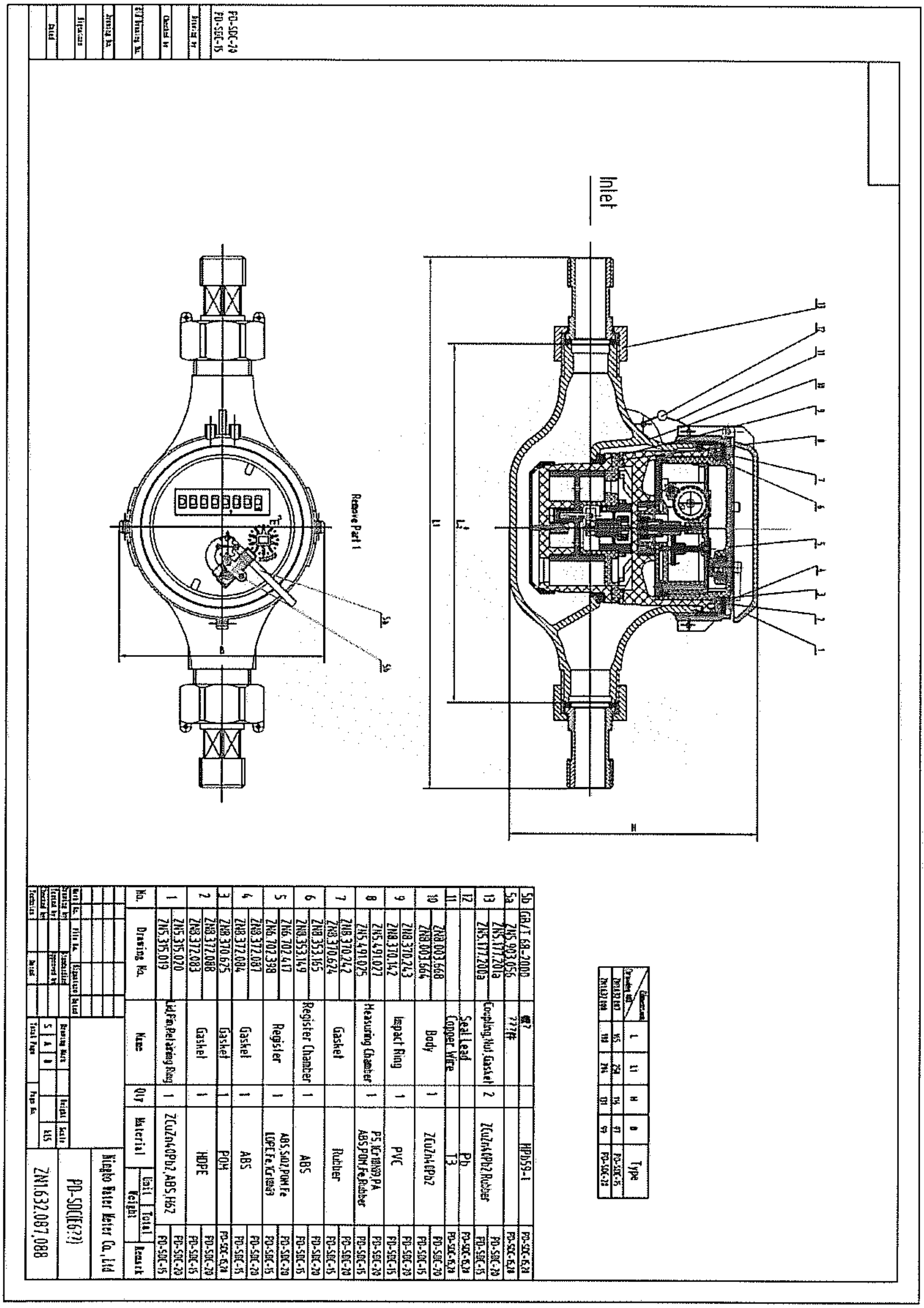


Figure 11: The water meter type PD-SDC (E8) assembly drawings:

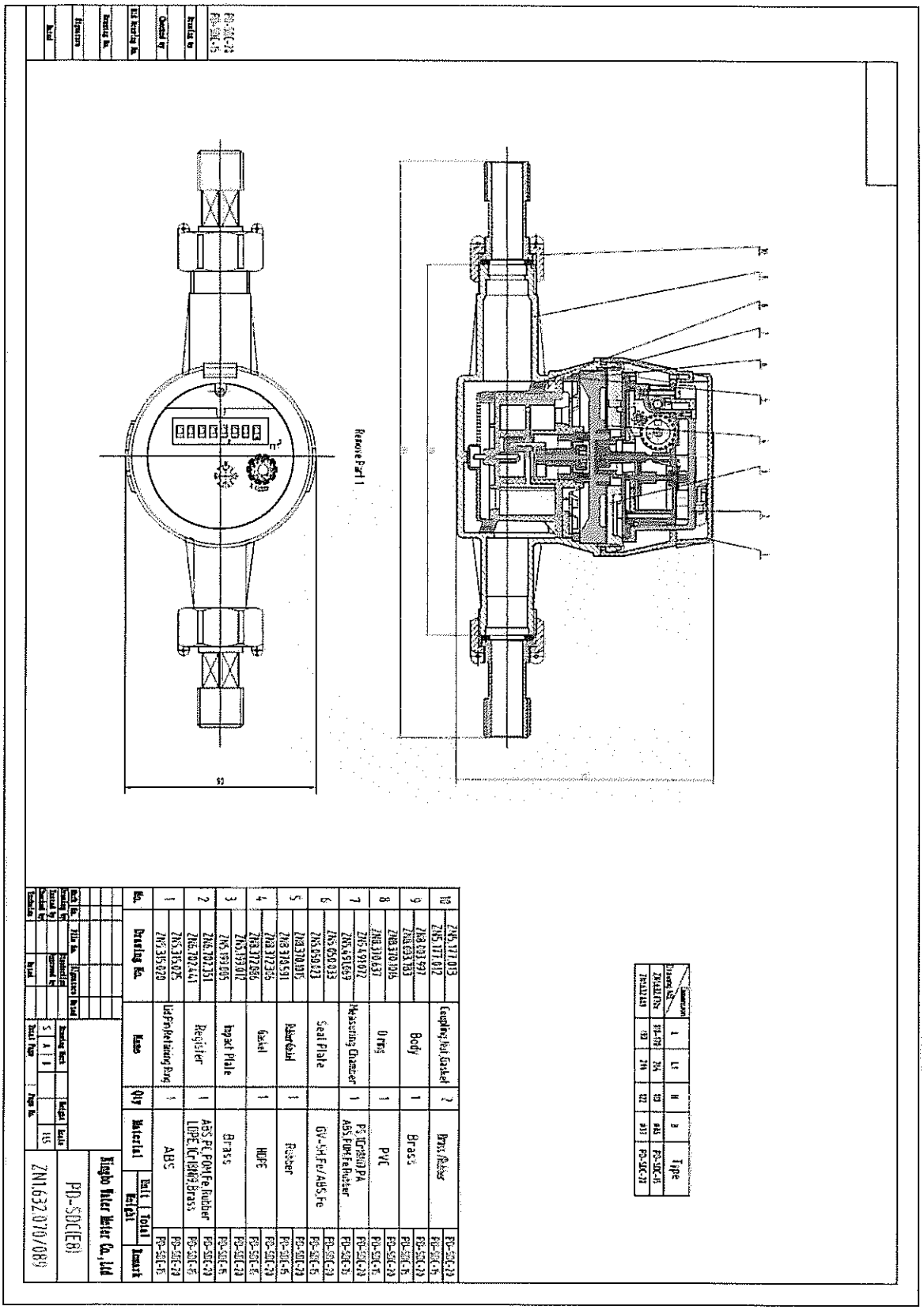


Figure 12: The water meter type PD-SDC (T) assembly drawings:

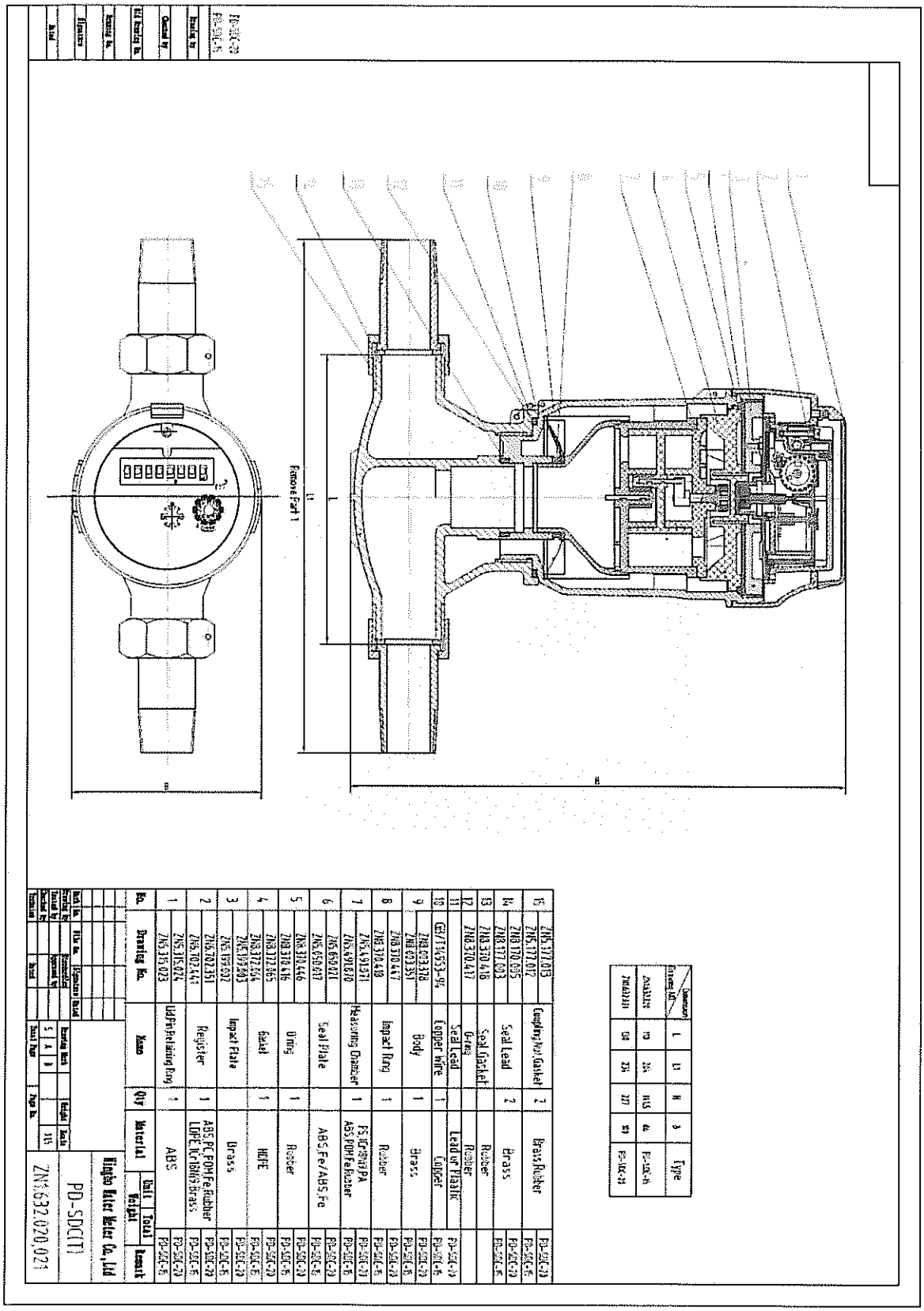


Figure 13: The sealing of the water meter type PD-SDC (E3):

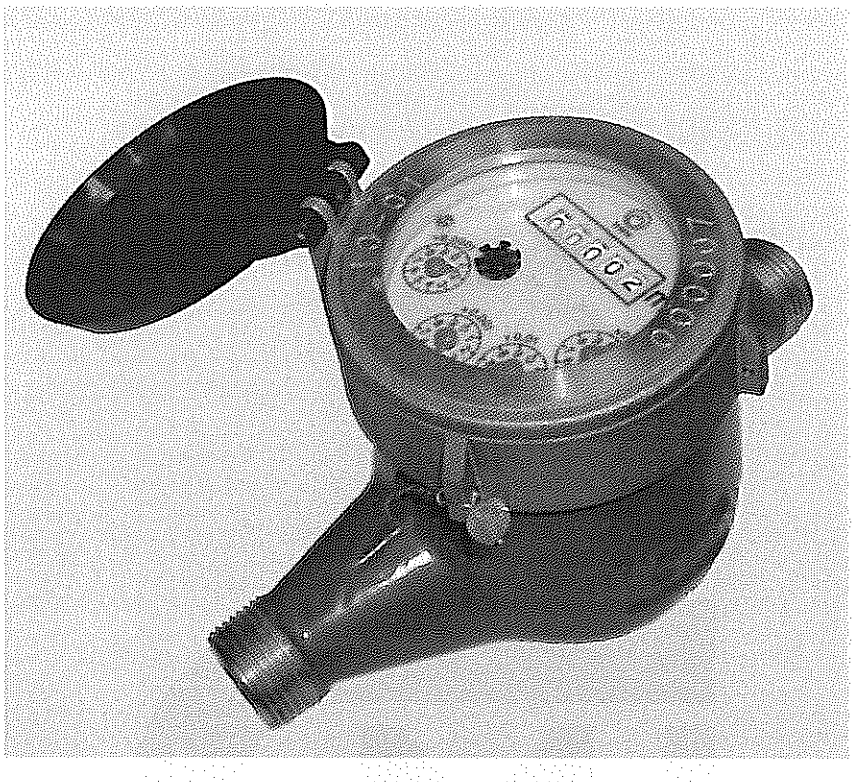


Figure 14: The sealing of the water meter type PD-SDC (E4):

Figure 15: The sealing of the water meter type PD-SDC (T):

Figure 16: Example of the dial plates of the water meter type PD-SDC with register 5+4:

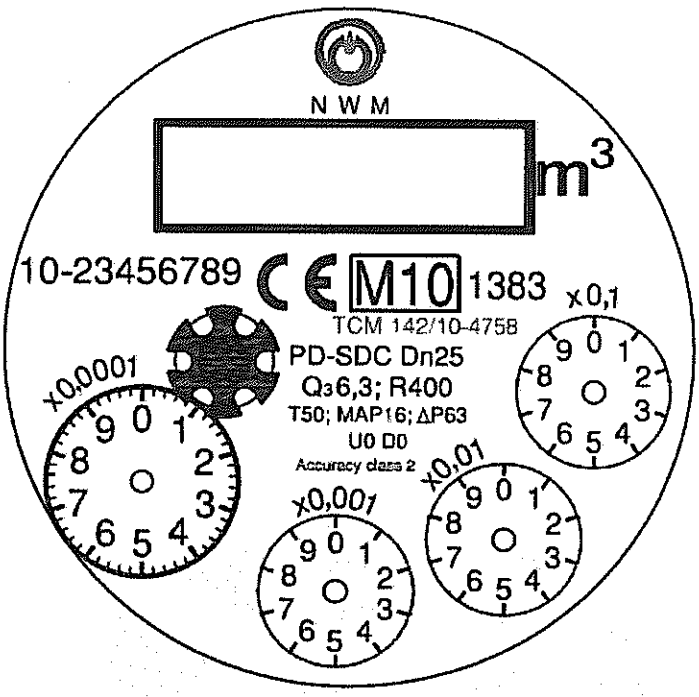
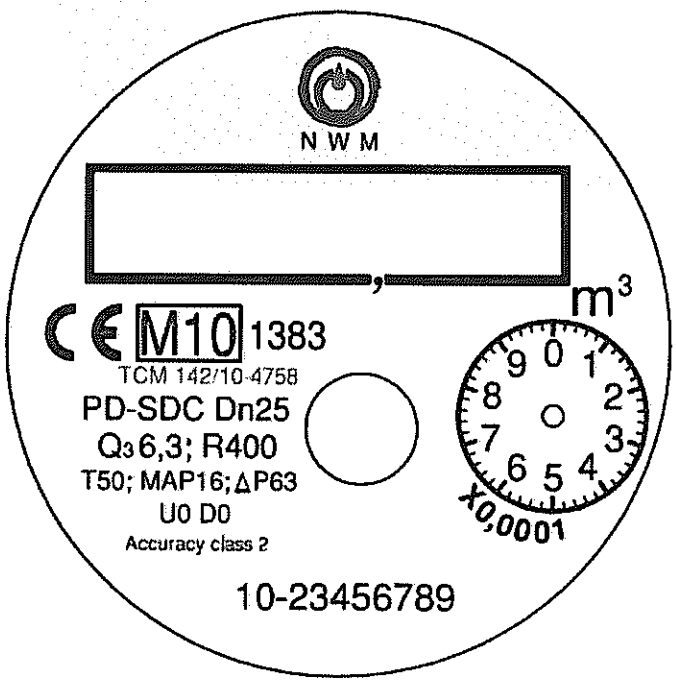


Figure 17: Example of the dial plates of the water meter type PD-SDC with register 8+1:



Czech Metrology Institute
Notified Body No. 1383, Okružní 31
638 00 Brno

EC-TYPE EXAMINATION CERTIFICATE

Number: TCM 142/10 – 4758

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

In respect of: **water meter - volumetric**
type: PD-SDC
Accuracy class: 2
Temperature class: T30 and T50

Valid until: **12 October 2020**

Document number: **0115-CS-A036-10**

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

Date of issue: 13 October 2010

Český metrologický institut NOTIFIKOVANÁ OSOBA AO 250 1383 2

RNDr. Pavel Klenovský
Notified Body No.1383

1. Measuring device description

The volumetric water meters type PD-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 PD-SDC are positive displacement meters with rotary piston.

The water meters type PD-SDC(E3) consist of a brass or bronze casted body with connecting threads and inlet strainer (optional), a wet measuring unit, a dry mechanical indicating device with a glass disc a brass closing ring with a plastic cover or super dry mechanical indicating device (Copper Can Calculator) with brass head ring with a plastic cover.

The water meters type PD-SDC(E4) consist of a brass or bronze casted or plastic body with connecting threads and inlet strainer (optional), a wet measuring unit, a pressure plate, a o ring, a gasket, a screwed plate a dry mechanical indicating device or super dry mechanical indicating device (Copper Can Calculator) and clamp on plastic cover.

The water meters type PD-SDC(E6) consist of a brass or bronze casted body with connecting threads and inlet strainer (optional), a wet measuring unit, a o-ring, a register chamber, a dry mechanical indicating device and brass head ring with a plastic cover.

The measuring unit consists of an internal strainer, a piston chamber with plastic shaft with stainless steel holder, a bush, a plate, a piston with stainless steel shaft, a piston chamber cover, an o-ring, a transmission shaft with magnetic holder.

The mechanical indicating device, dry (Plastic Calculator) or super dry (Copper Can Calculator), can be formed by numbered rollers with five drums and four rotary pointers, or eight drums and one rotary pointer. There is star wheel with six arms which can be used for rapid testing in mechanical indicating device.

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

The water meters type PD-SDC shall be installed to operate in arbitrary positions.
The water meters typee PD-SDC shall be designate by these trademarks:

NWM NWM 宁波® <NB>®

Water meters type PD-SDC are manufactured according to technical documentation of manufacturer No. Q/ZNJ 17005-2010 Annex 1 from 1.10.2010.

2. Basic technical data

Basic technical data of water meters type PD-SDC:

Nominal diameter (DN) [mm]:	15	20	25
Overload flowrate (Q_4) [m^3/h]:	≤ 3.13	≤ 5.00	≤ 7.88
Permanent flowrate (Q_3) [m^3/h]:	≤ 2.50 [1]	≤ 4.00 [1]	≤ 6.30 [1]
Transitional flowrate (Q_2) [m^3/h]:	≥ 0.0100	≥ 0.0160	≥ 0.0252
Minimum flowrate (Q_1) [m^3/h]:	≥ 0.0063	≥ 0.0100	≥ 0.0158
Ratio Q_3 / Q_1:	≤ 400 [2]		
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_l):	± 5 %		
Maximum permissible error for the upper flowrate zone (MPE_u):	± 2 % for water having a temperature ≤ 30 °C ± 3 % for water having a temperature > 30 °C		
Temperature class:	T30 and T50		
Water pressure classes:	MAP 16		

Pressure-loss classes:	ΔP 63		
Indicating range [m^3]:	99 999		
Resolution of the indicating device [m^3]:	0.00002		
Resolution of the device for the rapid testing [pulse/L]:	71.185	40.264	26.745
Flow profile sensitivity classes:	U0 D0		
Orientation limitation:	Arbitrary orientation		
Length L [mm]:	110 - 190	154 - 190	168 - 260
Connection type– Screw thread size:	G¾B or G1B	G1B	G1¼B or G1½B
Reed switch power supply (U_{max} / I_{max}):	max. 24 V / 0.01 A		
Reed switch K-faktor [impulse / L]:	1, 0.1, 0.01 and 0.001		

[1] The value of Q_3 shall be chosen from the R5 line of ISO 3:1973.
[2] 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.

3. Test

Technical tests of the water meters type PD-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-A0044-10 from October 11th 2010..

4. The measuring device data

The water meters type PD-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 (m^3)
- Accuracy class 2
- Numerical value Q_3 in m^3/h (Q_3 ×.×)
- The ratio Q_3 / Q_1, (R××)
- The temperature class (T××)
- The maximum admissible pressure (MAP ××)
- The pressure loss class (ΔP ××)
- Classes on sensitivity to irregularities in velocity field (U× D×)
- 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 brass head ring has to be sealed on water meters types PD-SDC (E3) and PD-SDC (E6).
The connection of water meter body and indicating device has to be sealed by plastic cover on water meters types PD-SDC (E4). This plastic cover has to be identified by safeguarding marks.
The connection of water meter body and reed impulse transmitter has to be sealed, if equipped.
The location of seal is described in Figure 9 and Figure 10.

Figure 1: The water meter type PD-SDC (E3) – view:

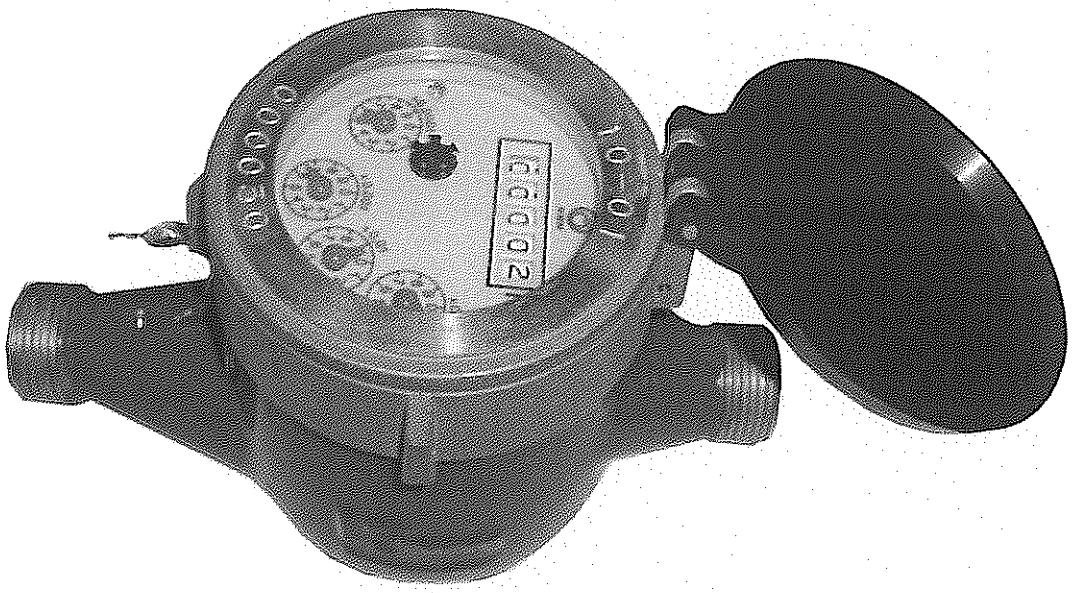


Figure 2: The water meter type PD-SDC (E4) – view:

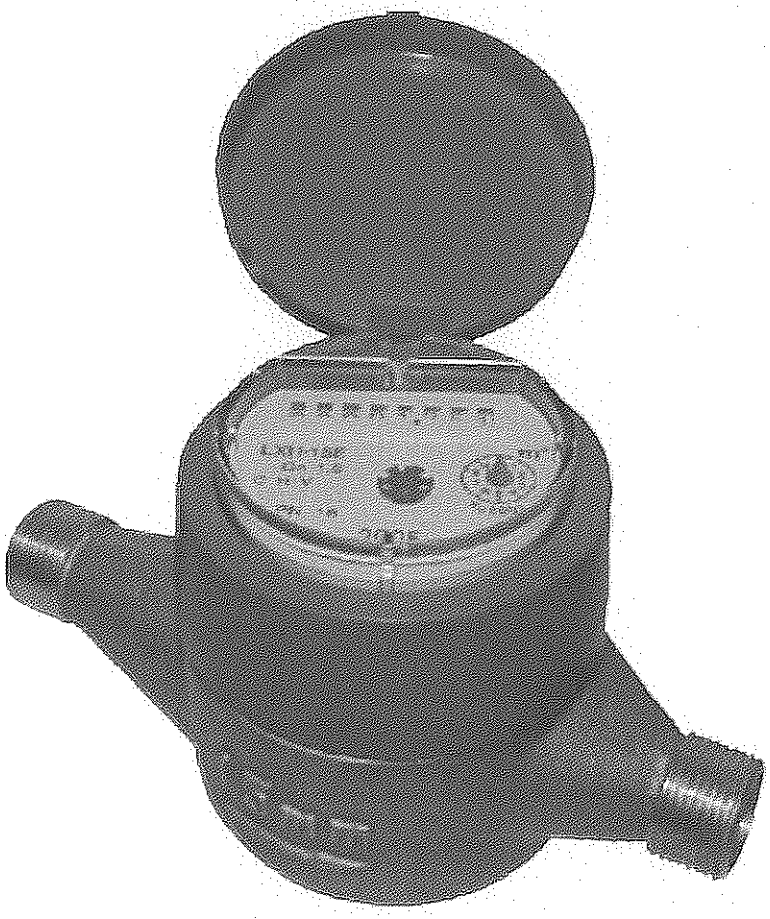


Figure 3: The water meter type PD-SDC (E4) with Super Dry Register (Cooper Can) – view:

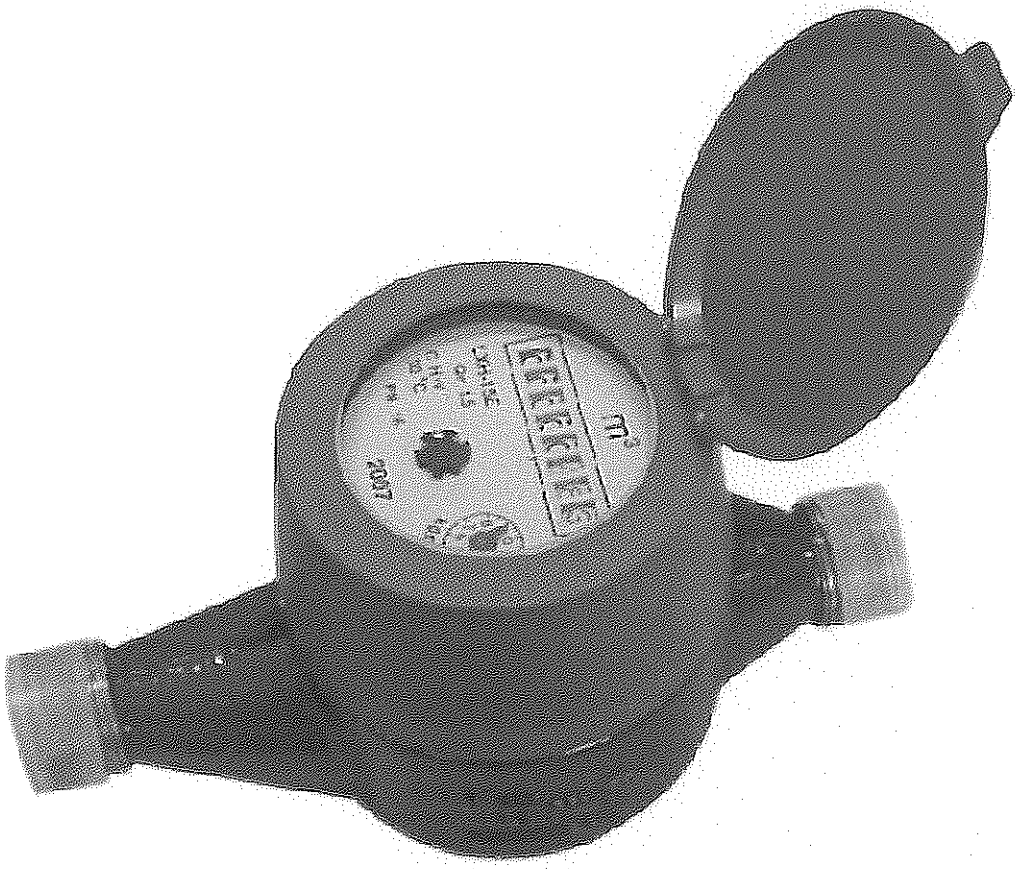


Figure 4: The water meter type PD-SDC (E4) with plastic body – view:

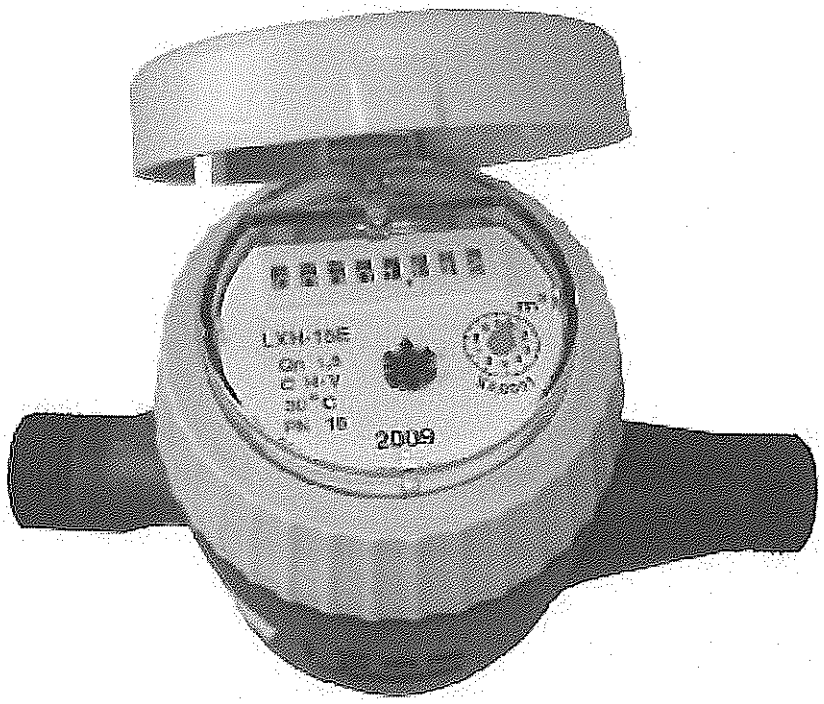


Figure 5: The water meter type PD-SDC (E6) – view:

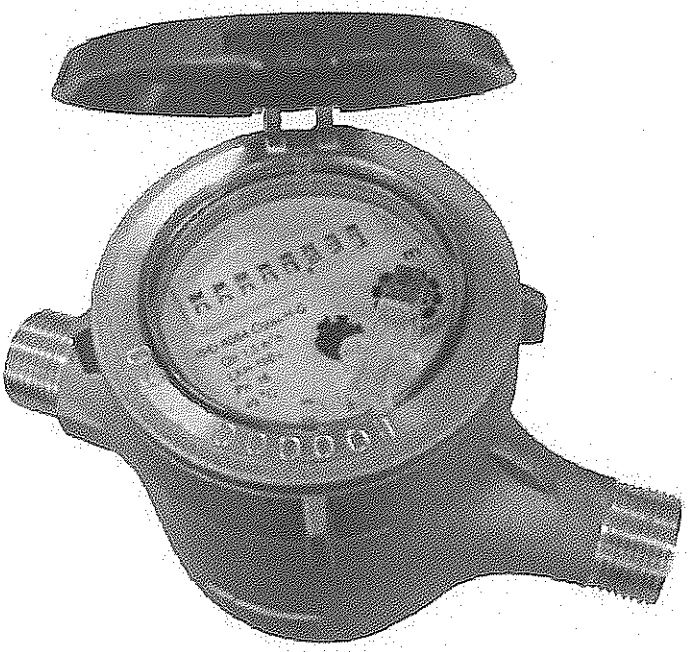


Figure 6: The water meter type PD-SDC (E3) assembly drawings:

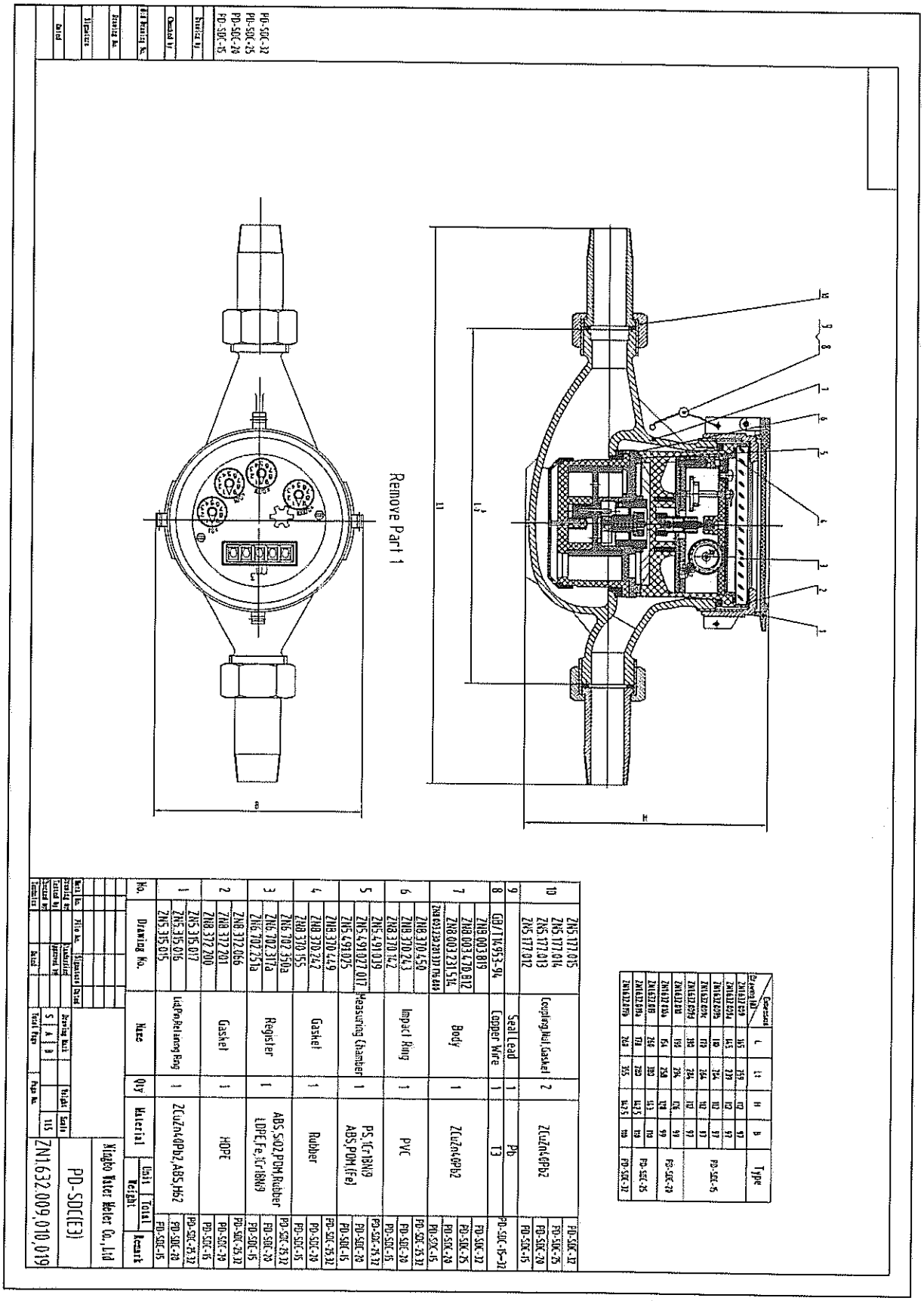


Figure 7: The water meter type PD-SDC (E4) assembly drawings:

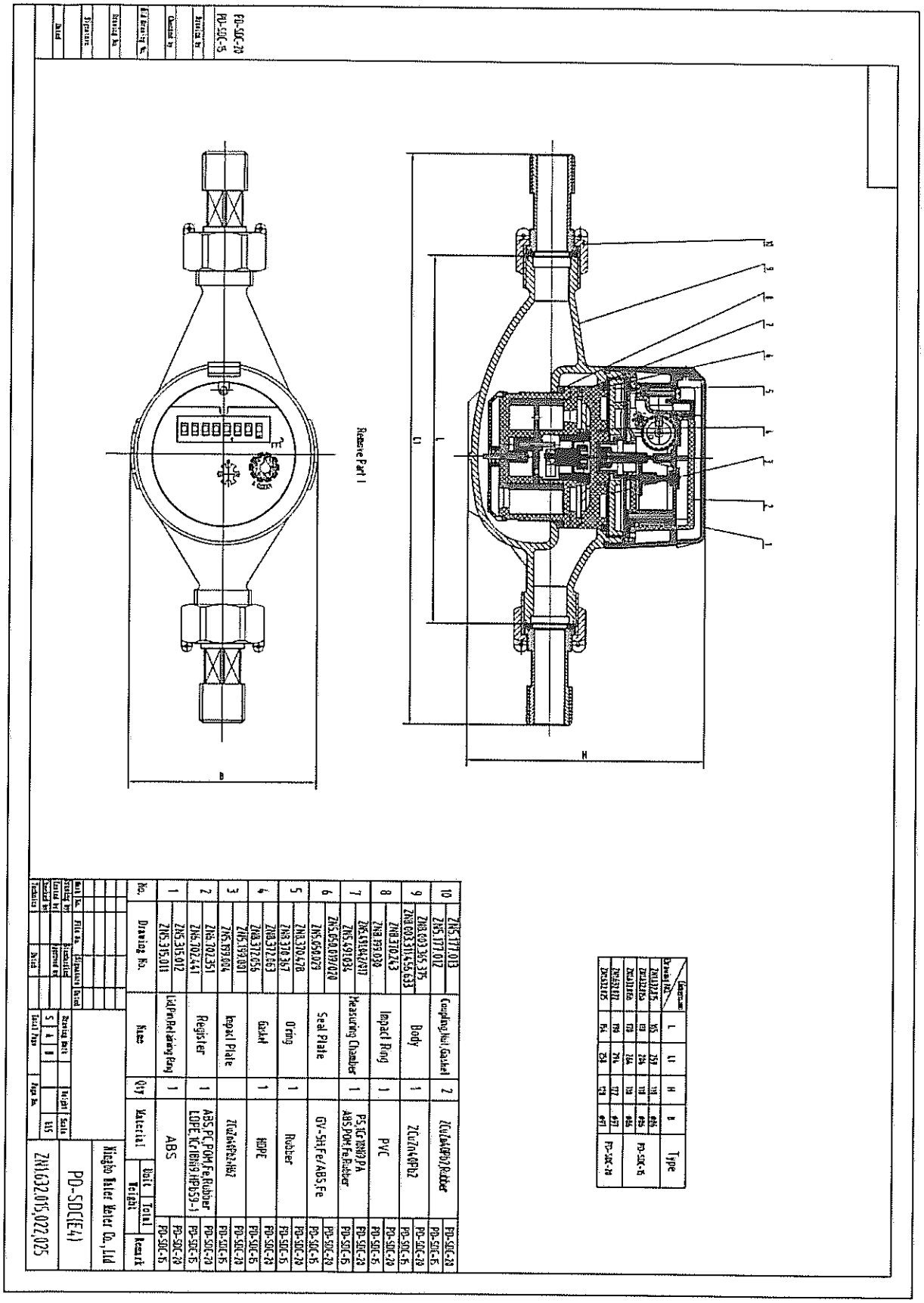


Figure 8: The water meter type PD-SDC (E6) assembly drawings:

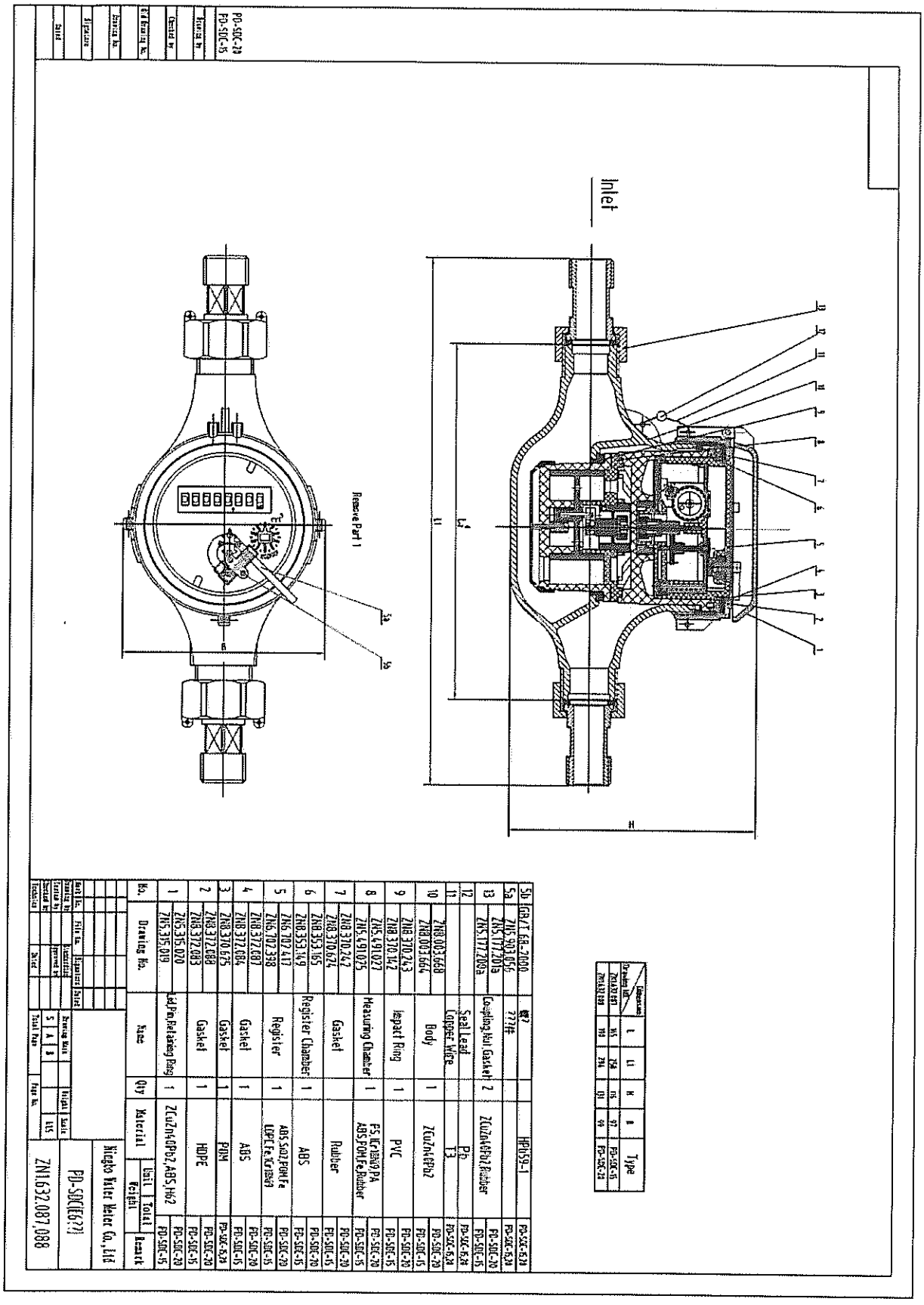


Figure 9: The sealing of the water meter type PD-SDC (E3):

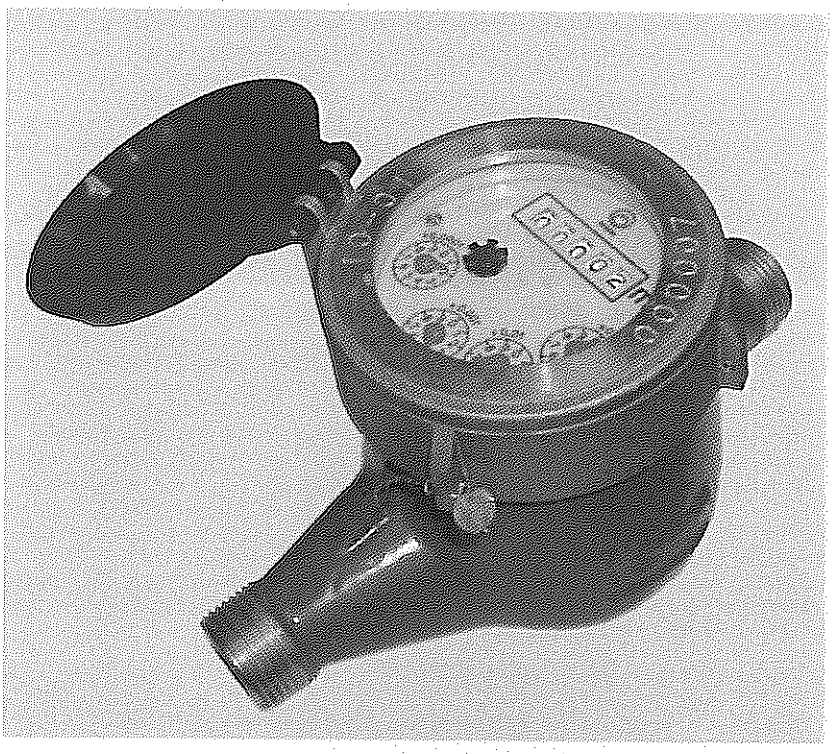


Figure 10: The sealing of the water meter type PD-SDC (E4):

Figure 11: The dial plates of the water meter type PD-SDC with register 5+4:

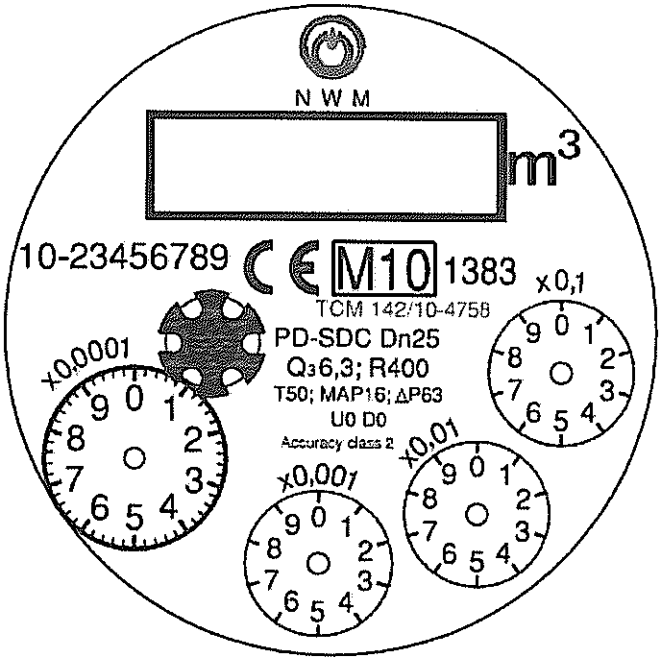


Figure 12: The dial plates of the water meter type PD-SDC with register 8+1: