Slovak Institute of Metrology
Karloveská 63, 842 55 Bratislava 4

SNAS
Reg. No. 101/P-035

ES CERTIFIKÁT TYPU

EC – Type-examination certificate

Číslo dokumentu: *Document number:*	**SK 09-MI001-SMU008** Revision 0
V súlade: *In accordance with:*	nariadením vlády Slovenskej republiky č. 294/2005 Z. z. o meradlách, ktorým sa preberá smernica Európskeho parlamentu a rady 2004/22/ES z 31. marca 2004 o meradlách *Government Ordinance of the Slovak Republic No. 294/2005 Coll., on measuring instruments, which implemented the Directive 2004/22/EC of the European Parliament and Council of the March 31, 2004 on measuring instruments*
Žiadateľ: *Applicant:*	**Elster Metering Ltd, Sundon Park, Luton, 130 Camford Way, LU3 3AN Befordshire, UNITED KINGDOM**
Výrobca: *Manufacturer:*	**Elster s.r.o., Nám. Dr. A. Schweitzera 194, 916 01 Stará Turá, Slovakia**
Označenie typu: *Type designation:*	**H 4000**
Základné požiadavky: *Essential requirements:*	príloha č. 1 a príloha MI-001 k nariadeniu vlády SR č. 294/2005 Z. z. *Annex No. 1 and Annex MI-001 to Government Ordinance of SR No. 294/2005 Coll.*
Platnosť do: *Valid until:*	**9. septembra 2019** *September 09, 2019*
Notifikovaná osoba: *Notified body:*	**1781**
Dátum vydania: *Date of issue:*	**10. septembra 2009** *September 10, 2009*

Základné charakteristiky, popis meradla a podmienky schválenia sú uvedené v prílohe, ktorá je súčasťou tohto certifikátu. Certifikát vrátane prílohy má spolu 9 strán.
Essential characteristics, instrument description and approval conditions are set out in the appendix hereto, which forms the part of the certificate. The certificate including the appendix contains 9 pages.

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Dr. Anna Nemečková
osoba oprávnená konať v mene notifikovanej osoby č. 1781
Notified body No.1781

Poznámka: ES certifikát typu je bez pečiatky a podpisu neplatný. Tento ES certifikát typu môže byť rozmnožovaný len celý a nezmenený. Rozmnožovať jeho časti je možné len s písomným súhlasom Slovenského metrologického ústavu.
Note: EC-type examination certificate without signature and seal are not valid. This EC-type examination certificate may not be reproduced other than in full. Extracts may be taken only with the permission of the Slovak Institute of Metrology.

1 Instructions and standards used within assessment

1.1 Generally binding instructions

Meter type was examined in terms of request for given type provisions Government Ordinance of the Slovak Republic No. 294/2005 Coll. (next Government Ordinance), on measuring instruments, which implemented the Directive 2004/22/EC of the European Parliament and Council of March 31, 2004 on measuring instruments.

Requirements are listed in No. 1 and Annex MI-001 to Government Ordinance of SR No. 294/2005 Coll.

1.2 Harmonised standards and normative documents used

OIML R 49-1:2006 - Water meters intended for the metering of cold potable water and hot water. Part 1: Metrological and technical requirements
OIML R 49-2:2004 - Water meters intended for the metering of cold potable water and hot water. Part 2: Test methods
EN 14154-1:2005+A1:2007 - Water meters - Part 1: General requirements
EN 14154-2:2005+A1:2007 - Water meters - Part 2: Installation and conditions of use
EN 14154-3:2005+A1:2007 - Water meters - Part 3: Test methods and equipment

1.3 Other instructions used:

OIML R 49-2:2006 - Water meters intended for the metering of cold potable water and hot water. Part 2: Test methods
OIML R 49-3:2006 - Water meters intended for the metering of cold potable water and hot water. Part 3: Test report format

2 Type marking

Woltman water meter for cold and hot water - H 4000

Meter is made in following subgroups:

Type of meter	Temperature class	Classes		Nominal Diameter
H 4000	T50	M1[1)] E1[1)]	B[2)]	DN 40, DN 50, DN 65, DN 80, DN 100, DN 125

3 Description of measuring instrument

Meter name: Woltman parallel water meter for cold and hot water

Type marking: H 4000

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[1] podľa nariadenia vlády, príloha č.1

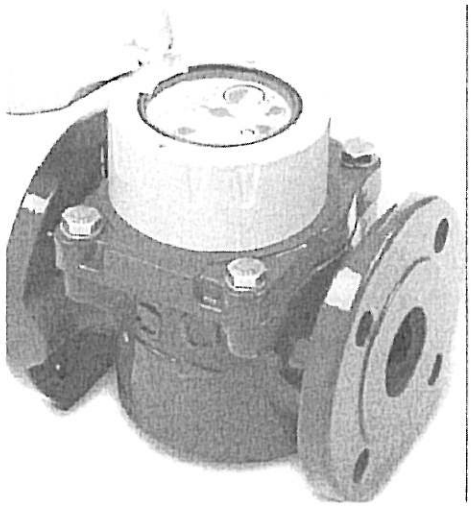
[2] podľa STN EN 14154-3:2005+A1 a OIML R 49-2:2004

Description of operating principle instrument design:

This industrial horizontal meter for cold and hot water is intended for metering of volume passed through it. The Woltman meter (Picture No. 1) operates on the speed principle whereby the speed of a rotor (number of its revolutions) is proportional to the volume of water passing through the meter. The speed of the rotor is being transferred to a mechanical counter indicating the volume passed through the meter.
This water meter is dedicated to measure the volume of cold and hot water passed through it.

Water meter is:

- Woltman horizontal, super dry water meter,
- with internal flow calibration via an integral adjustable blade,
- with removable measuring insert attached to a cover with flanged connection to the body
- measures in all position but not head down



Picture No.1 Woltman parallel water meter H 4000

3.1 Description of subgroups

Marking:	H 4000
DN:	DN40, DN50, DN 65, DN 80, DN 100, DN 125

Counter variants applicable on all sizes:

1. Multipulse counter polymer and as alternative high integrity version (copper can and mineral glass)
2. Counter suitable for retrofit inductive pulse pick up as high integrity version
3. Small, compact polymer and high integrity counter suitable for retrofit inductive pulse pick up
4. Absolute Encoder counter as high integrity (copper can and mineral glass) version and preparation for retrofit inductive pulse pick up

Pulse givers applicable on all sizes:

1. Opto-electrical and Reed switch pulse givers (for counter variant 1.)
2. Inductive retrofit pulse giver ("PR6 & 7 Falcon") for counter variants 2. and 3.
3. Inductive retrofit pulse giver ("PR6 & 7 Falcon") with MBus interface (for counter variant 4.)

3.2 Measuring insert

The measuring insert consists of the measuring mechanism, mechanism's flanged top cover and counter. The measuring insert is attached to the body by screws. The water-tightness of the measuring insert is secured in the body by 2 O-rings, while one O-ring secures the out side tightness (measuring insert and screws), the 2-nd O-ring secures the water-tightness of the insert situated in the body (inlet and outlet). The position of the regulation blade is adjustable via different positions in relation to the water flow.

3.3 Indicating device

The indicating device is a combined number rollers and pointers counter. It consists of 6 rollers for m^3 and 3 scale indicators with pointers for the decimals of m^3. Counter capacity is 999 999 m^3 and resolution of the reading is 0,0005 m^3.

The counter can be equipped with a number of retrofittable pulse givers (see 3.1). The mechanical counter is usually mounted into a metal/mineral glass casing for IP68 protection. The pulse givers can also be applied here.

3.4 Principle of operation

The core part of the water meter is the screw gear (worm wheel) laying vertically on the transfer axle and being driven by the worm gear at the end the horizontal rotor axis. The worm gear is rotating with rotor speed. The resulting rotation of the screw gear is transferred via the magnetic coupling into the mechanical counter.

3.5 Technical documentation

A number of drawing of technical documentations is listed in the following list:

H4000 DN40 – 125 with inductive counter including material list	ZL-0239.4, pages 1 - 5
Multipulse High Integrity Counter (inductive) including material list	ZL-0222.4, pages 1 - 3
Multipulse High Integrity Counter 2 including material list	ZL-0210.4, pages 1, 2
Multipulse Counter including material list	ZL-0243.4, pages 1, 2
H4000P Milestone Counter (inductive) including material list	ZL-0218.4, pages 1, 2
Encoder – High Integrity Counter *including material list*	ZL-0242.3, page 1 ZL-0242.4, pages 2, 3
Encoder / Inductive Counter including material list	ZL-0246.3, page 1 ZL-0246.4, pages 2, 3
Marking of meter data, certificate number and conformity mark	ZL-0255.4, page 1

All drawings, schemes and technical documentations used during the conformity assessment are saved in document No. NO-043/08.

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4 Basic technical characteristics

Type marking		H 4000					
Nominal diameter DN	mm	40	50	65	80	100	125
Indicating range	m^3	10^6					
Resolution of the reading	m^3	0,0005					
Maximum admissible pressure	-	MAP 16					
Working pressure range	bar	10 / 16					
Pressure loss	-	Δp 40	Δp 25				
Temperature class	-	T50					
Flow profile sensitivity classes	-	U3 / D0					
Position	-	all positions but not head down					
Climatic and mechanical environments	-	closed spaces /from 5°C to 55°C/mech. class M1					
Electromagnetic environments	-	E1					
Impulses	imp/l	≥ 1					

4.1 Additional technical characteristics

Weight from 12 kg to 20,5 kg

5 Basic metrological characteristics

The maximum permissible error (accurate class):

± 5 % ($Q_1 \leq Q < Q_2$)

± 2 % ($Q_2 \leq Q \leq Q_4$) for water temperature (from 0,1 to 30) °C

± 3 % ($Q_2 \leq Q \leq Q_4$) for water temperature greater than 30 °C

Temperature class	T	-	50					
Diameter	DN	mm	**40**	**40**	**40**	**50**	**50**	**50**
Minimum flow rate	Q_1	m^3/h	0,788	0,63	0,504	0,788	0,63	0,504
Transitional flow rate	Q_2	m^3/h	1,26	1,008	0,806	1,26	1,008	0,806
Permanent flow rate	Q_3	m^3/h	63	63	63	63	63	63
Overload flow rate	Q_4	m^3/h	78,75	78,75	78,75	78,75	78,75	78,75
Measuring range R	Q_3/Q_1	-	80	100	125	80	100	125
Ratio	Q_2/Q_1	-	1,6					

Temperature class	T	-	50				
Diameter	DN	mm	**65**	**65**	**80**	**80**	**80**
Minimum flow rate	Q_1	m^3/h	1,26	1	2	1,6	1,28
Transitional flow rate	Q_2	m^3/h	2,016	1,6	3,2	2,56	2,048
Permanent flow rate	Q_3	m^3/h	63	63	160	160	160
Overload flow rate	Q_4	m^3/h	78,75	78,75	200	200	200
Measuring range R	Q_3/Q_1	-	50	63	80	100	125
Ratio	Q_2/Q_1	-	1,6				

Temperature class	T	-	50					
Diameter	DN	mm	**100**	**100**	**100**	**125**	**125**	**125**
Minimum flow rate	Q_1	m^3/h	2	1,6	1,28	2	1,6	1,28
Transitional flow rate	Q_2	m^3/h	3,2	2,56	2,048	3,2	2,56	2,048
Permanent flow rate	Q_3	m^3/h	160	160	160	160	160	160
Overload flow rate	Q_4	m^3/h	200	200	200	200	200	200
Measuring range R	Q_3/Q_1	-	80	100	125	80	100	125
Ratio	Q_2/Q_1	-	1,6					

6 Results of conformity assessment

The results of tests, assessments and evaluations given in the evaluation report No. 6496/230/142/08 dated August 3, 2009 give sufficient evidence that the technical design of the measuring instrument – Woltman water meter type H 4000 - is in compliance with the technical requirements of the Slovak Republic Governmental Ordinance No. 294/2005 Coll. On measuring instruments, Annex No. 1 and MI-001, and the STN EN 14154-1:2005+A1 and OIML R 49-1:2006 standards.

7 Data placed on the measuring instrument

On the shroud, the dial of the indicating device or on an identification plate of every water meter or in the product documentation minimum the following data should be marked:

a) producer's name or his production mark
b) type of the Woltman water meter
c) measuring unit m^3
d) numerical value of Q_3 and ratio Q_3/Q_1
e) production number and the year of production
f) number of ES certificate type and conformity mark
g) the highest admissible pressure if it differs from 1 MPa
h) flow direction
i) the letter V or H, if the meter can only be operated in the vertical or horizontal position
j) class of pressure loss if it differs from Δp63
k) class of climatic and mechanical environment
l) flow profile sensitivity classes
m) class of electromagnetic environment
n) the temperature class where it differs from T30

8 Conditions of conformity assessment of measuring instruments produced with type approval

Woltman water meters for cold and hot water put onto the market in line with the procedure of conformity assessment according to the D or F Annexes of the Governmental ordinance should be in compliance with the technical description by item 3 of this report and at test should be in compliance with the requirements determined in OIML R 49-1:2006. Metrological test is performed by a testing equipment which should be in compliance with the requirements determined in STN EN 14154-3:2005+A1 and water at temperature 20 °C ± 5 °C at the following flow rates:

a) Minimum flow rate $Q_1 \leq Q \leq 1{,}1Q_1$
b) Transitional flow rate $Q_2 \leq Q \leq 1{,}1Q_2$
c) Permanent flow rate $0{,}9Q_3 < Q < Q_3$

A metrological test may only be performed by a producer, or a notified body respectively in line with the conformity assessment procedure according to the D or F Annexes of the Governmental ordinance respectively.

9 Measures asked for providing measuring instrument integrity

9.1 Identification

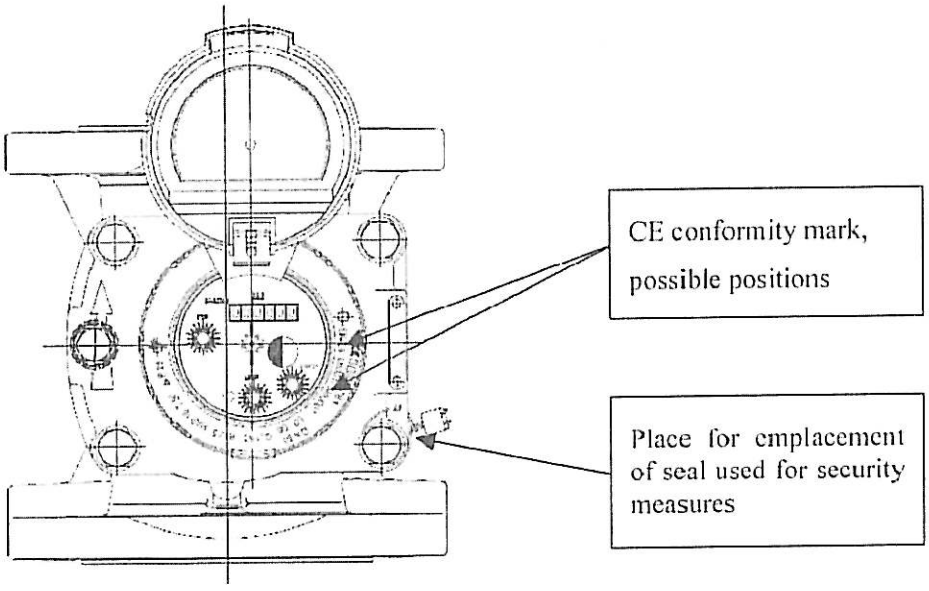
Woltman water meter should be in compliance with the description provided on item 3 of this Annex and should be in compliance with the marking specified by the item 7 of this Annex. The number given to the EC certificate is put at each piece of the measuring instrument.

Emplacement of the conformity mark is followed by § 7 of the Governmental ordinance.

9.2 Sealing of the measuring instrument

The Woltman water meter shall be before the conformity assessment according to the D or F Annexes sealed by following sealing marks:

Connection of counter shroud and water meter body shall be sealed by seal used for security measures (leaden seal) (Picture No. 2)

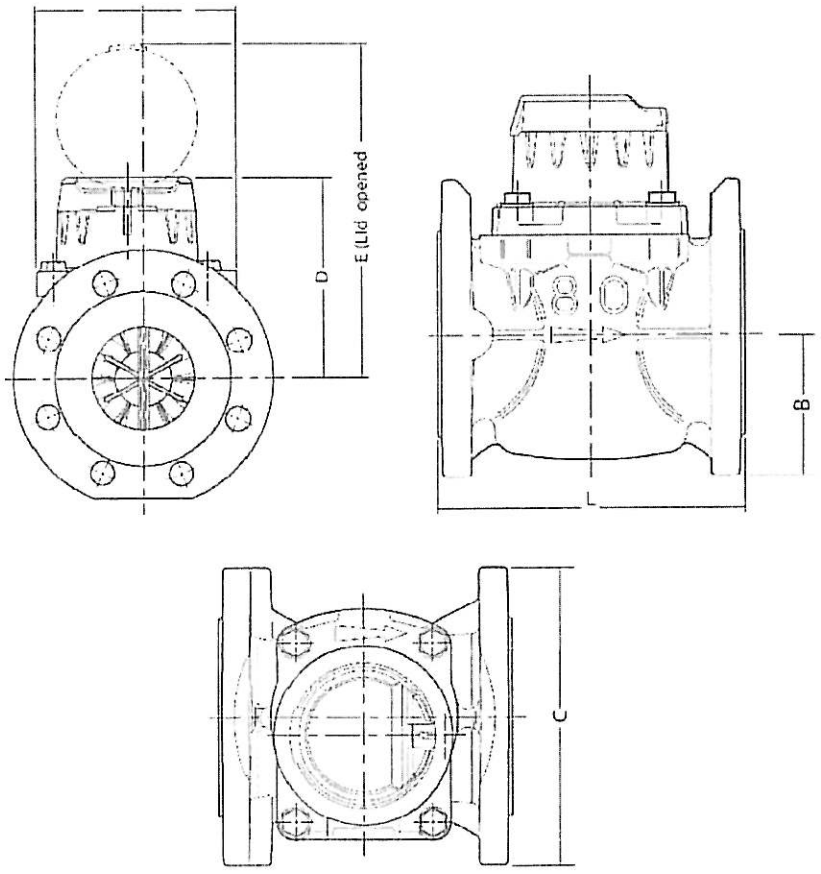


Picture No.2 Positioning of the seal

10 Requirements for installation, especially conditions of usage

10.1 Installation data

Diameter	40	50	65	80	100	125
Construction Length (*L*) [mm]	≥ 300	≥ 200	≥ 200	≥ 200	≥ 250	≥ 250
Flange Diameter (*C*) [mm]	151	166	186	201	228	251
Weight [kg]	11,8	12,2/13,1	13	14,1/16,6	19,4/21	20,5
Height (*D*) [mm]	148	148	148	159	159	159
Height (*B*) [mm]	78	78	86	94	106	118
Height (*E*) [mm]	236	236	236	247	247	247



Picture No.3 Installation dimensions

10.2 Installation requirements

A Woltman water meter is introduced into the operation by a worker having a certificate for this activity performance. The Woltman meter is possible to be put into use after a construction in line with this report and in line with a producer instruction by "Instruction of installation and conditions of use of flanged water meters". A measuring instrument should be installed in direction of water flow arrow marked on the meter body.

10.3 Conditions of use

The measuring instrument should be used within the recommendations of a producer or manufacturer: "Instruction of installation and conditions of use of flanged water meters".

Assessment done by: Ing. Miroslava Benková, Director of the Flow Centre

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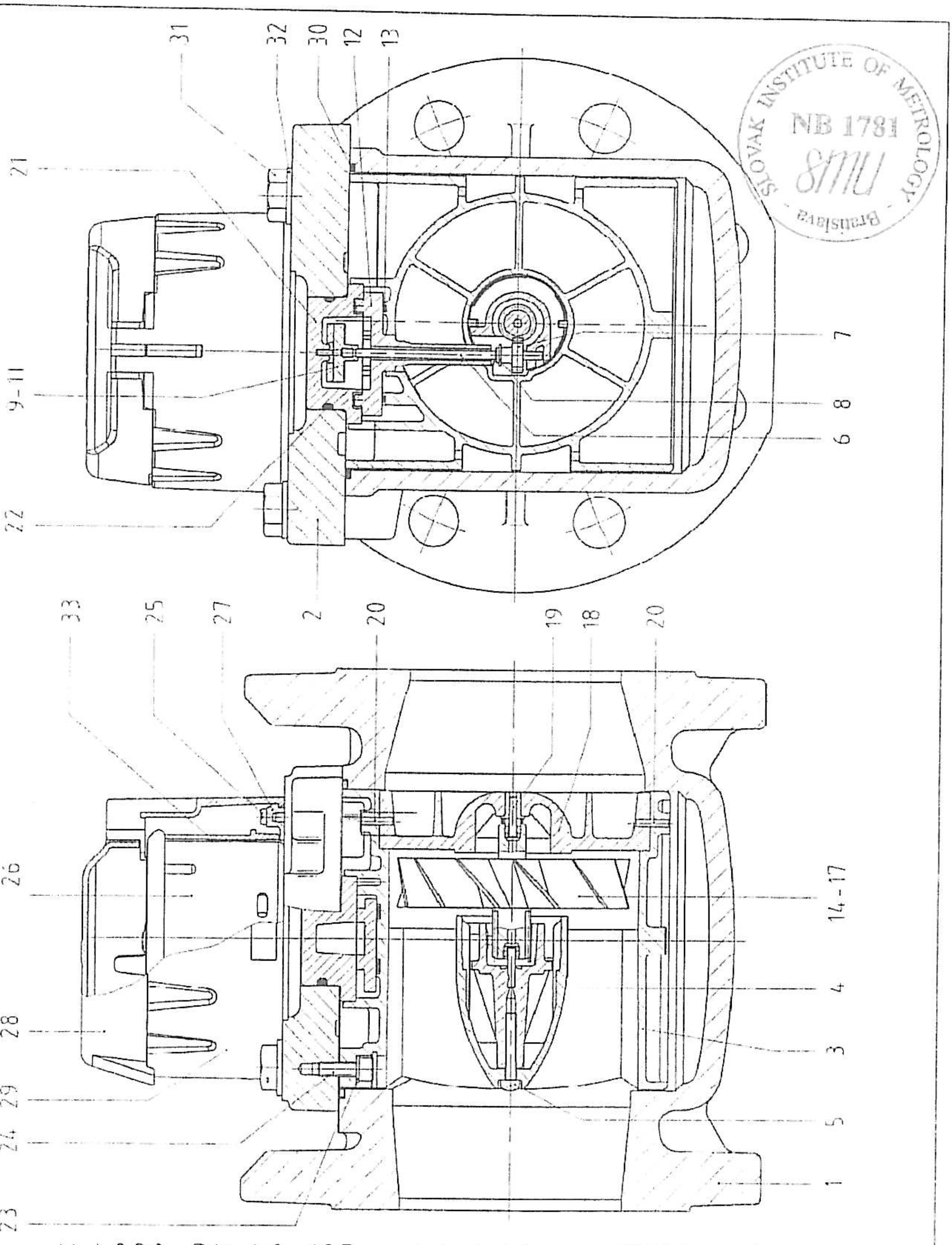

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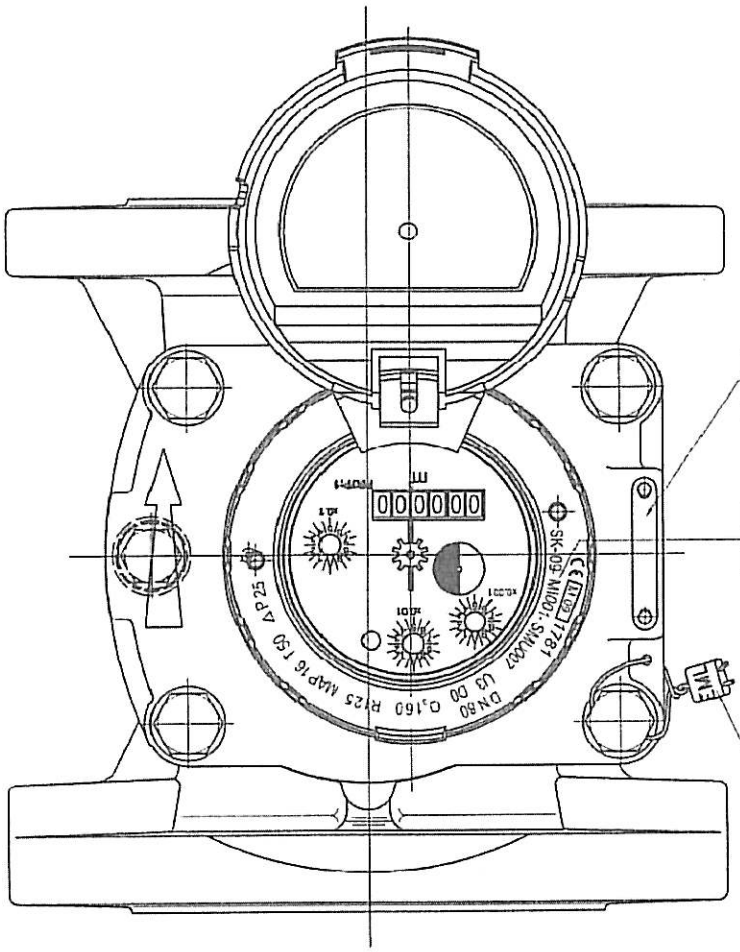
H 4000 DN 40-125 mit induktivem Zählwerk

H 4000 DN 40-125 with inductive counter (Cu Can)

(gezeichnet DN 80 / DN 80 shown)

Engel Non-Mittig a2591 geänd. Non-Mittig a2620

		DATUM DATE	NAME	MASSSTAB SCALE	IDENT-NR IDENT-NO	KENNWORT CODE	FORMAT SIZE	BLATT PAGE	VON OF
elster	BEARBEITET DRAWN	27.11.08	Engels	1:2	ZL-0239.4		A4	1	5
ELSTER Messtechnik GmbH	GEPRÜFT CHECKED	27.11.08	Bühler		ERSATZ FUER SUPERSEDES gl. Nr. v. 31.07.08	ERSETZT DURCH SUPERSEDED BY			



DN	Blg./Length
40	≥200
50	≥200
65	≥200
80	≥200
100	≥250
125	≥250

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H 4000 DN 40-125 mit induktivem Zählwerk
H 4000 DN 40-125 with inductive counter (Cu Can)
(gezeichnet DN 80 / DN 80 shown)

Kon-Mittlg b2655

		DATUM DATE	SIGN.	MASSSTAB SCALE	IDENT-NR. IDENT-NO.	KENNWORT CODE	FMT. SIZE	BLATT PAGE	VON OF
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	GEPRUEFT CHECKED	23.07.09	Bühler		ERSATZ FUER SUPERSEDES gl.Nr.v. 27.11.08	ERSETZT DURCH SUPERSEDED BY			

Teil/Part	Benennung / Denomination	Werkstoff / Material
1	Gehause	GG alternativ GGG
	Body	GG alternatively GGG
2	Gehausedeckel	GG alternativ GGG
	Cover	GG alternatively GGG
3	Eingangslager	PPO
	Measuring element	PPO
4	Vordere Lagerung kpl	PA/Hartmetall
	Front bearing assembly	PA/Tungsten Carbide
5	Kreuzschlitzschraube	Chrom-Nickel-Stahl
	Screw	Stainless steel
6	Ubertragungswelle	Chrom-Nickel-Stahl
	Transfer spindle	Stainless steel
7	Schneckenrad	PPS
	Worm wheel	PPS
8	Halteklammer	Chrom-Nickel-Stahl
	Clip	Stainless steel
9	Magnetträger	PPO
	Magnet carrier	PPO
10	Magnet	Kobalt-Samarium / Zinn beschichtet
	Magnet	Cobalt-Samarium / Tin plated
11	Abdeckung fur Magnetträger	PPO
	Cover for magnet carrier	PPO
12	Regulierflügel	PPO
	Regulator blade	PPO
13	O-Ring	EPDM / NBR
	O-ring	EPDM / NBR
14	Woltmanflugel	PP
	Rotor	PP

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Werkstoffliste/Material List

H 4000 DN 40-125 mit induktivem Zahlwerk

H 4000 DN 40-125 with inductive counter (Cu Can)

MAP 16 T 50

Eingef. Kon-Mittlg. -2591, geänd. Kon-Mittlg. a2620.

elster ELSTER Messtechnik GmbH		DATUM DATE	SGN.	MASSSTAB SCALE	IDENT-NR IDENT-NO	KENNWORT CODE	FMT SIZE	BLATT PAGE	VON OF
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	GEPRUEFT CHECKED	27.11.08	Buhler		ERSATZ FUER SUPERSEDES gl.Nr.v. 22.07.08	ERSETZT DURCH SUPERSEDED BY			

Teil/Part	Benennung / Denomination	Werkstoff / Material
15	Deckplättchen	Hartmetall
	Thrust pad	Tungsten Carbide
16	Distanzscheibe	PPO
	Distance ring	PPO
17	Lochstein	Synthetischer Saphir
	Bearing jewel	Synthetic sapphire
18	Ausgangslager	PPO
	Rotor support	PPO
19	Lagerstift kpl.	Chrom-Nickel-Stahl/Hartmetall
	Bearing pin assembly	Stainless steel/Tungsten Carbide
20	Klemmstift	Chrom-Nickel-Stahl
	Clamping pin	Stainless steel
21	Abdichtplatte	CuZn alternativ PPO
	Diaphragm	CuZn alternatively PPO
22	O-Ring	EPDM / NBR
	O-ring	EPDM / NBR
23	Innensechskantschr.	Chrom-Nickel-Stahl
	Screw	Stainless steel
24	Unterlegscheibe	Chrom-Nickel-Stahl
	Washer	Stainless steel
25	Zylinderschraube	Chrom-Nickel-Stahl
	Screw	Stainless steel
26	Zahlwerk kpl.	siehe / see
	Counter assembly	ZL-0243.4 Bl.1+2
		ZL-0210.4 Bl.1+2
		ZL-0218.4 Bl.1+2
		ZL-0222.4 Bl.1-3
		ZL-0242.3 Bl.1
		ZL-0242.4 Bl.2+3
		ZL-0246.3 Bl.1
		ZL-0246.4 Bl.2+3

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Werkstoffliste/Material List

H 4000 DN 40-125-mit induktivem Zahlwerk

H 4000 DN 40-125 with inductive counter (Cu Can)

MAP 16 T 50

Eingef. Kon-Mittlg. 2591, geänd. Kon-Mittlg. a2620

elster ELSTER Messtechnik GmbH		Datum / Date	Name	Massstab / Scale	Ident-Nr / Ident-No	Kennwort / Code	Fmt / Size	Blatt / Page	Von / Of
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	Geprueft / Checked	27.11.08	Buhler		Ersatz fuer / Supersedes: gl.Nr.v. 22.07.08	Ersetzt durch / Superseded by			

Teil/Part	Benennung / Denomination	Werkstoff / Material
27	Werksbefestigungsring	POM
	Base plate	POM
28	Schutzdeckel	ABS/PC - Mischung
	Lid	ABS/PC - Blend
29	Schutzhaube mit Kennzeichnung	ABS alternativ CuZn
	Shroud	ABS alternatively CuZn
30	O-Ring	EPDM / NBR
	O-ring	EPDM / NBR
31	Sechskantschraube	Chrom-Nickel-Stahl
	Screw	Stainless steel
32	Unterlegscheibe	Chrom-Nickel-Stahl
	Washer	Stainless steel
33	Werkhaltering	ABS
	Adaptor	ABS

Werkstoffliste/Material List

H 4000 DN 40-125 mit induktivem Zählwerk

H 4000 DN 40-125 with inductive counter (Cu Can)

MAP 16 T 50

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Eingef. Kon-Mitlg. 2551 geänd. Kon-Mitlg. 2620

ELSTER Messtechnik GmbH		DATUM DATE	SIGN	MASSSTAB SCALE	IDENT-NR IDENT-NO	KENNWORT CODE	FMT SIZE	BLATT PAGE	VON OF
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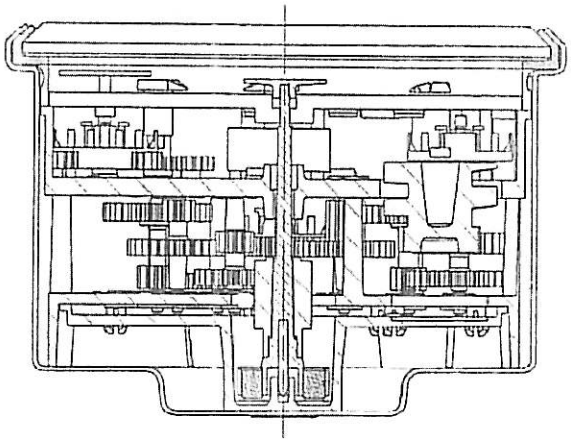

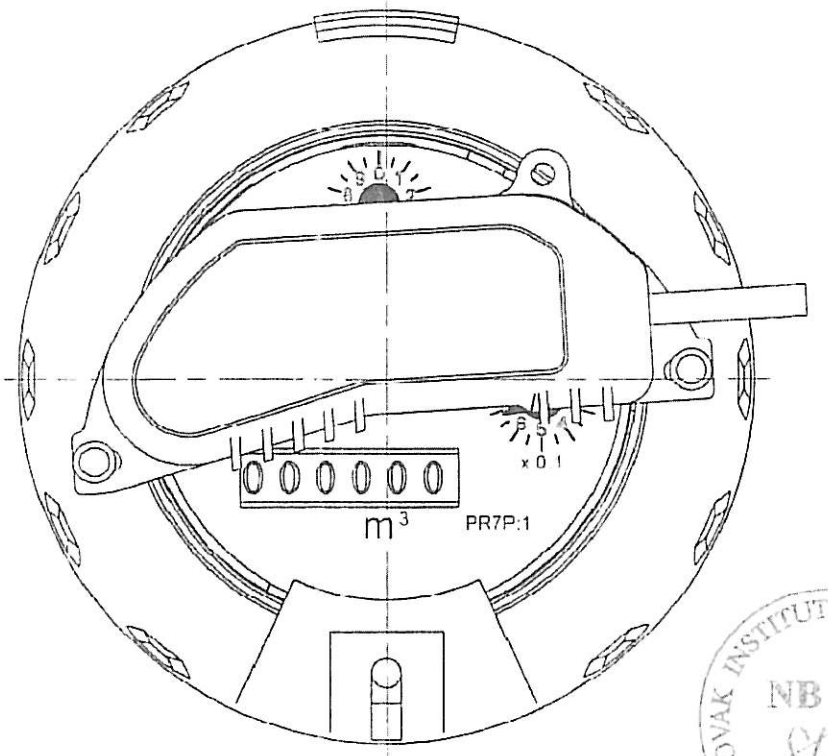

Multipulse-Dosenzahlwerk (induktiv)

Inductive counter (Cu Can)

(shown with shroud and pulse-giver)

Engel Kon-Mittlg -2379, geand Kon-Mittlg a2591,b2620.

elster ELSTER Messtechnik GmbH		DATUM DATE	SIGN	MASSSTAB SCALE	IDENT-NR. IDENT-NO	ZEICHNUNGART CODE	MT SIZE	BLATT PAGE	VON OF
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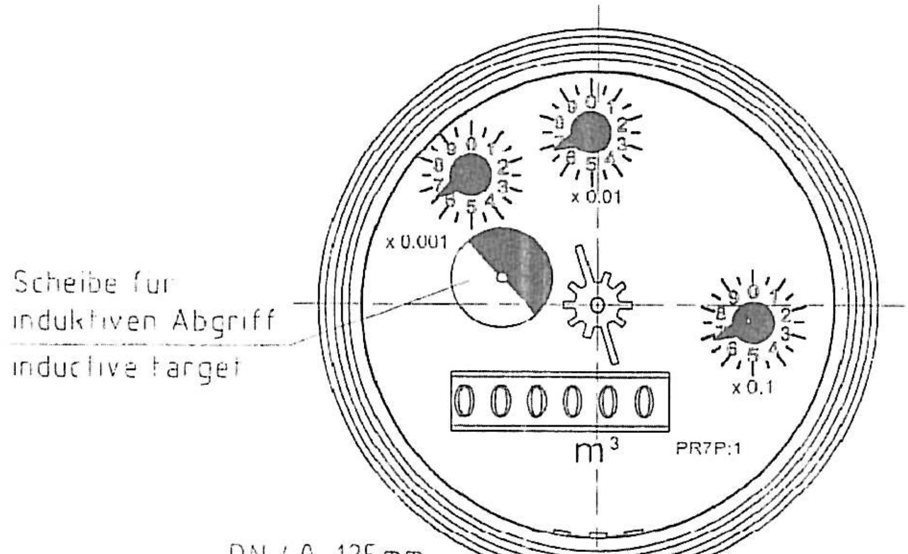
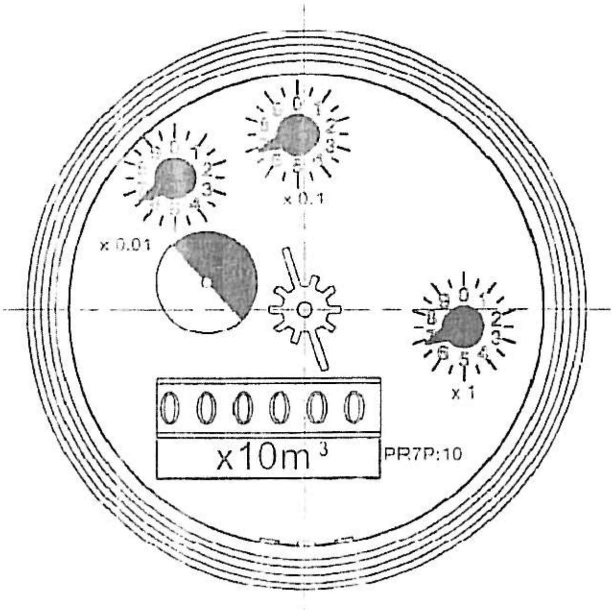
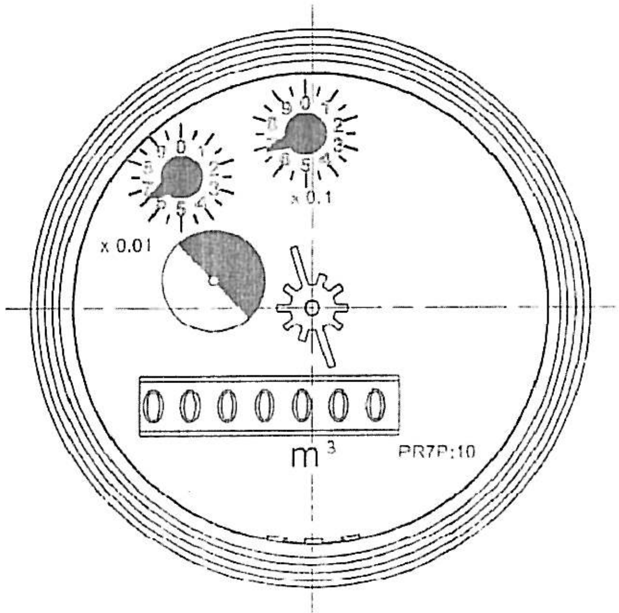
	GEPRÜFT CHECKED	17.12.08	Bühler	ERSATZ FÜR SUPERSEDES gl Nr v. 19.08.08		ERSETZT DURCH SUPERSEDED BY			



DN 40-125mm



DN 150-300mm



Altern 7 Rollen
Altern 7 Fig / Roller bank

Multipulse-Dosenzählwerk (induktiv)

Inductive counter (Cu Can)

Ausfg mit 2/3 Zeigerkreisen / 2/3 pointer version

Eingef Kon-Mittlg -2379 geänd Kon-Mittlg a2591,b2620

		DATUM DATE	SIGN	MASSSTAB SCALE	IDENT-NR IDENT-NO	KENNWORT CODE	FMT SIZE	BLATT PAGE	VON OF
elster ELSTER Messtechnik GmbH	BEARBEITET DRAWN	17.12.08	Engels	1:1	ZL-0222.4		A4	2	3
	GEPRUEFT CHECKED	17.12.08	Buhler		ERSATZ FUER SUPERSEDES gl Nr v. 13.08.08	ERSETZT DURCH SUPERSEDED BY			

Benennung / Denomination		Werkstoff / Material
Obere Lagerplatte	/ Upper bearing plate	PPO
Impulsgeberscheibe (induktiv)	/ Target (inductive)	ABS/Alu-Folie/ Cu/Ni/Cr
Zahlenrollenpaket	/ Number roller bank	PC/POM/SS/Brass
Schneckenrad	/ Worm wheel	PA
Triebräder	/ Gears	PA
Magnetträger kpl.	/ Magnet drive assembly	PA/Kobalt-Samarium/ Cr-Ni-Stahl/ Stainless steel
Untere Lagerplatte kpl.	/ Lower bearing plate assembly	PPO/Saphir
Magnetrad	/ Magnet gear	PA
Zifferblatt	/ Dial plate	Alu/PC
Zeiger	/ Pointer	PC
Kupferdose	/ Copper can	Cu
Formdichtung	/ Seal	EPDM
Glasscheibe	/ Glas	Hartglas/Mineral glass
Fixierstift	/ Locating pin	PC
Anlaufstern	/ Tell tale	PP

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NB 1781
SMU
Bratislava

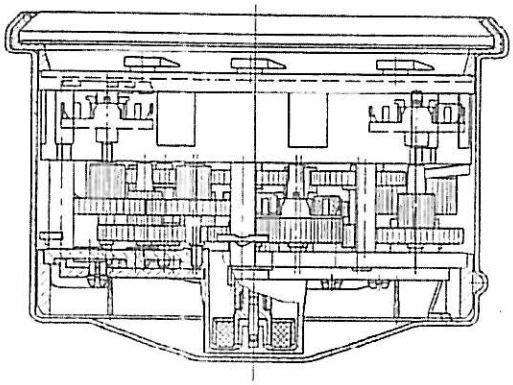
Werkstoffliste / Material List

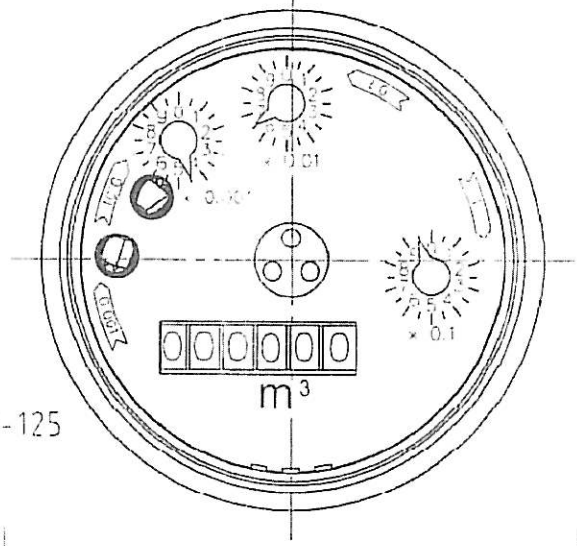
Multipulse-Dosenzählwerk (induktiv)

Inductive counter (Cu Can)

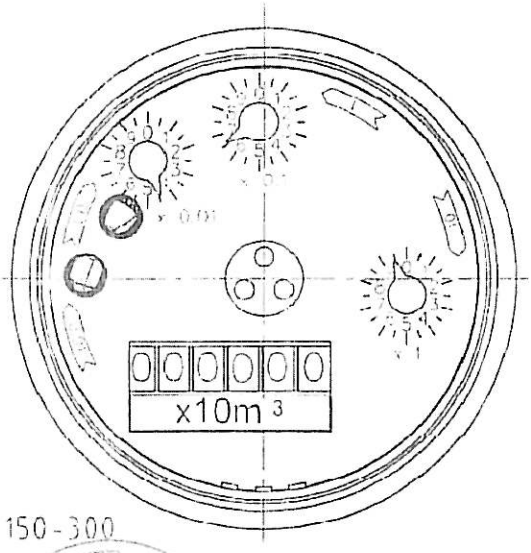
Eingef. Kon-Mittlg. 2379, geänd. Kon-Mittlg. a2591,b2620

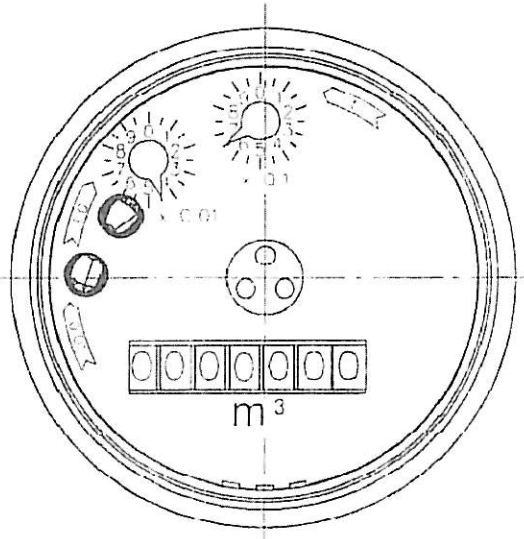
elster ELSTER Messtechnik GmbH		DATUM DATE	SIGN	MASSSTAB SCALE	IDENT-NR IDENT-NO	KENNWORT CODE	FMT SIZE	BLATT PAGE	VON OF
	BEARBEITET DRAWN	17.12.08	Engels	1:1	ZL-0222.4		A4	3	3
	GEPRÜFT CHECKED	17.12.08	Bahlke		ERSATZ FÜR SUPERSEDES [illegible] 13.06.05	ERSETZT DURCH SUPERSEDED BY			





DN 40-125





DN 150-300

Altern. 7 Rollen

Altern. 7 Fig. / Roller bank

Multipulse-Dosenzählwerk

Multipulse counter (Cu Can)

Ausfg mit 2/3 Zeigerkreisen / 2/3 pointer version

elster ELSTER Messtechnik GmbH		DATUM DATE	SIGN.	MASSSTAB SCALE	IDENT-NR IDENT-NO	KENNWORT CODE	FORMAT SIZE	BLATT PAGE	VON
	GEZEICHNET DRAWN	13.12.06	Engels	1:1	ZL-0210 4		A4	1	2
	GEPRÜFT CHKD	13.12.06	Bunse		ERSATZ FÜR SUPERSEDES		ERSETZT DURCH SUPERSEDED BY		

Benennung / Denomination		Werkstoff / Material
Obere Lagerplatte	/ Upper bearing plate	PPO
Zahlenrollenpaket	/ Number roller bank	PC/POM/SS/Brass
Schneckenrad	/ Worm wheel	PA
Triebrader	/ Gears	PA
Magnetzahnrad kpl	/ Magnet gear assembly	PA/Kobalt-Samarium
Magnettrager kpl	/ Magnet drive assembly	PA/Kobalt-Samarium/ Cr-Ni-Stahl/ Stainless steel
Untere Lagerplatte kpl	/ Lower bearing plate assembly	PPO/Saphir
Anlaufstern	/ Tell tale	PP
Magnetrad kpl	/ Magnet wheel assembly	PA/Kobalt-Samarium
Magnetrad	/ Magnet gear	PA/Cobalt-Samarium
Reflexscheibe	/ Reflective disc	PS/Alu-Folie
Zifferblatt	/ Dial plate	Alu/PC
Zeiger	/ Pointer	PC
Kupferdose	/ Copper can	Cu
Grundring	/ Base ring	PPO
Zwischenring	/ Spacer	PPO
Formdichtung	/ Seal	EPDM
Glasscheibe	/ Glas	Hartglas/Mineral glass

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Werkstoffliste / Material List

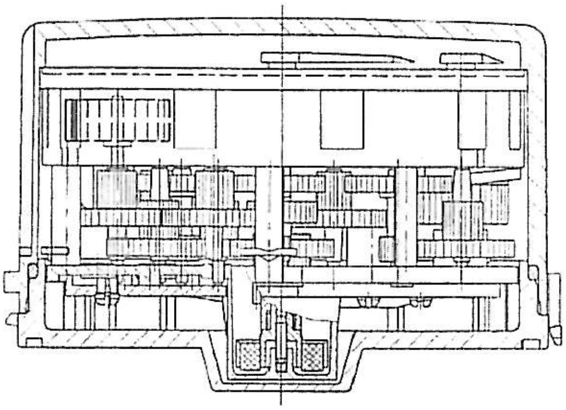
Multipulse-Dosenzahlwerk

Multipulse counter (Cu Can)

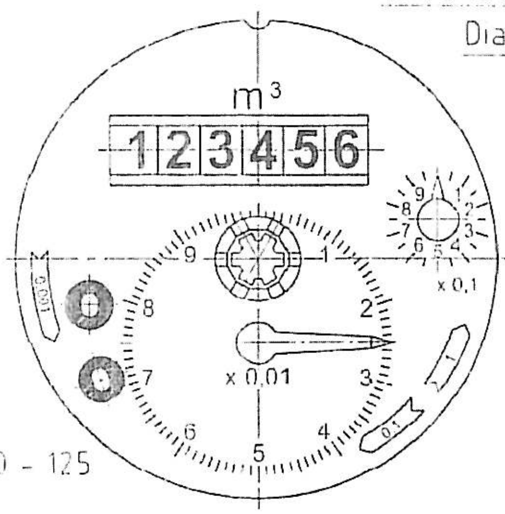
Ausfg mit 2/3 Zeigerkreisen / 2/3 pointer version

geand. Kon-Mittlg. a2591,a2620

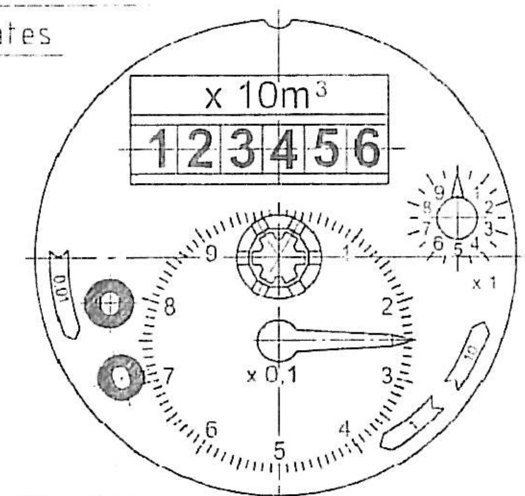
elster ELSTER Messtechnik GmbH		Datum / Date	Sign	Massstab / Scale	Ident-Nr / Ident-No	Kennwort / Code	Fmt / Size	Blatt / Page	Von / Of
	Bearbeitet / Drawn	17.12.08	Engels	1:1	ZL-0210.4		A4	2	2
	Geprueft / Checked	17.12.08	Bunte		Ersatz fuer / Supersedes: gl.Nr.v. 13.08.08	Ersetzt durch / Superseded by			



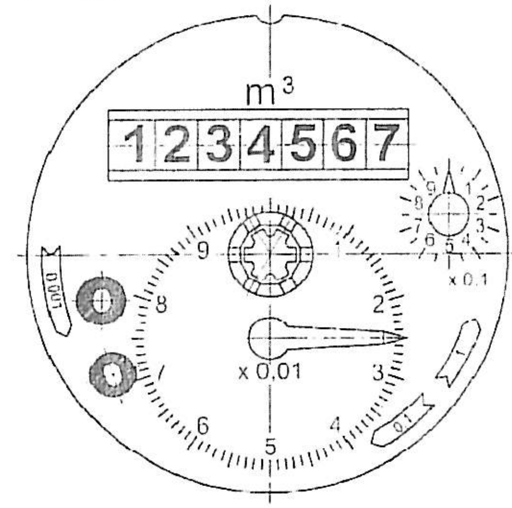
Zifferblatt - Ansichten
Dial plates



DN 40 - 125



DN150 - 300



Altern. 7 Rollen
Altern. 7 Fig./Roller bank

Multipulse - Zählwerk (KS)
Multipulse counter (Polymer)

Eingef. Kon-Mittlg. a2591, geänd. Kon-Mittlg. a2620

		DATUM DATE	NAME	MASSSTAB SCALE	IDENT-NR IDENT-NO	KENNWORT CODE	FMT SIZE	BLATT PAGE	VON OF
elster ELSTER Messtechnik GmbH	BEARBEITET DRAWN	17.12.08	Engels	1:1	ZL-0243.4		A4	1	2
	GEPRÜFT CHECKED	17.12.08	Buhler		ERSATZ FÜR SUPERSEDES	ERSETZT DURCH SUPERSEDED BY			

Benennung / Denomination			Werkstoff / Material
Obere Lagerplatte	/	Upper bearing plate	PPO
Reflexring	/	Reflective ring	PMMA/PC
Zahlenrollenpaket	/	Number roller bank	PPO/POM/SS/Brass
Schneckenrad	/	Worm wheel	PA
Triebrader	/	Gears	PA
Magnetzahnrad kpl.	/	Magnet gear assembly	PA/Kobalt-Samarium
Magnettrager kpl.	/	Magnet drive assembly	PA/Kobalt-Samarium/ Cr-Ni-Stahl/ Stainless steel
Untere Lagerplatte kpl.	/	Lower bearing plate assembly	PPO/Saphir
Reflexstern	/	Reflective leak detector	PMMA/PC
Magnetrad kpl.	/	Magnet wheel assembly	PA/Kobalt-Samarium
Impulsgeberrad	/	Pulse giver wheel	PA
Zeiger	/	Pointer	PC
Zahlwerkshaube	/	Counter cover	PC
Zahlwerksboden	/	Counter bottom	PC
Zifferblatt	/	Dial plate	Alu
O-Ring	/	O-ring	EPDM oder/or NBR

Werkstoffliste / Material List

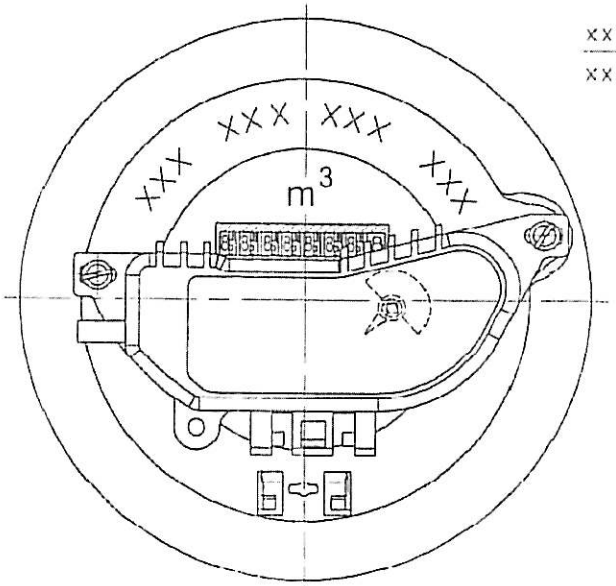
Multipulse - Zählwerk (KS)
Multipulse counter (Polymer)

Engel Ken-Mittig -2591 geänd Ken-Mittig a2620

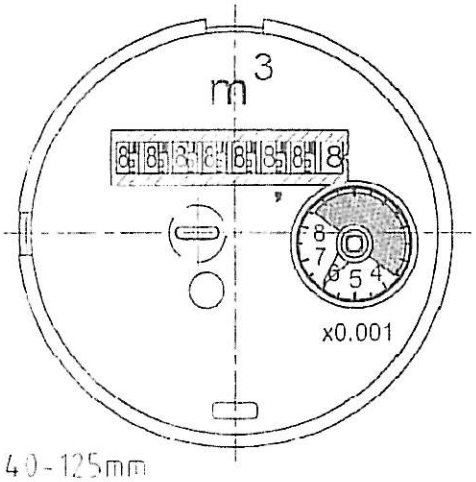
elster
ELSTER Messtechnik GmbH

	DATUM DATE	SIGN.	MASSSTAB SCALE	IDENT-NR IDENT-NO	KENNWORT CODE	FMT SIZE	BLATT PAGE	VON OF
BEARB. BY DRAWN	17.12.08	Engels	1:1	ZL-0243.4		A4	2	2
GEPRÜFT CHECKED	18.12.08	Bunar		ERSATZ FÜR SUPERSEDES gl.Nr. v. 13.08.08		ERSETZT DURCH SUPERSEDED BY		

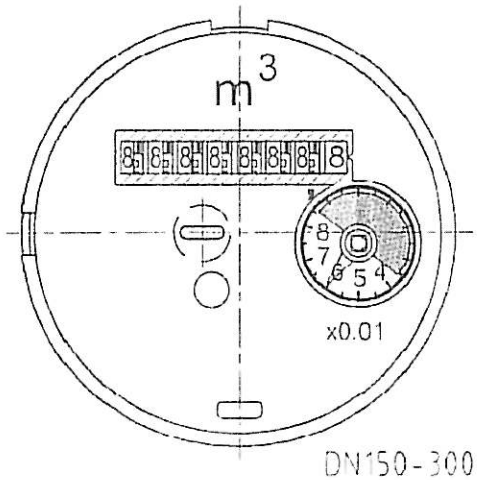
xxx MID Kennzeichnung
xxx Marking in this area



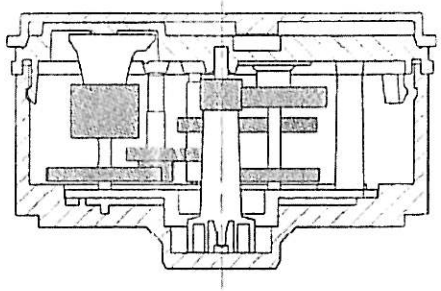
shown with shroud and pulse-giver



DN 40-125mm



DN150-300mm



Zeiger-Rollenzählwerk Kunststoff (induktiv)
Polymer inductive counter

Ersetzt Kon-Mttlg -2344, ersetzt Kon-Mttlg a2591,b2620

elster ELSTER Messtechnik GmbH		DATUM DATE	SIGN	MASSSTAB SCALE	IDENT-NR. IDENT-NO	KENNWORT CODE	FMT SIZE	SCALE PAGE	VON OF
	BEARBEITET DRAWN	17.12.08	Engels	1:1	ZL-0218 4		A4	1	2
	GEPRÜFT CHECKED	17.12.08	Buhrer		ERSATZ FÜR SUPERSEDES	ERSETZT DURCH SUPERSEDED BY			

Benennung / Denomination			Werkstoff / Material
Klarsichtkappe	/	Clear cover	PC
obere Lagerplatte	/	Upper bearing plate	PC
Magnettrieb	/	Magnet drive	POM
Magnet	/	Magnet	Oxyd
Triebräder	/	Gears	POM
Anlaufstern	/	Start flow detector	PC
Zeigerscheibe	/	Pointer disc	POM/KS-Folie
rechtes Seitenteil	/	Right side plate	PC
Schalttriebachse	/	Drive spindle	A2
Schalttrieb	/	Drive pinion	POM
Anfangsrolle	/	First number roller	POM
Zahlenrollen	/	Number rollers	PC
Zifferblatt	/	Dial plate	KS-Folie
Scheibe	/	Washer	PC
linkes Seitenteil	/	Left side plate	PC
untere Lagerplatte	/	Lower bearing plate	PC
Werkbecher	/	Register cup	PC
Lagerstein	/	Bearing jewel	Saphir
O-Ring	/	O ring	EPDM

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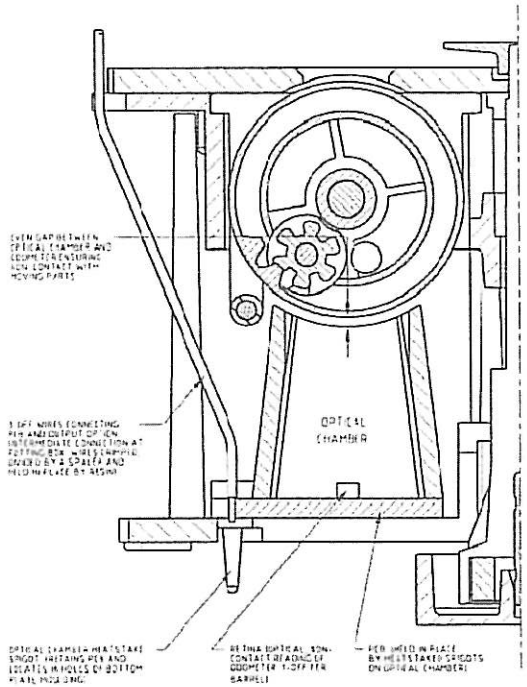
Werkstoffliste/Material List

Zeiger-Rollenzählwerk Kunststoff (induktiv)

Polymer inductive counter

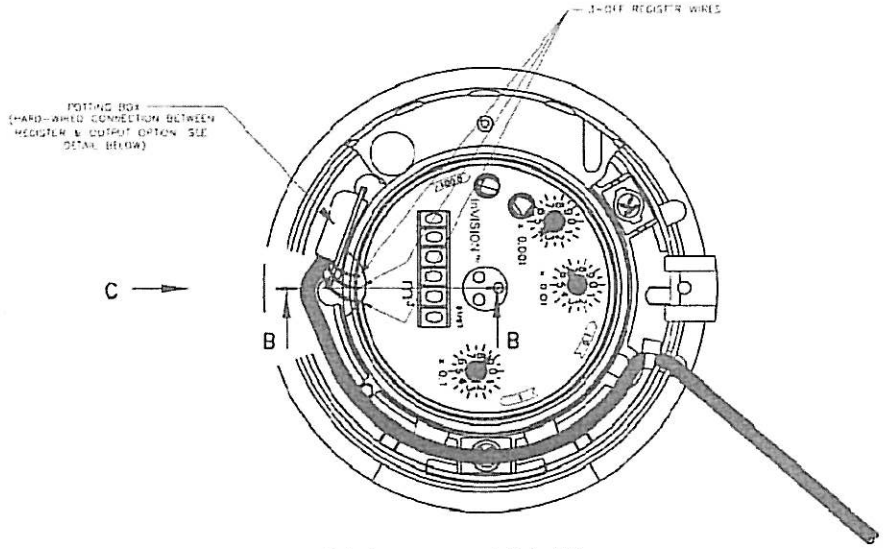
Engef Kon-Mittlg -2344, geänd Kon-Mittlg a2591,b2620

elster ELSTER Messtechnik GmbH		Datum / Date	Sign.	Massstab / Scale	Ident-Nr. / Ident-No	Kennwort / Code	Fmt / Size	Blatt / Page	Von / Of
	Bearbeitet / Drawn	17 12 08	Engels	11	ZL-0218.4		A4	2	2
	Geprüft / Checked	17 12 08	Bühler		Ersatz für / Supersedes: gl Nr v 12 08 06	Ersetzt durch / Superseded by			

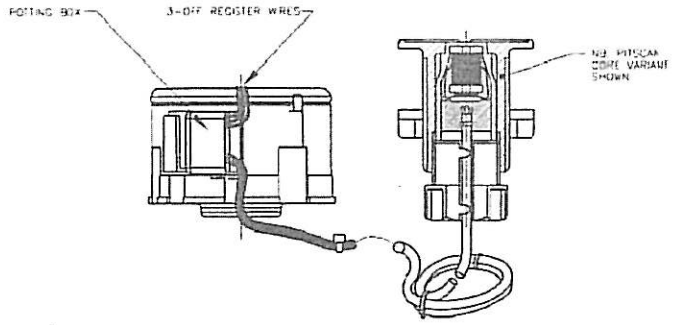


Kontaktlose Schnittstelle
zwischen optischen Sensoren
und Zahlenrollen

SECTION B-B SHOWING
NON-CONTACT INTERFACE BETWEEN
OPTICAL CHAMBER & ODOMETER



Kabelausgang und Kabelführung
PLAN VIEW OF COUNTER ASSY.
SHOWING CONNECTION & ROUTING

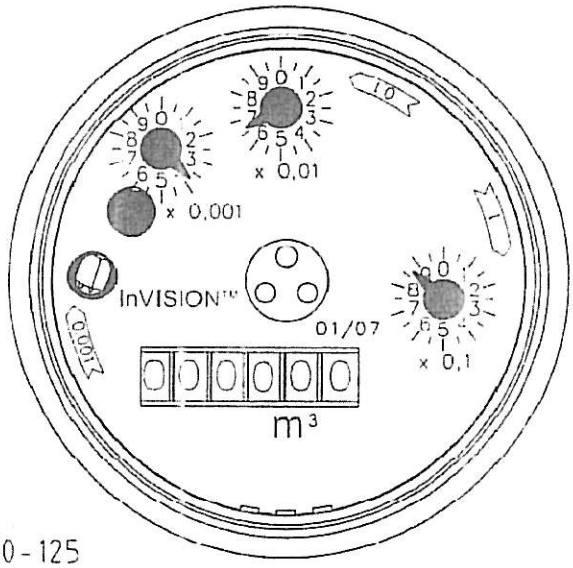


VIEW ON ARROW C SHOWING FIXED
LOCATION OF POTTING BOX WITHIN ADAPTOR
FOLLOWING CONNECTION AND POTTING

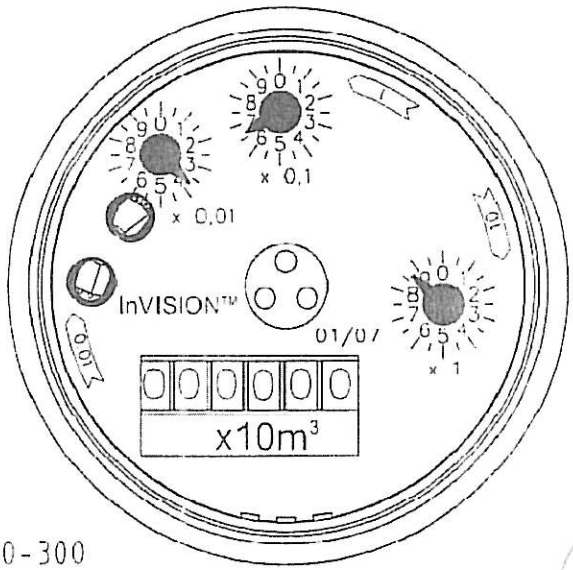
Encoder- Multipulse- Dosenzählwerk
Encoder / Multipulse counter (Cu Can)

Eingef Kon-Mittlg +259', geand Kon-Mittlg a2520.

elster ELSTER Messtechnik GmbH		DATUM DATE	NAME	MASSSTAB SCALE	IDENT-NR IDENT-NO	KENNWORT CODE	FORMAT SIZE	BLATT PAGE	VON OF
	BEARBEITET DRAWN	17.12.08	Engels	11	ZL-0242 3		A3	1	3
	GEPRÜFT CHECKED	17.12.08	Butler	ERSATZ FÜR SUPERSEDES gl N-V. 13.09.08		ERSATZ DURCH SUPERSEDED BY			



DN 40-125



DN150-300

Encoder- Multipulse- Dosenzählwerk

Encoder / Multipulse counter (Cu Can)

elster ELSTER Messtechnik GmbH		DATUM DATE	SIGN	MASSSTAB SCALE	IDENT-NR IDENT-NO	KENNWORT CODE	FORMAT SIZE	BLATT PAGE / BLÄTTER OF
	GEZEICHNET DRAWN	17.12.08	Engels	1:1	ZL-0242.4		A4	2 / 3
	GEPRÜFT CHECKED	17.12.08	Bunlor		ERSATZ FÜR SUPERSEDES gl Nr v 11.08.08	ERSETZT DURCH SUPERSEDED BY		

Benennung / Denomination			Werkstoff / Material
Obere Lagerplatte	/	Upper bearing plate	PPO
Reflexring	/	Reflective ring	PMMA/PC
Zahlenrollenpaket	/	Number roller bank	PPO/POM
Schneckenrad	/	Worm wheel	PA
Triebräder	/	Gears	PA
Magnetzahnrad kpl.	/	Magnet gear assembly	PA/Kobalt-Samarium
Magnetträger kpl.	/	Magnet drive assembly	PA/Kobalt-Samarium/ Cr-Ni-Stahl/ Stainless steel
Untere Lagerplatte kpl.	/	Lower bearing plate assembly	PPO/Saphir
Reflexstern	/	Reflective leak detector	PMMA/PC
Magnetrad kpl.	/	Magnet wheel assembly	PA/Kobalt-Samarium
Magnetrad	/	Magnet gear	PA
Reflexscheibe	/	Reflective disc	PS/Alu-Folie
Zifferblatt	/	Dial plate	Alu/PC
Zeiger	/	Pointer	PC
Kupferdose	/	Copper can	Cu
Grundring	/	Base ring	PPO
Zwischenring	/	Spacer	PPO
Formdichtung	/	Seal	EPDM
Glasscheibe	/	Glas	Hartglas/Mineral glass
Kabelausgang	/	Cable exit	KS/Cu

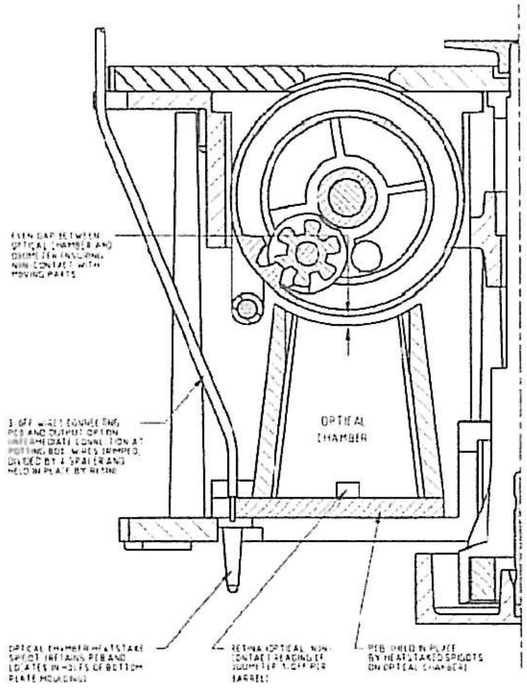
Werkstoffliste / Material List

Encoder - Dosenzählwerk

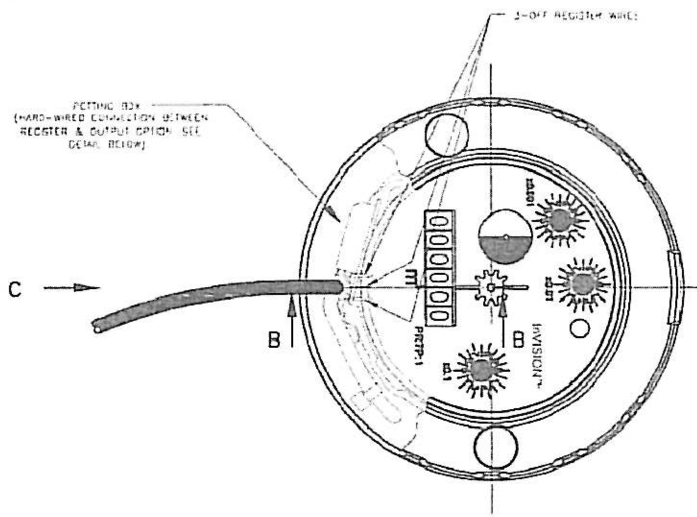
Encoder - High Integrity Counter

Eingef. Kon-Mitt.g -2591

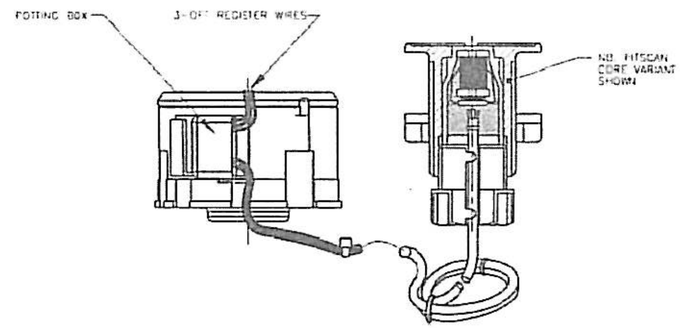
		DATUM DATE	SIGN.	MASSSTAB SCALE	IDENT-NR. IDENT-NO.	KENNWORT CODE	FMT. SIZE	BLATT PAGE	VON OF
elster ELSTER Messtechnik GmbH	BEARBEITET DRAWN	13.08.08	Engels	1:1	ZL-0242.4		A4	3	3
	GEPRUEFT CHECKED	13.08.08	Bühler		ERSATZ FUER SUPERSEDES	ERSETZT DURCH SUPERSEDED BY			



Kontaktlose Schnittstelle
zwischen optischen Sensoren
und Zahlenrollen
SECTION B-B SHOWING
NON-CONTACT INTERFACE BETWEEN
OPTICAL CHAMBER & ODOMETER



Kabelausgang und Kabelführung
PLAN VIEW OF COUNTER ASSY.
SHOWING CONNECTION & ROUTING

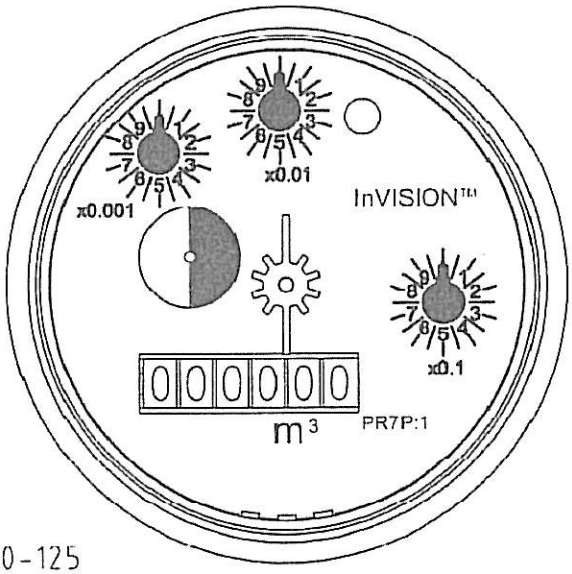


VIEW ON ARROW C SHOWING FIXED
LOCATION OF POTTING BOX WITHIN ADAPTOR
FOLLOWING CONNECTION AND POTTING

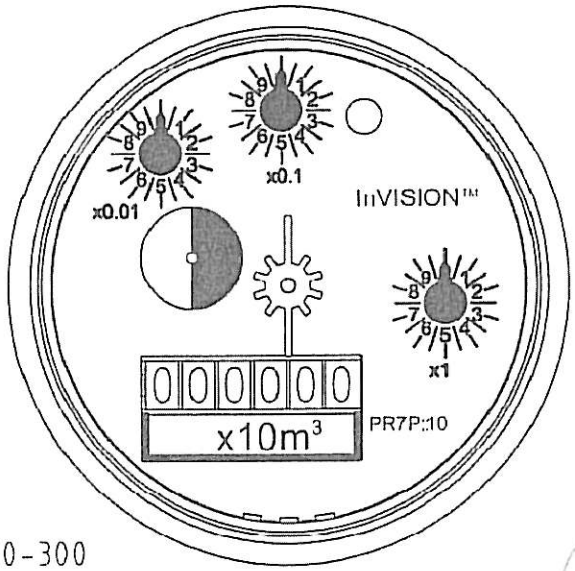
Encoder- Multipulse- Dosenzählwerk (induktiv)
Encoder / inductive counter (Cu Can)

elster ELSTER Messtechnik GmbH		Datum / Date	Name / Sign	Massstab / Scale	Ident-Nr / Ident-No	Kennwort / Code	Fmt Size	Blatt Page	von of
	Bearbeitet / Drawn	15.01.09	Engels	1:1	ZL-0246.3		A3	1	3
	Geprüft / Checked	15.01.09	Buhler		Ersatz für / Supersedes	Ersetzt durch / Superseded by			

Eingef. Kon-Mittlg. -2620, geänd. Kor-Mittlg.



DN 40-125



DN150-300

Encoder- Multipulse- Dosenzählwerk (induktiv)

Encoder / inductive counter (Cu Can)

Eingef. Kon-Mitt'g -2620, geand. Kon-Mitt'g

		DATUM DATE	SIGN	MASSSTAB SCALE	IDENT-NR IDENT-NO	KENNWORT CODE	FMT SIZE	BLATT PAGE	VON OF
elster ELSTER Messtechnik GmbH	BEARBEITET DRAWN	15.01.09	Engels	11	ZL-0246.4		A4	2	3
	GEPRÜFT CHECKED	15.01.09	Bunter		ERSATZ FÜR SUPERSEDES	ERSETZT DURCH SUPERSEDED BY			

Benennung / Denomination			Werkstoff / Material
Obere Lagerplatte	/	Upper bearing plate	PPO
Zahlenrollenpaket	/	Number roller bank	PC/POM/SS/Brass
Schneckenrad	/	Worm wheel	PA
Triebräder	/	Gears	PA
Magnetzahnrad kpl.	/	Magnet gear assembly	PA/Kobalt-Samarium
Magnetträger kpl.	/	Magnet drive assembly	PA/Kobalt-Samarium/ Cr-Ni-Stahl/ Stainless steel
Untere Lagerplatte kpl.	/	Lower bearing plate assembly	PPO/Saphir
Anlaufstern	/	Tell tale	PP
Magnetrad kpl	/	Magnet wheel assembly	PA/Kobalt-Samarium
Magnetrad	/	Magnet gear	PA/Cobalt-Samarium
Impulsgeberscheibe	/	Target (inductive)	ABS/Alu-Folie/Cu/Ni/Cr
Zifferblatt	/	Dial plate	Alu/PC
Zeiger	/	Pointer	PC
Kupferdose	/	Copper can	Cu
Grundring	/	Base ring	PPO
Zwischenring	/	Spacer	PPO
Formdichtung	/	Seal	EPDM
Glasscheibe	/	Glas	Hartglas/Mineral glass
Kabelausgang	/	Cable exit	KS/Cu
Opto Gehäuse	/	Optical chamber	PPO
Dichtung	/	Seal	Silikon/Silicone
PCB kpl.	/	PCB assy.	

Werkstoffliste / Material List

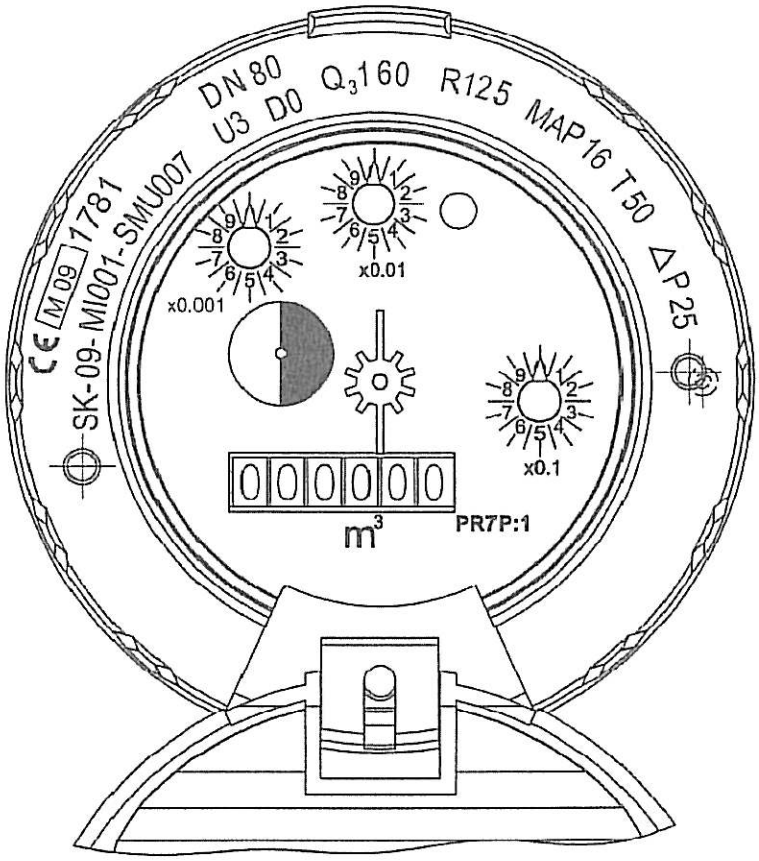
Encoder- Multipulse- Dosenzählwerk (induktiv)

Encoder / inductive counter (Cu Can)

Eingef. Kon-Mitlg. -2620, geand. Kon-Mitlg.

		DATUM DATE	SIGN	MASSSTAB SCALE	IDENT-NR IDENT-NO	KENNWORT CODE	FMT SIZE	BLATT PAGE	VON OF
elster ELSTER Messtechnik GmbH	BEARBEITET DRAWN	15.01.09	Engels	1:1	ZL-0246.4		A4	3	3
	GEPRUEFT CHECKED	15.01.09	Bühler		ERSATZ FUER SUPERSEDES		ERSETZT DURCH SUPERSEDED BY		

Darstellung der Zählerdaten
Marking of meter data



Kennzeichnung alternativ mit manipulationssicherem Klebeschild

Marking alternatively via a tamperproof adhesive label

SK-09-MI001-SMU007 H 4000 Q_3 160 R125
CE M 09 1781 DN80 MAP16 U3 D0 ΔP 25 T50

SLOVAK INSTITUTE OF METROLOGY NB 1781 SMU Bratislava

Kon-Mittlg. -2655

		DATUM DATE	SIGN.	MASSSTAB SCALE	IDENT-NR. IDENT-NO.	KENNWORT CODE	FMT. SIZE	BLATT PAGE	VON OF
elster ELSTER Messtechnik GmbH	BEARBEITET DRAWN	23.07.09	Wunsch	1:1	ZL-0255.4		A4	1	1
	GEPRUEFT CHECKED	23.07.09	Bühler		ERSATZ FUER SUPERSEDES	ERSETZT DURCH SUPERSEDED BY			