



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 Bedfordshire, 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.



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.
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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

¹ podľa nariadenia vlády, príloha č.1

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



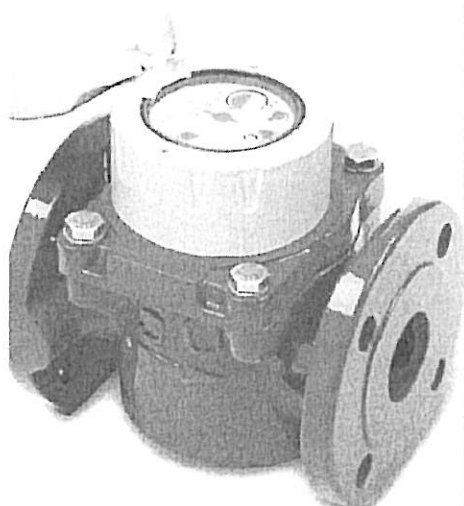
Description of operating principle instrument design:

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 <i>including material list</i>	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.



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):

$$\pm 5 \% (Q_1 \leq Q < Q_2)$$

$$\pm 2 \% (Q_2 \leq Q \leq Q_4) \text{ for water temperature (from 0,1 to 30) } ^\circ\text{C}$$

$$\pm 3 \% (Q_2 \leq Q \leq Q_4) \text{ for water temperature greater than 30 } ^\circ\text{C}$$

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:

- producer's name or his production mark
- type of the Woltman water meter
- measuring unit m³
- numerical value of Q_3 and ratio Q_3/Q_1
- production number and the year of production
- number of ES certificate type and conformity mark
- the highest admissible pressure if it differs from 1 MPa
- flow direction
- the letter V or H, if the meter can only be operated in the vertical or horizontal position
- class of pressure loss if it differs from Δp_{63}
- class of climatic and mechanical environment
- flow profile sensitivity classes
- class of electromagnetic environment
- 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 $20\text{ °C} \pm 5\text{ °C}$ at the following flow rates:

- Minimum flow rate $Q_1 \leq Q \leq 1,1Q_1$
- Transitional flow rate $Q_2 \leq Q \leq 1,1Q_2$
- 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

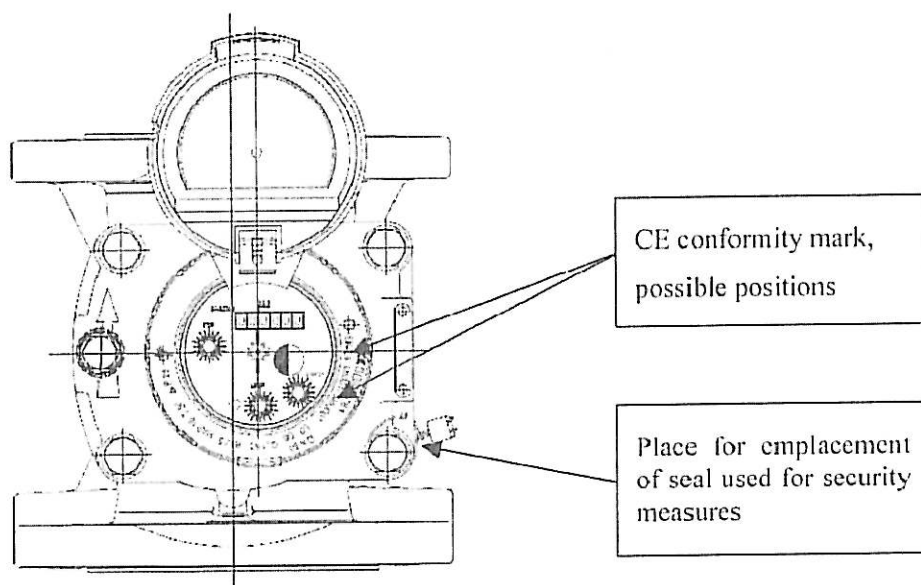
Woltman water meter should be in compliance with the description provided on item 3 of this Annex and should be in compliance with the marking specified by the item 7 of this Annex. The number given to the EC certificate is put at each piece of the measuring instrument.

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 (lead seal) (Picture No. 2)



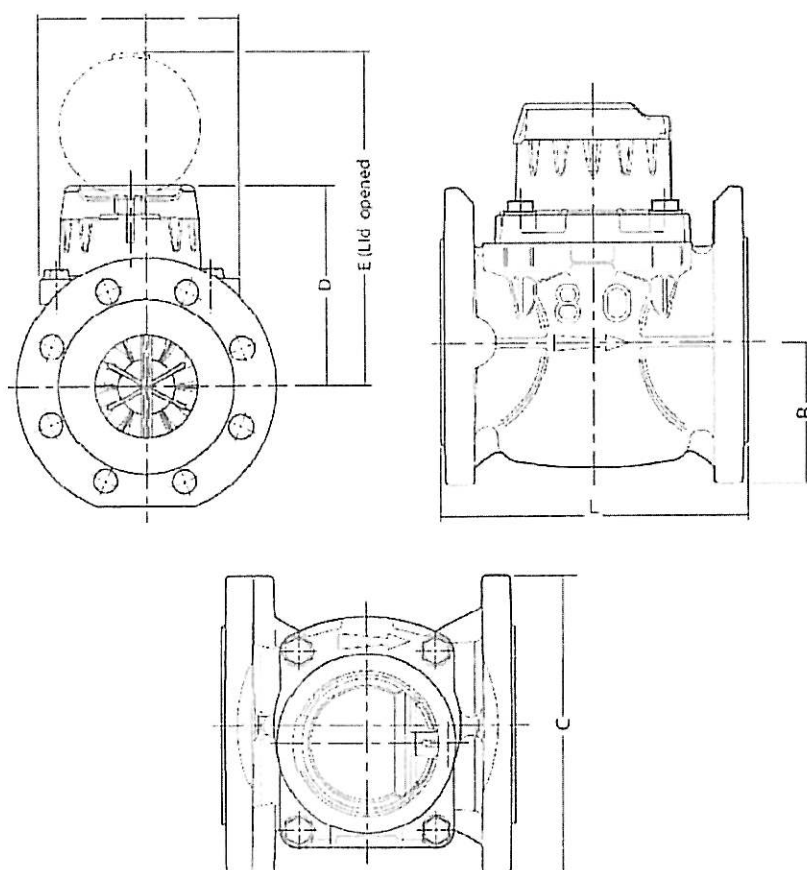
Picture No.2 Positioning of the seal



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

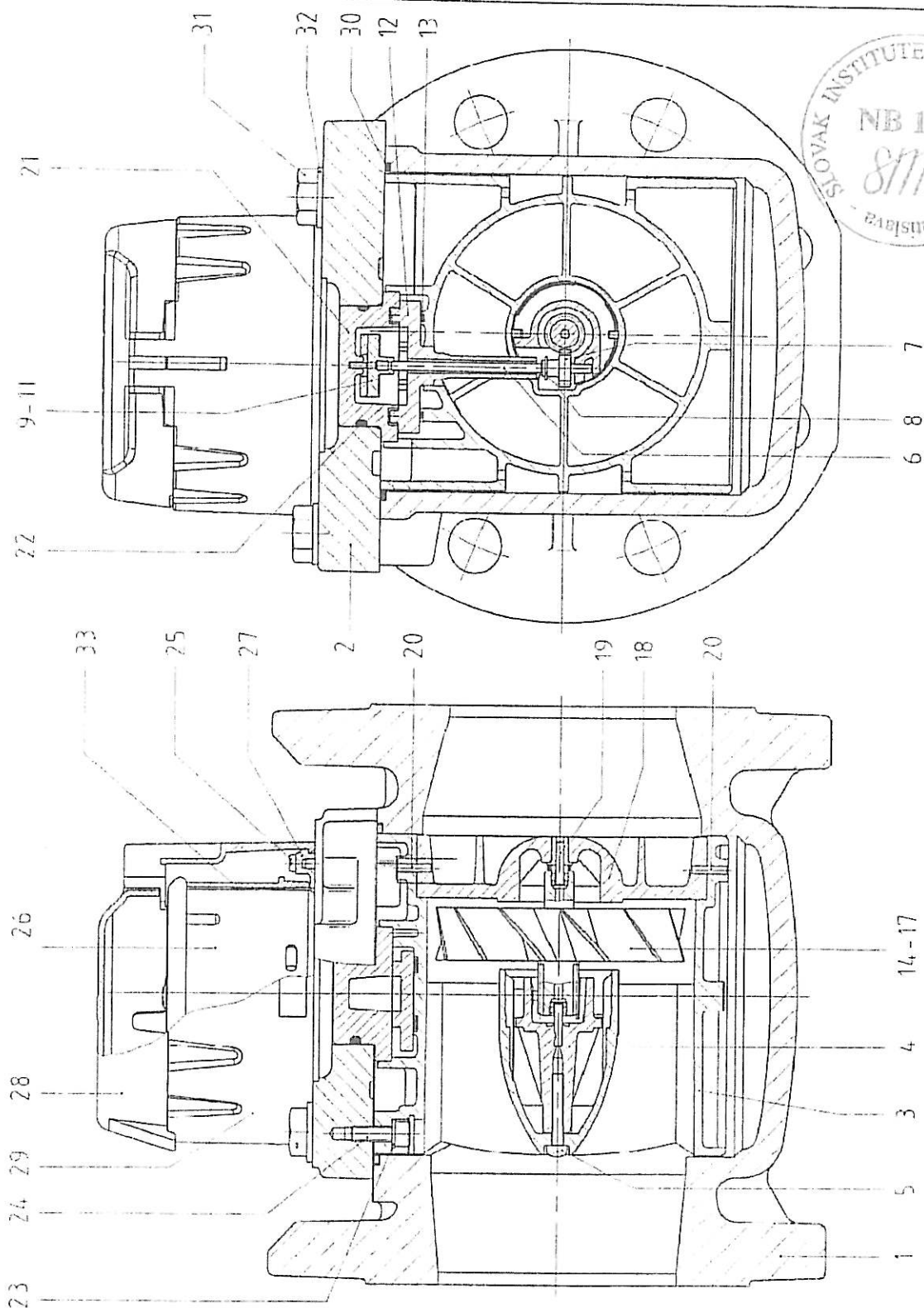
A Woltman water meter is introduced into the operation by a worker having a certificate for this activity performance. The Woltman meter is possible to be put into use after a construction in line with this report and in line with a producer instruction by "Instruction of installation and conditions 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".

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





H 4000 DN 40-125 mit induktivem Zahlwerk

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

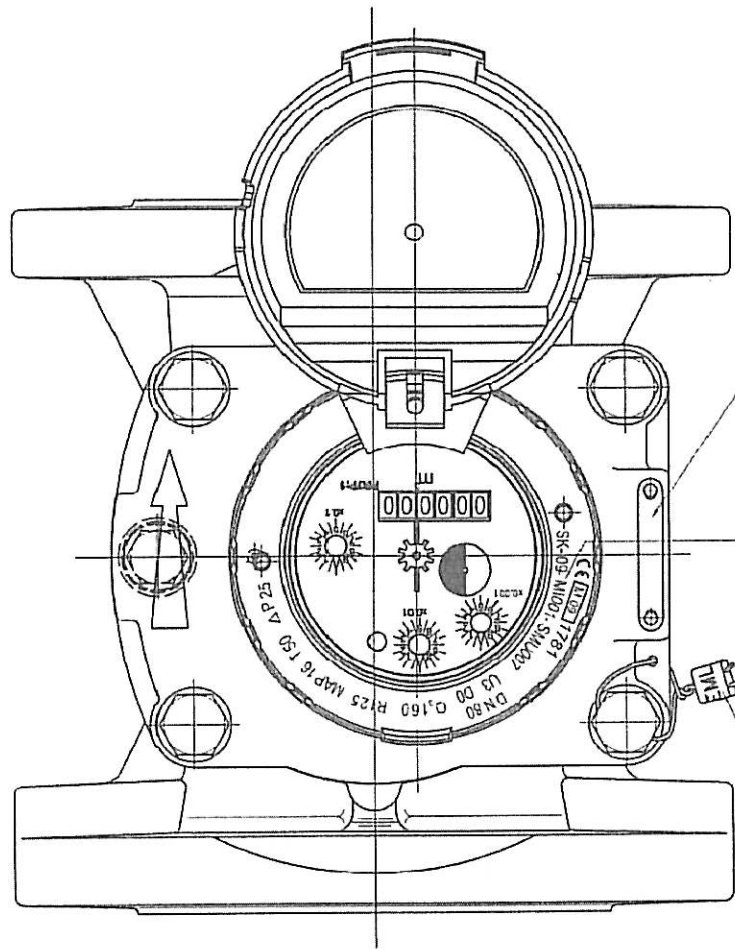
Engel Kon-Mittig a2591 and Kon-Mittig a2620



elster

ELSTER Messtechnik GmbH

DATE DATE	ISSN	CLASSIFICATION SCALE	IDENTIFICATION IDENT-NO	ACQUISITION CODE	PAGE PAGE	YEAR YEAR
27.11.08	Engels	1:2	ZL-0239.4		A4	1
27.11.08	Buhler		ERSATZ TULP SUPERSEDED BY Nr v 3107 08	ERSATZ DURCH SUPERSEDED BY		



Serien Nr. _____
Serial no. Label

MID - Kennzeichnung
MID - Marking

Plombierung von Messeinsatz
Sealing of Measuring Insert

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



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



ELSTER Messtechnik GmbH

BEARBEITET DRAWN	DATUM DATE	SIGN.	MASSSTAB SCALE	IDENT-NR. IDENT-NO	KENNWORT CODE	FMT. SIZE	BLATT PAGE	VON OF
GEPRÜFT CHECKED	23.07.09	Wunsch	1:2	ZL-0239.4		A4	2	5
	23.07.09	Bühler		ERSATZ FÜR SUPERSEDES	gl.Nr v. 27.11.08	ERSETZT DURCH SUPERSEDED BY		

Teil/Part	Benennung / Denomination	Werkstoff / Material
1	Gehäuse Body	GG alternativ GGG GG alternatively GGG
2	Gehäusedeckel Cover	GG alternativ GGG GG alternatively GGG
3	Eingangslager Measuring element	PP0 PP0
4	Vordere Lagerung kpl Front bearing assembly	PA/Hartmetall PA/Tungsten Carbide
5	Kreuzschlitzschraube Screw	Chrom-Nickel-Stahl Stainless steel
6	Übertragungswelle Transfer spindle	Chrom-Nickel-Stahl Stainless steel
7	Schneckenrad Worm wheel	PPS PPS
8	Halteklammer Clip	Chrom-Nickel-Stahl Stainless steel
9	Magnetträger Magnet carrier	PP0 PP0
10	Magnet Magnet	Kobalt-Samarium / Zinn beschichtet Cobalt-Samarium / Tin plated
11	Abdeckung für Magnetträger Cover for magnet carrier	PP0 PP0
12	Regulierflügel Regulator blade	PP0 PP0
13	O-Ring O ring	EPDM / NBR EPDM / NBR
14	Wolffmanflügel Rotor	PP PP

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



Eingel. Kon-Mittelg. -2591, geand. Kon-Mittelg. a2620.

 elster ELSTER Messtechnik GmbH	DRAWN 27.11.08 Engels	DATE 27.11.08 Engels	SCALE 1:1	IDENT-NR. IDENT-NO ZL-0239.4	KENNZEICHEN CODE	FOLIE SIZE A4	BLATT PAGE 3	VON OF 5
	CHECKED 27.11.08 Buhler			ERSTELT FÜR SUPERSEDES 27.07.08	ERSETZT DURCH SUPERSEDES 27.07.08			

Teil/Part	Benennung / Denomination	Werkstoff / Material
15	Deckplättchen Thrust pad	Hartmetall Tungsten Carbide
16	Distanzscheibe Distance ring	PP0 PP0
17	Lochstein Bearing jewel	Synthetischer Saphir Synthetic sapphire
18	Ausgangslager Rotor support	PP0 PP0
19	Lagerstift kpl. Bearing pin assembly	Chrom-Nickel-Stahl/Hartmetall Stainless steel/Tungsten Carbide
20	Klemmstift Clamping pin	Chrom-Nickel-Stahl Stainless steel
21	Abdichtplatte Diaphragm	CuZn alternativ PP0 CuZn alternatively PP0
22	O-Ring O-ring	EPDM / NBR EPDM / NBR
23	Innensechskantschr. Screw	Chrom-Nickel-Stahl Stainless steel
24	Unterlegscheibe Washer	Chrom-Nickel-Stahl Stainless steel
25	Zylinderschraube Screw	Chrom-Nickel-Stahl Stainless steel
26	Zahlwerk kpl. Counter assembly	siehe / see ZL-0243 4 BL1+2 ZL-0210 4 BL1+2 ZL-0218 4 BL1+2 ZL-0222 4 BL1-3 ZL-0242 3 BL1 ZL-0242 4 BL2+3 ZL-0246 3 BL1 ZL-0246 4 BL2+3



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

Ing.-Kon.-Mittig 2551, 2552, 2553, 2554, 2555, 2556, 2557, 2558, 2559, 2560, 2561, 2562, 2563, 2564, 2565, 2566, 2567, 2568, 2569, 2570, 2571, 2572, 2573, 2574, 2575, 2576, 2577, 2578, 2579, 2580, 2581, 2582, 2583, 2584, 2585, 2586, 2587, 2588, 2589, 2590, 2591, 2592, 2593, 2594, 2595, 2596, 2597, 2598, 2599, 2600, 2601, 2602, 2603, 2604, 2605, 2606, 2607, 2608, 2609, 2610, 2611, 2612, 2613, 2614, 2615, 2616, 2617, 2618, 2619, 2620, 2621, 2622, 2623, 2624, 2625, 2626, 2627, 2628, 2629, 2630, 2631, 2632, 2633, 2634, 2635, 2636, 2637, 2638, 2639, 2640, 2641, 2642, 2643, 2644, 2645, 2646, 2647, 2648, 2649, 2650, 2651, 2652, 2653, 2654, 2655, 2656, 2657, 2658, 2659, 2660, 2661, 2662, 2663, 2664, 2665, 2666, 2667, 2668, 2669, 2670, 2671, 2672, 2673, 2674, 2675, 2676, 2677, 2678, 2679, 2680, 2681, 2682, 2683, 2684, 2685, 2686, 2687, 2688, 2689, 2690, 2691, 2692, 2693, 2694, 2695, 2696, 2697, 2698, 2699, 2700, 2701, 2702, 2703, 2704, 2705, 2706, 2707, 2708, 2709, 2710, 2711, 2712, 2713, 2714, 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Teil/Part	Benennung / Denomination	Werkstoff / Material
27	Werksbefestigungsring Base plate	POM POM
28	Schutzdeckel Lid	ABS/PC - Mischung ABS/PC - Blend
29	Schulzhaube mit Kennzeichnung Shroud	ABS alternativ CuZn ABS alternatively CuZn
30	O-Ring O-ring	EPDM / NBR EPDM / NBR
31	Sechskantschraube Screw	Chrom-Nickel-Stahl Stainless steel
32	Unterlegscheibe Washer	Chrom-Nickel-Stahl Stainless steel
33	Werkhalterung Adaptor	ABS 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

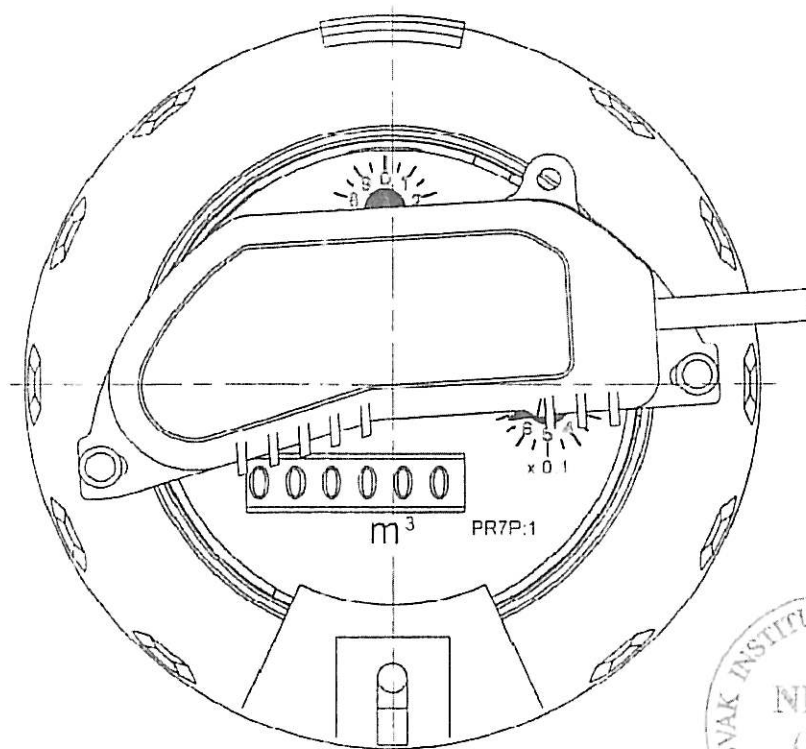
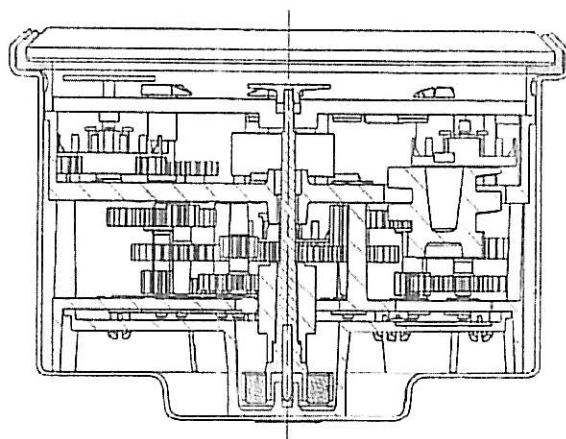


Original Kan-Mittig 2551 g und Kan-Mittig 2670



ELSTER Messtechnik GmbH

DATE	SIGN	SCALE	DENT-NO	REVISION	DATE	SCALE	REVISION
27.11.08	Engels	11	ZL-0239 4		27.11.08	Butler	
27.11.08	Butler		ERBAUT FÜR SUPERSEDES	ERBAUT FÜR SUPERSEDES			



Multipulse-Dosenzahlwerk (induktiv)

Inductive counter (Cu Can)

(shown with shroud and pulse-giver)

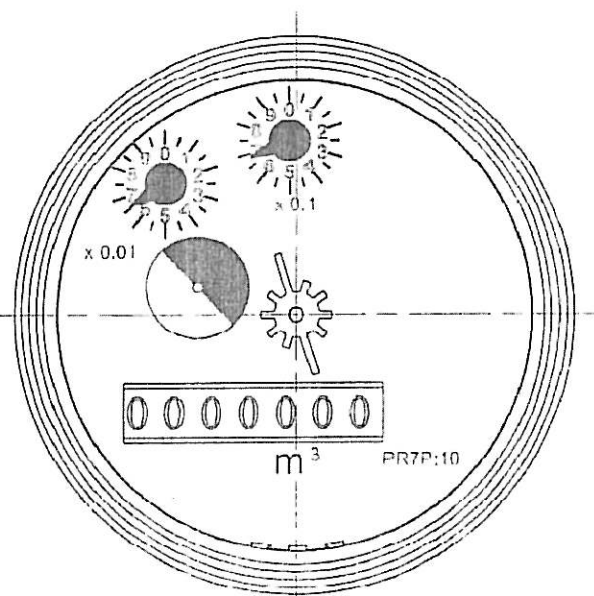
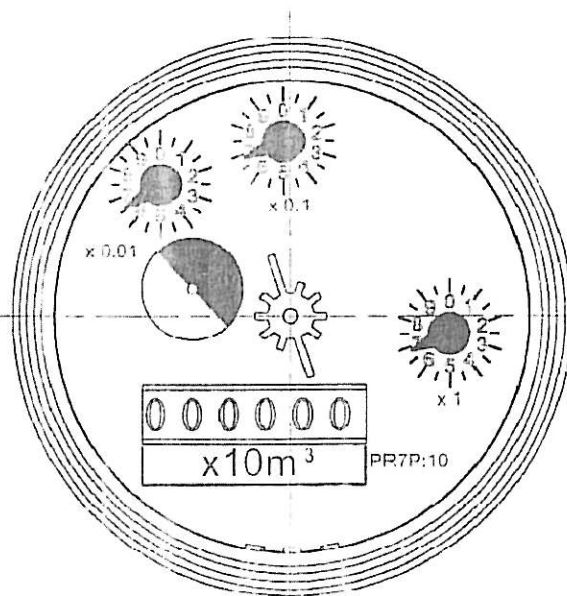
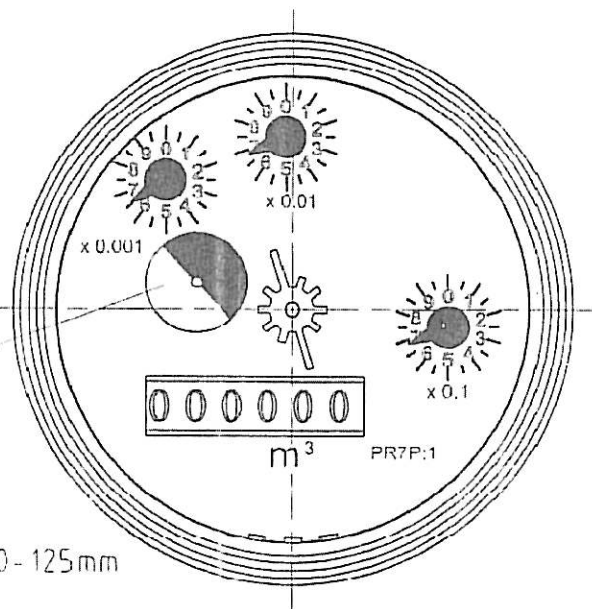
Einzel Kon-Mittlg -2379, qgend Kon-Mittlg a2591,b2620.



 **elster**
ELSTER Messtechnik GmbH

DATE DATE	SIGN	UNIT STAB SCALE	IDENT-OR IDENT-NO	REWORK CODE	MT SIZE	BLAT PAGE	CON OF
BURBETT DRAWN	17 12 08	Engels	11	ZL-0222.4		A4	1 5
CLIPPERT CHECKED	17 12 08	Bühler	ENSAIT FUCH SUBSERIES	gl Nr v 12 CR 08	ENSAIT FUCH SUPERSEDED BY		

Scheibe für induktiven Abgriff
inductive target



Multipulse-Dosenzählwerk (induktiv)

Inductive counter (Cu Can)

Ausg. mit 2/3 Zeigerkreisen / 2/3 pointer version



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



elster
ELSTER Messtechnik GmbH

DATE	DATE	DATE	DATE	DATE	DATE	DATE	DATE	DATE	DATE
17.12.08	17.12.08	17.12.08	17.12.08	17.12.08	17.12.08	17.12.08	17.12.08	17.12.08	17.12.08
Engels	Engels	Engels	Engels	Engels	Engels	Engels	Engels	Engels	Engels
Bühler	Bühler	Bühler	Bühler	Bühler	Bühler	Bühler	Bühler	Bühler	Bühler

11

ZL-0222.4

ERSETZT DURCH
SUPERSEDES

ERSETZT DURCH
SUPERSEDES

ERSETZT DURCH
SUPERSEDES

ERSETZT DURCH
SUPERSEDES

ERSETZT DURCH
SUPERSEDES

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
Fixierschift	/ Locating pin	PC
Anlaufstern	/ Tell tale	PP



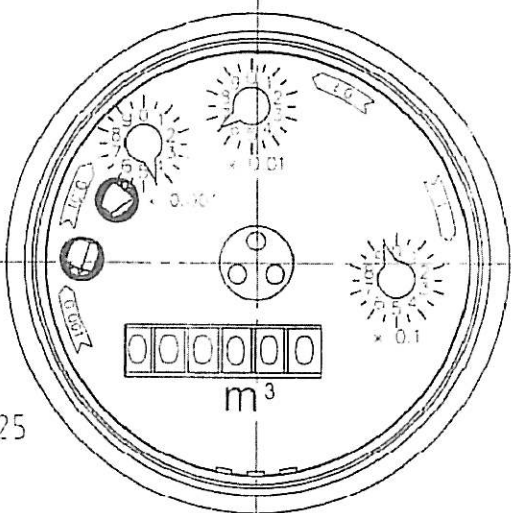
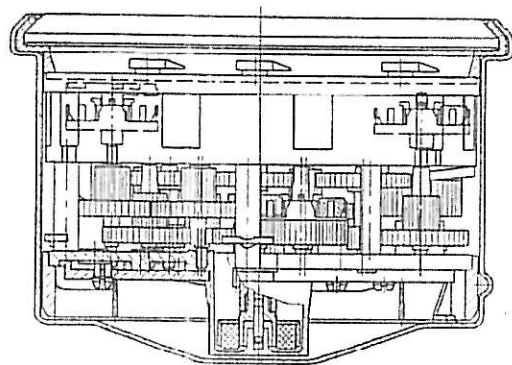
Werkstoffliste / Material List

Multipulse-Dosenzählwerk (induktiv)

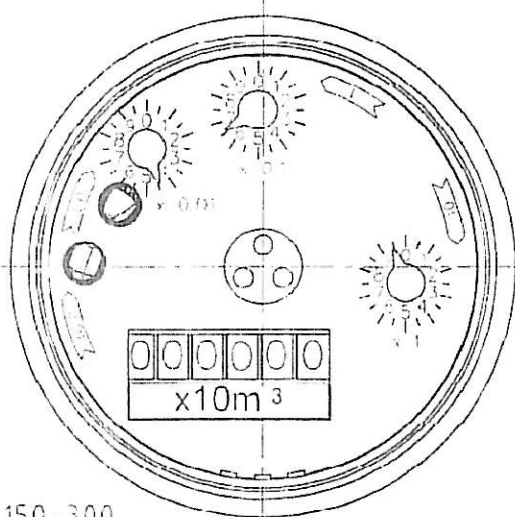
Inductive counter (Cu Can)

Einzel-Kon-Mittlg - 2359, Grand Kon-Mittlg a2591, b2420

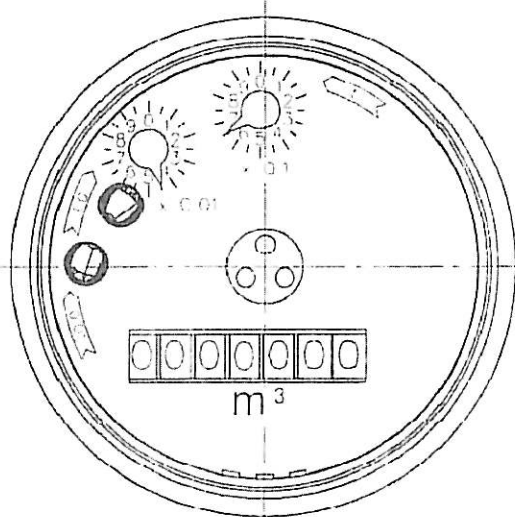
 elster ELSTER Messtechnik GmbH	DATE 17.12.08	SIGN Engels	SCALE 11	IDENT-NO ZL-0222 4	IDENT-NO 111111 12 08 08	IDENT-NO 111111 12 08 08	IDENT-NO 111111 12 08 08	IDENT-NO 111111 12 08 08	IDENT-NO 111111 12 08 08
	DATE 17.12.08	SIGN Engels	SCALE 11	IDENT-NO ZL-0222 4	IDENT-NO 111111 12 08 08	IDENT-NO 111111 12 08 08	IDENT-NO 111111 12 08 08	IDENT-NO 111111 12 08 08	IDENT-NO 111111 12 08 08



DN 40-125



DN 150-300



Altern. 7 Rollen

Altern. 7 Fig. / Roller bank



Multipulse-Dosenzahlwerk
Multipulse counter (Cu Can)

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

 elster ELSTER Messtechnik GmbH	DATE	SIGN.	MASSTAB SCALE	IDENT-NR IDENT-NO	KENNZEICHEN CODE	FOLIE PAGE	PLATTEN ID
	17.12.08	Engels	1:1	ZL-0210 4		14	1 2
BEFRIEDIGEND CRAWL ZUFRIEDEN CHECKED	17.12.08	Bauer		ERSATZTEIL SUPERNOBLE	RSETZTEIL SUPERNOBLE		

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
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



Werkstoffliste / Material List

Multipulse-Dosenzahlwerk
Multipulse counter (Cu Can)

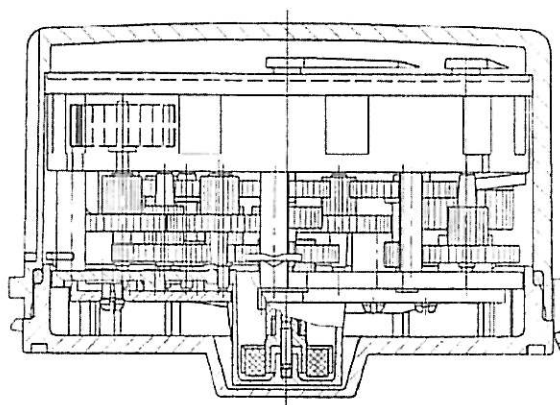
Ausfg mit 2/3 Zeigerkreisen / 2/3 pointer version

geand Kon-MitHg a299152620



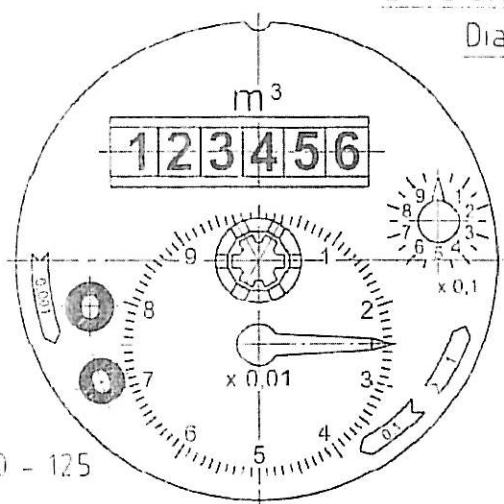
ELSTER Maschinenbau GmbH

	DATE	SIGN.	WALSTAG SCOTT	IDENT-IR IDENT-NO	KENWONT CODE	PAT AGE	PLATT VOR NACH
REPRESENT DOWN	17 12 08	Erges	11	ZL-0210.4		AA	2 2
APPROVED CHECKED	17 12 08	Bunter		ERSATZ FUER SUPERSEDES: 01 Nov 1968 08	ERSATZ FUER SUPERSEDES BY		

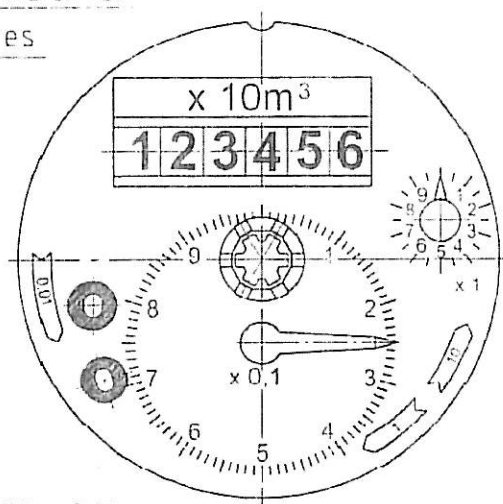


Zifferblatt - Ansichten

Dial plates



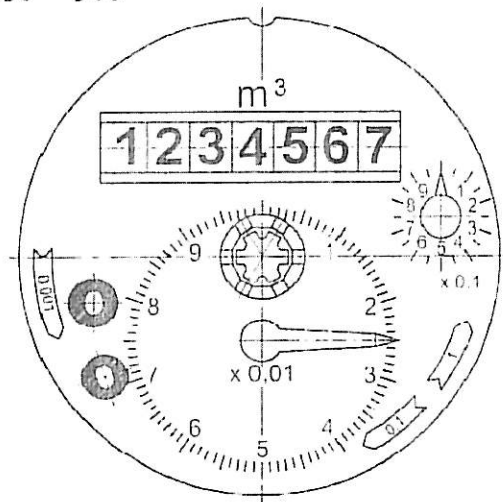
DN 40 - 125



DN150 - 300



Multipulse - Zählwerk (KS)
Multipulse counter (Polymer)



Altern 7 Rollen

Altern 7 Fig /Roller bank

Engel Kon-Mittig -2591 Conrad Kon-Mittig a2620



elster

ELSTER Messtechnik GmbH

DATE	DATE	DATE
17.12.08	17.12.08	17.12.08
Engels	Engels	Engels
Engels	Engels	Engels

SCALE	SCALE
1.1	1.1
1.1	1.1
1.1	1.1

IDENT-NO	IDENT-NO
ZL-0243.4	ZL-0243.4
ZL-0243.4	ZL-0243.4
ZL-0243.4	ZL-0243.4

IDENT-NO	IDENT-NO
ZL-0243.4	ZL-0243.4
ZL-0243.4	ZL-0243.4
ZL-0243.4	ZL-0243.4

IDENT-NO	IDENT-NO
ZL-0243.4	ZL-0243.4
ZL-0243.4	ZL-0243.4
ZL-0243.4	ZL-0243.4

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
Triebbräder	/ 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)

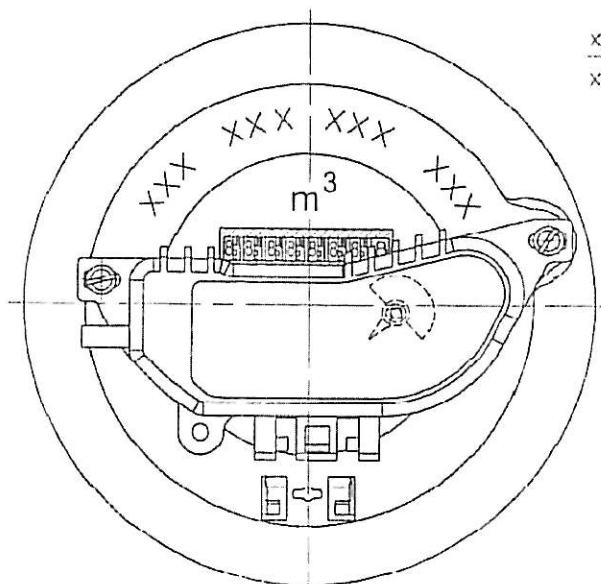


Fingerring-Mittelg -2581, geand Kon-Mittlg a2620



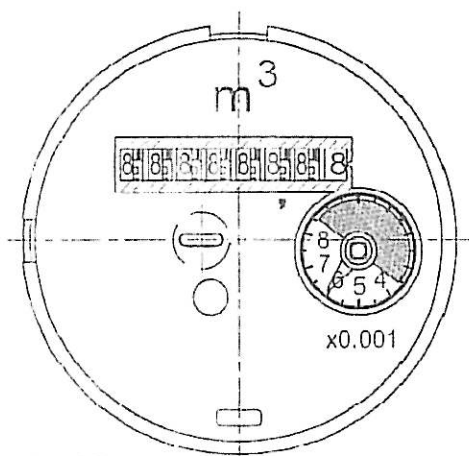
ELSTER Messtechnik GmbH

DATE	SIGN	MASSSTAB SCALE	IDENT-NR IDENT-NO	WERNISCHT CODE	PMT SIZE	SCALE	UNIT
17.12.08	Engels	11	ZL-0243.4		A4	2	2
18.12.08	Buhler		ERSATZ FÜR SUPERSEDES	gi Nr v 13.08.08			

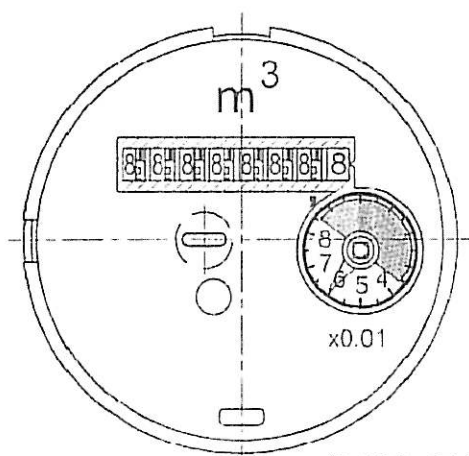


xxx MID Kennzeichnung
xxx Marking in this area

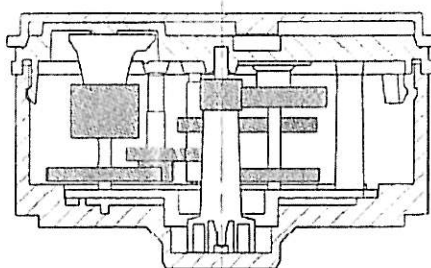
shown with shroud and pulse-giver



DN 40-125mm



DN 150-300mm



Zeiger-Rollenzählwerk Kunststoff (induktiv)
Polymer inductive counter

Eingezeichnet Kon-Mittlg -2344 gezeichnet Kon-Mittlg a2591.b2620



elster
ELSTER Messtechnik GmbH

BEARBEITET DRAWN	DATUM DATE	SIGNE SIGNATURE	VERSTÄRK SCALE	IDENT-NR IDENT-NO	KENNZEICHNUNG CODE	FOLIE PAGE	BLATT VON OF
17.12.08	Engels	11	ZL-0218 4	ERSATZ FÜR SUPERSEDES	ERSATZ DURCH SUPERSEDES	A4	1 2

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

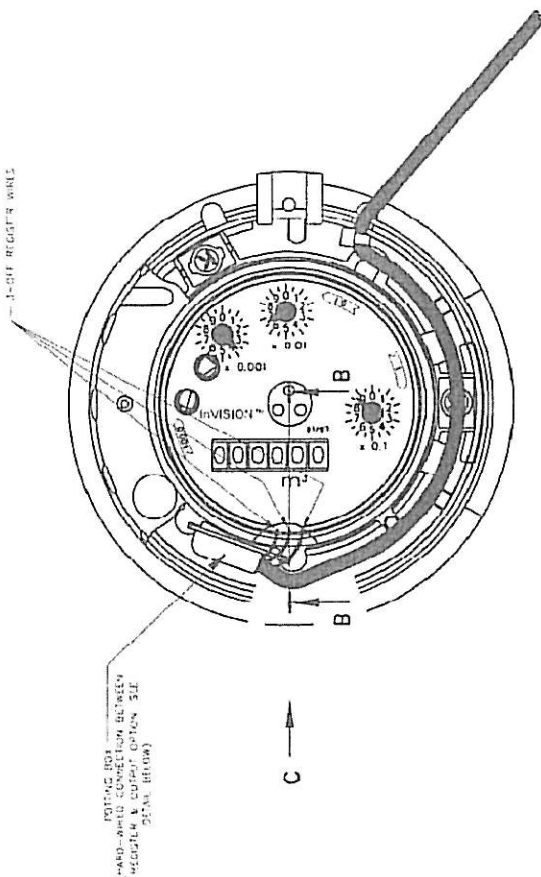


Werkstoffliste/Material List

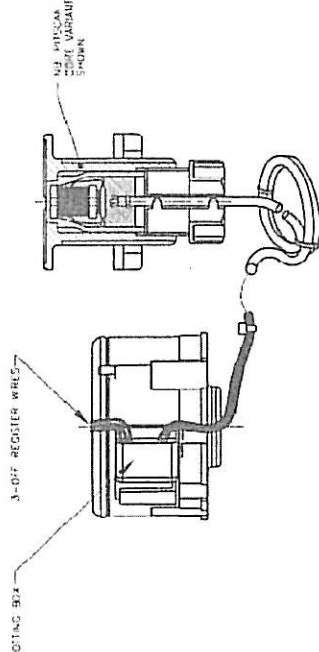
Zeiger-Rollenzahlwerk Kunststoff (induktiv)
Polymer inductive counter

Eingef. Kon-Mittlg. -2344, geand. Kon-Mittlg. a2591,b2620

 elster ELSTER Messtechnik GmbH	DATE	SIGN.	MASSSTAB SCALE	IDENT. NO. IDENT.-NO.	PRINTING CODE	REV. REV.	REVISION PAGE
	DRAWN 17.12.08 CHECKED 17.12.08	Engels	11	ZL-0218 4		A4	2
		Bohler		ERSATZ FUER g-Nr v 12.08.06	EPSETZ DURCH SUPERSEDED BY		



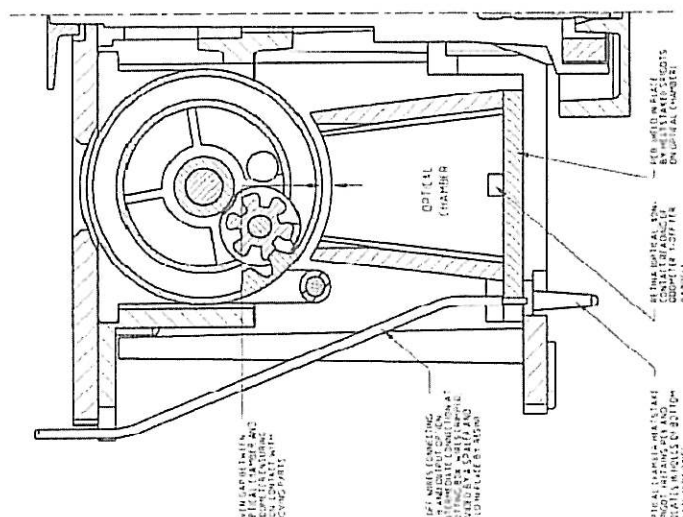
Kabelausgang und Kabelführung
PLAN VIEW OF COUNTER ASSY.
SHOWING CONNECTION & ROUTING



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



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

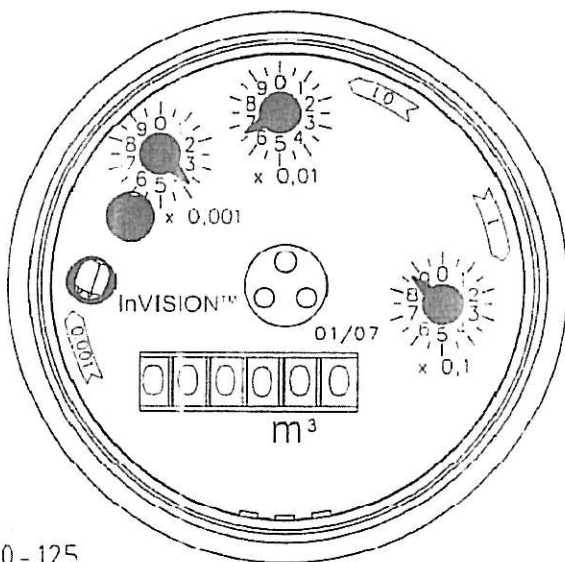


Kontaktlose Schnittstelle
zwischen optischen Sensoren
und Zählrollen

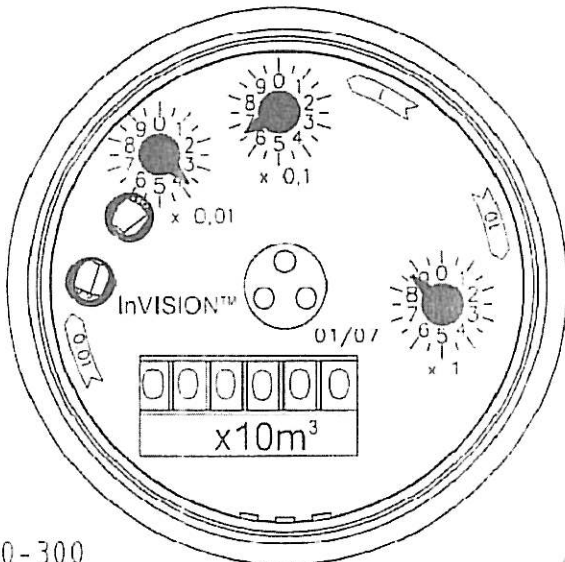
SECTION B-B SHOWING
NON-CONTACT INTERFACE BETWEEN
OPTICAL CHAMBER & CODE-METER
ASSEMBLY WITH THE ADAPTOR

elster ELSTER Messtechnik GmbH		11		ZL-02L23		3	
DATE	17.12.04	ENGINEER	Engels	DATE	17.12.04	DESIGNER	Engels
REVISION	01	REVISION	01	REVISION	01	REVISION	01

Die Darstellung ist ohne Gewähr. Die Abbildung ist eine schematische Darstellung und ist nicht zur Verwendung als Ersatzteil zu verwenden.
 ELSTER Messtechnik GmbH



DN 40-125



DN150-300



Encoder - Multipulse - Dosenzählwerk

Encoder / Multipulse counter (Cu Can)

Encoder Kon-Mittig -2591 gemäß Kon-Mittig a2620.



ELSTER Messtechnik GmbH

DATE	SIGN.
17.12.08	Engels
17.12.08	Buhner

MASSSTAB
SCALE
1:1

IDENT-NR
IDENT-NO
ZL-0242.4

ERSATZ FÜR
SUPERSEDES
tl Nr v 11.08.08

KEYWORD
CODE
ERSETZT DURCH
SUPERSEDED BY

ENT SZL	BLATT NR PAGE
A4	2 3

Für Details über die Anwendung des Gerätes, die Eigenschaften und die Bedienung, siehe die Bedienungsanleitung.
 ELSTER Messtechnik GmbH

Benennung / Denomination

Werkstoff / Material

Obere Lagerplatte	/ Upper bearing plate	PP0
Reflexring	/ Reflective ring	PMMA/PC
Zahlenrollenpaket	/ Number roller bank	PP0/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	PP0/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	PP0
Zwischenring	/ Spacer	PP0
Formdichtung	/ Seal	EPDM
Glasscheibe	/ Glas	Hartglas/Mineral glass
Kabelausgang	/ Cable exit	KS/Cu

Werkstoffliste / Material List

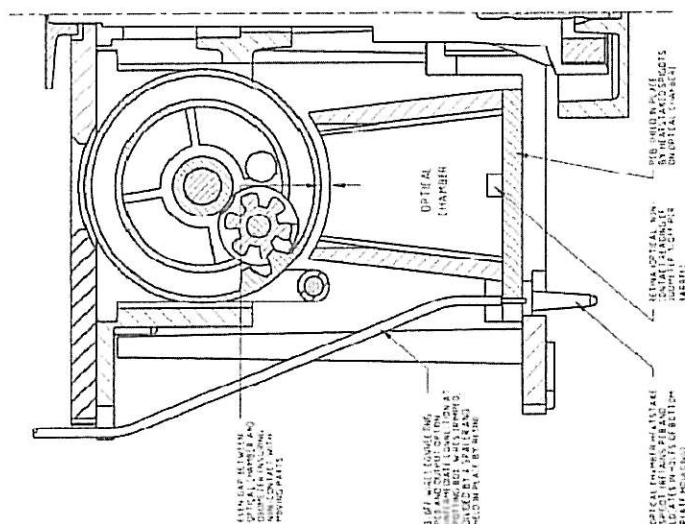
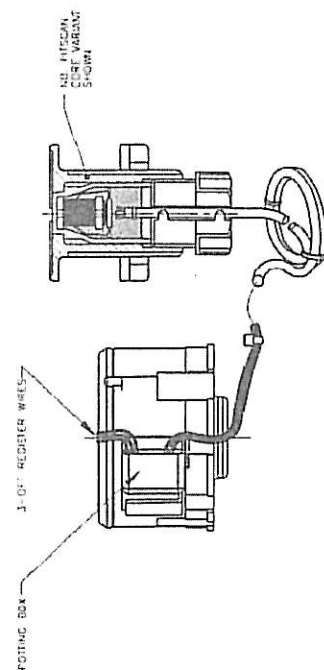
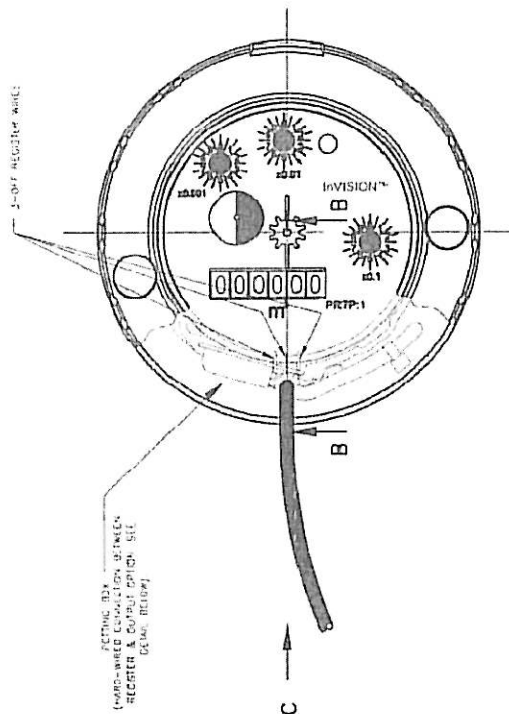
Encoder - Dosenzählwerk

Encoder - High Integrity Counter



Uingef. Kon-Mittlg. -2591

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



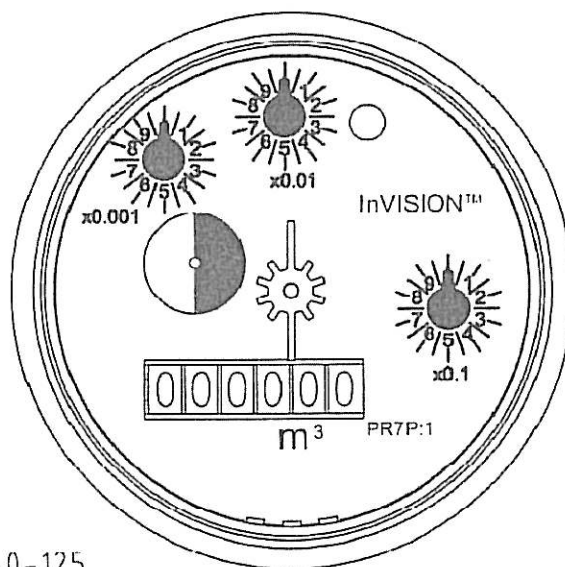
Kontaklose Schnittstelle zwischen optischen Sensoren und Zahlenrollen

SECTION B-B SHOWING NON-CONTACT INTERFACE BETWEEN OPTICAL CHAMBER & ODOMETER FITTING ASSEMBLY WITH THE ADDITION OF CENTER CLAMPS!

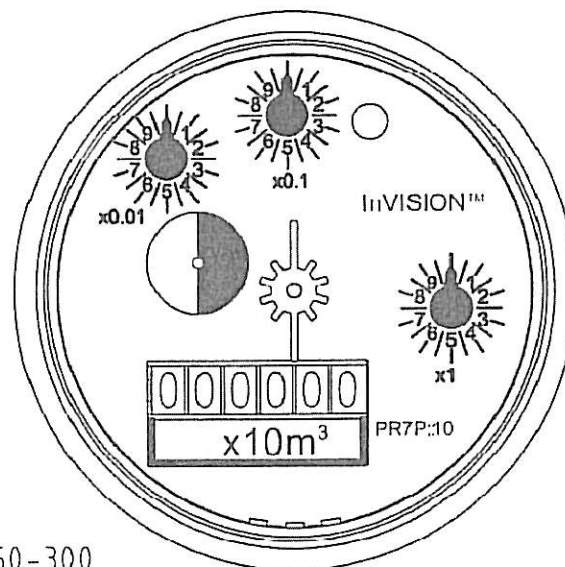
Encoder- Multipulse- Dosiszählwerk (induktiv)
Encoder / inductive counter (Cu Can)

[illegible]

Fingert Con-Pittig - 2670, grand Kor-Mittig



DN 40-125



DN150-300



Encoder- Multipulse- Dosenzählwerk (induktiv)

Encoder / inductive counter (Cu Can)

Eingef Kon-Mittig -2620, geand Kon-Mittig



elster
ELSTER Messtechnik GmbH

DATUM DATE	SGN	MASSSTAB SCALE	IDENT-NR IDENT-NO	KENNWORT CODE	FMT SIZE	BLATT PAGE	VON OF
BEARBEITET DRAWN	15.01.05	Engels	11	ZL-0246.4	A4	2	3
GEPRÜFT CHECKED	15.01.05	Buhler	ERSATZ FÜR SUPERSEDES	ERSETZT DURCH SUPERSEDED BY			

Silikon/Silicone

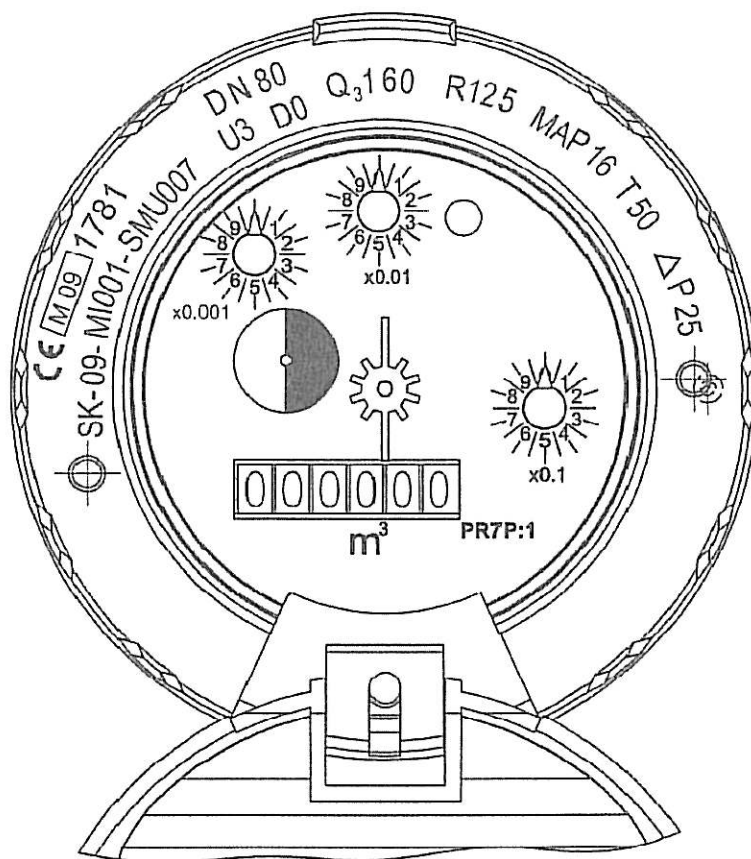
Encoder - Multipulse - Dosiszählwerk (induktiv)
Encoder / inductive counter (Cu Can)



ELSTER Messtechnik GmbH

	DATE	SIGN	MASS/SCALE	IDENT-NO IDENT-NO	KENN/WORD CODE	UNIT SIZE	SHEET PAGE	PAGE OF
BEARBEITET DRAWN	15 01 09	Engels	11	ZL-0246.4		A4	3	3
GEPRUEFT CHECKED	15 01 09	Buhler		ERSATZ FUER SUPERSEDES	ERSATZ 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 Q₃ 160 R125
CE M09 1781 DN80 MAP16 U3 D0 ΔP25 T50

Kon-Mittlg. -2655



elster
ELSTER Messtechnik GmbH

	DATE	SIGN.	SCALE	IDENT-NR. IDENT-NO.	REMARKS COUL	FMT. SIZE	BLATT PAGE	VON OF
GEPRÜFT CHECKED	23.07.09	Bühler	1:1	ZL-0255.4		A4	1	1
ERSETZT REPLACED				ERSATZ FÜR SUPERSEDES	ERSETZT DURCH SUPERSEDED BY			