



EC-TYPE EXAMINATION CERTIFICATE

Number: TCM 142/12 - 4994

Page 1 from 10 pages

- In accordance:** with Directive 2004/22/EC of the European Parliament and of the Council as amended implemented in Czech Republic by Government Order No. 464/2005 Coll. as amended that lays down technical requirements on measuring instruments.
- Manufacturer:** Isoil Industria S.p.A.
Via F.lli Gracchi 27
20092 Cinisello Balsamo (MI)
Italy
- For:** water meter - ultrasound
type: IFX-C1 and IFX-C2
Accuracy class: 2
Temperature class: T30
- Valid until:** 12 December 2022
- Document No:** 0511-CS-A047-12
- Description:** Essential characteristics, approved conditions and special conditions, if any, are described in this certificate.
- Date of issue:** 13 December 2012

Certificate approved by:



RNDr. Pavel Klenovský

1. Measuring device description

Ultrasound water meters types IFX-C1 and IFX-C2 are designed to measure, memorize and display the volume at metering conditions of water passing through the measurement transducer in the sense of the Directive of Czech Parliament no. 464/2005 (in the sense of the Directive of the European Parliament and of Council no. 2004/22/EC of measuring instruments), as amended.

The water meters types IFX-C1 and IFX-C2 consist of flow sensor and measuring transducer with the electronic calculator. The body of flow sensor is made by shaped casting from material called ductile iron with standard flanges and is installed by ultrasonic sensors which count is either one pair for single-beam model (type IFX-C1) or two pairs for double-beam model (type IFX-C2).

Measuring transducer is made by an aluminum box with a plastic lid and a plastic transparent sight hole for LCD display, by a button, by a valve for pressure equalization, by plate for communication by the optical probe and by three connectors designated for communication by RS232, by an impulse output and by a current output. Connectors which are not used must be blind. Maximum length of cable for communication is 2 meters.

Measuring transducer of water meters types IFX-C1 and IFX-C2 is saved in case whose part is case for interchangeable and supply battery. The life of battery is 8 years. A part of transducer is one row LCD display displaying the metrological parameters; it is possible to changeover parameters by switching the button. Version of software and checksum can be read by the optical probe and test of display can be displayed by press the button for the time longer than 5 seconds and is displaying during the switching the button. The necessary parts of water meter are the optical probe or by RS232 and special software which will be used for reading version of software and checksum.

Ultrasound water meters types IFX-C1 and IFX-C2 are designed and can operate in an arbitrary position, with the measuring transducer placed in horizontal or vertical position. The water meter type IFX-C1 with nominal diameter DN32 must be installed with cross type of flow straighter.

The water meters are manufactured in accordance with technical documentation of the company ISOIL Industria, No. ES 401 889 to ES 401 893 from 13.7.2012.

2. Technical Data

Type of water meter	IFX-C1				
Nominal diameter (DN) [mm]	32	40	50	65	80
Overload flowrate (Q_4) [m^3/h]	≤ 12.5	≤ 20.0	≤ 31.3	≤ 50.0	≤ 78.8
Permanent flowrate (Q_3) [m^3/h]	≤ 10	≤ 16	≤ 25	≤ 40	≤ 63
Transitional flowrate (Q_2) [m^3/h]	≥ 0.32	≥ 0.51	≥ 0.80	≥ 1.28	≥ 2.02
Minimum flowrate (Q_1) [m^3/h]	≥ 0.20	≥ 0.32	≥ 0.50	≥ 0.80	≥ 1.26
Ratio Q_3 / Q_1	$\leq 50^2$				$\leq 40^2$
Ratio Q_2 / Q_1	1.6				
Ratio Q_4 / Q_3	1.25				
Orientation limitation	arbitrary				
Accuracy class	2				
Maximum permissible error for the lower flowrate zone (MPE _l)	$\pm 5\%$				
Maximum permissible error for the upper flow zone (MPE _u)	$\pm 2\%$ for water with temperature $\leq 30\text{ }^\circ\text{C}$				
Temperature class	T30				
Water pressure classes	MAP 16				
Pressure-loss classes	$\Delta P 25$				
Indicating range [m^3]	99 999 to 999 999				
Resolution of the indicating device [L]	1				10
Resolution of the device for the rapid testing [pulse/L]	1.6	1.6	0.64	0.32	0.32
Flow profile sensitivity classes	U10S D5	U10 D5			
Length [mm]	260	300	300	300	350
Connection type	standard flange				
Environmental class	B				
Electromagnetic class	E1 and E2				
Version of software	M16V400 - FL50X4				

W&M checksum	B543DAA9
Power supply	3.6 V / 19 Ah
Effective life (of the battery) [years]	8

Type of water meter	IFX-C1			
Nominal diameter (DN) [mm]	100	125	150	200
Overload flowrate (Q_4) [m^3/h]	≤ 125.0	≤ 200.0	≤ 312.5	≤ 500.0
Permanent flowrate (Q_3) [m^3/h]	≤ 100	≤ 160	≤ 250	≤ 400
Transitional flowrate (Q_2) [m^3/h]	≥ 3.20	≥ 5.12	≥ 8.00	≥ 12.80
Minimum flowrate (Q_1) [m^3/h]	≥ 2.00	≥ 3.20	≥ 5.00	≥ 8.00
Ratio Q_3 / Q_1	$\leq 50^2$			
Ratio Q_2 / Q_1	1.6			
Ratio Q_4 / Q_3	1.25			
Orientation limitation	arbitrary			
Accuracy class	2			
Maximum permissible error for the lower flowrate zone (MPE _i)	$\pm 5\%$			
Maximum permissible error for the upper flow zone (MPE ₀)	$\pm 2\%$ for water with temperature $\leq 30\text{ }^\circ\text{C}$			
Temperature class	T30			
Water pressure classes	MAP 16			
Pressure-loss classes	$\Delta P 25$			
Indicating range [m^3]	999 999 to 9 999 999			
Resolution of the indicating device [L]	10			
Resolution of the device for the rapid testing [pulse/L]	0.16	0.16	0.16	0.064
Flow profile sensitivity classes	U10 D5			
Length [mm]	350			
Connection type	standard flange			
Environmental class	B			
Electromagnetic class	E1 and E2			
Version of software	M16V400 – FL50X4			
W&M checksum	B543DAA9			
Power supply	3.6 V / 19 Ah			
Effective life (of the battery) [years]	8			

Type of water meter	IFX-C2					
Nominal diameter (DN) [mm]	65	80	100	125	150	200
Overload flowrate (Q_4) [m ³ /h]	≤ 50	≤ 79	≤ 125	≤ 200	≤ 313	≤ 500
Permanent flowrate (Q_3) [m ³ /h]	≤ 40 ¹	≤ 63 ¹	≤ 100 ¹	≤ 160 ¹	≤ 250 ¹	≤ 400 ¹
Transitional flowrate (Q_2) [m ³ /h]	≥ 0.64	≥ 2.50	≥ 2.50	≥ 2.56	≥ 4.00	≥ 6.40
Minimum flowrate (Q_1) [m ³ /h]	≥ 0.40	≥ 1.58	≥ 1.59	≥ 1.60	≥ 2.50	≥ 4.00
Ratio Q_3 / Q_1	≤ 100 ²	≤ 40 ²	≤ 63 ²	≤ 100 ²	≤ 100 ²	≤ 100 ²
Ratio Q_2 / Q_1	1.6					
Ratio Q_4 / Q_3	1.25					
Orientation limitation	arbitrary					
Accuracy class	2					
Maximum permissible error for the lower flowrate zone (MPE _l)	± 5 %					
Maximum permissible error for the upper flow rate zone (MPE _u)	± 2 % for water with temperature ≤ 30 °C					
Temperature class	T30					
Water pressure classes	MAP 16					
Pressure-loss classes	ΔP 25					
Indicating range [m ³]	999 999 to 9 999 999					
Resolution of the indicating device [L]	1	10				
Resolution of the device for the rapid testing [pulse/L]	0.32	0.32	0.16	0.16	0.16	0.064
Flow profile sensitivity classes	U5 D3					
Length [mm]	300	350				
Connection type	Standard flange					
Environmental class	B					
Electromagnetic class	E1 and E2					
Version of software	M16V400 – FL50X4					
W&M checksum	B543DAA9					
Power supply	3.6 V / 19 Ah					
Effective life (of the battery) [years]	8					

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 types IFX-C1 and IFX-C2 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-P0039-12 from October 31, 2012.

4. Marking

The measuring instrument shall bear the following data:

- "CE" marking and metrology marking
- EC-type examination certificate number
- Name or trademark of the manufacturer
- Year of manufacture (last two digits)
- Serial number (as close as possible to the totalising device)
- Measuring instrument model
- Unit of measurement (m³)
- Accuracy class 2

- Numerical value of Q_3 in m^3/h ($Q_3 \times \times$)
- Numerical value of ratio Q_3 / Q_1 ($R \times \times$)
- Temperature class ($T \times \times$)
- Maximum admissible pressure (MAP $\times \times$)
- Maximum pressure loss class ($\Delta P \times \times$)
- Classes on sensitivity to irregularities in velocity field ($U \times D \times$)
- Direction of flow arrow on both sides of the meter body
- Environmental and mechanical classes
- Electromagnetic class
- Last data for change the battery
- External power supply requirements (type/level)
- Version of software

5. Sealing

The water meter is secured by seals as described in Figure 1.

Each water meter must be sealed by legal metrological seals after the tests with positive results:

on case of measuring transducer:

- at minimum 2 screws on the bottom of the case of the transducer 2x
- connecting of the case of transducer and the body of the flow sensor 1x

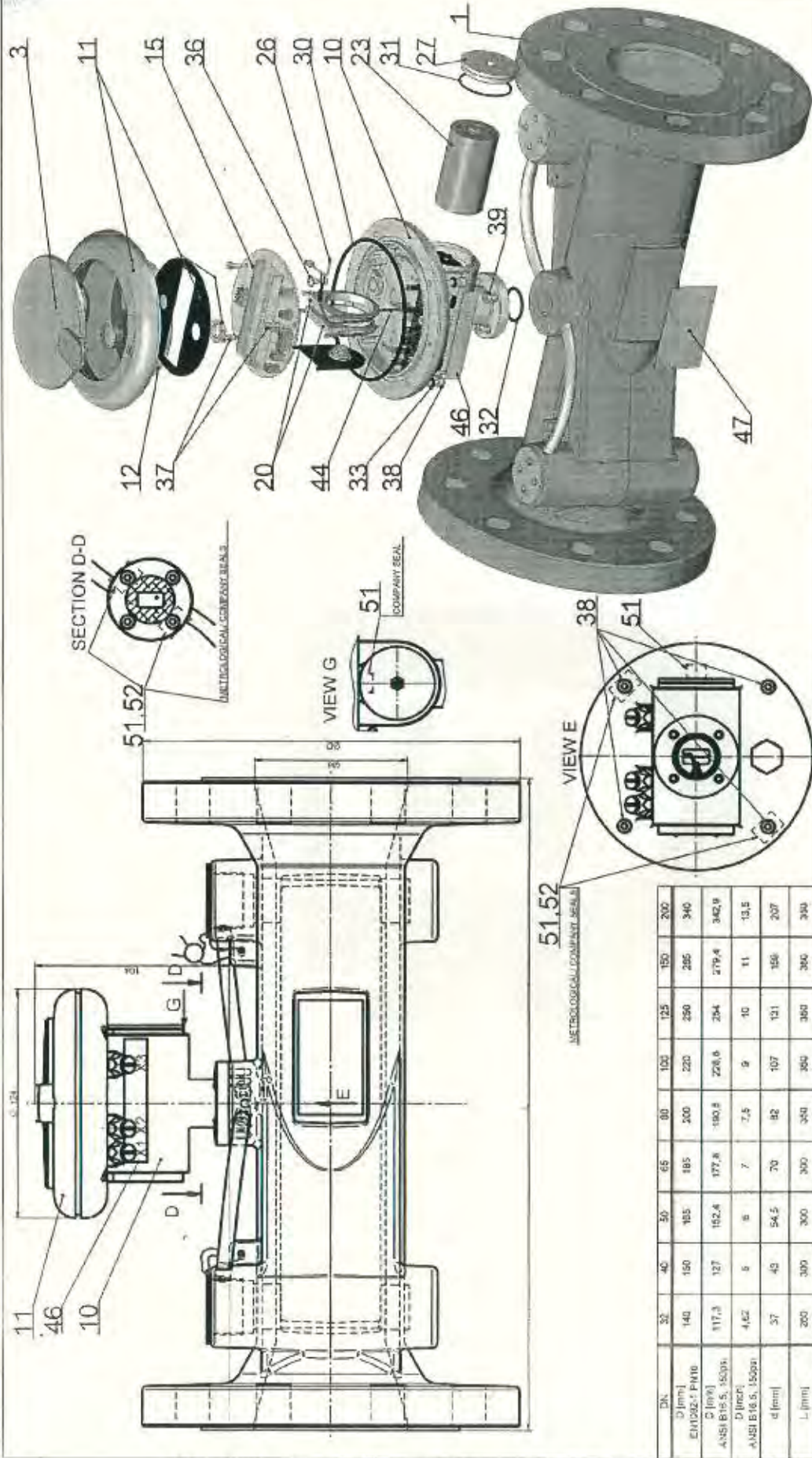
on flow sensor:

- connecting of the sticker with marking and flow sensor 1x
- connecting of the covers of the ultrasound sensors and the body of flow sensor 2x

Connecting of the lid of the battery and the case of flow sensor must be secured by manufacturer's installation seal or other relevant authority seal

1x

Figure 1: The IFX-C1 and IFX-C2 water meter assembly drawings including sealing



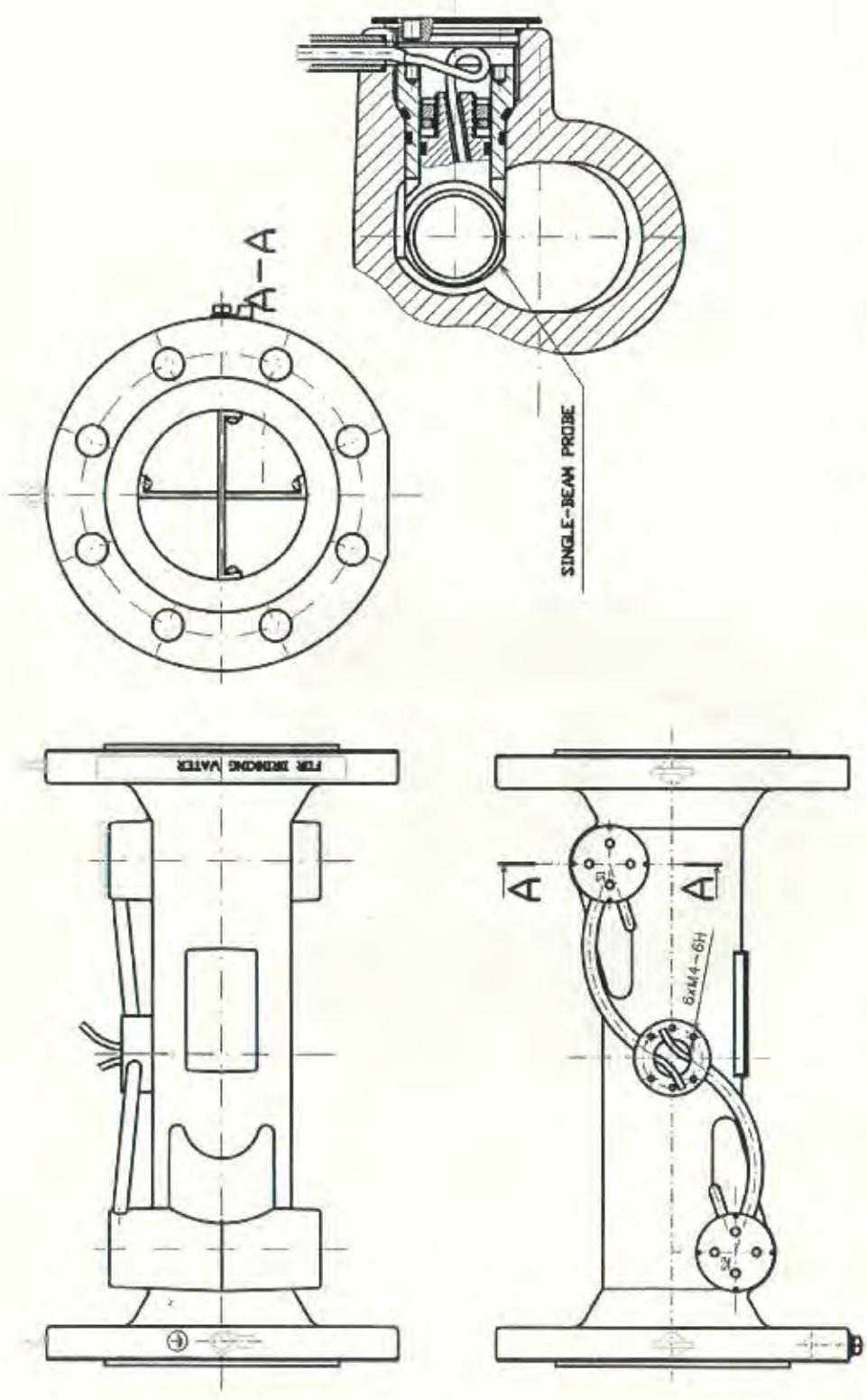
DN	32	40	50	65	80	100	125	150	200
D (mm)	140	150	165	185	200	220	250	285	340
EN10221 PN10									
C (mm)	117,3	127	142,4	157,8	180,8	208,6	234	279,4	342,9
ANSI B16.5, 150psi									
D (mm)	4,62	6	6	7	7,5	9	10	11	13,5
ANSI B16.5, 150psi									
d (mm)	37	43	54,5	70	82	107	131	156	207
L (mm)	200	300	300	350	350	350	350	350	350

DATA	SOSTITUISCE IL DIS N°	DESCRIZIONE DELLA MODIFICA
MODIFICHE DOCUMENTO		
DRAWN BY	P. Zyka	DATE
CHECKED BY	Hruza	COMPANY
CONTROLLO DISTRIBUZIONE DOCUMENTO TECNICO		
TITLE		
WATERMETER IFX - C		
SIZE	A4	DWG NO./REV/NAME
SCALE	-	Es 401889
DATE		SHEET
13.7.2012		1 of 1



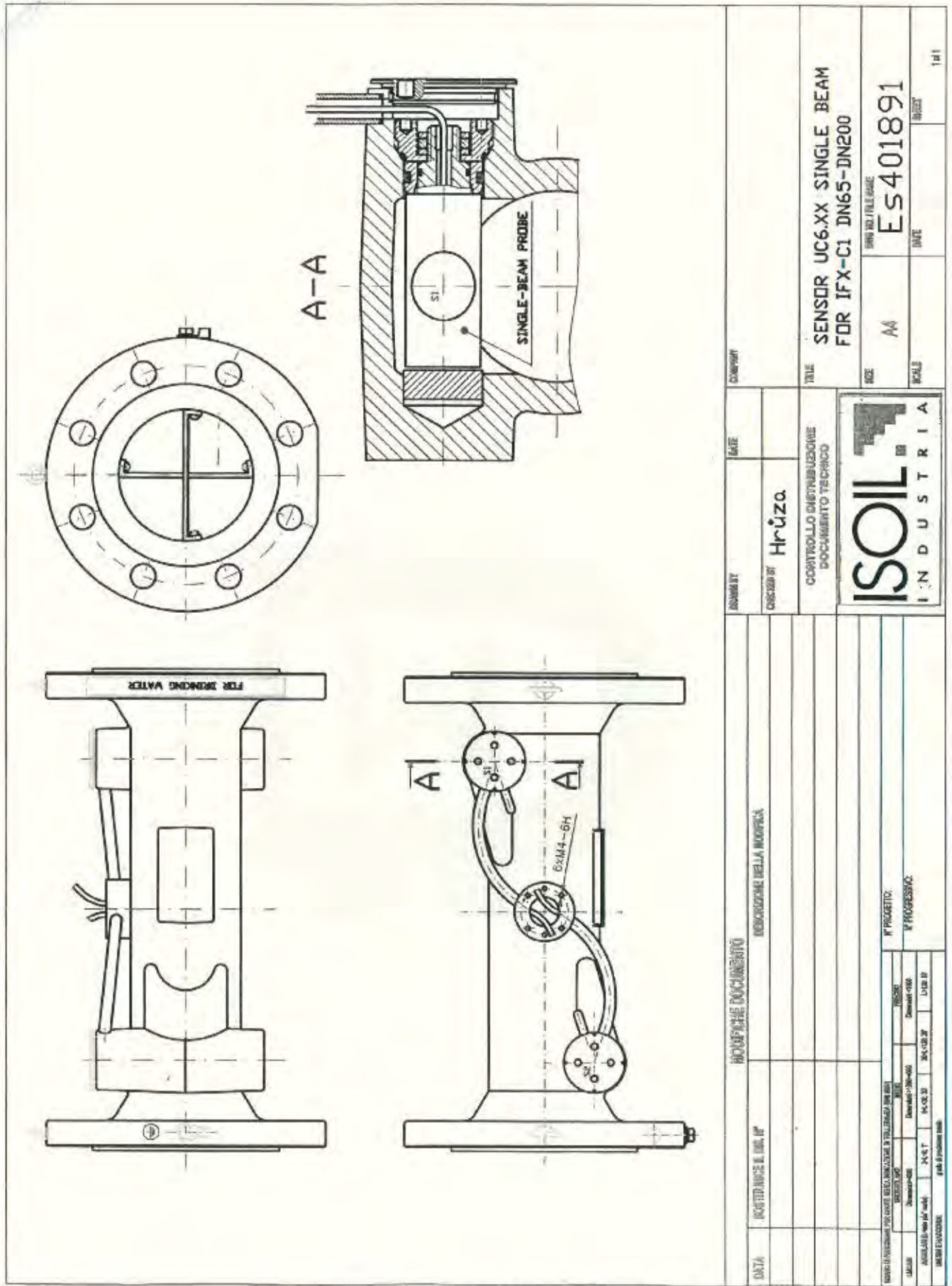
STACCO ASSEMBLATO PER ACCIAIO IN ACCIAIO E IN ALLUMINIO
 LEGHE: ZINCALCATO
 MATERIALI: ZINCALCATO
 N° PROGETTO: N° PROIEZIONE: N° PROIEZIONE

Figure 2: The IFX-C1 water meter assembly drawings



DATA		MODIFICHE DOCUMENTO		COMITATO	
SOSTITUISCE IL Dwg. N°		DESCRIZIONE DELLA MODIFICA		UNITE	
				CHIEZO DA Hruza	
				CONTROLLO DISTRIBUZIONE DOCUMENTO TECNICO	
				TITOLO SENSOR UC6.XX SINGLE-BEAM FOR IFX-C1 DN32-DN50	
				SCALE	1:1
				SIZE	A4
				DESCRIZIONE FILE/NUMERO	ES401890
				SCALE	PROST
MODIFICHE DOCUMENTO DESCRIZIONE DELLA MODIFICA N° PROGETTO: N° PROGRESSIVO:		MODIFICHE DOCUMENTO DESCRIZIONE DELLA MODIFICA N° PROGETTO: N° PROGRESSIVO:		MODIFICHE DOCUMENTO DESCRIZIONE DELLA MODIFICA N° PROGETTO: N° PROGRESSIVO:	
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Figure 3: The IFX-C1 water meter assembly drawings



DATA		AUTENTICITÀ E DATA		INQUADRIAMO DOCUMENTO	
DETERMINAZIONE DELLA MODIFICA		PROBABILITÀ		PROBABILITÀ	
REVISIONI		REVISIONI		REVISIONI	
RISULTATI		RISULTATI		RISULTATI	
CATEGORIA		CATEGORIA		CATEGORIA	
PRODOTTORE		PRODOTTORE		PRODOTTORE	
PUBBLICAZIONE		PUBBLICAZIONE		PUBBLICAZIONE	
AUTORE		AUTORE		AUTORE	
TITOLO		TITOLO		TITOLO	
SCHEDA		SCHEDA		SCHEDA	
AUTORE		AUTORE		AUTORE	
REVISIONI		REVISIONI		REVISIONI	
REVISIONI		REVISIONI		REVISIONI	
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SENSOR UC6.XX SINGLE BEAM
FOR IFX-C1 DN65-DN200

NO. FILE BASE
ES401891

Figure 4: The IFX-C2 water meter assembly drawings

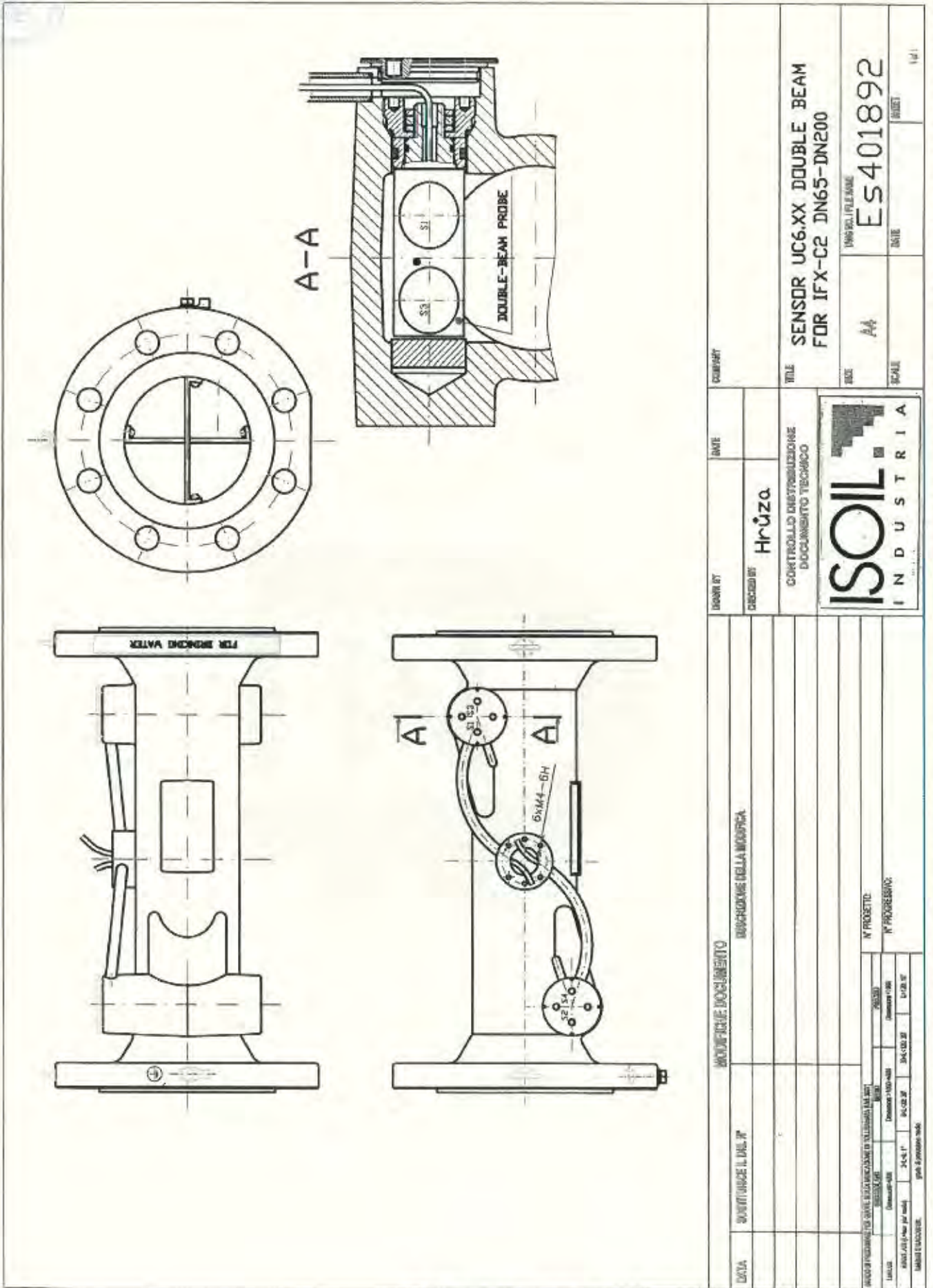


Figure 5: The dials of IFX-C1 and IFX-C2 water meter



DATA		AUTORITÀ DOCUMENTO		COMPART	
SCOTTIGLIONE S. DEL M°		PROSECCO DELLA MOLETTA		DATE	
				CROCE DI	
				Netrval	
				TITOLI	
				DISPLAY WITH FRONT LABEL	
				MATERIALE	
				M	
				ES401893	
				DATE	
				1 of 1	

MODELLO DI PRESSIONE (INDICAZIONE SULLA MANOPOLA DI TRASMISSIONE) MODELLO: 25x45 Dimensioni: 25x45		IP PROGETTO: IP PROSECCO	
MODELLO (senza perno): 25x45 Dimensioni (senza perno): 25x45		Dimensioni (con perno): 25x45 Dimensioni (con perno): 25x45	

CONTROLLO DISTRIBUZIONE DOCUMENTO TECNICO		ISOIL INDUSTRIA	
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