Honeywell

Operation and Service Manual for HERMetic UTImeter N Series Otex

Portable Gas Tight Electronic Gauging Device
Ullage - Temperature - Interface detector



Note 1: to identify the unit refer to section 2.
Note 2: before using the instrument, please read this book.
Note 3: this document is subject to changes without notice.

1. Table of contents

1. TABLE OF CONTENTS 2
2. GENERAL INFORMATION 4
   - 2.1 SHIPMENT NOTE 4
   - 2.2 INITIAL INSPECTION 4
   - 2.3 DOCUMENTATION DISCREPANCIES 4
   - 2.4 WARRANTY 4
   - 2.5 CERTIFICATION 5
   - 2.6 SPARE PARTS 5
   - 2.7 SERVICE AND REPAIR 5
3. LIST OF AUTHORIZED SERVICE STATIONS FOR HERMETIC PRODUCTS 6
4. RECOMMENDATION FOR SAFE USE 7
5. FUNCTIONS- KEY FEATURES 8
6. DESCRIPTION 9
   - 6.1 GENERAL 9
   - 6.2 ULTRA N SENSING PROBE 11
     - *6.2.1 Introduction 11*
     - *6.2.2 Ullage detection 11*
     - *6.2.3 Interface detection 12*
     - *6.2.4 Temperature measurement 12*
   - 6.3 TAPE 13
   - 6.4 READING INDEX 14
     - *6.4.1 UTImeter Otex standard version 14*
     - *6.4.2 UTImeter Otex visc version 14*
   - 6.5 TAPE CLEANER 15
   - 6.6 ADDITIONAL LOAD (OPTION) 16
     - *6.6.1 Viscous liquids (> 800 Cst) 16*
     - *6.6.2 Reference height and innage 16*
   - 6.7 OTHERS 16
7. OPERATION 17
   - 7.1 BASIC RULES CONCERNING THE 5-KEY CONTROL PAD 17
   - 7.2 SELECTING THE LANGUAGE 18
   - 7.3 TRANSLATION OF MESSAGES 19
   - 7.4 SELECTING THE TEMPERATURE SCALE 19
   - 7.5 SELECTING THE TEMPERATURE RESOLUTION 20
   - 7.6 ACTIVATING THE LED 21
     - *7.6.1 Temporary setting of the LED 21*
     - *7.6.2 Permanent setting of the LED 21*
   - 7.7 MUTING THE BUZZER 22
   - 7.8 BACKLIGHT 22
   - 7.9 CHECKING THE FUNCTIONS BEFORE USING THE INSTRUMENT 23
     - *7.9.1 Battery 23*
     - *7.9.2 Reading index 23*
     - *7.9.3 Temperature 23*
     - *7.9.4 Ullage 23*
     - *7.9.5 Interface 23*
   - 7.10 INSTALLATION OF THE INSTRUMENT 24
   - 7.11 ULLAGE / INTERFACE MEASUREMENT 24
   - 7.12 REFERENCE HEIGHT / INNAGE MEASUREMENT 25
   - 7.13 TEMPERATURE MEASUREMENT 26
8. CARE AND MAINTENANCE 27
   - 8.1 GENERAL CARE & CONSIDERATIONS 27
   - 8.2 CHECKING THE BATTERY 28
     - *8.2.1 Before starting gauging 28*
     - *8.2.2 During gauging 29*
   - 8.3 BATTERY REPLACEMENT 30
   - 8.4 TAPE REPLACEMENT 31
     - *8.4.1 Disconnecting the tape from the sensor ... 31*
     - *8.4.2 Disconnecting the tape from the electronic box 31*
     - *8.4.3 Disconnecting the tape from the reel axle 32*
     - *8.4.4 Removing the tape from the frame 32*
     - *8.4.5 Mounting the new tape 32*
   - 8.5 SENSING PROBE REPLACEMENT 33
     - *8.5.1 Disconnecting the old sensing probe 33*
     - *8.5.2 Connecting the new sensing probe 33*
   - 8.6 VISC OPTION-LOAD ASSEMBLY 33
   - 8.7 TAPE WIPERS REPLACEMENT 34

8.8 DISPLAY UNIT REPLACEMENT 34
8.8.1 Disconnecting the old display unit 34
8.8.2 Connecting the new display unit 34
8.9 BUTTON HANDLE REPLACEMENT 34
8.10 VERIFICATION AND CERTIFICATION OF TAPES 35
8.11 VERIFICATION AND ADJUSTMENT OF THE READING INDEX 35
8.12 TEMPERATURE VERIFICATION 36
8.12.1 Equipment required 36
8.12.2 Preparing the Ice Point bath 36
8.12.3 Checking the UTImeter 36
8.13 ULLAGE/INTERFACE VERIFICATION 37
8.14 STORAGE OF HERMetic DEVICES 37
8.15 TRANSPORTATION OF HERMetic DEVICES 37
8.16 RECYCLING OF HERMetic DEVICES 37

9. TROUBLE SHOOTING 38
9.1 SAFETY WARNING 38
9.2 POWER SUPPLY TROUBLES 38
9.3 TRANSMISSION TROUBLES 38
9.4 ULLAGE AND/OR INTERFACE TROUBLES 39
9.5 TEMPERATURE TROUBLES 39
9.6 VISUAL INSPECTION FOR DAMAGED OR MISSING PARTS 39
9.7 COATED ALUMINIUM PARTS 40
9.8 WINDING ACTION BECOMING STIFF 40
9.9 ELECTRICAL CHECKING OF THE TAPE ASSEMBLY 40

10. SPECIFICATIONS 41

11. SPARE PARTS 42
11.1 HOW TO PROCEED 42
11.2 LIST OF PARTS DESCRIPTIONS 42
11.3 SPARE PARTS DRAWINGS 44

2. General information

2.1 Shipment note

The following parts should be included in the shipment:

- 1 instrument fitted out with one battery in the display.
- 1 set of 4 Allen keys: 1.5, 2, 2.5 and 3 mm.
- 1 operation and Service Manual.

2.2 Initial inspection

Check the contents of the shipment for completeness and note whether any damage has occurred during transport. Carry out the “Initial test before installing the instrument” to verify the good functioning. If the contents are incomplete or if there is damage, do not use the device; a claim should be filed with the carrier immediately; and Enraf Tanksystem SA, or Honeywell Authorized Service Organization, should be notified at tanksystem@honeywell.com to facilitate the repair or replacement of the instrument.

2.3 Documentation discrepancies

The design of the instrument is subject to continuous development and improvement. Consequently, the instrument may incorporate minor changes in detail from the information contained in the manual.

2.4 Warranty

The instrument is covered by warranty period mentioned in Order Acknowledgement document. The Vendor undertakes to remedy any defect resulting from faulty design materials or workmanship. The Vendor’s obligation is limited to the repair or replacement of such defective parts by his own plant or one of his authorized service stations. The Purchaser shall bear the cost and risk of transportation of defective parts and repaired parts supplied in replacement of such defective parts.

When returned to Enraf or any of its agreed Service Stations equipment must be contamination-free.
If it is determined that the Purchasers equipment is contaminated, it will be returned to the Purchaser at the Purchasers expense. Contaminated equipment will not be repaired, replaced, or covered under any warranty until such time that the said equipment is decontaminated by the Purchaser.

The Purchaser shall notify by email or in writing of any defect immediately upon discovery, specifying the nature of the defect and/or the extent of the damage caused thereby.

Where no other conditions have been negotiated between the Vendor and the Purchaser “General Conditions 188” of United Nations shall apply.

This instrument has been certified as Intrinsically Safe Instrumentation for only those classes or categories of hazardous areas stated on the instrument label, bearing the mark of the applicable approval authority. No other usage is authorized.

Unauthorized repair or component replacement by the Purchaser will void this guarantee and may impair the intrinsic safety of the instrument. It is not allowed to repair electronic circuits.

In no event shall Enraf be liable for indirect, incidental, or consequential loss or damage or failure of any kind connected with the use of its products or failure of its products to function or operate properly.

Enraf do not assume the indemnification for any accident or damage caused by the operation of its product and the warranty is limited to the replacement of parts or complete goods.

2.5 Certification

Enraf is an ISO 9001 certified company by Intertek and MED-D by Det Norske Veritas Certification GmbH.

The equipment has been approved for the electrical intrinsic safety by the following authorities:

IECEx

Ex ia IIB T4 Ga / -20°C < Ta < +50°C
/ -40°C ≤ Tp ≤ +90°C
Standards used:
IEC 60079-0:2017,
IEC 60079-11:2011

ATEX

II 1 G Ex ia IIB T4 Ga / -20°C ≤ Ta ≤ +50°C
/ -40°C ≤ Tp ≤ +90°C
Standards used:
EN60079-0:2018
EN60079-11:2012
Regarding product compliance against standards updates or new standards, please refer to the Declaration of conformity.

FM Approvals

CL I, DIV 1, GP C&D, T4 Tamb. 50 °C and
CL I, ZN 0, AEx ia IIB T4 Tamb. 50 °C
Maximum process Temperature +90°C

If you need a copy of any of these certificates, please contact:

Manufacturer Address:

Enraf B.V.
Delftechpark 39, 2628XJ Delft, Netherlands
+31152701100
enraf-nl@honeywell.com

Business Address:
Enraf Tanksystem SA
ZA La Pièce 16, 1180 Rolle, Switzerland
+41 21 695 30 10
tanksystem@honeywell.com

2.6 Spare parts

When ordering spares identify the spare part by TS number and description. Refer to section “Drawings”.

Some spares might be repairable, in this case send the part(s) to any authorized service center or to the factory.

In case of urgency, complete replacement units can be made available. Contact the factory or nearest Service Station for details.

2.7 Service and Repair

We are always available at a port nearby for quick service support from a Honeywell Authorized Service Station. They also provide easy and non-stop availability of genuine HERMetic spare parts, which will help you sustain intrinsic safety certification as per ATEX guidelines. The list of Honeywell-authorized service stations is shown on the next page. As we keep expanding our network, changes could happen to this list. For the latest updated list of Honeywell Authorized service stations, please visit the direct link below to our website:https://process.honeywell.com/us/en/initiative/honeywell-authorized-parts-service

Please contact Honeywell Authorized service stations directly for service support for all HERMetic products. For any further assistance or support, please e-mail us at tanksystem@honeywell.com.

The customer is responsible for any freight and customs clearance charges. If units are sent on a "freight collect" basis, the charges will be invoiced to the customer.

When returning units or parts for repair to the service station, please provide the following important details:

- The 7-digit serial number (which begins with the letters "GN" or “2N” or “RN” or “ON” followed by 5 digits) is printed on the identification plate as shown in Figure 6-1.

- The IMO number of the ship from which the unit is sent to the service station for repairs.

When returned to Enraf equipment must be contamination-free. If it is determined that the customers equipment is contaminated, it will be returned to the customer at the customers’ expense. Contaminated equipment will not be repaired until such time that the customer decontaminates the said equipment.

3. List of Authorized Service Stations for HERMetic Products

Country	Name of Service Station	Address	Contact Details	Ports of Operation
Brazil	Tridente Brasil	Rua Jeronimo de Mendonça, 186, Bom Retiro, São Gonçalo, RJ, Brazil - 24722-040	Tel 1: +55 21 2233 1489 Tel 2: +55 21 999 833 190 e-mail 1: services@tridente.com.br e-mail 2: ope@tridente.com.br	All Ports in Brazil
Canada	Pylon Atlantic	A Division of Pylon Electronics 31 Trider Crescent, DARTMOUTH, NS B3B 1V6	Tel 1: +1-902-932-4139 e-mail 1: dartpurchasing@pylonelectronics.com	Vancouver, Montreal, Prince Rupert, Halifax, Saint John, Quebec, Port Cartier, Sydney, Toronto, Hamilton
Germany	Christian Bindemann Group of Companies GmbH & Co. KG	Gaertnerstrasse 81G, D-25469 Halstenbek (Hamburg), Germany	Tel 1: +49(0)40-57148252 Tel 2: +49(0)40-5703033 e-mail 1: service@bindemann-group.com e-mail 2: info@bindemann-group.com	All German sea ports: Rostock, Luebeck, Kiel (incl. Kiel Canal), Flensburg, Husum, Brunsbuettel, Hamburg, Cuxhaven, Bremerhaven, Bremen, Wilhelmshaven, all others on special request
Greece	N.M Aretos E.E-Spanmarine	86, Filonos Str., 2Nd Floor Gr18536 – Piraeus Athens – Greece	Tel 1: +30-2104294498 Tel 2: +30-2104294529 e-mail 1: post@spanmarin.gr	Piraeus, Thesalloniki. Heraklion, Patra, Vatika, Lavrion, Elefsis. Agioi Theodoroi, Syros
Japan	Daiwa Hanbai Corporation Ltd.	2-10-31, Mitejima, Nishi-Yodogawa-ku, Osaka 555-0012	Tel 1: +81-6-64714701 e-mail 1: m-sales@daiwa-hanbai.jp	Osaka port, Kobe port
Mexico	Urban Del Golfo S.A. De C.V.	Rfc: Ugo-050422-Mw3 Julian Carrillo No 709 Nte. Col. Los Mangos Cd. Madero Tamps. Mexico Cp. 89440	Tel 1: +52(833)217-0190 e-mail 1: urbansa@prodigy.net.mx	All Ports in Mexico
Netherlands Belgium Luxembourg	B.V. Technisch Bureau Uittenbogaart	Innsbruckweg 43 NL-3047 AG Rotterdam Netherlands	Tel 1: +31(0)88-368-00-00 Tel 2: +31(0)88-368-00-23 e-mail 1: info@tbu.nl	Rotterdam, Amsterdam, Dordrecht, Eemshaven, Ijmuiden, Terneuzen, Vlissingen Antwerp, Gent, Zeebrugge
Panama	Panamatek Group	Balboa Ancon, #2364, Panama City, Panama	Tel 1: +507-389-0786 Tel 2: +507-6675-5533 e-mail 1: service@panamatek.com	All Ports in Panama.
Portugal	OceanControls, Lda	Rua Jorge Croner Vasconcelos, N8A, 2855-596 Corroios, Portugal	Tel 1: +351-966047474 Tel 2: +351-937907935 e-mail 1: service@oceancontrols.pt	Lisbon, Setúbal, Sines, Aveiro, Leixões, Viana do Castelo
Singapore	Hubbell International (1976) Pte Ltd	322 Thomson Road Singapore 307665	Tel 1: +65-62557281 Tel 2: +65-62550464 e-mail 1: hubbell@hubbint.com e-mail 2: hubbell@singnet.com.sg	Singapore
South Korea	Worldocean Co.,Ltd.	Zip code: 48939, Rm 1403, Busan Trade Center 11, Chung-Jang Daero, Jung-Gu, Busan. South Korea	Tel 1: +82-51-462-2555 Tel 2: +82-51-462-2554 e-mail 1: info@worldocean.co.kr	Busan. Ulsan. Yosu. Pyeongtaek. Daesan. Pohan. (every port in South Korea)
Spain Gibraltar	Cj Services Strait Of Gibraltar S.L.	C/ Mar Mediterráneo nº 15 Polígono empresarial las marismas de, 11379 Palmones, Cádiz, Spain	Tel 1: +34-856-090-530 Tel 2: +34-634-540-870 e-mail 1: info@cjservices.es	Algeciras,Malaga,Huelva,Cartagena,Valencia,Barcelona,Bilbao,Coruña, Islas Canarias,Ceuta,Gibraltar. (Todos los puertos Españoles y Gibraltar)
Sweden	Instrumentkontroll Bessmann AB	Varholmsgatan 1 414 74 Göteborg Sweden	Tel 1: +46(0)735-13-26-03 e-mail 1: info@instrumentkontroll.se	Gothenburg, Ports at Norway, Denmark, Finland, Estonia, Latvia, Lithuania
Turkey	Yedi Deniz Malzeme ve Güvenlik A.Ş.	Gebze Organize Sanayi Bölgesi, Pelitli Köyü Yolu Üzeri, Biren Çiftliği No.90 41400 Gebze / Kocaeli - Türkiye	Tel 1: +90-535-321-16-63 Tel 2: +90-532-738-07-71 e-mail 1: servicestation@yedideniz.net e-mail 2: dmgistanbul@yedideniz.net	İstanbul, Ambarlı, Antalya, Bandırma, İskenderun, İzmir, İzmit, Mersin, Samsun, Sinop & Trabzon
UAE	M/S Maritronics	AWTAD Tower, NBQ Bldg, M1 Floor, Room No : 103, Near Burj Al Jaabir, Opp. FGT, Hamad Bin Abdulla Road, Al Gurfa, Fujairah-9476, UAE.	Tel 1: +971-501158492 Tel 2: +971-505570854 e-mail 1: marineservice.dubai@centena.com	Fujairaj, Khorfakhan, Sharjah Hamria Port, Dubai Maritime City, Jebal Ali
UK Ireland	Safety Gear Store Ltd.	Safety Gear Store Ltd, Meir park, Whittle Road, Stoke on Trent, Staffordshire, ST3 7TU	Tel 1: +44-0800-678-5708 e-mail 1: sales@safetygearstore.co.uk	All Ports in UK and Ireland
USA / Texas	Honeywell Hermetic	4522 Center Street Deer Park, TX 77536	Tel 1: +1-281-9301777 Tel 2: 1800-900-1778 Toll Free e-mail 1: hermetic@honeywell.com	Located in Gulf Coast servicing all ports in USA
Singapore India Nigeria	Swift Marine Tech Services Pte. Ltd.	7 Soon Lee Street #03-40 ISpace, Singapore - 627608	Tel: (65) 6913-0263 HP: +65-9890-3047 E-mail 1: admin@smtssg.com E-mail 2: service@smtssg.com	Singapore, India, Nigeria
China	Xiamen Jielian Equipment Technology Co., Ltd.	No. 33, Xizaiwei Xinmin, Tongan District, Xiamen, Fujian, China	Phone: +86 18050059662 Tel: +86 (0)592 7029662 E-mail: xmjielian@163.com	China

To view updated list of Honeywell Authorized service station, please visit below link or scan this QR code ➔
https://process.honeywell.com/us/en/initiative/honeywell-authorized-parts-service

For any further clarifications or assistance, please write to us on tanksystem@honeywell.com

4. Recommendation for safe use

According to TSB_7030_E, Issue 1 of November 18, 2014

1. This Operation and Service Manual is a guide to help the user to operate the device safely and correctly.
2. Nevertheless, the maker disclaims all responsibility and liability for damage resulting from the use of the equipment regardless of the cause of the damage.
3. Before using the device, ensure the device fits with the gauging conditions (tank pressure, product, temperature…). Refer to device specifications.
4. This device is certified to penetrate a “Zone 0” (explosible area) when connected to a valve. The opening of the valve may generate risk of flammable gas release or flame entrance. Ensure safety conditions are met before use.
5. Attention is drawn to the possible hazard due to electrostatic charges which may be present in the tank. This may happen with static accumulator liquids, i.e. liquids which have low conductivity of 50 picoSiemens/metre (pS/m) or less.
6. It is very important that the instrument is grounded to the tank before the probe is introduced into the tank and remains grounded until after complete withdrawal from the tank.
   - 6.1. If the instrument is installed with the quick connect coupler, grounding is affected through the quick connect coupler and the mating nipple of the valve provided that these parts are kept clean and free from corrosion to guarantee electrical conductivity. If a grease is used for this purpose, it must be one which contains graphite.
   - 6.2. If the instrument is not connected to the mating deck valve, the instrument must be also earthed by means of the grounding cable and clamp.
7. It is anticipated that the user will have specific operating methods laid down to ensure safety when using this type of apparatus. In this case the user’s instructions shall be strictly observed.
8. In the absence of such instructions the following should be noted:
   - 8.1. If a metal sounding pipe is fitted beneath the deck valve or tank is inserted, then ullaging, etc. is permissible at any time with no restriction.
   - 8.2. If there is no sounding tube or tank is not inerted, the following precautions shall be taken:
     - 8.2.1. If the cargo is not a static accumulator liquid, i.e. its conductivity is more than 50 pS/m, then ullaging is permitted provided that the instrument is properly grounded and earthed before the probe is inserted into the tank and remains earthed until the probe has been removed from the tank.
     - 8.2.2. If the cargo is a static accumulator liquid, i.e. its conductivity is less than 50 pS/m, then ullaging is permitted provided that:
       - 8.2.2.1. The instrument is properly grounded and earthed before the probe is inserted into the tank and remains earthed until the probe has been removed from the tank.
       - 8.2.2.2. The apparatus is not introduced into a tank until at least 30 minutes have elapsed after completion of any loading operation or stopping the injection of inert gas.
   - 8.3. For further guidance refer to the latest edition of the International Safety Guide for Oil Tankers and Terminals (ISGOTT) or consult the appropriate Legislative Authority for the installation.
9. **Warning:**
   - 9.1 Substitution of components may impair the intrinsic safety. Only use the device for the intended purpose as described in this manual. For maintenance, use genuine spare-parts exclusively. Non genuine spare-parts may impair the intrinsic safety of the device.
   - 9.2 Change of battery must be carried out in safe area only (nonflammable atmosphere); Use only an approved battery.
   - 9.3 To prevent ignition hazard, avoid impact or friction of the device aluminum parts.
10. This product and its use are / may be related to international, national, local or company regulations or standards. It is the customer / user responsibility to ensure that the way to use the device complies with such applicable regulations or standards.
11. This device is a portable product. It must not be permanently installed on the tank and must be disconnected after use and stored clean in a safe and dry area.

5. Functions - Key Features

This HERMetic instrument is a portable multiple functions gauging system that is designed to perform under completely closed conditions in a single operation 3 measurements:

a) Ullage (outage). Optionally innage is available[1].

b) Oil/water Interface Level.

Tape resolution: 1 mm (*1/16"*)
Tape accuracy: ±1.5 mm for 30 m
(±*1/16*" approx. for 100 feet)
Ullage/interface detection accuracy:
±2 mm (±*0.08*" approx.)
Minimum detectable tank bottom interface or liquid level:
4 mm (0.16" approx.).

c) Temperature by continuous reading at any level.

Ambient temperature range: -20°C to 50°C
(-4°F to 122°F)

Sensor measurement range: -40°C to
90°C (-40°F to 194°F)

Resolution: 0.01° or 0.1°, selectable

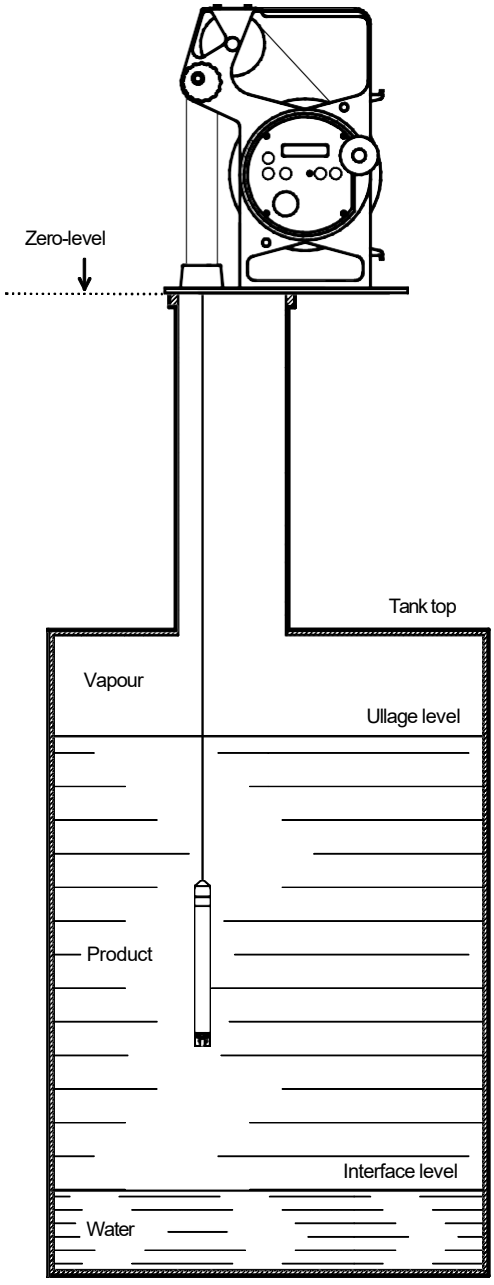
Accuracy over calibration range: ±0.1°C (0°C to 70°C);
±0.2°F (32°F to 158 °F)

Temperature reading: °C or °F, selectable.

This HERMetic device meets the requirements of API MPMS Chapter 7 2001, table 3, ISO 4268 and IP PMM Part IV.

Thanks to the small diameter of the sensing probe this instrument can be used with valves of diameters down to 25 mm (1") only.

[1] An additional device, usable with 2" valves only, can be provided that allows Reference Height and Innage measurement. Available on "Visc" models.



6. Description

6.1 General

Each HERMetic instrument is individually identified with a 7 digits serial number starting with the letter GN, 2N, RN or ON, for example ON10058. This serial number is printed on the identification plate, as shown in Figure 6-1.

The HERMetic instrument is fitted with an ULTRA N sensing probe.

The unit emits control beep, continuous beep, and intermittent beep.

When the sensing probe is surrounded by air, a control beep occurs every 2 sec.

When the sensing probe is in contact with any petroleum product, the beep is continuous.

When the sensing probe is in contact with water the beep is intermittent.

Control beep • •
Continuous beep • • • • • • • • • •
Intermittent beep • • • • • •

A light signal (LED) can also be activated that blink at the same frequency as the buzzer tones. This can be useful in noisy environments or at night.

A backlight can be used at night to light up the display.

The HERMetic instrument is powered by a 9 Volt battery stored in the electronic terminal named instrument unit. Current consumption is very low, ensuring long operation without battery replacement. A continuous tone means that the battery needs replacement. If the battery power is too low, it is no longer possible to read the temperature.

Maintenance is easy because the design is modular and allows quick exchange of parts.

See also Figure 6-2 to get to know the equipment.

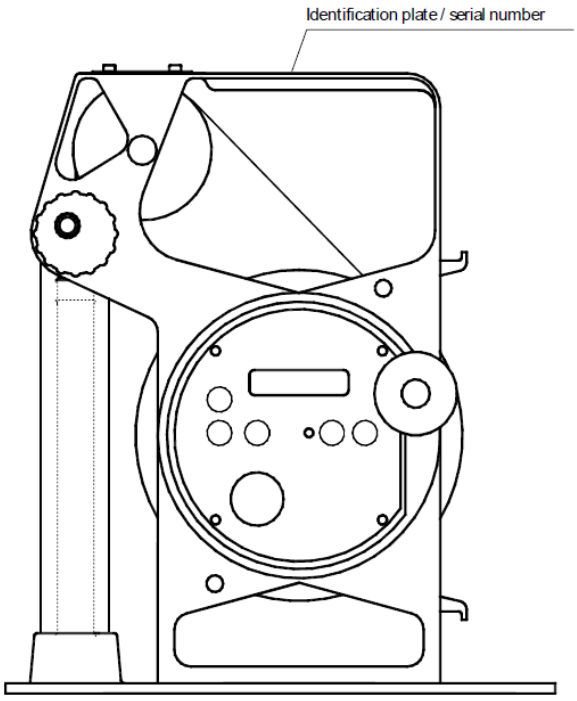


Figure 6.1

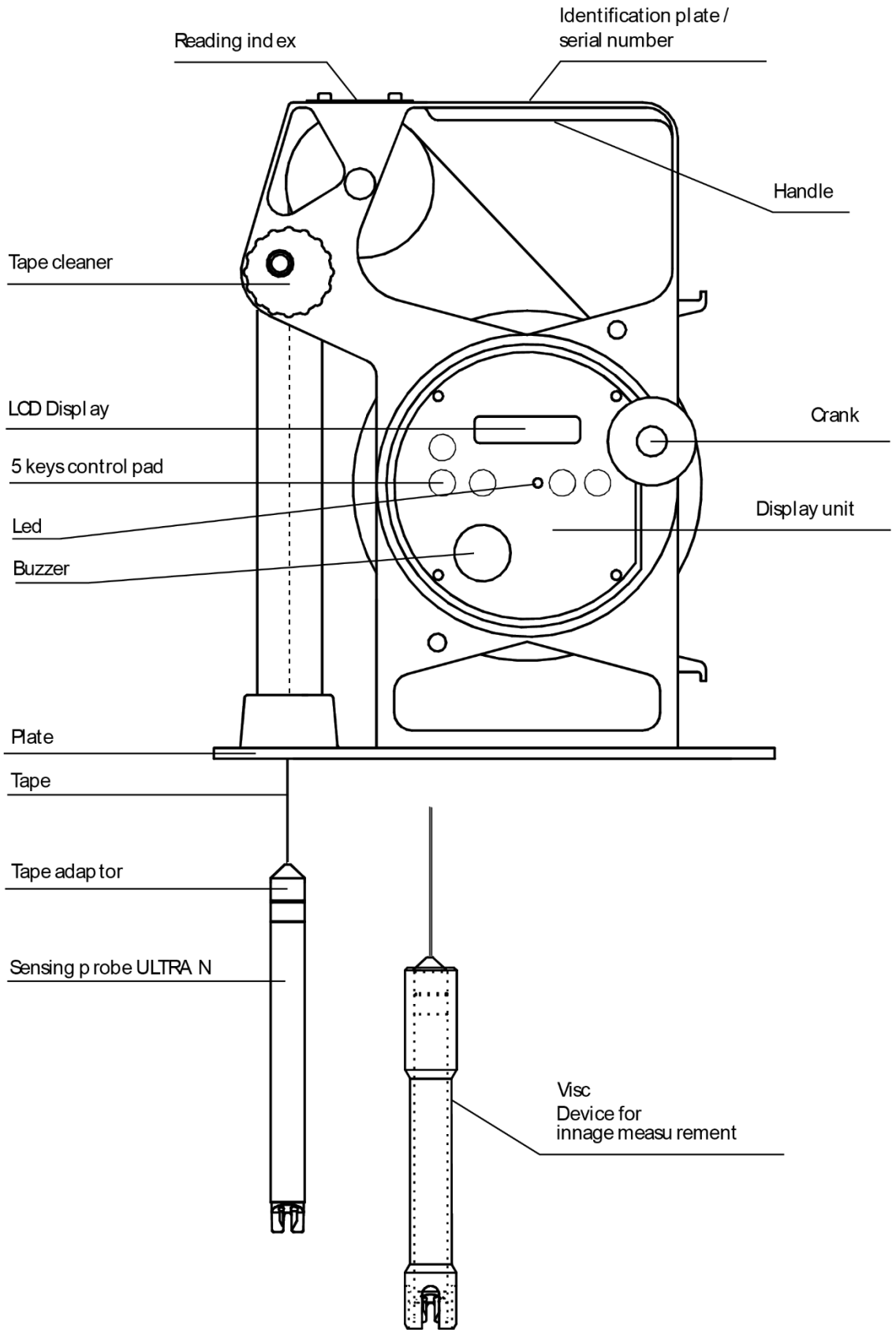

Reading index
Identification plate / serial number
Handle
Tape cleaner
LCD Display
Crank
5 keys control pad
Led
Display unit
Buzzer
Plate
Tape
Tape adaptor
Sensing probe ULTRA N
Visc
Device for
innage measurement

Figure 6-2

6.2 ULTRA N sensing probe

6.2.1. Introduction

The ULTRA N sensing probe consists of a stainless-steel tube terminated by a high-tech plastic head which cannot be removed from the tube. The sensing probe includes an ultrasonic liquid level sensor, a temperature sensor and a conductivity electrode. The sensitivity for ullage and interface measurement is not adjustable. The temperature measurement is calibrated at the factory and does not require subsequent adjustment.

6.2.2. Ullage detection

The ullage detector consists of two piezoceramic plates and electronic circuits. When the sensor head is immersed in a non-conductive liquid (oil or petroleum), the emitted ultrasonic signal is detected by the receiver, coded, and sent to the instrument unit which activates the buzzer with the continuous beep.

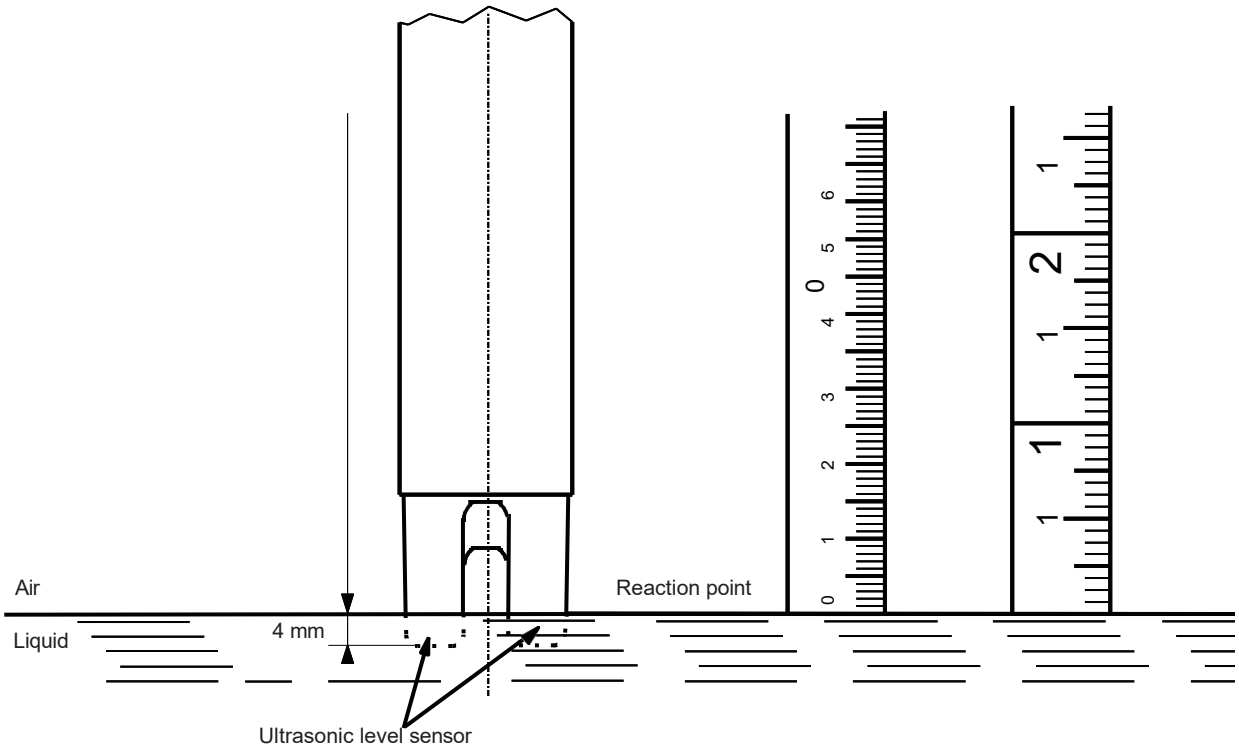


Figure 6-3

The reaction point is located 4 mm (5/32”) from the sensor bottom and identical with the zero-point of the tape graduation.

6.2.3. Interface detection

The principle consists of a conductivity measurement between an active electrode and a grounded electrode. When the liquid is conductive (as water), the ullage sensor detects the presence of the liquid as well and the conductivity electrodes and associated electronic circuits modulate the coded signal to generate the intermittent beep.

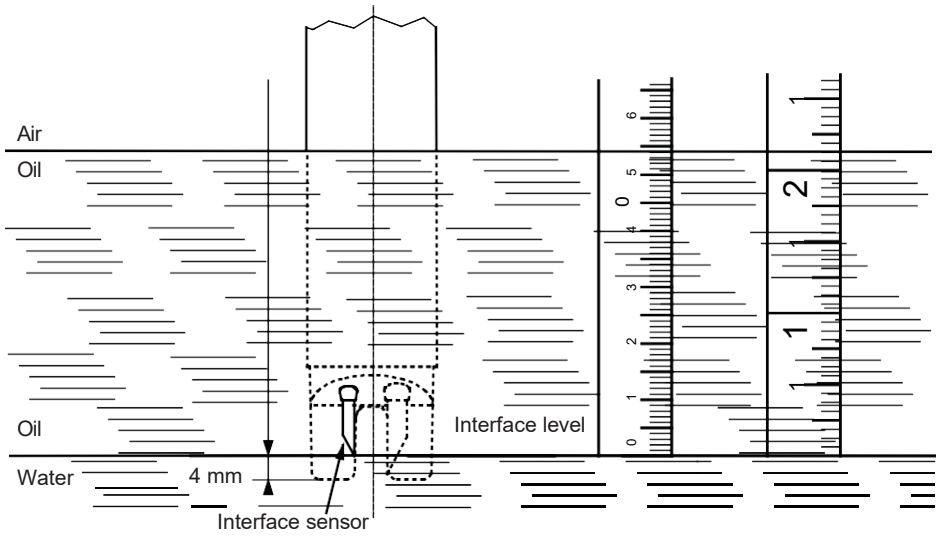


Figure 6-4

The reaction point is located 4 mm (5/32”) from the sensor bottom and identical with the zero-point of the tape graduation.

6.2.4. Temperature measurement

The sensing element is a Platinum Resistance Temperature Detector (RTD) element. The element is in the temperature electrode, which is filled in with a heat transfer compound paste to reduce the response time.

The RTD element signal is digitized, and then all errors (offset, non-linearity and drift) are corrected and compensated by the micro-controller located in the sensor probe. The RTD element characteristics are stored in the sensor memory and are dedicated to one sensor. For this reason, changing a sensor does not require a new calibration.

All data are serialized and sent by the micro-controller to the Display Unit.

Temperature settings (resolution, scale) are easy to select by pressing the 5-key control panel.

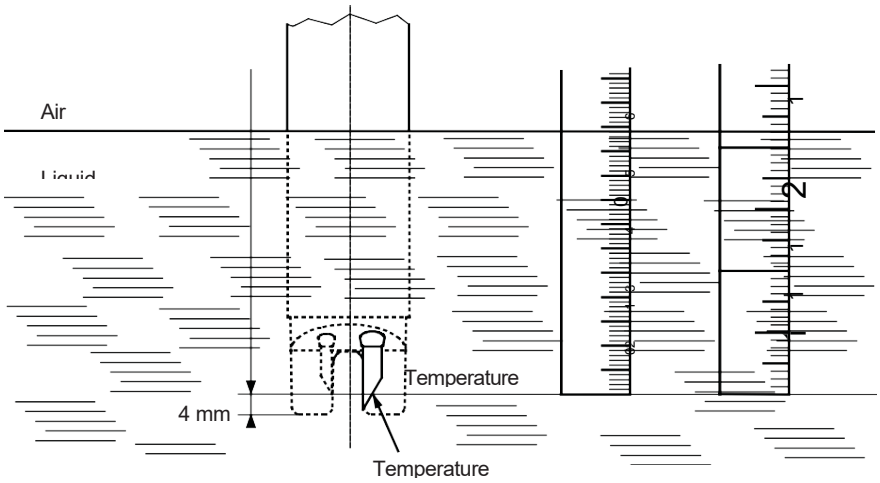


Figure 6-5

The reaction point is located 4 mm (5/32”) from the sensor bottom and identical with the zero-point of the tape graduation.

6.3 Tape

The ETFE (TEFZEL) coated tape provides 3 main functions:

- It holds the sensing probe.
- It is graduated and therefore makes it possible to determine. The distance between the reaction points and the reading index. If the reading index is set up at the zero-ullage level, the reading of the tape is identical to the ullage.
- It contains 2 wires for transmitting the signal and the power between the display unit and the probe. The steel tape itself is used as a grounding wire between the sensing probe tube and the display unit.

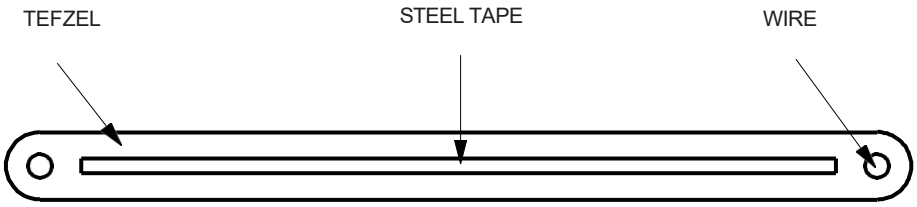


Figure 6-6

The standard graduation is a double side type that shows the metric graduation on one side and the inch one on the other side. The tape is mounted on the equipment according to the need.



inch side metric side

Figure 6-7

6.4 Reading index

6.4.1. UTImeter Otex standard version

The reading index shows “zero” when the reaction point of the sensing probe coincides with the bottom of the plate. As the reaction point is 4 mm recessed from the probe bottom the reading index shows zero when the sensing probe is 4 mm below the plate, as shown on Figure 6-8.
For more details refer to section 8.11 Verification and adjustment of the reading index.

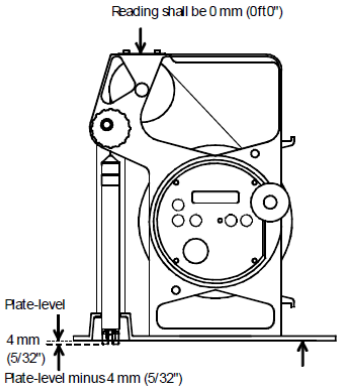
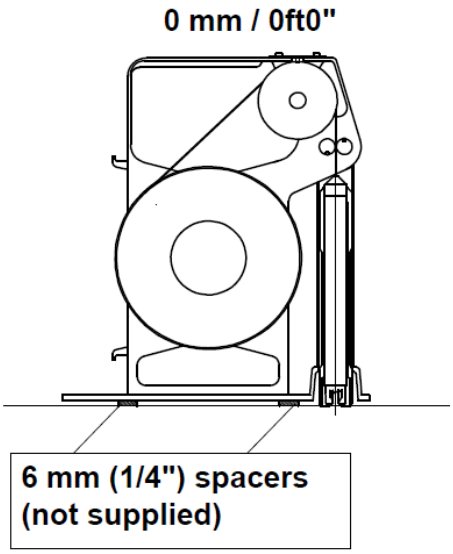


Figure 6-8

6.4.2. UTImeter Otex visc version

The reading index shows “zero” when the reaction point of the sensing probe coincides with the bottom of the plate. As the reaction point is 6 mm recessed from the additional load bottom the reading index shows zero when the sensing probe is 6 mm below the plate.
For more details refer to section 8.11 Verification and adjustment of the reading index.



If the instrument is installed in such a way that the bottom of the plate is at the same level as the zero-ullage reference level then the reading of the tape corresponds to the ullage when the reaction point of the sensing probe is positioned at the liquid level, as shown on Figure 6-9.

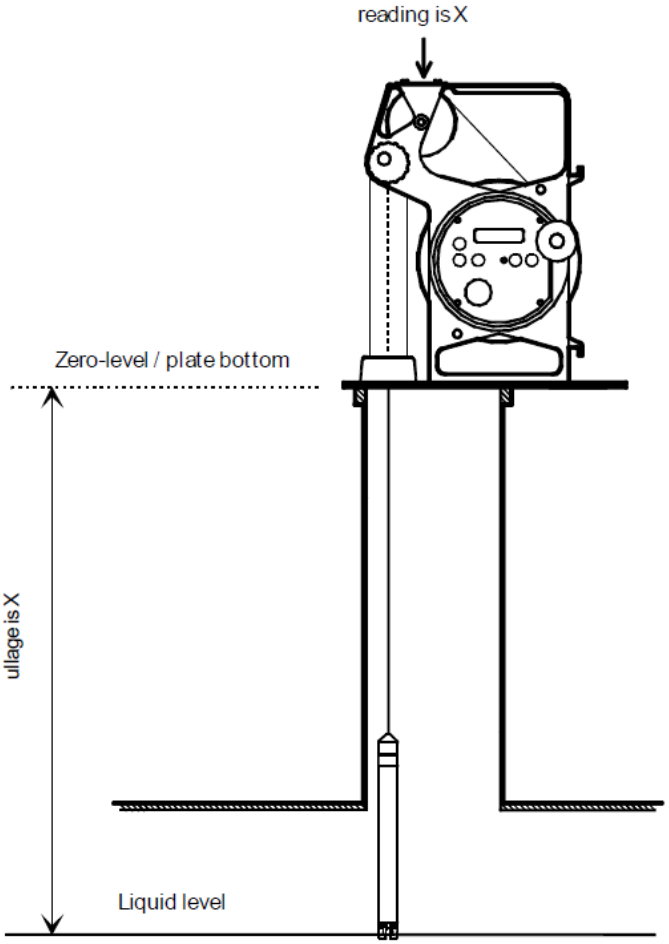


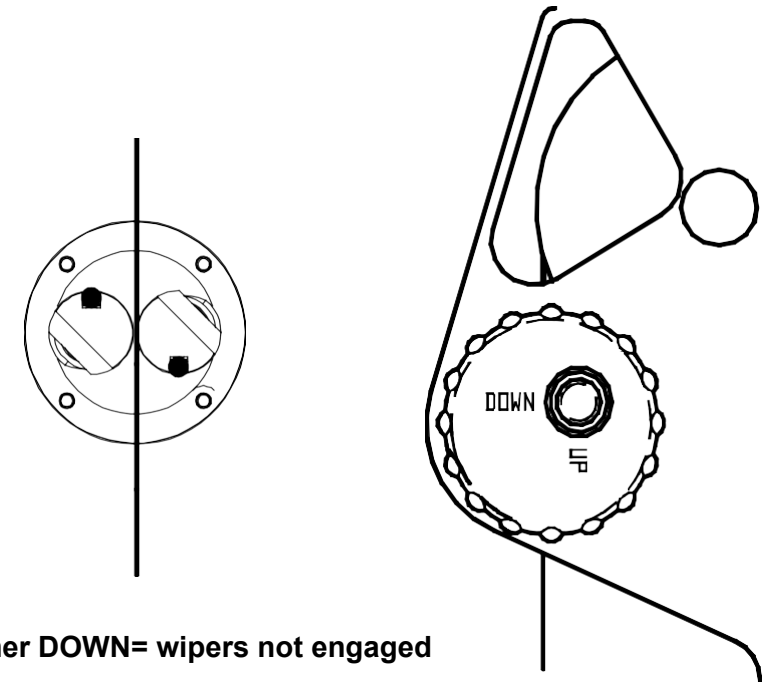
Figure 6-9

If the bottom of the plate is positioned below or above the zero-reference level a positive or negative correction of the tape is necessary.

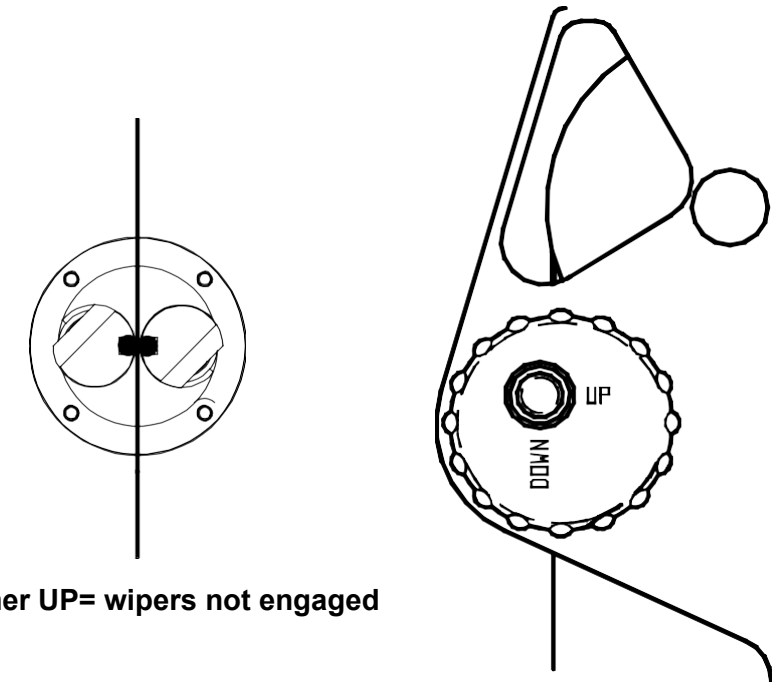
6.5 Tape cleaner

This HERMetic equipment is fitted with a tape cleaner that helps drain the liquid back to the tank when rewinding the tape. It is very easy to operate:

- Position “DOWN”: the wipers are not working; the tape is free.
- Position “UP”: the wipers are cleaning the tape. Refer to Figure 6-10.



Tape cleaner DOWN= wipers not engaged



Tape cleaner UP= wipers not engaged

Figure 6-10

6.6 Additional Load (option)

An additional load (see Figure 6-2) on the sensing probe can be provided for one of the following reasons.

6.6.1. Viscous liquids (> 800 Cst)

For gauging viscous liquids, the load can help the sensing probe in penetrating the liquid and in keeping the tape straight.

6.6.2. Reference height and innage

For measuring the reference height of a tank and innages the load allows the sensing probe to touch the dip/datum plate.

6.7 Others

The tape is coiled on the axle which also holds the electronic box and the display unit.

The axle is assembled to the electronic box and can be locked at discrete positions by means of a stopping mechanism in the crank. Pull the crank to free the stopping mechanism.

The frame and the plate are made in aluminum coated with polyamid PA 11 (RILSAN®).

7. Operation

7.1 Basic rules concerning the 5-key control pad

Apart from the “ON” / “OFF” keys that are self-explanatory, there are 3 other keys that help in customizing the unit:

- Pressing “+” allows to scroll down the menu, a pointer show the actual menu you have selected.
- Pressing “– “allows to exit a menu.
- Pressing “enter” (later named “E”) allows you to enter a specific menu.

The small pointer displayed on the left shows the active setting.

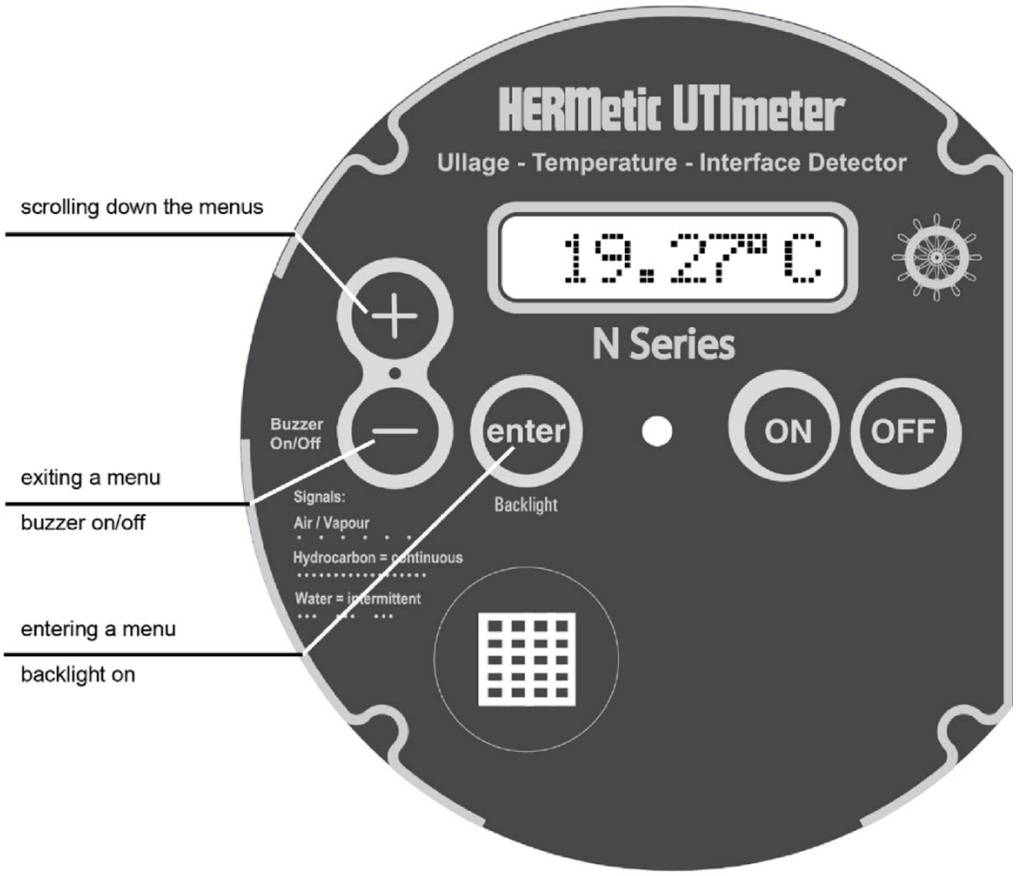


Figure 7-1

7.2 Selecting the language

English, German, or French languages can be selected by following the sequences described in Figure 9-2.

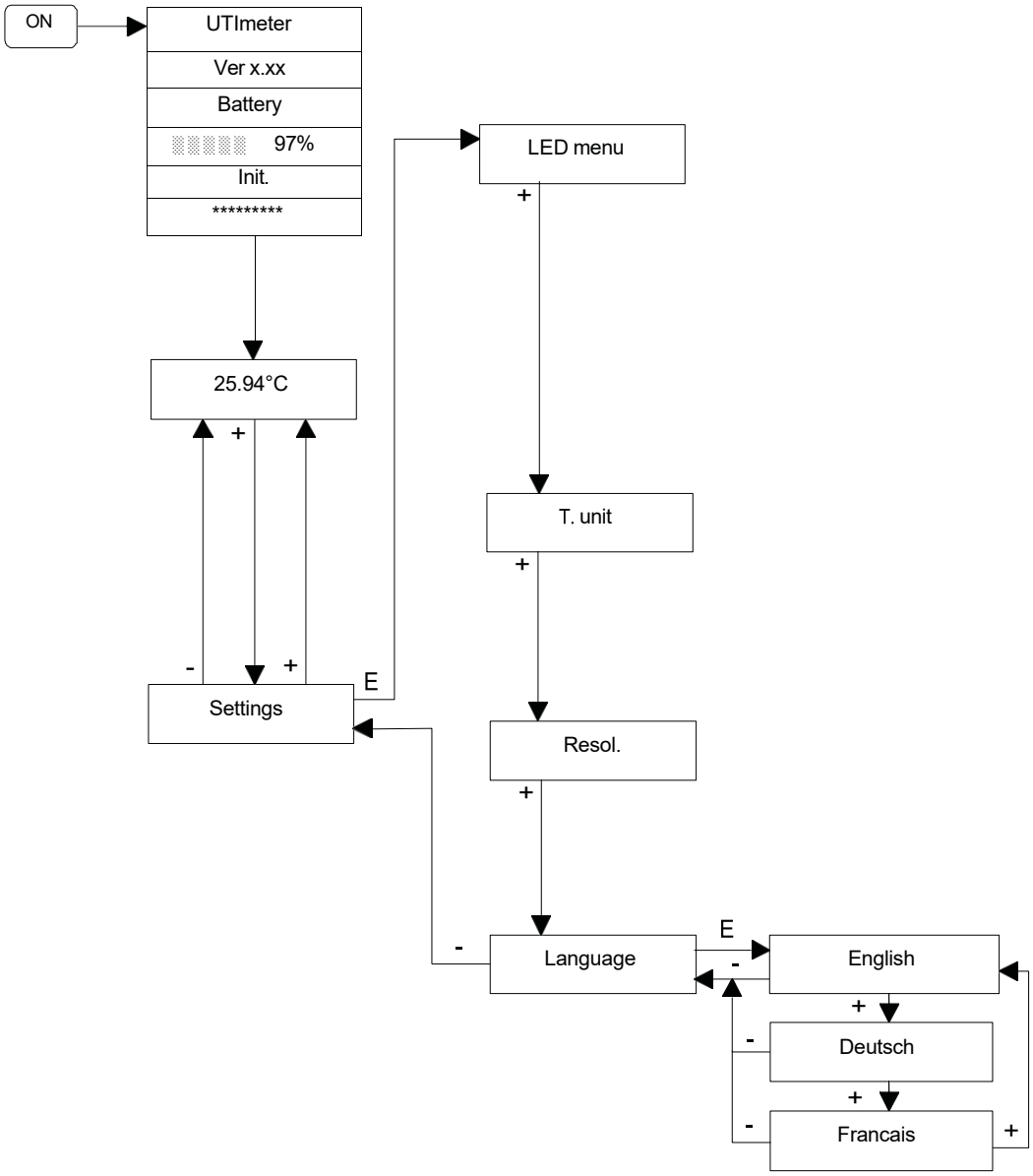


Figure 7-2

- Switch on the equipment,
- Wait until the temperature is displayed,
- Press on "+" to enter the settings menu,
- Press on "enter", "LED menu" is displayed,
- Press on "+"; "T. unit" is displayed,
- Press on "+", "Resol." is displayed,
- Press on "+", "Language." is displayed,
- Press on "enter",
- Select the language by pressing on "+" one or more times, the display shows the language selected,
- Press "-" two times to come back in measurement mode.

The new setting is stored in the permanent memory.

7.3 Translation of messages

English	German	French
Language	Sprache	Langues
No Msg	KeineMel	LigneHS
Error	Fehler	Erreur
English	Deutch	Francais
Invalid	Ungültig	Invalide
Unknow	Unbekan.	Inconnu

7.4 Selecting the temperature scale

The temperature can be displayed either in Celsius or Fahrenheit degrees. Refer to Figure 7-3.

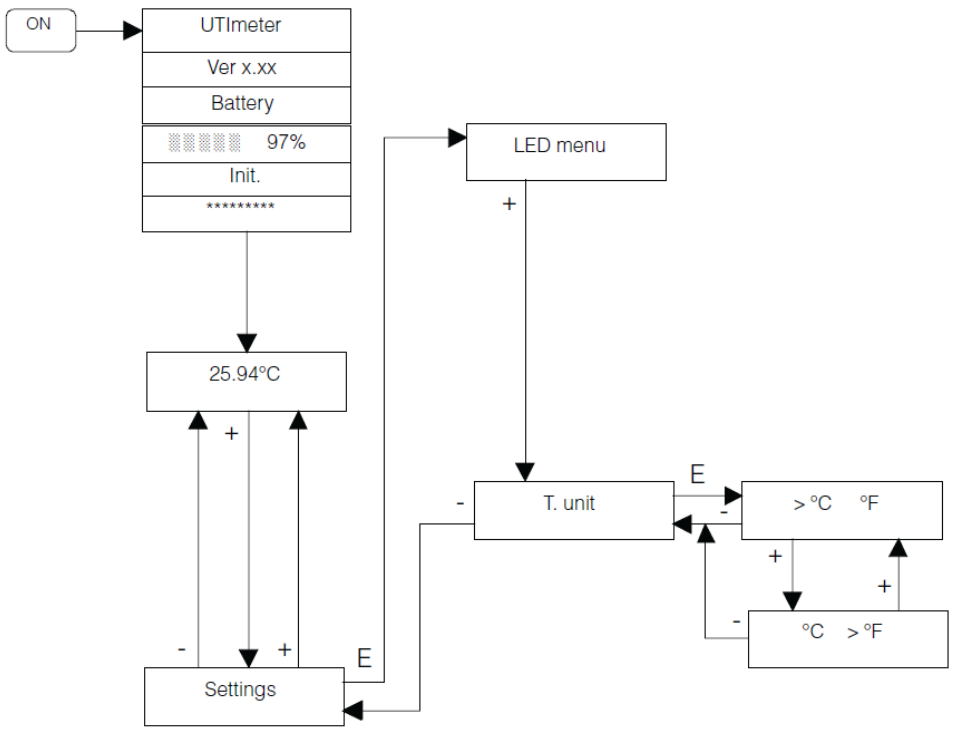


Figure 7-3

- Switch on the equipment,
- Wait until the temperature is displayed,
- Press on "+" to enter the settings menu,
- Press on "enter", "LED menu" is displayed,
- Press on "+"; "T. unit" is displayed,
- Press on "enter",
- Select the scale by pressing on "+" one or more times, the pointer shows the scale selected,
- Press "-" two times to come back in measurement mode.

The new setting is stored in the permanent memory.

7.5 Selecting the temperature resolution

The temperature reading can be given with 1 or 2 digits after the dot. Select the appropriate resolution as shown on Figure 7-4.

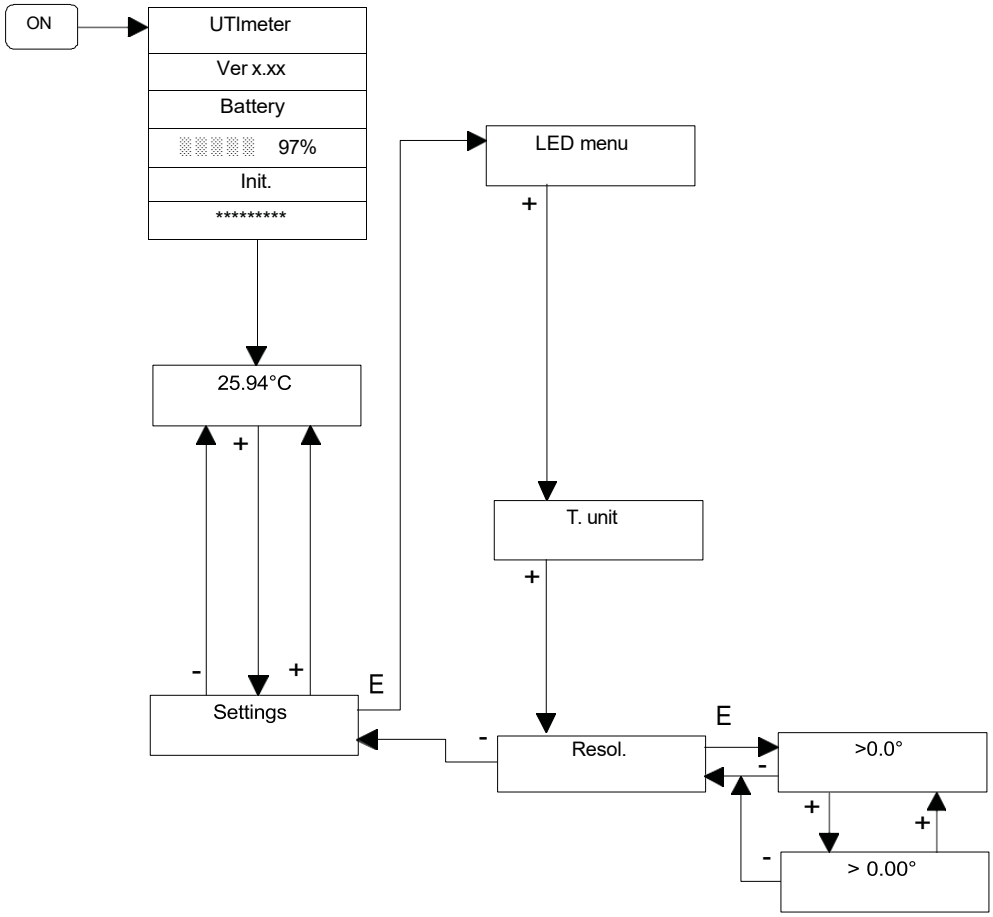


Figure 7-4

- Switch on the equipment,
- Wait until the temperature is displayed,
- Press on "+" to enter the settings menu,
- Press on "enter", "LED menu" is displayed,
- Press on "+"; "T. unit" is displayed,
- Press on "+", "Resol." is displayed,
- Press on "enter",
- Select the resolution by pressing on "+" one or more times, the pointer shows the resolution selected,
- Press "-" two times to come back in measurement mode.

The new setting is stored in the permanent memory.

7.6 Activating the LED

Refer to Figure 7-5.

The LED can be activated on 2 modes:

· One is temporary, it is automatically erased when the unit is switched off, to save battery life.

· The other is permanent, it will stay even is the unit is switched off.

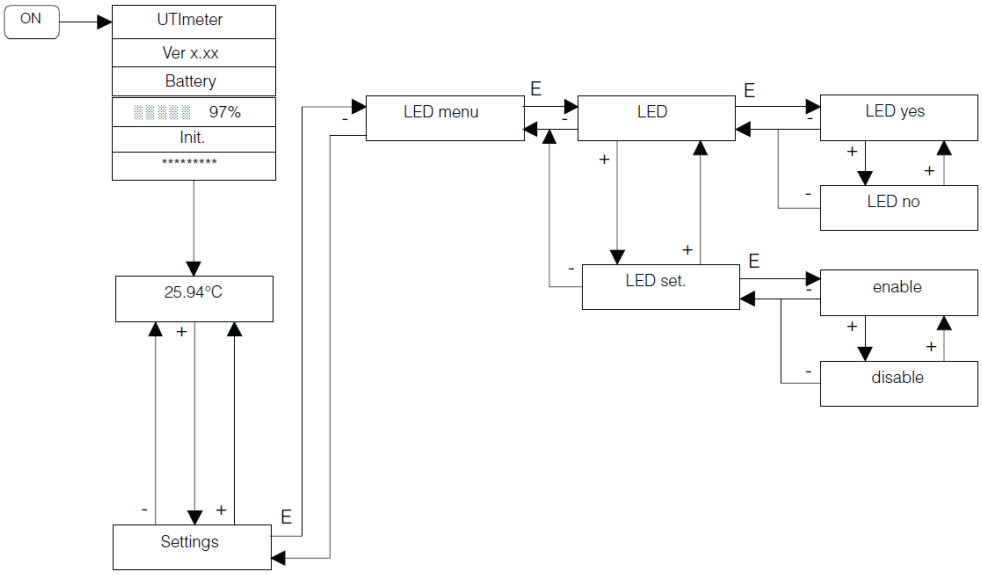


Figure 7-5

7.6.1. Temporary setting of the LED

- Switch on the equipment.
- Wait until the temperature is displayed.
- Press on "+" to enter the settings menu.
- Press on "enter"; "LED menu" is displayed.
- Press on "enter"; "LED" is displayed.
- Press on "enter", then select by pressing "+" the mode: "LED yes" or "LED no".
- Press "-" two times to come back in measurement mode.

It is always possible to change the status of the LED during gauging, by using the same menu again. If not done before, switching off the unit will automatically light off the LED.

7.6.2. Permanent setting of the LED

- Switch on the equipment,
- Wait until the temperature is displayed,
- Press on "+" to enter the settings menu,
- Press on "enter"; "LED menu" is displayed,
- Press on "enter"; "LED " is displayed,
- Press on "+", "LED Set." is displayed,
- Press on "enter",
- "Enable" or "disable" the LED by pressing on "+" one or more times,
- Press "-" two times to come back in measurement mode.

The new setting is stored in the permanent memory.

Remember that the LED needs extra power and reduces the battery life accordingly.

7.7 Muting the buzzer

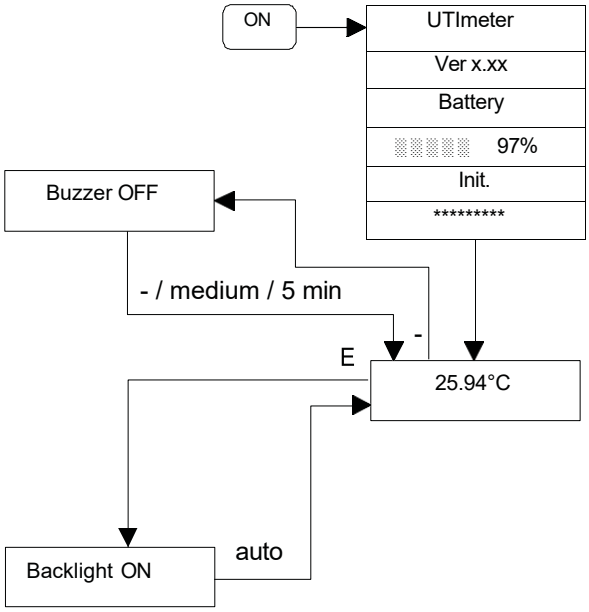


Figure 7-6

When in measurement mode it is possible to mute the buzzer.

- Press on "-".
- Press on "-" again to reset the buzzer.

IMPORTANT NOTE: To prevent any misuse of the equipment, there is an automatic reactivation of the buzzer each time the medium changes (air to liquid, liquid to water, etc.) or after 5 minutes muting. To keep the buzzer muting, press again on "-".

7.8 Backlight

Refer to Figure 7-6.

When in measurement mode press "enter": this switches on the backlight. After around 10 seconds, the light switches off automatically to save battery life.

7.9 Checking the functions before using the instrument

Before installing the HERMetic instrument as described in section 7.1, the following tests are recommended to ensure that the instrument is ready to work.

7.9.1. Battery

Refer to section 8.2 “Checking the battery”.

7.9.2. Reading index

Otex standard version. The reading shall be 0 mm when the sensor tip end is 4 mm below the plate level. To adjust it refer to section 8.11 Verification and adjustment of the reading index.

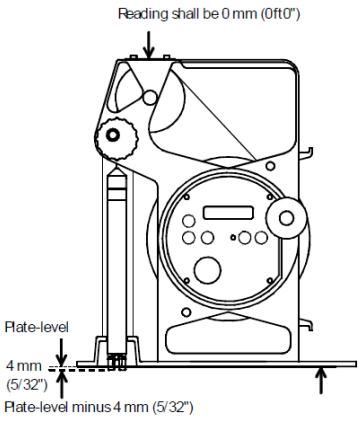
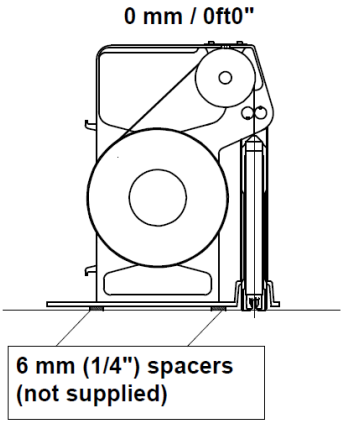


Figure 7.7

Otex Visc or French plate version. The reading shall be 0 mm when the sensor tip end is 6 mm below the plate level. To adjust it refer to section 8.11 Verification and adjustment of the reading index.



7.9.3. Temperature

Switch on the unit.The buzzer shall beep every 2 sec. When the temperature is displayed, check that it shows the surrounding temperature.

7.9.4. Ullage

Switch on the unit.

The buzzer shall beep every 2 sec.

Check the ullage in a glass of water.

Check the ullage by immersing the ultrasonic gap sensor but not the electrodes (position A); The buzzer shall beep continuously.

7.9.5. Interface

Switch on the unit.

The buzzer shall beep every 2 sec.

Check the interface in a glass of water.

Check the interface by immersing the interface electrodes also (position B). The buzzer shall beep intermittently.

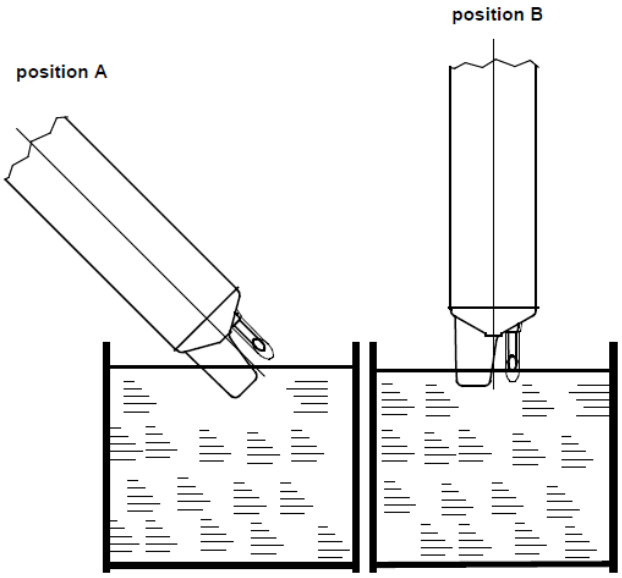


Figure 7.8

7.10 Installation of the instrument

- Before starting, please carefully read the chapter “Recommendation for safe use” and follow your company's safety instructions.
- Install the HERMetic equipment on the edge of the tank opening.
- Connect the instrument to a grounded conductive part of the tank with the grounding cable.
- Attention is drawn to the fact that paint coating and oxidized parts are insulating.

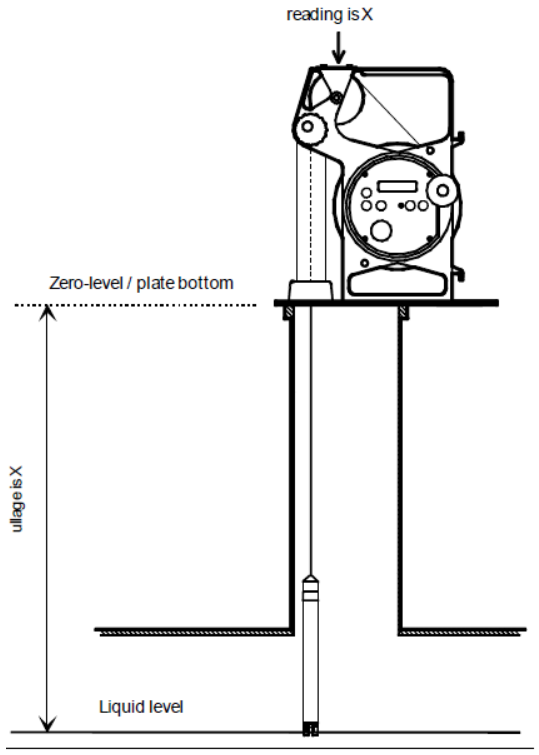


Figure 7-9

7.11 Ullage / interface measurement

- Install the HERMetic equipment as per 7.10 "Installation of the instrument”.
- Switch on the equipment: a control beep is audible every 2 seconds.
- Check that the tape cleaner is on the “DOWN” position. Disengage the knob of the crank handle and lower the sensing probe into the tank by turning the reel. Make sure that the tape does not rub on any sharp edge when lowering as its insulation could be damaged.
- As soon as the sensor meets the petroleum product the control beep will change for a continuous beep. Raise the sensing probe again until the continuous beep stops and lower the sensing probe again slowly until the continuous beep is heard again. Now the ullage level can be read against the ullage reference. If the zero-ullage reference does not correspond to the reading index of the instrument, a correction must be made accordingly.
- Lower the sensing probe further until the sensor touches the oil-water interface. As soon as the sensor meets water the continuous beep will change for an intermittent beep. The difference between the ullage reading and the interface reading represents the thickness of the product layer.
- When the measurements are completed, switch off the unit, turn the tape cleaner on to the "UP" position and wind up the tape until the sensing probe is in the storage tube. The reading on the tape shall be zero.
- Close the valve and disconnect the instrument from the nipple.

IMPORTANT NOTE:

Do not use any tool to activate the crank handle. In case of abnormal effort required, identify its cause, and solve the problem. See section 9.8.
Do not activate the crank handle too fast, specifically during the rewinding operation. This may generate a rocking of the sensor and some damage (sensor / tape) in case of chocs onto the tank structure.
When activating the crank handle, always control through the window that the The tape is really moving. If the tape does not move when the handle is activated, stop winding, and identify its cause. Make sure the tape cleaner is in “DOWN” position. If the tape is still not moving despite the correct position of the tape cleaner, please check if the sensor is stuck somewhere.

7.12 Reference height / innage measurement

For manual detection of the dip/down plate it is advised to use the HERMetic UTImeter Visc version. If the unit is fitted with the additional load" Visc Version" (see Figure 7-10) then reference height/innage measurement are possible.

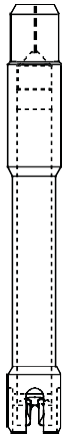


Figure 7-10

- Install the HERMetic equipment as per 7.10 "Installation of the instrument".
- Open the valve by turning the handle. the valve by turning the handle.
- Check that the tape cleaner is on the "DOWN" position Disengage the knob of the crank handle and lower the sensing probe into the tank by turning the reel. Make sure that the tape does not rub on any sharp edge when lowering as its insulation could be damaged.
- When the sensing probe meets the dip/ datum plate records the distance shown on the reading index. See Figure 7-11. The exact distance from the plate to the reading index is (reading + 6 mm) or (reading + 1/4" approx.) which is the reference height providing the reading index level has been adjusted to the zero-ullage level of the tank. If the tank zero ullage is levelled above or below the reading index, an additional correction shall apply.
- Turn the tape cleaner on "UP" position.
- Switch on the unit and raise up the sensing probe until checking the oil/water interface if any (see details in section 7.11" Ullage / interface measurement"). To get a better accuracy of the interface level, release the tape cleaner on the "DOWN" position during the final checking. Calculate the free water height by subtracting the index reading to the reference height.
- Reengage the tape cleaner in the "UP" position and raise up the sensing probe until checking the ullage (see details in section 7.11 "Ullage / interface measurement"). Release the tape cleaner for final checking of the ullage. Calculate the innage by subtracting the index reading and the free water height to the reference height determined before.
- Wate When the measurements are completed, switch off the unit, engage the tape cleaner in the "UP" position and wind up the tape until the sensing probe is in the storage tube. The reading on the tape shall be zero.
- Close the valve and disconnect the instrument from the nipple.
- Put the end cap back on the valve.

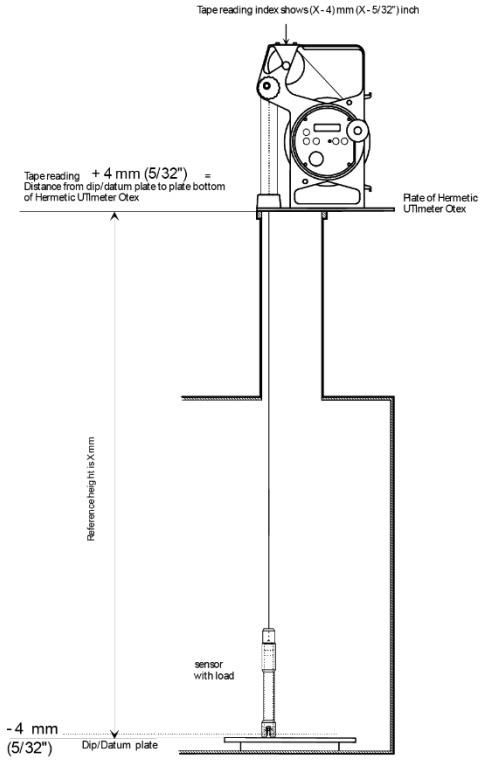


Figure 7-11

UTImeter Version	Offset Correction A
Otex Visc	6 mm
Otex French Plate	6 mm

7.13 Temperature measurement

- Install the HERMetic equipment as per 7.10 "Installation of the instrument".
- Check that the tape cleaner is in “DOWN” position. Disengage the knob of the crank handle and lower the sensing probe to the deepest reading desired. Make sure that the tape does not rub on any sharp edge when lowering; its insulation might be damaged.
- The position of temperature sensor coincides with zero of tape, so the tape index reading shows directly the level at which temperature is measured.
- Switch on the unit a control beep is audible every 2 seconds. The buzzer can be deactivated by pressing on the "-" key.
- When the desired temperature ullage level is reached, joggle the sensing probe approximately 300 mm (1 foot) above and below the desired measurement level until the displayed temperature reading settles. For heavy crude oils which have a low thermal conductivity and a viscous nature, the joggling procedure is a necessity to assure an accurate temperature reading in a minimum amount of time.
- When the temperature has settled, record it.
- Engage the tape cleaner in “UP” position. Raise the probe to the next ullage level to be measured and repeat the procedure a.m. To joggle the sensing probe the tape cleaner must be on the “DOWN” position.
- When the measurements are completed, switch off the unit, engage the tape cleaner on “UP” position and wind up the tape until the sensing probe is in the storage tube. The reading on the tape shall be zero.

IMPORTANT NOTE:

As mentioned in 7.7 “Muting the buzzer” it is easy to mute the buzzer during the temperature measurement by pressing on “-”.

Recall that after 5 minutes have elapsed or each time the probe detects a change of the medium (air, liquid, water), the buzzer will reactivate automatically. To keep it muting, press on “-” again.

8. Care and Maintenance

8.1 General Care & Considerations

Clean the instrument of any excess of liquid after use.

Make sure that the sensing probe is completely parked after use (reading index shall indicate zero)

Check the tightness of the reading index screws and if necessary, adjust the level, refer to section 6.4 “Reading index”.

Store the instrument in a safe, dry and dust free location.

Check periodically (at least every 6 months) the continuity of grounding by measuring the electrical resistance between the tape adaptor (or the sensing probe tube) and the quick connect coupler. Resistance should not exceed 10 Ω. Periodically clean carefully the sensor probe, the tape housing, and the mechanical parts, as storage tube, tape, with an appropriate solvent.

Check periodically the condition of the tape cleaner.

With such conductive liquids which form salts when drying, wash the sensing probe with water or alcohol and brush it very gently with a soft brush to prevent a water detection error due to a short-circuit between the electrode and the tube.

For transportation of the unit without its box, always carry the unit with the button handle directed to the body.

Equipment does not contain any dangerous materials inside which can harm the environment and people’s health during normal use or disposal. However, the utilization and recycling of the equipment after the end of its life must be implemented by an authorized organization in accordance with local legislation.



Do not throw in rubbish but recycle waste in accordance with environmental / local rules.

8.2 Checking the battery

Please note that in case you must change the battery, it must be done only in a safe area. Refer to section 8.3 “Battery replacement”.

8.2.1. Before starting gauging

Switch on the unit. The buzzer tones every 2 seconds if the battery is not too low.

The following sequences are displayed as per Figure 8-1, the 4th sequence shows the remaining power of the battery in percentage and as a bar-graph.

If the power left is less than 50%, we recommend having a spare battery ready for exchange. See also 8.3 “Battery replacement”.

If the power left is less than 20% the message is blinking to advise that the power may not be enough to carry out all the work.

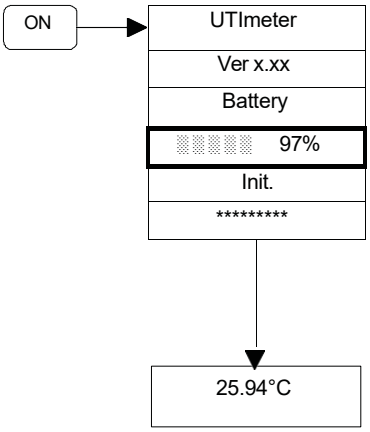


Figure 8-1

If the battery is too low, the unit will stop on the message “battery” as shown on Figure 8-2 and the buzzer tones continuously. Change the battery as per 8.3 “Battery replacement”.

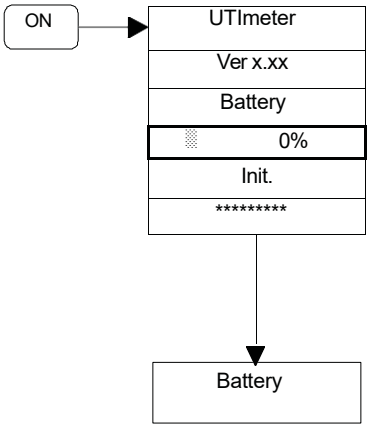


Figure 8-2

If it is not possible to switch on the unit, the battery is out or works. Change the battery first, as per 8.3 “Battery replacement”.

8.2.2. During gauging

When the unit is already switched on and working, it is always possible to see what power is left with the battery by entering the settings menu:

- Press on “+” to enter the settings menu,
- Press on “enter”, “LED menu” is displayed,
- Press on “+”; “T. unit” is displayed,
- Press on “+”, “Resol.” is displayed,
- Press on “+”, “Language” is displayed,
- Press on “+”, “Battery” is displayed,
- Press on “enter”,
- The remaining battery power is displayed in percentage and as a bar-graph; pressing “+” again allows to see the tension of the battery (B); the last information (A) is internal.
- Press “-” two times to come back in measurement mode.

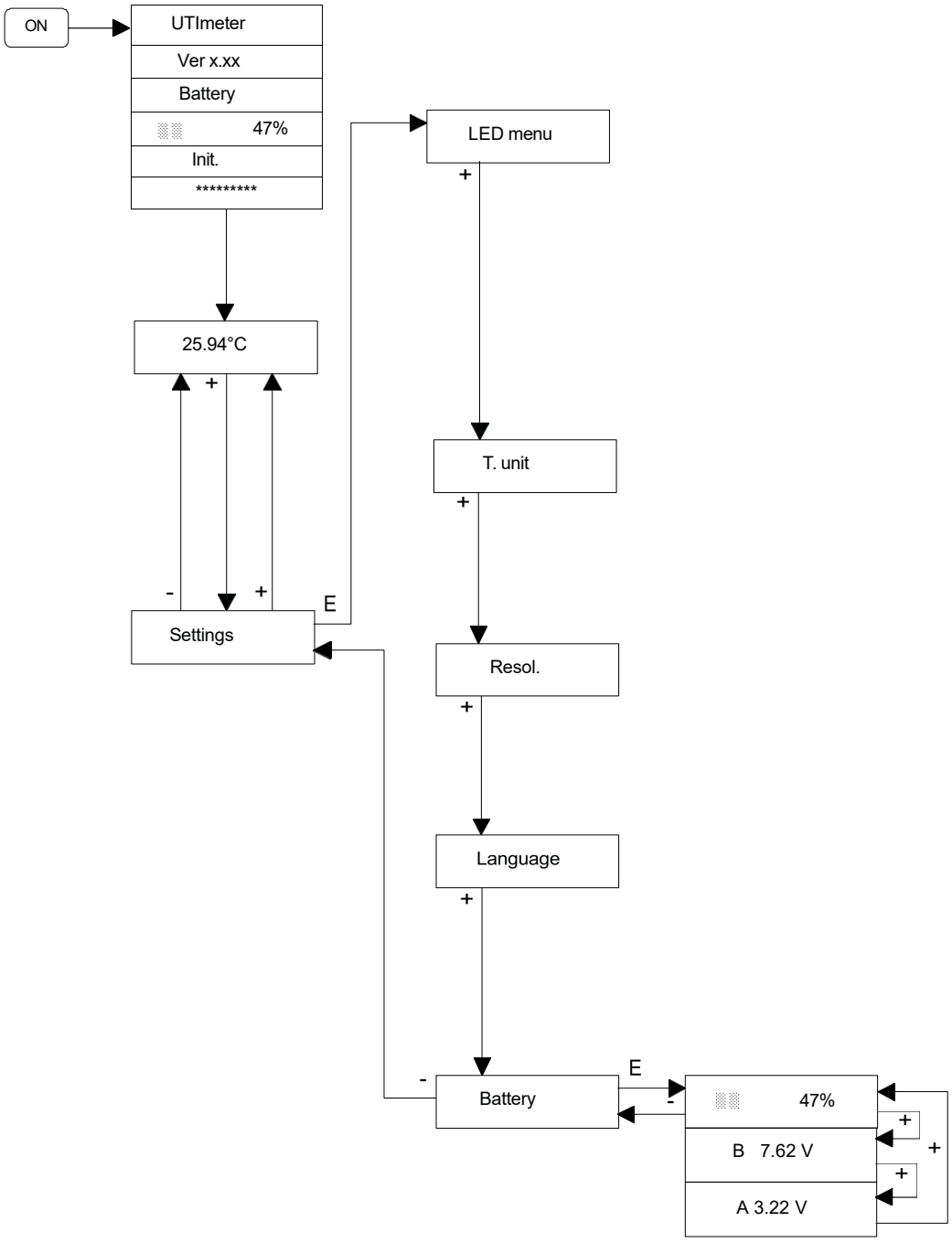


Figure 8-3

8.3 Battery replacement

Warning: change the battery only in a nonhazardous area.

- Unscrew the 2 screws of the battery holder using the 2,5 mm Hex Allen key which is located on the carrying case. See Figure 8-4.
- Pull it gently out.
- Change the battery (one-way only device). See Figure 8-4.
- Push the battery holder back in its housing (one-way only).
- Tighten the 2 screws. Note: to prevent gripping risks, we recommend adding lubricating paste on screws.

Only following batteries are approved:

Duracell / Procell MN1604

Duracell 9V Industrial (6LF22)

Energizer Max (6LR61)

Disposing of general purpose & Alkaline batteries

Disposal should be in accordance with national and local regulations. Do not incinerate for disposal except in a controlled incinerator.

Due to concerns about mercury in the municipal solid waste stream, Duracell / Procell alkaline batteries used are composed primarily of common metals—steel, zinc. and manganese—and do not pose a health or enviro during normal use or disposal.



Caution: Do not throw batteries in rubbish; deposit them in a recycling bin

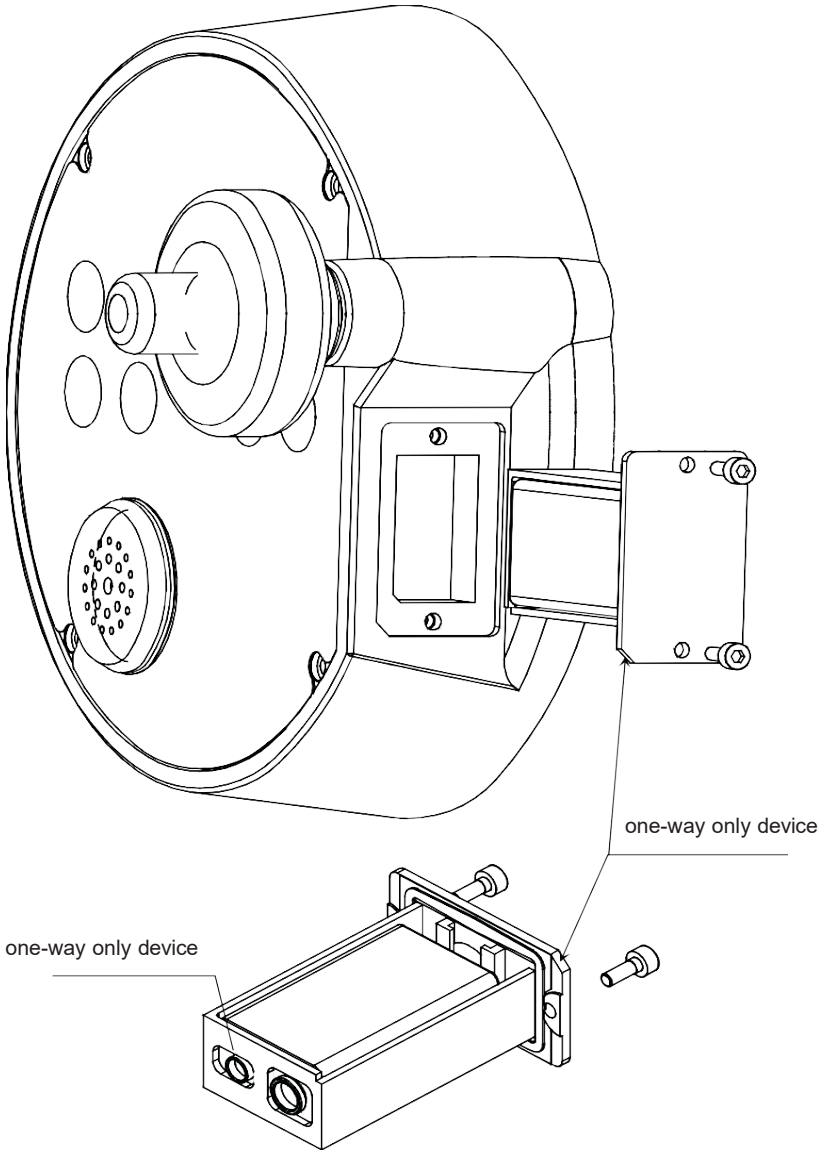


Figure 8-4

8.4 Tape replacement

THE REPLACEMENT OF THE TAPE DOES NOT REQUIRE TO RE-CALIBRATE THE TEMPERATURE.

Follow the different sequences as described below. Figure 11-1: general assembly, list of the main spare parts can also help.

8.4.1. Disconnecting the tape from the sensor

Follow the instructions of section 8.5 “Sensing probe replacement”.

8.4.2. Disconnecting the tape from the electronic box

- Unscrew with the 2.5 Allen key the 2 screws(A) of the battery holder and pull it out as shown on Figure 8-5.
- Unscrew with the 2.5 Allen key the 4 screws(B) of the Display unit and pull it gently out as shown on Figure 8-5.

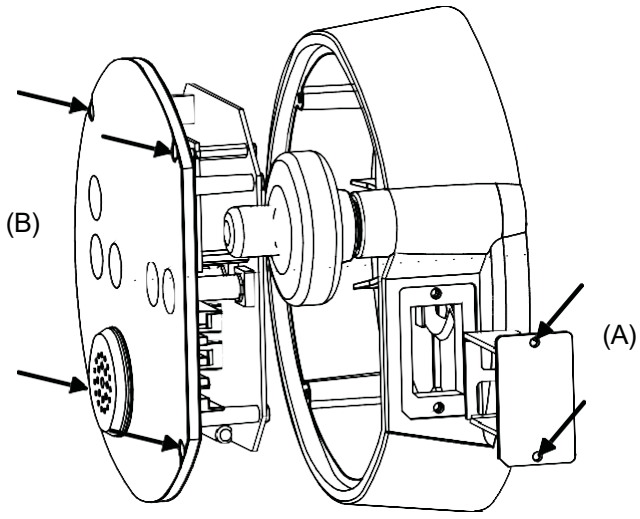


Figure 8-5

- Disconnect the connecting plug(C) as shown on figure 8-6 and remove the display unit.
- Unscrew with the 2.5 Allen key the tape holder(G) by removing the 2 screws(F) and the grounding cable (D) as shown on Figure 8-6. Do not lose the 2 remaining screws that secure the reel axle.

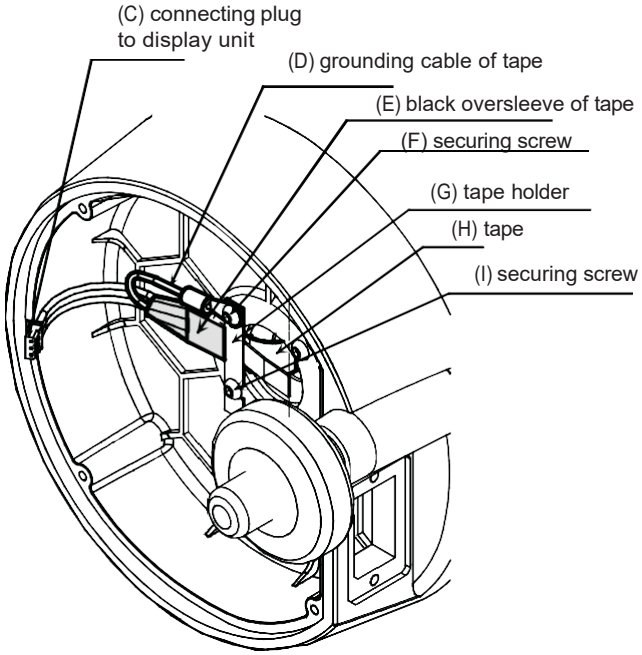


Figure 8-6

8.4.3. Disconnecting the tape from the reel axle

- Remove the axle cover (3 screws to unscrew with the 2.5 Allen key).
- Unscrew with the 2.5 Allen key the 4 screws (K) of the washer holder, as shown on figure 8-7.
- Remove the tape from the reel axle.

8.4.4. Removing the tape from the housing

- Turn the tape cleaner in position "DOWN" to free the tape.
- Pull the tape gently out of the tape cleaner.
- Unscrew and remove the pully. Please note that the pully is not symmetrical, one diameter is 1 mm bigger than the other.
- Slacken the tape a few turns from the reel axle.
- Remove the tape from the housing.

8.4.5. Mounting the new tape

- Install the new tape on the reel axle.
- Leave approximately 20 cm of tape free at the core.
- Make a loop (M) and a S-shape (L) with the tape as shown on Figure 8-7.
- Pass the tape end through the axle core.
- Secure the gaskets and the washers mounted on the tape in the axle core with the washer holder and its 4 screws (K) as shown on Figure 8-7. Do not tighten the 4 screws(K)
- On the electronic box side, adjust the black oversleeve just to the edge of the tape holder (pull the tape gently from the other side) and tighten tshe tape end as shown on Figure 8-6.
- Tighten the 4 screws(K).
- Follow in reverse order the instructions of sub-section 8.4.2 to re-install the electronic box. Do not forget to secure the screws (F & I) with glue.
- If necessary, readjust the loop (M) and the shape (L) of the tape at the core of the reel axle.
- Follow the instructions of sub-section 8.4.4 in the reverse order to pass the tape through the tape cleaner.
- Put back and secure the pulley. Note that the pulley is not symmetrical: the special groove shall stay opposite of the frame (see Figure 8-8).
- Put back the reel flange and its 3 securing screws.
- Check the good adjustment of the reading index as described in section.
- Follow the instructions of section 8-5 "Sensing probe replacement" to re-install the sensor on the tape.
- Carry out the functional tests as per 7.9 "Checking the functions before using the instrument".
- If there is any problem, refer to section 9 “Trouble shooting.”

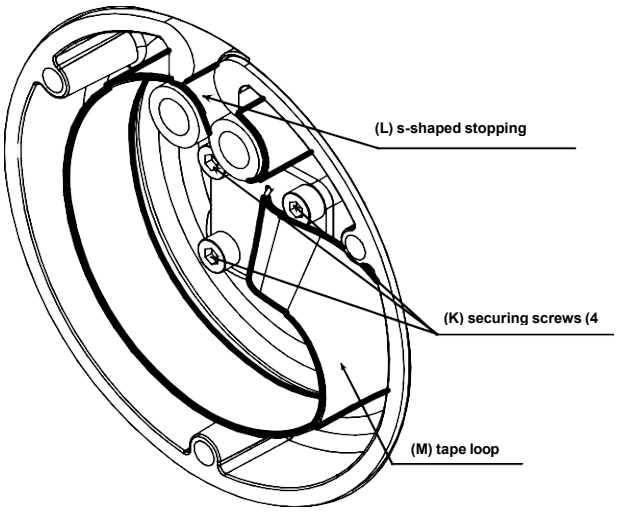


Figure 8-7

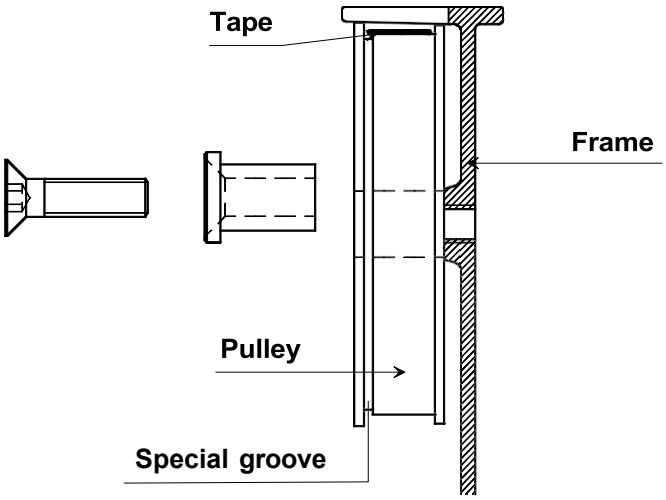


Figure 8-8

8.5 Sensing probe replacement

THE REPLACEMENT OF THE SENSING PROBE DOES NOT REQUIRE TO RE-CALIBRATE THE TEMPERATURE NOR THE ULLAGE / INTERFACE.

8.5.1 Disconnecting the old sensing probe

- Unscrew the securing screw with the 1.5 mm Hex Allen key.
- Carefully pull the adaptor out of the sensing probe tube by turning it slightly left and right. Make sure that the O-ring is not damaged when it passes the hole of the sensing probe tube.
- Disconnect the plug by pulling it gently out of the tube.

8.5.2. Connecting the new sensing probe

- Refer to figure 8-9.
- Insert the Insertion tool gently in the free hole in the free external holes of the tape plug.
- With one hand keep the sensing probe and tape. Adaptor as shown on Figure 8-9.
- On the other hand, drive the plug into the new sensor tube with the Insertion tool to connect it to the sensing probe socket. Note this is a one way only plug.
- Pull out gently the Insertion tool from the plug while keeping the plug-in place with another non sharp tool, for instance the 4 mm Allen key. Check that the plug is fully inserted.
- Switch on the unit and wait a few seconds. If all is OK, the temperature is displayed, and the buzzer beeps every 2 seconds. If there is any problem, refer to the chapter 9 “Trouble shooting”.
- Put some light grease on the O-ring.
- Gently push the adaptor into the sensing probe tube. Mind not to damage the O-ring when it passes the screw hole.
- Screw the securing screw back with the 1.5 mm Hex Allen key.

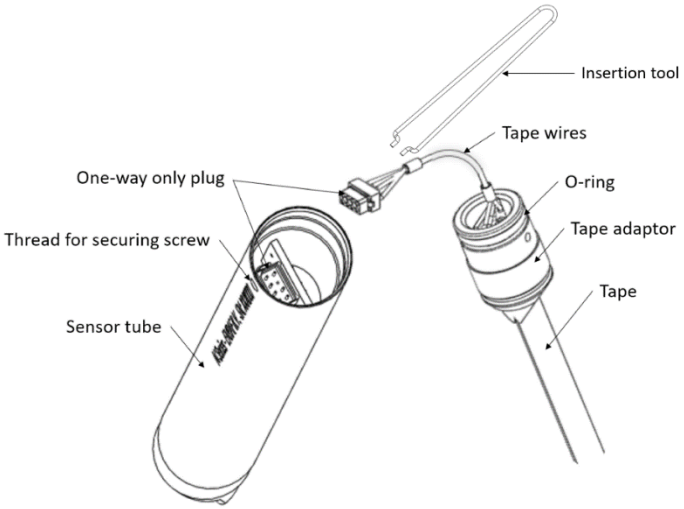
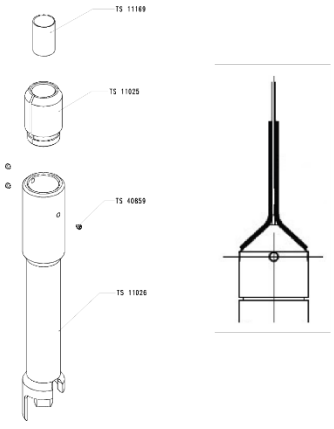


Figure 10-9

8.6 Visc Option - Load Assembly

- To protect the tape, mount the heat shrink tube 24/8 x 80, TS 11169, onto the tape.
- The tube must be placed at the extremity of the tape. Adaptor, covering its black plastic plug.
- With a heat gun, shrink the tube. The temperature is to be set at about 80-100°C. Caution not to damage the coating of the tape and consider all safety aspects before proceeding to this operation.
- Once the tube is cold, pass the tape through the slot te nut for loading 700gr, TS 11025.
- Pass the sensor through the load and screw the load with the Nut for load 700gr, TS 11025. Fix parts with screw M4x4, TS 40859.
- Place the load subassembly onto the tape adaptor. The fork of the load must be aligned and behind the plastic fork of the sensor. Fix it with both screw M4x4, TS 40859. For better tightening, tighten the screws at the same time, with 2 wrenches.



8.7 Tape wipers replacement

The 2 tape wipers can be easily replaced:

- Check that the tape cleaner is on “DOWN” position.
- The tape wipers are inserted in holder’s grooves. Remove the old ones and insert the new ones.
- Put back and lock the housing lid.
- Check that the tape cleaner is working properly.

Note: we recommend always changing both wipers.

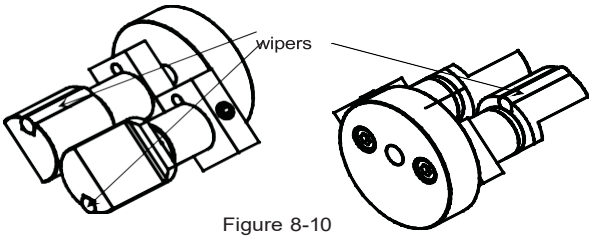


Figure 8-10

8.8 Display unit replacement

THE REPLACEMENT OF THE DISPLAY UNIT DOES NOT REQUIRE TO RE-CALIBRATE THE TEMPERATURE.

8.8.1 Disconnecting the old display unit

- Unscrew with the 2.5 Allen key the 2 screws (A) of the battery holder and pull it out as shown on Figure 8-11.
- Unscrew with the 2.5 Allen key the 4 screws (B) of the display unit and pull it gently out of the electronic box, as shown on Figure 8-11.
- Disconnect the tape plug, item (C) shown on Figure 8-6.

8.8.2. Connecting the new display unit

- Connect the tape plug to the new display unit.
- Put back the new display unit in the electronic box; tighten the 4 screws (B) of Figure 8-11.
- Reinstall the battery holder with the 2 screws (A) of Figure 8-11.
- Check that the unit is working properly, as described in 7.9.

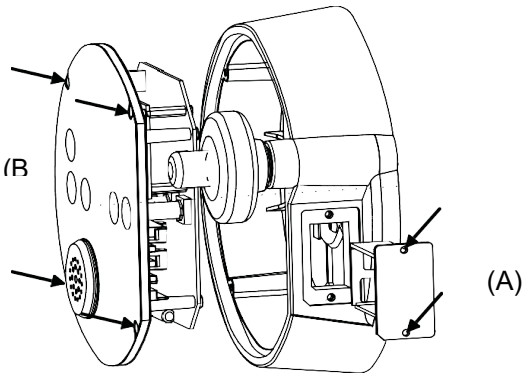


Figure 8-11

8.9 Button handle replacement

CAUTION: THE BUTTON HANDLE IS A SAFETY PART. IT MUST BE REPLACED BY A GENUINE SPARE-PART ONLY. An incorrect replacement may impair the safety of the device.

Refer to Figure 13-4: electronic box assembly TS 10190 at the end of the manual to identify components.

- Disconnect the tape from the electronic box as specified in section 8.4.2.
- Unscrew the 2 remaining screws that secure the reel axle.
- Remove the old button handle subassembly.
- Assembly the button handles its spring and the figure for handle subassembly.
- Pass it through the electronic box.
- Assemble the knob for handle onto the button handle and align their holes.
- Place the dowel pin and secure it by mounting the external part of knob.
- Follow in reverse order the instructions of sub-section 8.4.2 to re-install the electronic box.

8.10 Verification and certification of tapes

The tape must be periodically inspected for breaks, kinks, wear, and illegible numbers.

As the tape is a cable it might be necessary to check its electrical conformity. Refer to section 9.9. It is necessary also to check it for accuracy regularly according to current National or International Standards, as API “Manual of Petroleum - Measurement Standards - Chapter 3 - Tank Gauging - Section 1A - Standard practice for the manual gauging of petroleum products in stationary tanks” or IP “Petroleum Measurement Manual - Part III - Manual Tank Gauging - Section 1 - Non-Electrical Methods” or relevant ISO standards.

In such a case it is important to remember that the bottom of the sensing probe is 4 mm lower than the zero of the tape, thus, to assure that the electrical zero coincides with the tape zero.

It is also important to remember that the nominal tension at which the tape was produced is marked on each beginning of tape and is normally 6 N (1,3 lb). If tensioned at 44,5 N (10 lb) as per API this will result in an additional elongation up to 3.7 mm over 30 meters.

This periodical verification can be done at any of the Honeywell Authorized Service Stations shown in Chapter 4.

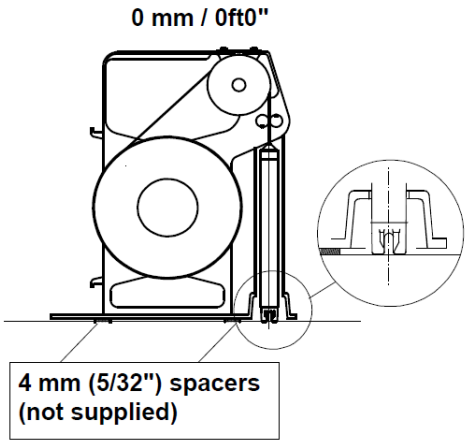
8.11 Verification and adjustment of the reading index

8.11.1. UTImeter Otex Standard Version

To verify or to adjust the reading index, after renewed a tape,

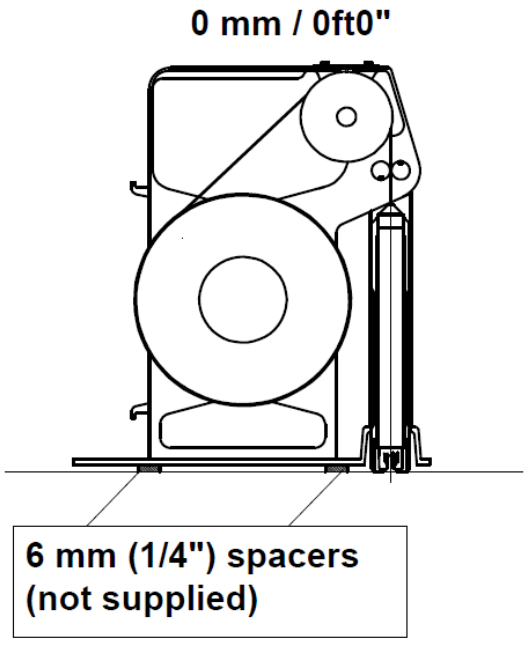
apply the following instructions:

- prepare 2 spacers 4 mm thick (5/32”) and a flat surface
- put the tape cleaner on "DOWN" position.
- keep the equipment standing vertically on the 2 spacers; make sure that the surface is flat between the 2 spacers and that the spacers are placed on the flat part of the Otex plate.
- gently lower the tape until the sensor gets in contact with the surface (Figure 8-12).
- the reading on the tape shall be exactly 0 mm.
- Loose the 2 screws and adjust the index to this value of 0 mm (0ft0"). Tighten the 2 screws.



8.11.2. UTImeter Otex Visc Version

To verify or to adjust the reading index, in particular after having renewed a tape, apply the following instruction:
- prepare 2 spacers 6 mm thick (1/4”) and a flat Surface.
- put the tape cleaner on "DOWN" position.
- keep the equipment standing vertically on the 2 spacers; make sure that the surface is flat between the 2 spacers and that the spacers are placed on the flat part of the Otex plate.
- gently lower the tape until the sensor gets in contact with the surface (Figure 8-13).
- the reading on the tape shall be exactly 0 mm.
- Loose the 2 screws and adjust the index to this value of 0 mm (0ft0"). Tighten the 2 screws.



UTImeter Version	Offset Correction A
Otex Standard	4 mm
Otex Visc	6 mm
Otex French Plate	50+6 mm

8.12 Temperature verification

The temperature calibration curve is stored in the sensor memory and cannot be modified. The calibration is set once at the factory and does not require subsequent adjustment.

Nevertheless, it is recommended to check the temperature accuracy once a year. A one-point check is enough to qualify the sensor.

8.12.1. Equipment required

- A Dewar flask or any vacuum flask, approximately 8 cm in diameter and 36 cm deep.
- Ice, preferably made from distilled water.
- Water preferably distilled and precooled.

8.12.2. Preparing the Ice Point bath

- Shave or crush the ice into small pieces, avoiding direct contact with the hands or any unclean object. The pieces shall be no more than 5 mm.
- Fill the Dewar flask with the crushed ice and add sufficient water to form a slush, just filling the voids between ice particles but not enough to float the ice.
- Insert the sensor, packing the ice gently about it.
- Let it stand for half an hour to permit the sensor temperature, the ice particles, and the water to equilibrate.
- As the ice melts it will be necessary to drain off some water and add more crushed ice. Gently stir the ice with the sensor periodically to assist equilibration.

IMPORTANT NOTE: Attention to detail during the preparation of the Ice Point bath is critical to the accuracy and quality of the offset verification.

8.12.3. Checking the UTImeter

- After 30 minutes have elapsed, gently stir the bath with the sensor again to ensure complete equilibration of temperature.
- Switch on the UTImeter.
- Observe the reading. It should be ±0.10 °C (±0.20 °F) The temperature must be stable, i.e. within ± 0.04 °C (± 0.07 °F).
- If it is not OK, refer to section 11 "Trouble shooting".

8.13 Ullage/Interface verification

The sensitivity of the instrument in ullage / interface cannot be adjusted. Both ullage and interface levels are set at the factory.

Checking ullage and interface level detection

The test liquid should be the one to be gauged. Fill in a container with appropriate liquid.

Switch on the unit. The buzzer shall beep every 2 sec.

If the liquid is conductive (alcohol, water, ...)

- Check the **ullage** by immersing the ultrasonic gap sensor but not the electrodes (position A); The buzzer shall beep continuously.
- Check the **interface** by immersing the interface electrodes (position B). The buzzer shall beep intermittently.

If the liquid is nonconductive (gasoline, oil, ...)

- Check the **ullage** by immersing the sensor (position B); The buzzer shall beep continuously.
- Check the interface by immersing the sensor (position B) in water. The buzzer shall beep intermittently.

8.14 Storage of HERMetic devices

For a proper storage of HERMetic products (UTImeter, Sampler, Thermometer, and related spare-parts…), we recommend:

- Clean the devices after use,
- Remove batteries for prolonged storage,
- Store batteries in a dry and cold location,
- Store the goods in a safe, dry, and dust-free location with an ambient temperature between +5°C to +45°C.

8.15 Transportation of HERMetic devices

For transportation of the device, always stretch out the tape to avoid any movement of the sensor inside its storage tube.

For transportation of the device by its handle, always carry the unit with the button handle directed to the body (carrier).

8.16 Recycling of HERMetic devices

Regarding delivery, equipment does not contain any dangerous materials inside which can harm the environment and people's health during normal use or disposal. However, the utilization and recycling of the equipment after the end of its life must be implemented by an authorized organization in accordance with local legislation.

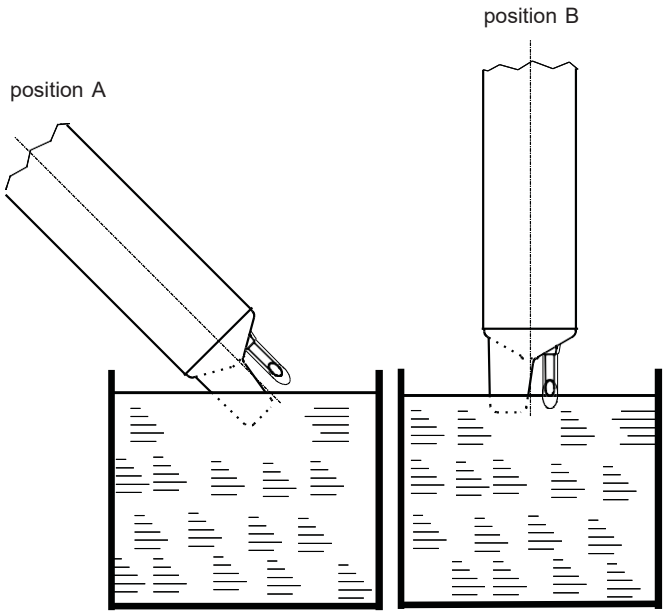


Figure 8-14

Do not throw in rubbish but recycle waste in accordance with environmental / local rules.



9. Trouble shooting

9.1 Safety warning

As this equipment is designed and approved for use in an explosive area (intrinsic safe equipment), only authorized service stations and the factory are allowed to repair electronic circuits.

However, the customer can exchange parts and modules if the following points are observed:

1. Never open the instrument nor carry out any repair or trouble shooting in a hazardous area.
2. Use only original spare parts.
3. Work shall be done only by maintenance personnel who have experience with intrinsically safe equipment.

has experience with intrinsically safe equipment.

The design of the equipment is modular, i.e. in case of breakdown the customer can find out which modules have to be replaced. The instrument consists of the following modules:

- Mechanical parts
- Sensing probe
- Tape assembly
- Display unit / electronic box
- Tape cleane

The following sections should allow us to identify the defective module and to replace it.

9.2 Power supply troubles

Symptom	Origin	Action	Section
The unit does not switch on	Battery too low	Change the battery	8.3
	Corrosion of terminals (battery side)	Clean the battery terminals	---
	Corrosion of terminals (display unit side)	Clean the display unit terminals	---
	Switch defective	Change the display unit	8.8
The unit switches on but stops on the message “battery”; the buzzer tones continuously	Battery too low	Change the battery	8.3

9.3 Transmission troubles

Symptom	Origin	Action*	Section
“!!!!!!!!“ is displayed	Sensor out of work or	Renew the sensor	8.5
	Tape out of work or	Renew the tape	8.4
	Display out of work	Renew the display	8.8
“No Msg“ is displayed	Sensor out of work or	Renew the sensor	8.5
	Tape out of work	Renew the tape	8.4
“Invalid” is displayed	Sensor out of work	Renew the sensor	8.5
“Unknown” is displayed	Sensor out of work	Renew the sensor	8.5
"!Sensor!" is displayed	Sensor out of work	Renew the sensor	8.5
"!!Tape!!" is displayed	Tape out of work	Renew the tape	8.4
"99999999" is displayed	Display out of work	Renew the display	8.8

*If a problem persists, please contact the nearest Honeywell Authorized Service Station mentioned in Chapter 4.

9.4 Ullage and/or Interface troubles

Symptom	Origin	Action	Section
The buzzer does not beep when the unit is switched on	Buzzer switched off or	Press on "-" to reactivate it	7.7
	Key-pad defective or	Pressing on "+" has no action Change the display unit	8.8
	Buzzer defective	Press on "+": "Settings" is displayed Change the display unit	8.8
The buzzer tones continuously when the sensing probe is in air or liquid or water	Battery too low	Change the battery	8.3
The buzzer gives the water signal whatever liquid is gauged	Sensing head contaminated by conductive residues	Wash, clean and brush (soft brush) the sensing head or change the sensor	--- 8.5
The buzzer gives the oil signal in water	Sensing head contaminated by non conductive residues	Wash, clean and brush (soft brush) the sensing head or change the sensor	--- 8.5

9.5 Temperature troubles

Symptom	Origin	Action	Section
"> 90°C" or "> 194°F" is displayed	Temperature to high	The temperature range shall be < 90°C / 194 °F	---
"< -40°C" or "< -40°F" is displayed	Temperature too low	The temperature range shall be > -40 °C/F	---
Temperature does not stabilise	Heated viscous liquid (such as heavy crude oils)	Check the stability in cold and hot water; if it is OK the problem is with the gauged liquid and not with the probe	---
	Contaminated sensing probe	Clean the temperature electrode; remove any residues or sludge; check the stability in cold and hot water	---

9.6 Visual inspection for damaged or missing parts

General condition: missing parts

Display unit: 5-key control pad, buzzer, front face, LED, screen.

Sensing probe: sensors broken, smashed or damaged.

Tape: check at least the first 3 m; wires still insulated, no breaks, no kink.

Mechanical parts: check housing, lid, axle, storage tube, wipers of tape cleaner, window wiper

9.7 Coated aluminium parts

PA 11: Rilsan = blue, grey or yellow colour

The coating should be subject to regular and careful inspection. The continued use of the apparatus should not be permitted if inspection reveals that the protective material has become damaged to the extent that the underlying protected metal is visible, until such damage has been satisfactorily repaired.

9.8 Winding action becoming stiff

If after repeated use the winding action is becoming slightly stiff apply the following simple process:

- Engage the tape cleaner (position “UP”), with the sensor retained in the storage tube.
- Slacken the tape a few turns, typically 10.
- Gently shake the instrument to free up the tape within the tape housing.
- Wind the tape again and disengage the tape cleaner (position “DOWN”).

9.9 Electrical checking of the tape assembly

⇒ Test for grounding

- Remove the battery holder as described in section 8.3.

⇒ Measure the resistance between the ground (-) terminal (as shown on Figure 9-1) of the electronic circuit and the tube of the sensing probe; the resistance should be less than 10 Ω. If it is higher, the steel tape might be broken or the connection between the sensing probe circuit and the sensing probe tube might be interrupted.

⇒ Test for short-circuit

- Disconnect the tape at both ends display unit side and sensing probe side (see sections 8.4.1 and 8.4.2).
- Measure the resistance between each conductor red-white, red-black, white-black. This resistance should be infinite as an open circuit. If not, the tape might be defective.

⇒ Test for open circuit (continuity)

- Disconnect the tape at the sensing probe side see 8.4.1).
- Measure the resistance of each conductor of the tape (between red and red, white, and white, etc.).
- The resistance should be less than 15 Ω. If not, the tape might be broken. To replace the tape, see section 8.4

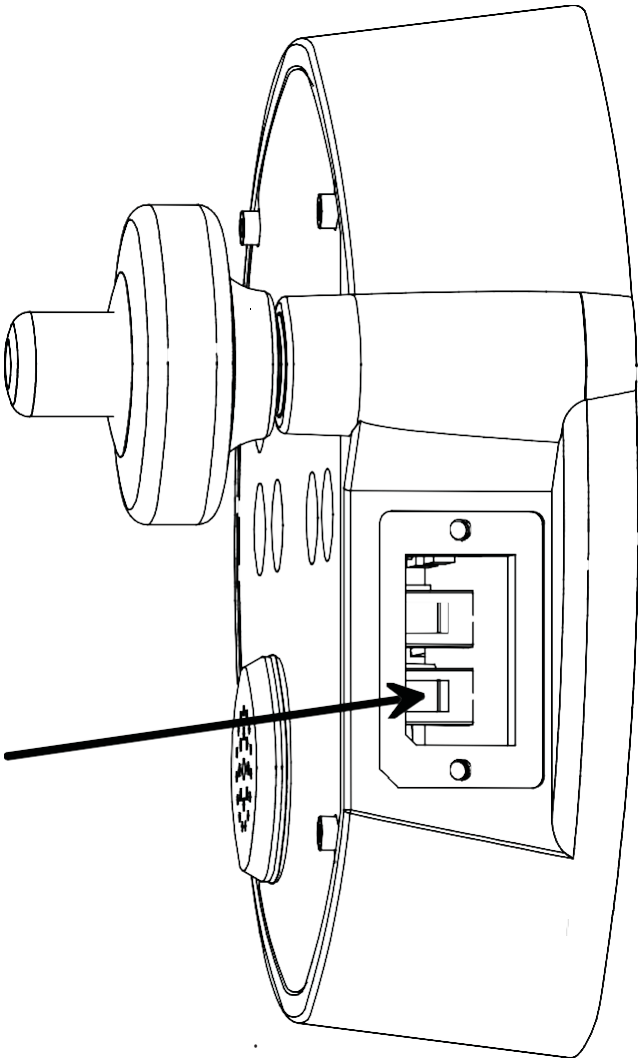


Figure 9-1

10. Specifications

General Specifications

Accuracy of ullage-interface detection	±2 mm (± 0.08” approx.)
Ullage, interface indication	Audible or visible
Tape length	15 m/50 ft, 25 m/75 ft, 35 m/115 ft
Tape graduation	Metric/Imperial
Tape resolution	1 mm / 1/16”
Tape accuracy	±1.5 mm/30 m (±1/16" approx./100 feet)
Meets ISO 4512 and API MPMS Chap 3.1A requirements	
Diameter of probe (without load)	23 mm (29/32” approx.)
Minimum detectable tank bottom liquid level	4 mm (5/32” approx.)
Accuracy	±0.1°C (0°C to 70°C); ±0.2°F (32°F to 158°F)
Meets ISO 4268, API MPMS Chap 7 and IP PMM Part IV requirements	
Ambient temperature range	-20°C to 50 °C (-4°F to 122°F)
Temperature sensor measurement range	-40°C to 90°C (-40°F to to 194°F)
Temperature measurement resolution	0.01° or 0.1°, selectable
Temperature reading	°C or °F, selectable
LCD Display	8 characters
Ingress Protection Rating	IP54
Weight with 15 meter / 50ft tape	3.5 kg / 7.7 Lbs.

Hazardous environments approvals

IECEx	Ex ia IIB T4 Ga / -20°C < Ta < +50°C / -40°C ≤ Tp ≤ +90°C
ATEX	II 1 G Ex ia IIB T4 Ga / -20°C ≤ Ta ≤ +50°C / -40°C ≤ Tp ≤ +90°C
FM Approvals	CL I, DIV 1, GP C&D, T4 Tamb 50°C and CL I, ZN 0, AEx ia IIB T4 Tamb 50°C Maximum Process Temp +90°C

Multifunction-Sensor

Ullage detection	ultrasonic
Interface detection	conductivity
Temperature	Platinum RTD Pt 1000
Innage / Reference height	additional load (option)
Tape cleaning device	UP / DOWN tape cleaner
Maintenance	modular design / easy exchange of parts

Specifications subject to change without notice.

11. Spare parts

11.1 How to proceed

Each spare part is identified by the letters TS followed by a 5 digits number, for instance TS 10235 for the sensor or TS 10250 for the 15 meters tape.

Proceed as follows to identify the part you need to order:

1) Find the adequate drawing on the next pages.
2) Note the item TS number, ex. TS 10235.
3) With the assistance of the below table, identify its description, ex. “Sensor Ultra”.

For each order, please note the item number, its description, and the required quantity.

Example: TS 10235 “Sensor Ultra”, 3 x

11.2 List of parts descriptions

TS number	Description	Notes
10189	Battery holder assy	does not include TS 40300 & 37020
10190	Electronic box assy	does not include TS 11210 & TS 40765
10250	Tape 15m stand. assy Otex N	kit (tape + 1 x TS 11603 + 1 x TS 40853)
10252	Tape 35m stand. assy Otex N	kit (tape + 1 x TS 11603 + 1 x TS 40853)
10253	Tape 15m chem. assy Otex N	kit (tape + 1 x TS 12059 + 1 x TS 40853)
10255	Tape 35m chem. assy Otex N	kit (tape + 1 x TS 12059 + 1 x TS 40853)
10235	Sensor Ultra N assy	
10248	Display unit assy IIB N	
10254	Tape 25m chem. assy Otex N	kit (tape + 1 x TS 12059 + 1 x TS 40853)
10251	Tape 25m stand. assy Otex N	kit (tape + 1 x TS 11603 + 1 x TS 40853)
11098	Pulley	
11114	Earth strap with clamp	kit (cable + 1 x TS 40116 + 1 x TS 40328)
11150	Zero indicator	
11152	Finger	
11155	Handle Mr.40p-M8 X 20	
11202	UNI Sensor protection	
11207	Axle bearing	
11208	Bearing for tape cleaner	
11209	Belt	
11210	Tape holder	
11211	Electronic box	
11213	Button handle	
11214	Connecting lever	
11216	Spacer	
11217	Gasket for electronic unit	
11218	Finger for handle	
11223	Knob	
11227	Washer holder	
11228	Screw cup	
11232	Load 500 gr.	
11235	Plate for battery holder	
11240	Wiper holder	
11243	Tube for sensor / Protection	
11244	Washer guide	
11245	Washer sensor visc	
11246	Spring for battery holder	

TS number	Description	Notes
11248	Gasket for battery holder	
11249	Battery holder	
11257	Reel axle assy	
11259	External part of knob	
11260	Knob for handle	
11262	Bearing of pulley	
11263	Front face assy	without gasket
11267	External reel flange	
11269	Frame Otex	
11270	Base plate	
11283	Pipe clamp	kit (plates and screws)
11286	Protection tube	
11292	Tube for french plate visc	
11600	O-Ring Ø31x2	
11603	O-Ring Ø15x3 Viton	
12047	Lever	
12059	O-Ring Ø15x3 FFKM	
12086	Gasket for electronic box	
12106	Wiper FFKM	
12107	Wiper Viton	
14093	Spring	
35069	LCD 1x8 alphanum assy	
37004	Buzzer SC 235 B	
37020	Bat 9v alka mang Procell MN 1604	
37524	Push Button Distancer 23.5	
37521	UTImeter N Series Tested Display Board	
37354	Hard Paper Washer 2.2mm	
40115	Toothed lock washer M4	
40118	Washer M8	
40220	Dowel pin 3x35	
40300	Socket head cap screw M3x8	
40303	Socket head cap screw M4x12	
40306	Socket head cap screw M3x10	
40316	Socket head cap screw M3x6	
40328	Socket head cap screw M4x6	
40555	Spacer M-M M3x6/M3x8	
40621	Flat head socket screw M5x12	
40622	Flat head socket screw	
40628	Flat head socket screw M8x30	
40774	Socket button head cap screw M4x6	
40776	Socket button head cap screw M4x10	
40853	Socket set screw M3x3	
40857	Socket set screw M4x6	
40862	Socket set screw M4x6	
40906	Crescent ring Ø17 Benzing	
50305	Hexagon key 1.5mm	
50346	Hexagon key 2mm	
50300	Hexagon key 2.5mm	
50345	Hexagon key 3mm	
50462	Insertion tool for connector	

11.3 Spare parts drawings

The next pages show the following drawings:

- Figure 11-1: general assembly HERMetic UTImeter Otex standard version, list of the main spare parts
- Figure 11-2: general assembly HERMetic UTImete Otex chem version, list of the main spare parts
- Figure 11-3: display unit assembly TS 10248, details
- Figure 11-4: battery holder assembly TS 10189, details
- Figure 11-5: electronic box assembly TS 10190, details
- Figure 11-6: French base plate
- Figure 11-7: Visc
- Figure 11-8: pipe clamp assembly
- Figure 11-9: tape cleaner, details
- Figure 11-10: tape cleaner for Chemical version, details
- Tool for UTI GT (ND40854 / TS 50347)

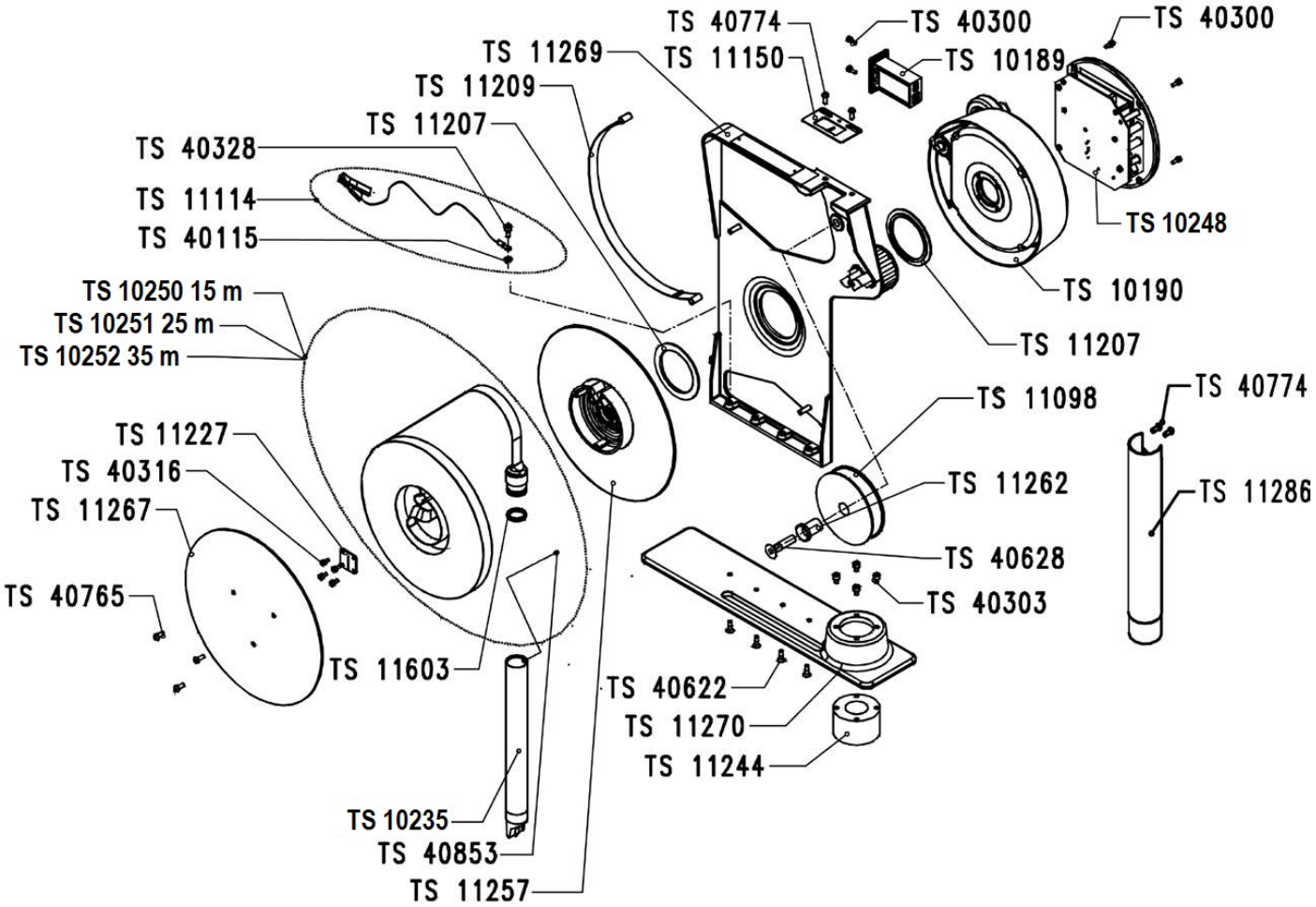


Figure 11-1: general assembly HERMetic UTImeter Otex standard version, list of the main spare parts

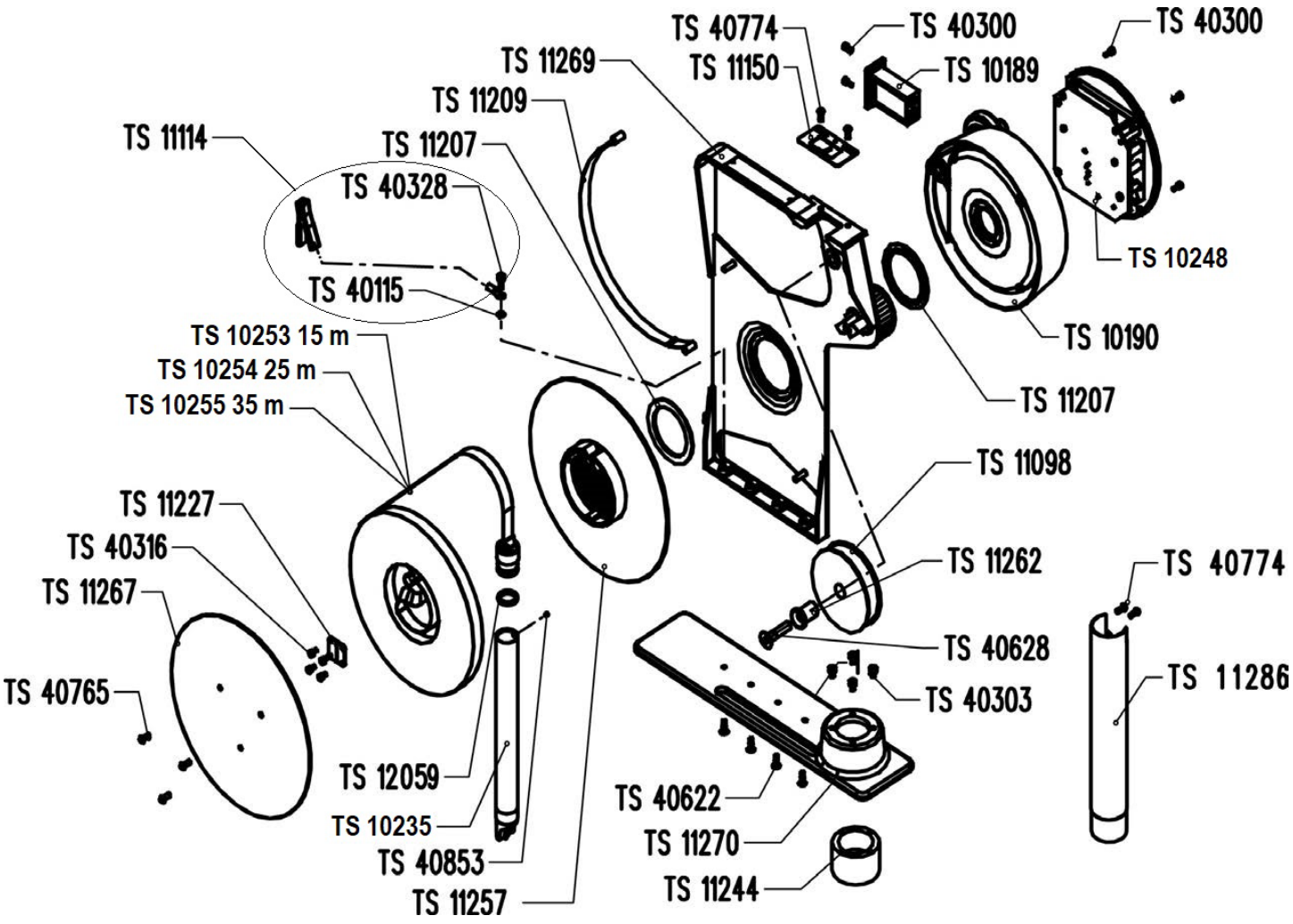


Figure 11-2: general assembly HERMetic UTImeter Otex chem version, list of the main spare parts

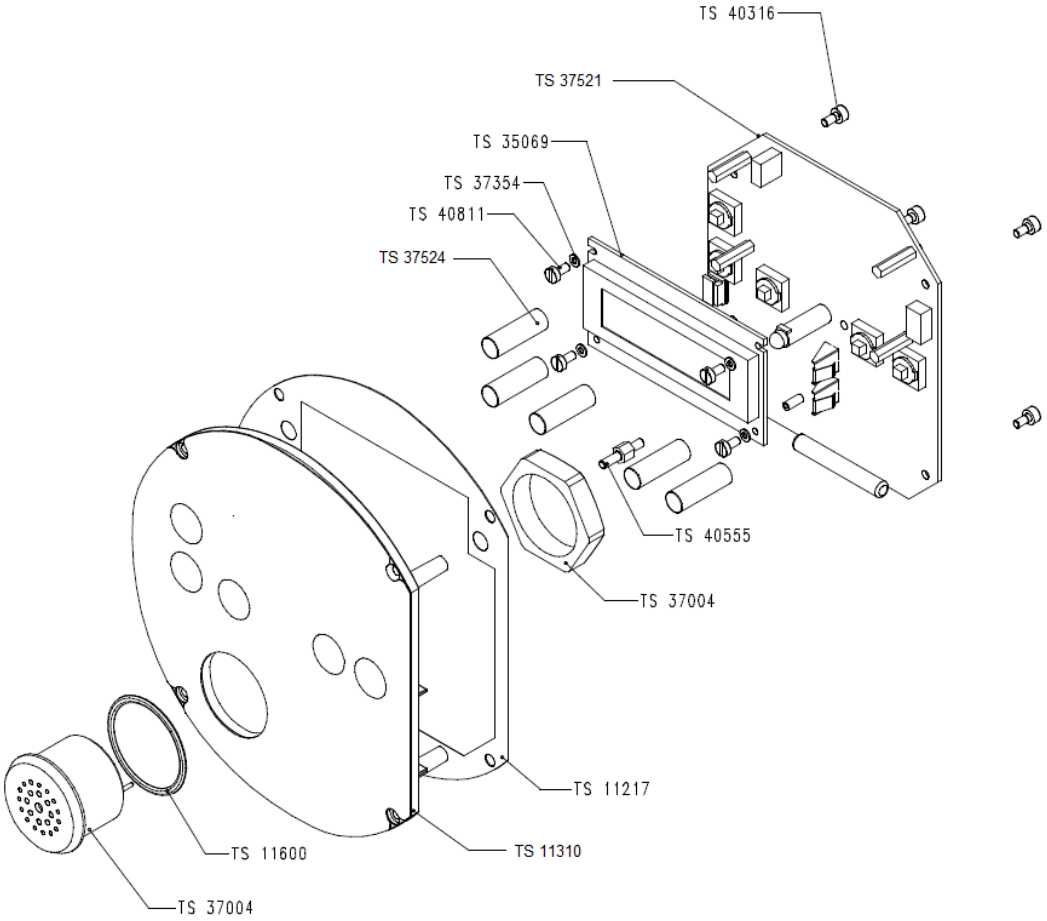


Figure 11-3: display unit assembly TS 10248, details

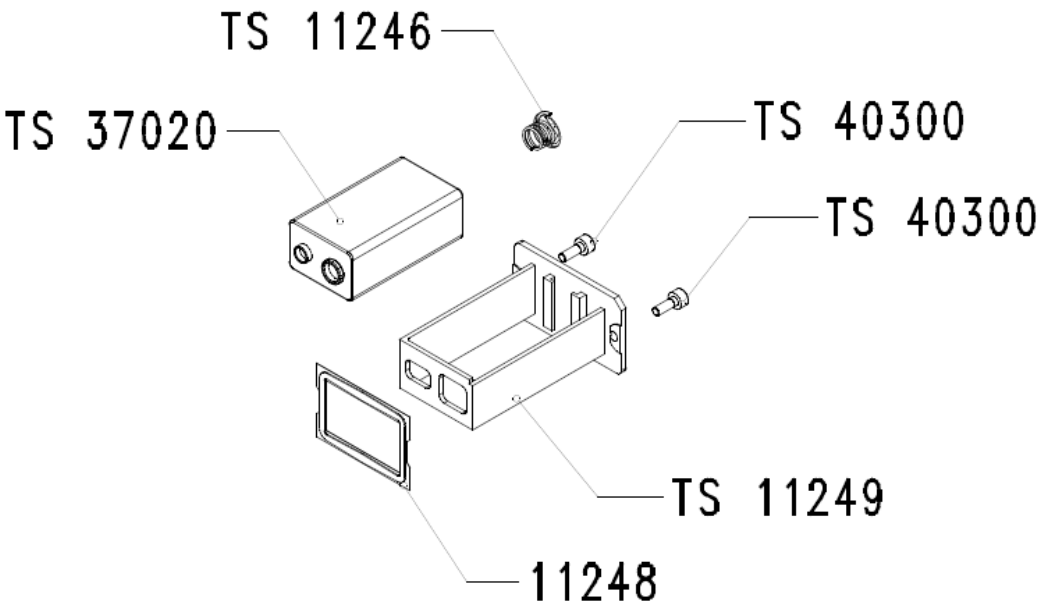


Figure 11-4: battery holder assembly TS 10189, details

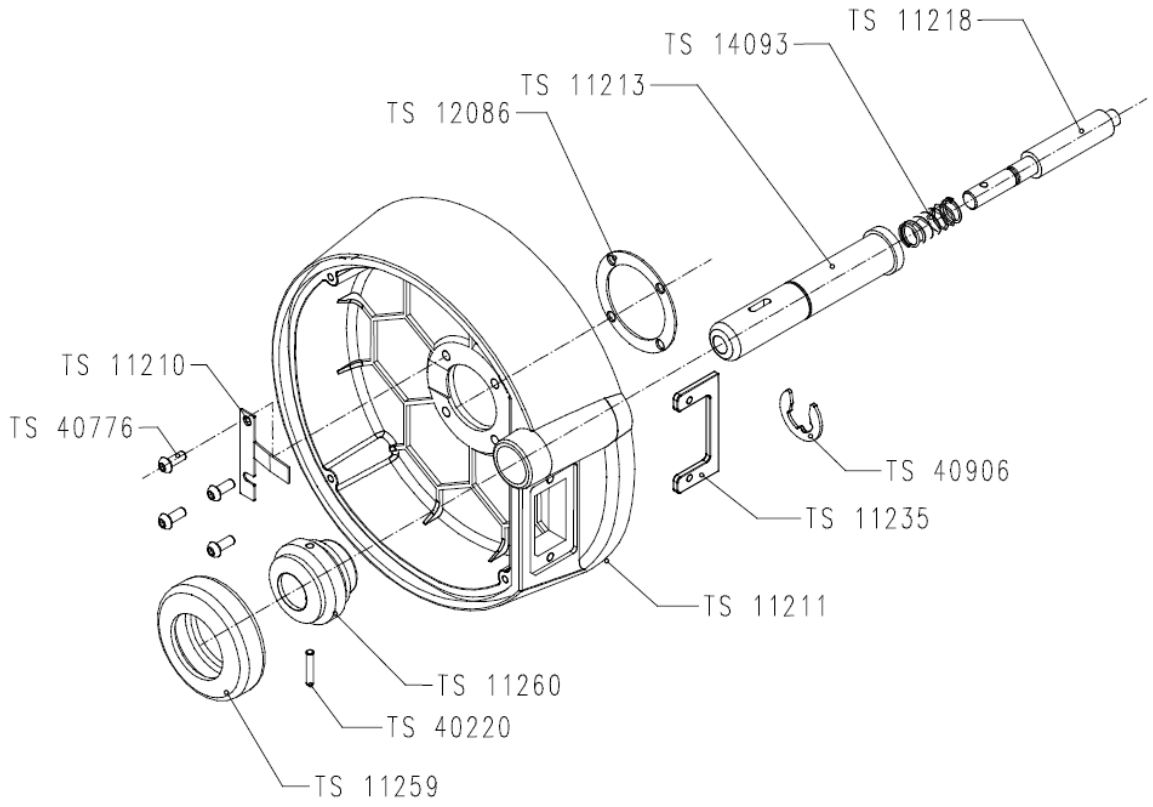


Figure 11-5: electronic box assembly TS 10190, details
(the screws TS 40776 and the plate TS 11210 are not included in the TS 10190 assembly; they shall be ordered separately) Screws TS 40776 must be glued when fitted)

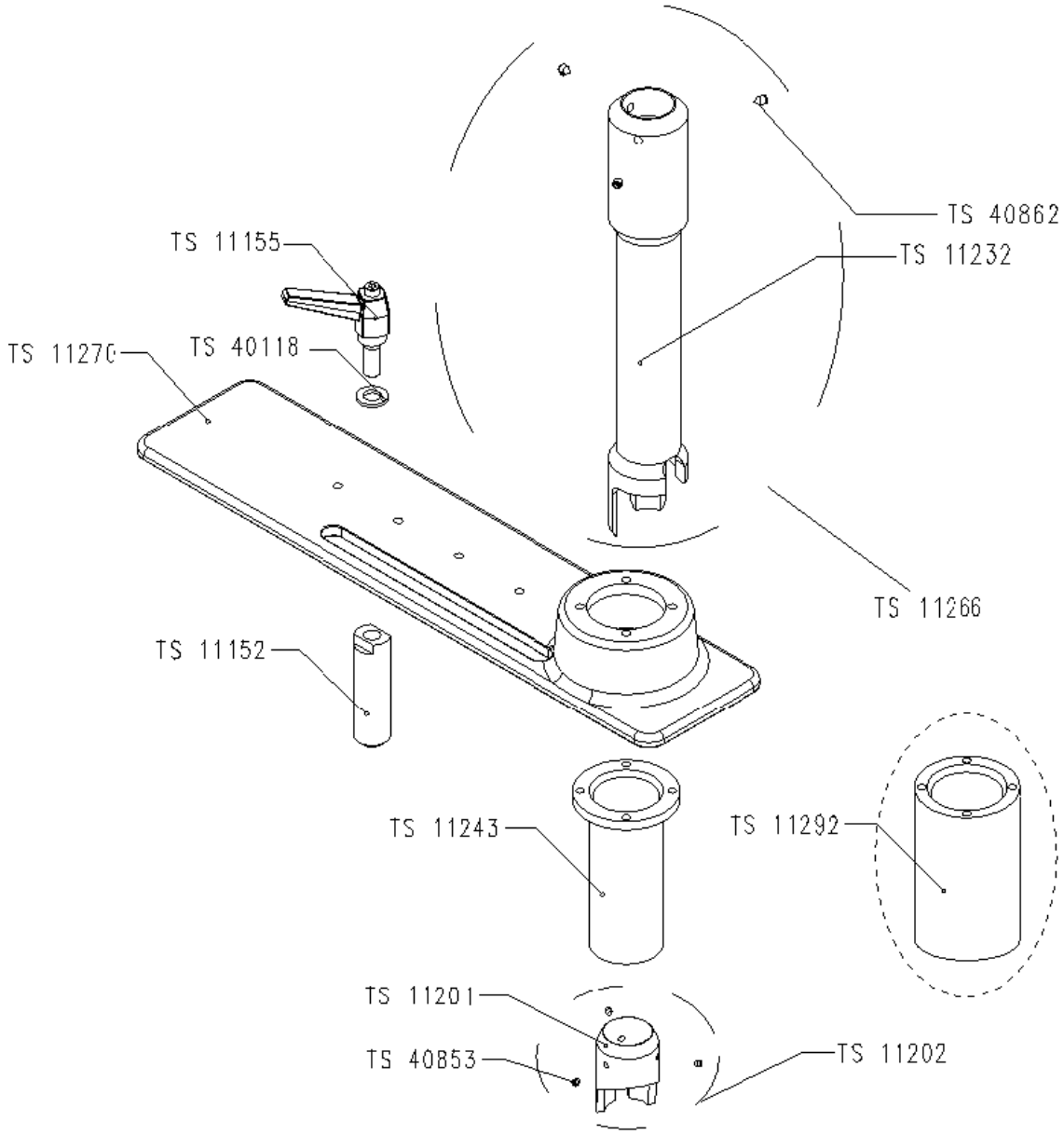


Figure 11-6: French base plate

For 0 reading index adjustment on tape use 6mm spacer (see Verification and adjustment of the reading index 8.11)

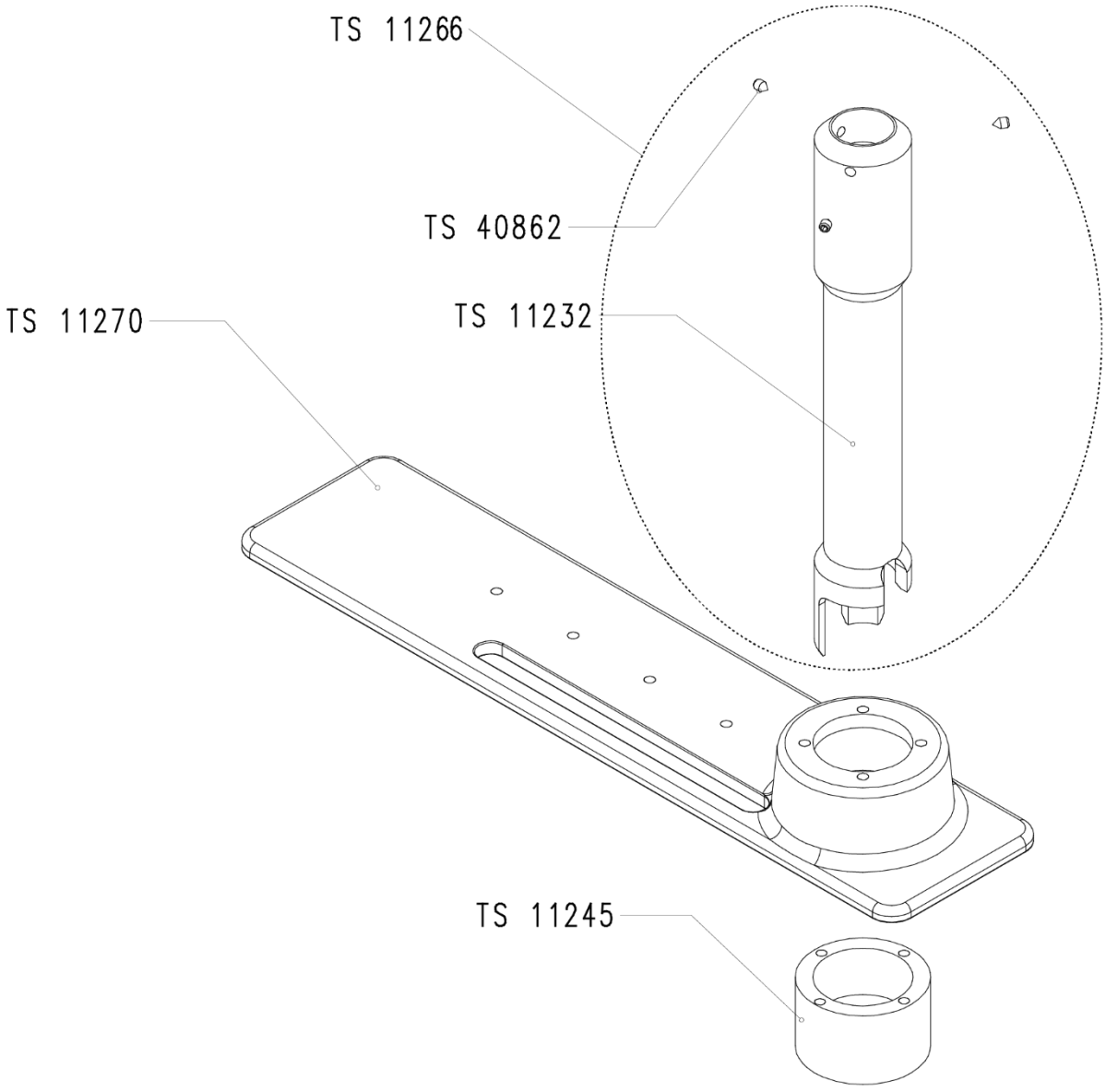


Figure 11-7: Visc base plate

For 0 reading index adjustment on tape use 6mm spacer (see Verification and adjustment of the reading index 8.11)

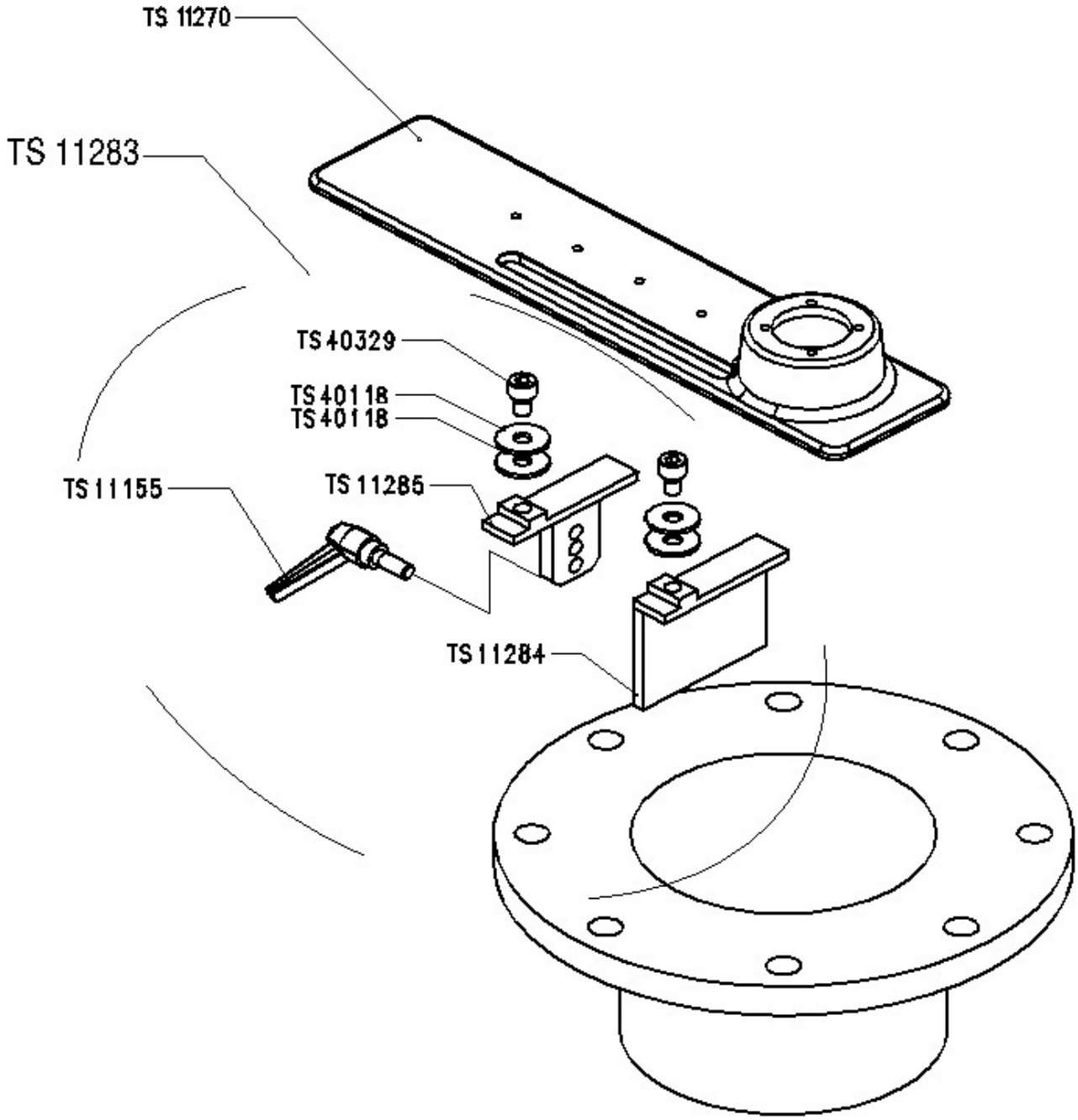


Figure 11-8: Pipe clamp assembly

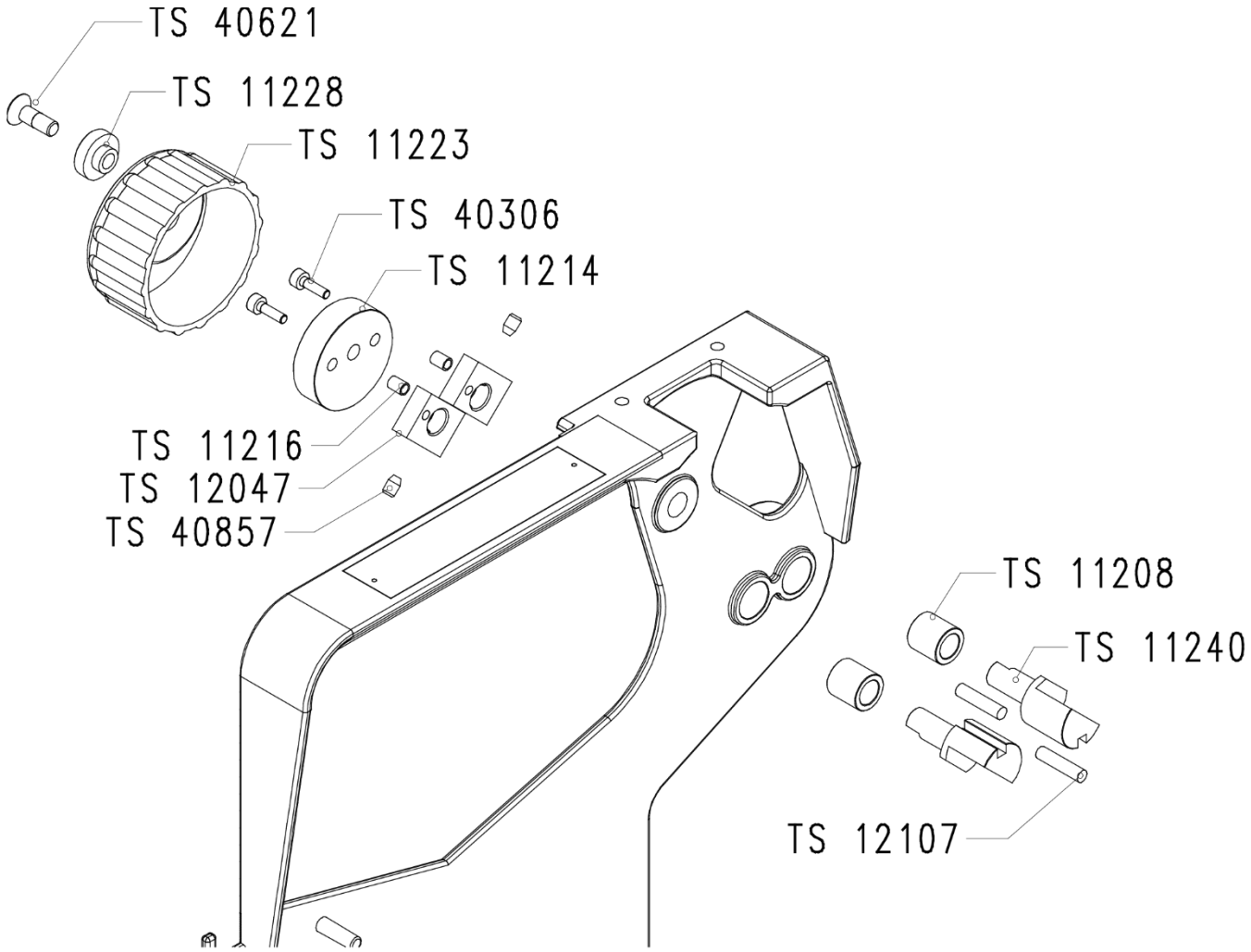


Figure 11-9: Tape cleaner, details

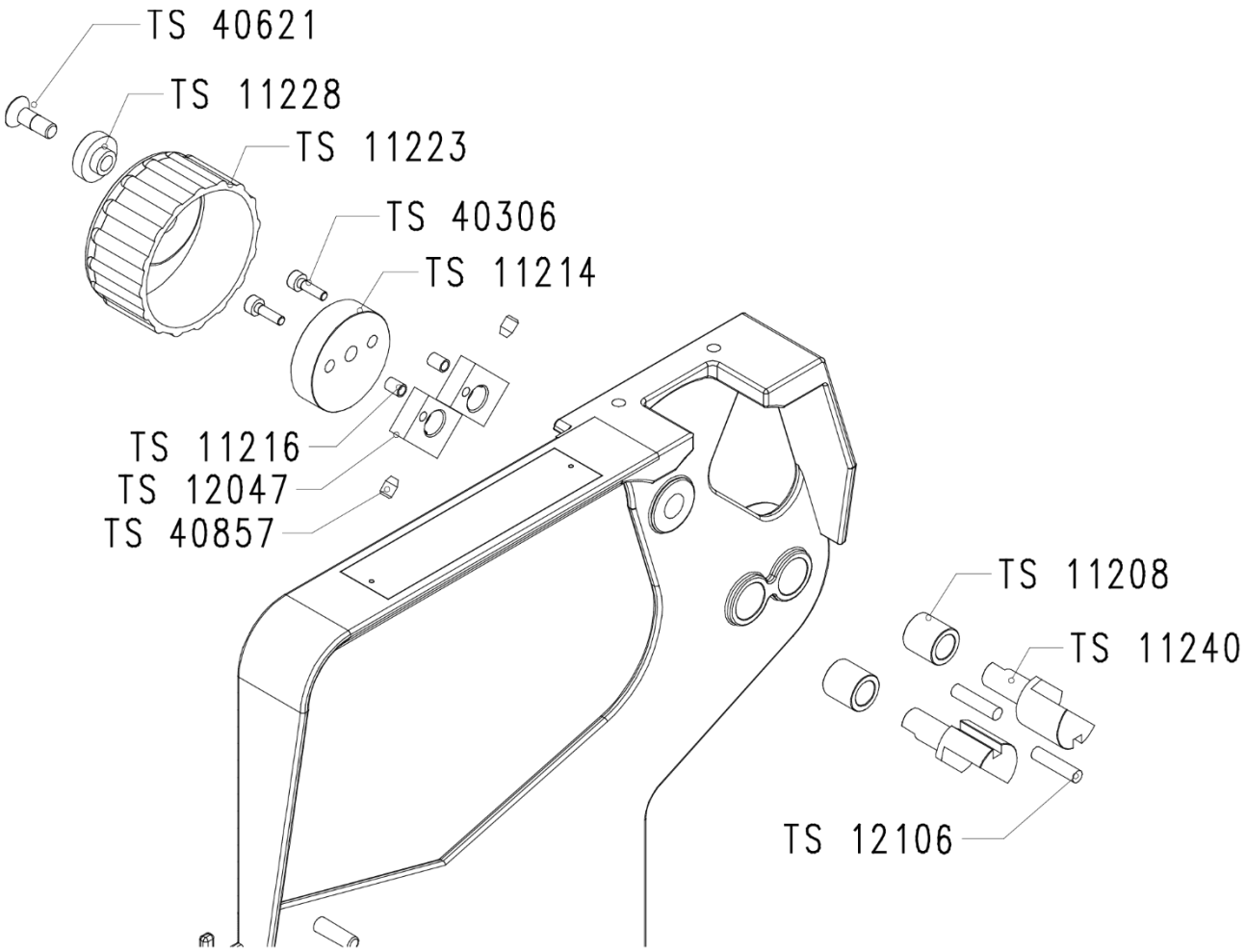
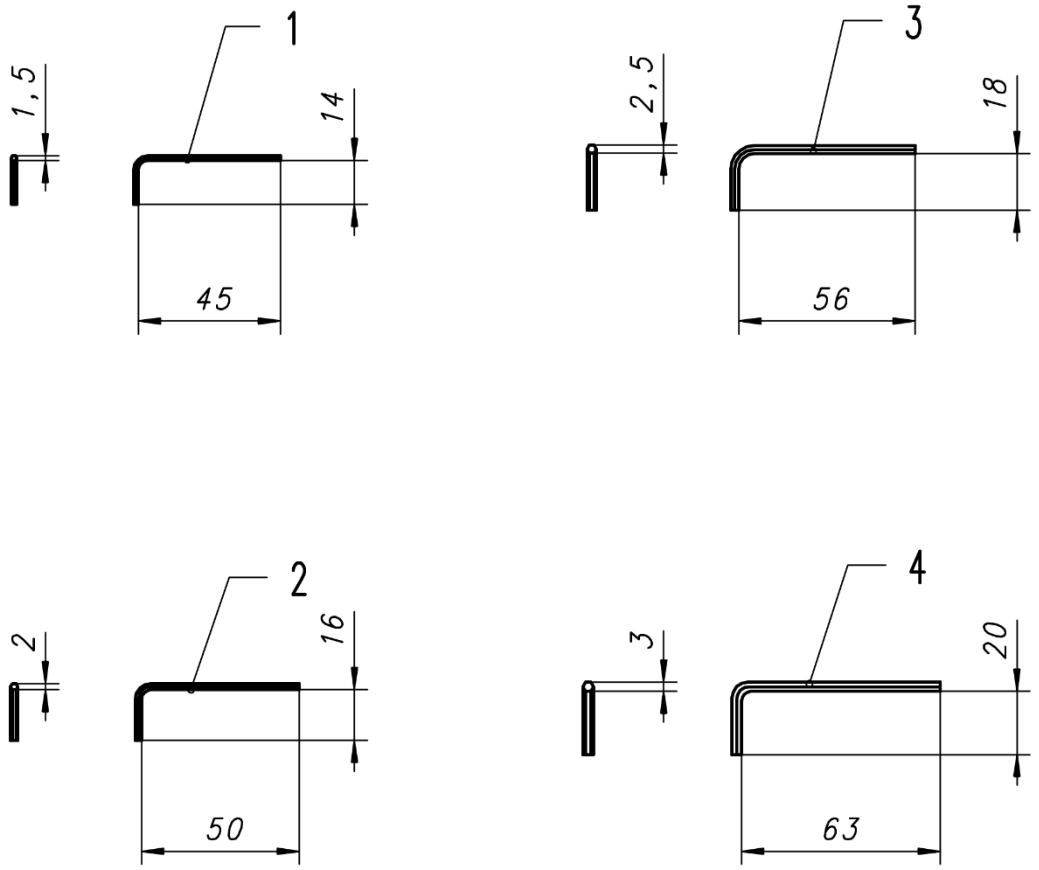


Figure 11-10: Tape cleaner for chemical version, details



Item	Qt	Weight	Description	Material	TS #	ND #
1	1	1	Hexagon key 1.5mm	Steel	50305	ISO 2936
2	1	2	Hexagon key 2mm	Steel	50346	ISO 2936
3	1	3	Hexagon key 2.5mm	Steel	50300	ISO 2936
4	1	5	Hexagon key 3mm	Steel	50345	ISO 2936
5	1	6	Sachet PEBD 90x75	-	50335	-

TOLERANCES UNLESS OTHERWISE SPECIFIED								
Norm.Size	Over		6	30	100	300	1000	Angles
Fit	To	6	30	100	300	1000	2000	
Fine	±	0,05	0,1	0,15	0,2	0,3	0,5	0,1°

Weight: 17 Th. 12 Eff.

ISSUE 1 : 19.9.1994

REMOVE ALL BURRS AND SHARP EDGES

1:2

MPSA

Drawn: CPI 19.09.1994

Control:

Replacement for: ND

Replaced by: ND

UTI GT

Tool for UTI GT

TS 50347

ND 40854

REF ND 20170

Modification | Visa | Date | Is

5

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