



# HELLTECH Solutions Oil & Gas Measurements System



# HELLTECH Solutions and Tank Gauging Measurement Systems

A Hellenic Branch Helltech company located in Greece specialized all measuring and sourcing tank instruments. Helletch is an ISO 9001:2015 Accredited company for In-house, On-board, Offshore Oil & Gas industry and has the best Calibration Measurement Capability to provide the faster solutions as required by customers around the world.

Our lab is equipped with high-tech equipment traceable to the standards. Our professional Calibration Technicians has years of experience on measurement devices such as MMC/UTI sampling and dip unit's. Using the latest technology and advanced standards, calibration and repair of equipment are achieved with the best accuracies possible.

A reliable partner for Calibration, Rental, Testing services and Supply of Instruments and spares around the world. We serve all type of Offshore Oil and Gas, Marine Tankers, LNG-LPG tankers and Shore Refineries'.

We are an independent calibration hub providing Calibration and Testing services throughout Greece and overseas.

We at Helltech Measurement device provide spare parts , calibrate an extensive range of instruments such as pressure, temperature, electrical, humidity, dimensional, chemical, mechanical and many others.

# Portable level, pressure gauging and sampling equipment for marine applications

*CLOSED ELECTRONIC GAUGE*

*RESTRICTED ELECTRONIC GAUGE*

*SAMPLING EQUIPMENT*

*ACCESSORIES*  
*- DIP*  
*- Oxy*  
*- PRESS*

*VAPOUR LOCK VALVES*

*PORTABLE DIGITAL THERMOMETER*

*SERVICE STATION NETWORK*

*Disclaimer- WARRANTY*

Measurement accuracy is essential for the sale, purchase and handling of petroleum products. It reduces the likelihood of disputes between buyer and seller and facilitates control of losses. Accurate measurement demands the use of standard equipment and procedures.

Although automatic level gauging systems are in widespread use in the petroleum industry for the measurement of petroleum liquids in storage tanks, manual tank gauging is still widely applied as the normal technique for level measurement in non-pressurized and vapour tight tanks. It is highly accurate provided the correct procedures are carefully observed.

Manual tank gauging is the method that shall be applied for the calibration (setting) and periodic verification of automatic level gauging (ALG) systems. It is also normally selected as the reference method for the measurement of the level of liquid in a tank, should a dispute arise between the parties in a commercial transaction.

### **PORTABLE ELECTRONIC GAUGING DEVICES (PEGDs)**

Portable electronic gauging devices are multi-functional in that they may measure other functions such as the level of any oil/water interface, temperature, in addition to measuring ullage.

Portable electronic gauging devices are available for either open, restricted, or closed gauging applications. Closed and restricted gauging operations will generally require the portable electronic gauging device to be used in conjunction with a compatible vapour lock valve. Alternatively, a suitable adapter will be required when it is necessary to use a PEGD (that is designed to be used with one particular type of valve fitting) with a different vapour lock valve fitting.

Representative measurements of the temperature of the tank contents are also required to convert the observed volume to

a standard volume measurement. When the tank contains free water in addition to the petroleum liquid, it will generally be necessary to measure the level of the oil/water interface. If the oil also contains suspended water and/or sediment, representative samples and analysis will normally be required to enable the calculation of the net standard volume of the oil.

### **OPEN, CLOSED AND RESTRICTED GAUGING**

Safety and environmental regulations may restrict tank gauging operations which can result in the release of hydrocarbons or other volatile organic compounds (VOCs) into the atmosphere. In these circumstances, it will not normally be feasible to use traditional open gauging procedures via an open gauge hatch or gauging access point.

When the tank ullage space is pressurised, and/or the tank forms part of a vapour balancing/recovery system, it will normally be necessary to use closed or restricted gauging procedures to avoid de-pressurising the tank and minimise the consequent loss of VOCs. If the vapour from the tank contents is hazardous, it will also normally be necessary to use closed or restricted gauging procedures to minimise the risk of environmental impact.

Closed gauging is the process of taking measurements within a tank using closed gauging devices under closed system conditions. A closed system exists when the operations do not permit the direct exposure and/or release of any tank contents to atmosphere. Manual closed gauging measurements are therefore normally made via a vapour lock valve, using a closed measurement device that provides a gas-tight seal when in use. Restricted gauging is the process of taking measurements within a tank using a restricted gauging device that is operated via a vapour lock valve. Restricted equipment is designed to substantially reduce or minimise the vapour losses that would occur during open gauging, but may still allow some small quantity of vapour to escape because the equipment is not completely gas tight.

### **IMO REQUIREMENTS**

Annex I of MARPOL 73/78  
Chapter II, Reg. 15(3)(b)

The International Convention for the Prevention of Pollution from Ships, 1973 specifies that oil tankers shall be provided with effective oil/water interface detectors approved by the Administration for a rapid and accurate determination of the oil/water interface in slop tanks and shall be available for use in other tanks where the separation of oil and water is affected and from which it is intended to discharge effluent direct to the sea.



# HERMetric UTImeter Gtex

The HERMetric UTImeter Gtex is a portable gas tight liquid level gauge designed to operate on deck of marine vessels. The unit is used for cargo inspection, custody transfer, temperature measurement, free water detection and verification of fixed installed level gauging systems. Connected to a HERMetric vapour control valve fixed installed on deck, the HERMetric UTImeter Gtex avoids any gas release during operation.

The unit enables 3, optionally 4 measurements in one single operation:

- Ullage
- Temperature
- Oil-Water interface level
- Innage, Reference height (Visc version)

A GAUGE IN DIFFERENT VERSION  
DEDICATED TO YOUR APPLICATION:

## HERMetric UTImeter Gtex

- with 1" sensing probe, FKM gaskets for the main applications in hydrocarbons.

## HERMetric UTImeter Gtex Chem

- with 1" sensing probe, FFKM gaskets and tape connector for use in corrosive liquids.

## HERMetric UTImeter Gtex Visc and HERMetric UTImeter Gtex Chem Visc

- with 2 Inch load on the sensing probe, recommended for operation in high viscous products or for innage measurements in hydrocarbons or in corrosive liquids.
- Manual detection of tank bottom.

"A closed system exists when a marine tank vessel does not permit the direct exposure and/or release of the tank content into the atmosphere under normal operating conditions." (API MPMS 17.2 A.4.1.)

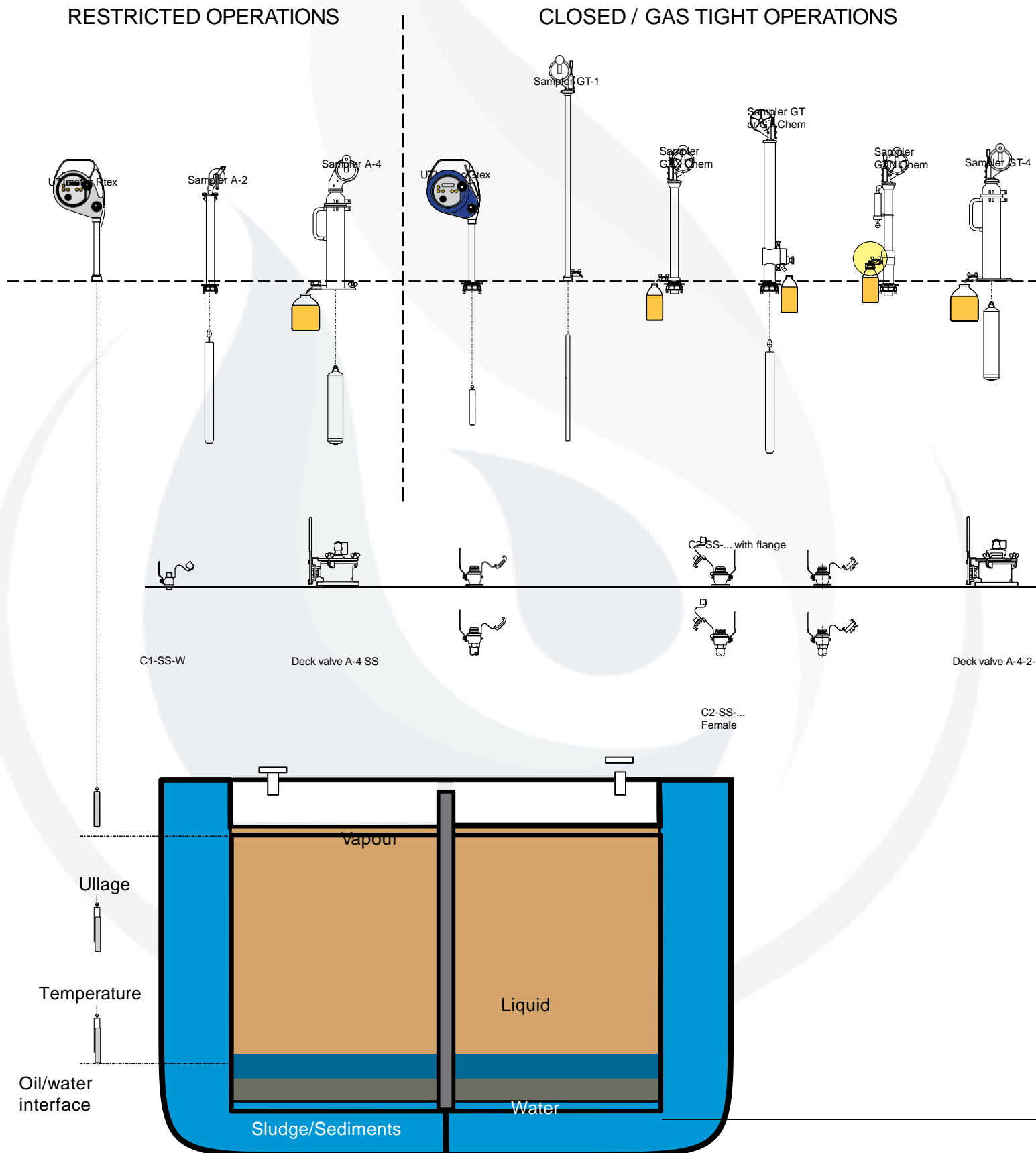


- IMO
  - Solas 74
  - MARPOL 73/78
- ISO, API, IP
- EC Directive 89/336/EEC
- EC Directive 94/9/EC
- EC Directive 96/98/EC
- ATEX, Factory Mutual, IECEx
- National authorities, (USCG, MSA, ..)
- All major classification societies



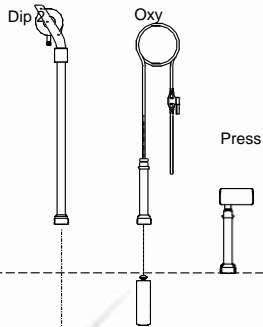
Installation, connection and references for the new UTImeter family are fully compatible with previous HERMetric UTI/ GT3 type of equipment.

# HERMetric portable tank measuring system for marine applications



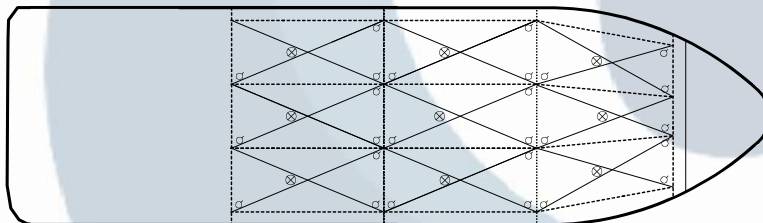
## COMPLIANCE RULES

Equipment type	Function	Complies with
Closed type portable oil/water interface detector (UTI)	Ullage level Temperature gauging Oil - water interface level	SOLAS 1974, REGULATION 60 PARAGRAPH 7 IMO MARPOL 73/78 ANNEX I-CHAP II - REGULATION 15,(3)(b) IMO RESOLUTION MEPC.5 (XIII).
Cargo liquid sampling device	Liquid sampling	OCIMF, API STANDARD RESTRICTED WITH CLOSED SAMPLING OF LIQUID SAMPLING
Inert gas sampling hose & adaptor	Oxygen and flammable gas concentration measuring	IMO REQUIREMENT ON TANKER SAFETY AND POLLUTION PREVENTION, 1978-RESOLUTION A.446(XI), 6.6 (a)
Pressure gauge	Inert gas pressure gauging	IMO REQUIREMENT ON TANKER SAFETY AND POLLUTION PREVENTION, 1978-RESOLUTION A.446(XI), 6.6 (b)
Tank bottom liquid and sediments checking device	Tank bottom dryness & sediment checking	IMO REQUIREMENT ON TANKER SAFETY AND POLLUTION PREVENTION, 1978-RESOLUTION A.446(XI), 4.4.4
Shut on/off valve	Vapour lock installation of portable tank measuring system	IMO MARPOL 1973/78 ANNEX I, REGULATION 13b (3) SOLAS 1974, CHAPTER II-2, REGULATION 60 PARAGRAPH 7 (REQUIREMENT OF CLOSED ULLAGE SYSTEM) IMO MARPOL 73/78 ANNEX I - CHAP II - REGULATION 15,(3)(b) SOLAS 1974, CHAP II-2, REGULATION 62, PARAGRAPH 17



### TYPICAL ARRANGEMENT OF VALVES

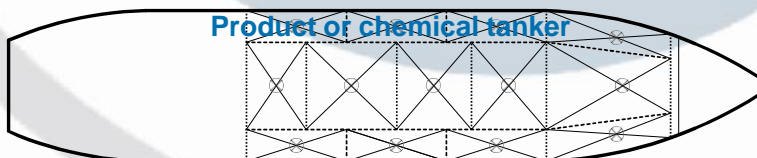
**VLCC, crude oil or oil/chemical tanker**



○ 1 Inch ball valves for dipping

⊗ 2Inch ball valves for gauging and sampling access

**Product or chemical tanker**



⊗ 2 Inch ball valves for gauging and sampling access

Graduated dip stick

- ◉ IMO
  - ◉ Solas 74
  - ◉ MARPOL 73/78
- ◉ ISO
  - ◉ 4512
  - ◉ 3170
  - ◉ 4268
- ◉ API
  - ◉ MPMS Chap 3.1A
  - ◉ MPMS Chap 7
  - ◉ MPMS Chap 8.1
  - ◉ MPMS Chap 17.11
- ◉ IP
  - ◉ PMM Part III-1
  - ◉ PMM Part IV



# HERMetric UTImeter Gtex

The HERMetric UTImeter Gtex is a portable gas tight liquid level gauge designed for closed gauging of hydrocarbons and chemicals. The unit is used for custody transfer, inventory control measurement and free water detection on marine vessels and shore tanks. Connected to a HERMetric vapour control valve fixed on the tank, the HERMetric UTImeter Gtex avoids any gas release during operation.

The unit enables 3, optionally 4 measurements in one single operation:

- Ullage
- Temperature
- Oil-Water interface level
- Innage, Reference height (Visc version)

A GAUGE IN DIFFERENT VERSIONS  
DEDICATED TO YOUR APPLICATION:

## HERMetric UTImeter Gtex

- with 1" sensing probe, FKM gaskets for the main applications in hydrocarbons.

## HERMetric UTImeter Gtex Chem

- with 1" sensing probe, FFKM gaskets and tape connector for use in corrosive liquids.

## HERMetric UTImeter Gtex Visc and HERMetric UTImeter Gtex Chem Visc

- with 2 Inch load on the sensing probe, recommended for operation in high viscous products or for innage measurements in hydrocarbons or in corrosive liquids.
- Manual detection of tank bottom.

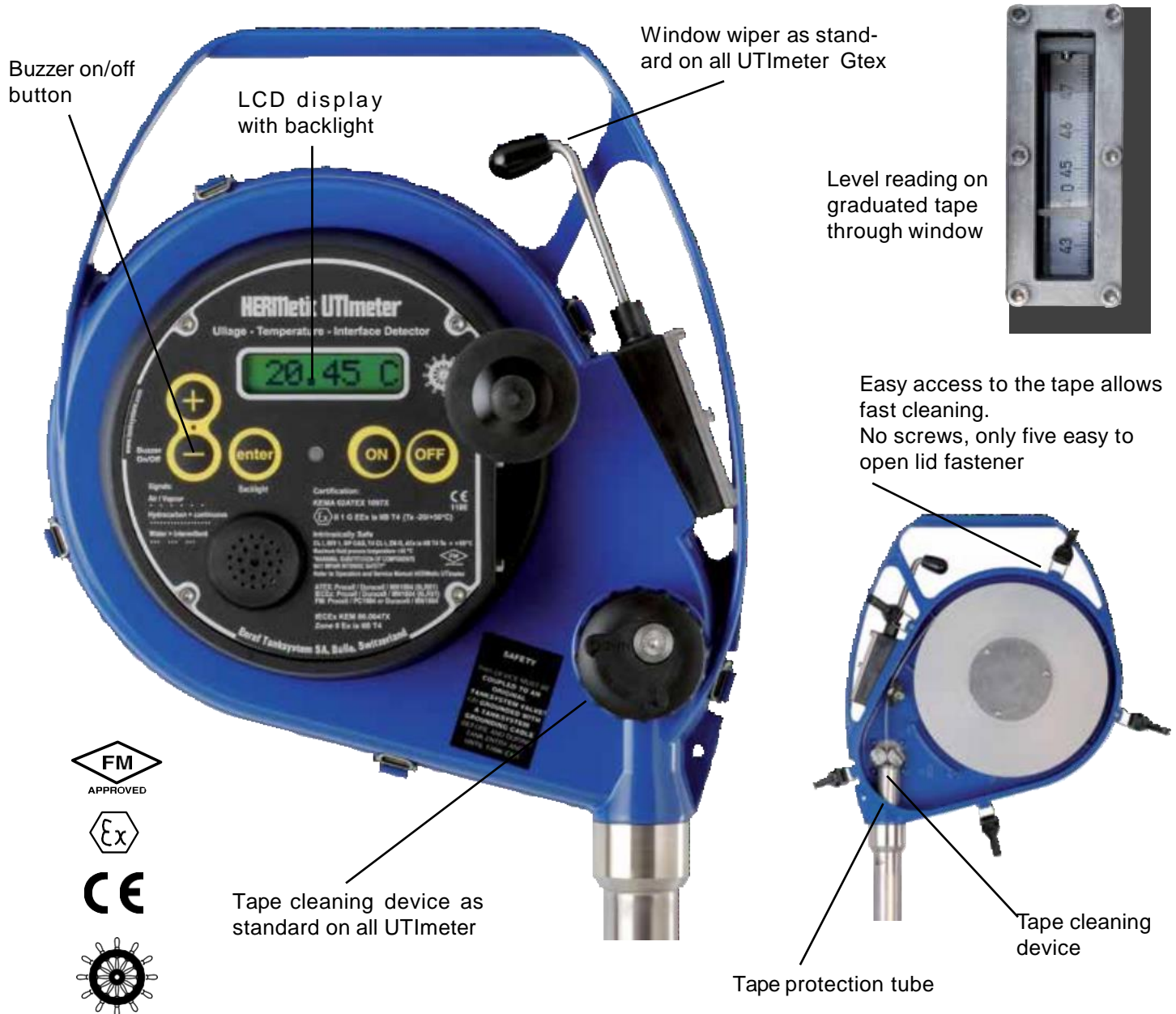


- ◉ IMO
  - ◉ Solas 74
  - ◉ MARPOL 73/78

- ◉ ISO, API, IP
- ◉ EMC: Directive 2004/108/EC
- ◉ ATEX: Directive 94/9/EC
- ◉ MED: Directive 96/98/EC
- ◉ ATEX, FM Approvals, IECEx
- ◉ National authorities, (USCG, MSA, ..)
- ◉ All major classification societies

Installation, connection and references  
for the new UTImeter family are fully  
compatible with previous HERMetric UTI/  
GT3 type of equipment.





## TECHNICAL SPECIFICATIONS:

Accuracy of ullage-interface detection:

Ullage, interface indication:

Maximum tank overpressure:

Tape length:

Tape graduation:

Tape resolution:

Tape accuracy:

**Meets API MPMS Chap 3.1A and ISO 4512 requirements**

Temperature accuracy:

**Meets API MPMS Chap 7 request**

**Meets ISO 4268 , IP PMM Part IV**

Ambient temperature range:

Temperature sensor measurement range:

Temperature measurement resolution:

Temperature reading:

LCD Display:

Power:

Weight with 15 meter / 50ft tape:

**Hazardous environments approvals**

ATEX

FM Approvals

± 2 mm (± 0.08" approx.)

Audible and Visible selectable

0,3 bar (4,4 psi)

15 m/50 ft, 30 m/100 ft, 35 m/115 ft

Metric/English

1 mm / 1/16"

± 1.5 mm/30 m (±1/16"/100 ft approx.)

± 0.1°C (0°C to 70°C);

± 0.2°F (32°F to 158°F)

-20°C to 50°C / (-4°F to 122°F)

-40°C to 90°C / (-40°F to 194°F)

0.01° or 0.1° selectable

°C or °F selectable

8 characters with backlight

Approved 9V batteries

4.4 kg / 9.7 Lbs.

II 1 G Ex ia IIB T4 / Tamb 50°C

CL I, DIV 1, C&D, T4 Tamb 50°C and

CL I, ZN 0, AEx ia IIB T4 Tamb 50°C

Zone 0 Ex ia IIB T4 -20°C < Ta < +50°C

## ULTRA SENSING PROBE

### Benefits:

- 100 % repeatability of measures.
- Continuous temperature reading.
- High accuracy and stability.
- Chemically resistant to corrosive liquids (Chem version).
- Easy access for battery exchange.
- **Sensor exchange without need of new calibration.**
- Low weight for easy operation and carry around.
- No temperature drift. No degradation of the sensitivity due to sensor ageing.
- Interchangeable adapters for connection to different vapour control valves.
- Tape cleaning devices, window wiper and tape protection on all units as standard.

### Low maintenance cost:

Fully modular unit. Change tape, storage tube, sensor or instrument unit yourself.  
Easy and detailed instructions in Operation and Service Manual.



Storage tube SS1-Q2



Storage tube SS1-Q1



Visc version  
Storage tube SS2-Q2



Interchangeable adapters  
for connection to different  
vapour control valves ( page  
13 )



Type: C2-SS-SEC

Mechanical tape cleaning device  
as standard on all UTImeter



Type: C1-SS-W

Sensor fitted with additional load,  
recommended for operation in  
high viscous products or for in-  
nage measurements



All HERMetric UTImeters are now equipped with the sensor “**ULTRA**” for use in low and high viscous liquids. The ULTRA sensing probe consists of a stainless steel tube terminated by a PEEK head. The sensing probe includes an ultrasonic liquid level sensor, a temperature sensor and a conductivity electrode. The sensitivity for ullage and interface measurement does not require any adjustment. The sensor is calibrated once at the factory and does not require subsequent calibration. The temperature transducer is a RTD element. The characteristics of the RTD element are stored inside the sensor. The sensor is sending true temperature values to the electronic box and display.

### Benefits

- 100% repeatability.
- No adjustment of the sensitivity required.
- Small diameter for use on 1” HERMetric valves.
- Chemically resistant to corrosive liquids (Chem version).
- High mechanical stability.
- No degradation of the sensitivity due to ageing of the sensor.



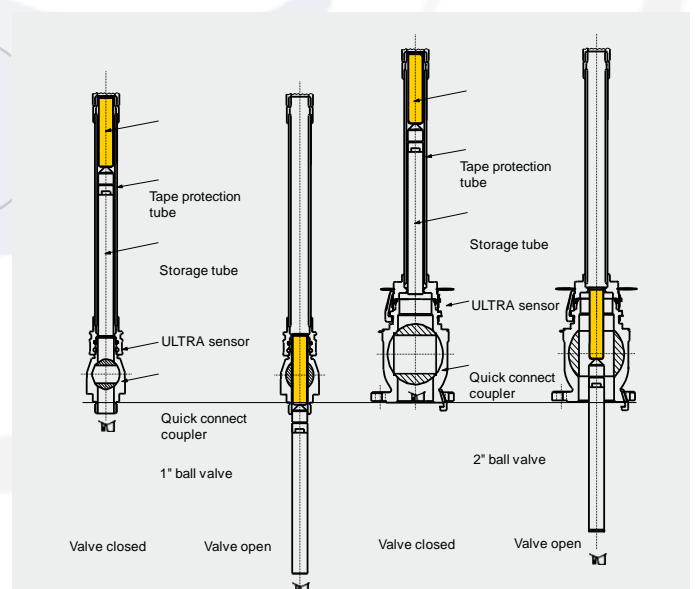
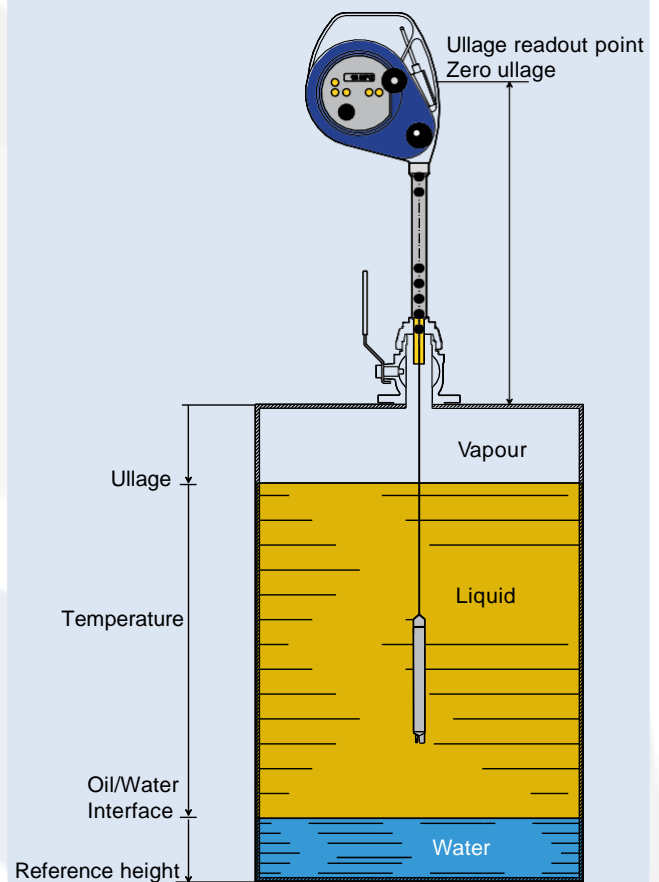
All HERMetric portable level gauges and 2 Inch samplers are delivered with a **tailor made plywood carrying case as a standard**. This special box avoids any damage during transport and storage.



**Special tape protection** to protect the tape from inadvertent cuts by closing the valve while the sensor is inside the tank. This mechanical safety device prevents damages on tape and reduces repair costs.



### Principle of installation



# HERMetric UTImeter Rtex

The HERMetric UTImeter Rtex is a portable liquid level gauge designed for restricted gauging of petroleum products. The unit is used for custody transfer, inventory control measurement and free water detection on marine vessels and shore tanks. The HERMetric UTImeter Rtex has to be connected to a HERMetric vapour control valve fixed on the tank.

The unit enables 3, optionally 4 measurements in one single operation:

- Ullage
- Temperature
- Oil-Water interface level
- Innage, Reference height (Visc ver)



Storage tube SS1-Q2



Storage tube SS1-Q1



A GAUGE DEDICATED TO YOUR APPLICATION:

## HERMetric UTImeter Rtex

- with 1" sensing probe, FKM gaskets for the main applications in hydrocarbons.

## HERMetric UTImeter Rtex Visc

- with 2 Inch load on the sensing probe, recommended for operation in high viscous products or for innage measurements in hydrocarbons.
- Manual detection of tank bottom.

- IMO
  - Solas 74
  - MARPOL 73/78
- ISO, API, IP
- EMC: Directive 2004/108/EC
- ATEX: Directive 94/9/EC
- MED: Directive 96/98/EC
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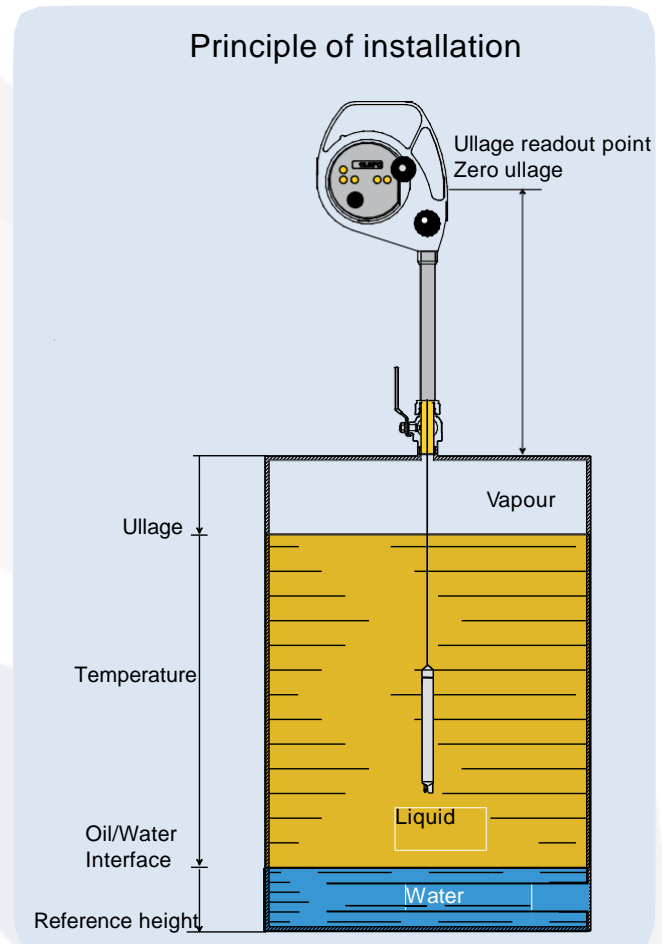
07/07/2019

HELLTECH Solution

12



All HERMetric UTImeters are now equipped with the sensor “ULTRA” for use in low and high viscous liquids. The ULTRA sensing probe consists of a stainless steel tube terminated by a PEEK head. The sensing probe includes an ultrasonic liquid level sensor, a temperature sensor and a conductivity electrode. The sensitivity for ullage and interface measurement does not require any adjustment. The sensor is calibrated once at the factory and does not require subsequent calibration. The temperature transducer is a RTD element. The characteristics of the RTD element are stored inside the sensor. The sensor is sending true temperature values to the electronic box and display.



## TECHNICAL SPECIFICATIONS:

Accuracy of ullage-interface detection:

$\pm 2 \text{ mm}$  ( $\pm 0.08''$  approx.)

Ullage, interface indication:

Audible and Visible selectable

Tape length:

15 m/50 ft, 30 m/100 ft, 35 m/115 ft

Tape graduation:

Metric/English

Tape resolution:

1 mm / 1/16"

Tape accuracy:

$\pm 1.5 \text{ mm}/30 \text{ m}$  ( $\pm 1/16''/100 \text{ ft}$  approx.)

**Meets API MPMS Chap 3.1A and ISO 4512 requirements**

Temperature accuracy:

$\pm 0.1^\circ\text{C}$  ( $0^\circ\text{C}$  to  $70^\circ\text{C}$ );

**Meets API MPMS Chap 7 request**

$\pm 0.2^\circ\text{F}$  ( $32^\circ\text{F}$  to  $158^\circ\text{F}$ )

**Meets ISO 4268 , IP PMM Part IV**

Ambient temperature range:

$-20^\circ\text{C}$  to  $50^\circ\text{C}$  / ( $-4^\circ\text{F}$  to  $122^\circ\text{F}$ )

Temperature sensor measurement range:

$-40^\circ\text{C}$  to  $90^\circ\text{C}$  / ( $-40^\circ\text{F}$  to  $194^\circ\text{F}$ )

Temperature measurement resolution:

0.01° or 0.1° selectable

Temperature reading:

°C or °F selectable

LCD Display:

8 characters with backlight

Power:

Approved 9V batteries

Weight with 15 meter / 50ft tape:

3.7 kg / 8.1 Lbs.

**Hazardous environments approvals**

II 1 G Ex ia IIB T4 / Tamb 50°C

ATEX

CL I, DIV 1, C&D, T4 Tamb 50°C and

FM Approvals

CL I, ZN 0, AEx ia IIB T4 Tamb 50°C

IECEX

Zone 0 Ex ia IIB T4  $-20^\circ\text{C} < T_a < +50^\circ\text{C}$

# HERMetric Sampler GTX Chem or Sampler GTN Chem

The **HERMetric Sampler GTX Chem** and **HERMetric Sampler GTN Chem** are designed for closed sampling of liquids or chemicals, which present a fire, health or air pollution hazard. The gas tight construction of these units avoids a pressure release from the tank and exposure to fumes during operation.

For the **HERMetric Sampler GTX Chem** the transfer of the liquid from the sampling bottle to a laboratory bottle occurs by overpressuring the upper chamber of the sampler with a pump.

- After sampling, the liquid can be transferred into a laboratory bottle by opening the transfer valve and actuating the pressure pump.
- The graduated tape permits checking of sampling bottle height.
- The HERMetric Sampler GTX Chem is very easy to clean and fully compatible with all kind of non corrosive and corrosive liquids.

For the **HERMetric Sampler GTN Chem**, the sample can be transferred under closed condition. This transfer guarantees the integrity of the sample, since the liquid is never in contact with the atmosphere. A closed vapour recovery system dispatches the vapours back into the tank during transfer of the liquid into the laboratory bottle.

- The HERMetric Sampler GTN Chem can be purged with inert gas before and/or after sampling.
- The sampled liquid is never in contact with the atmosphere.
- The sampling height can be measured on the graduated tape.

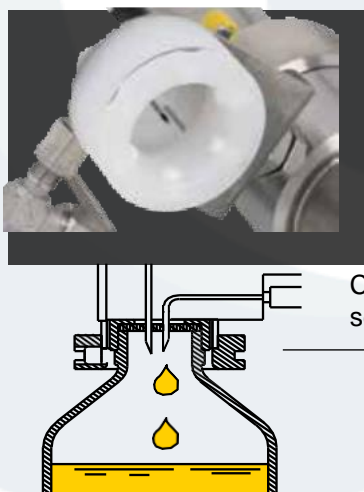
HERMetric Sampler GTX Chem



HERMetric Sampler GTN Chem



Vapour return back into the tank.



Closed transfer into sealed laboratory bottle.

- ISO
  - 3170
- API
  - MPMS Chap 8.1
  - MPMS Chap 17.11

## TECHNICAL SPECIFICATIONS:

	HERMetric GTX Chem	HERMetric GTN Chem
Maximum tank overpressure :	0,3 bar	0,3 bar
Unit height:	800 mm	801 mm
Weight :	5.3 kg	7.5 kg
Tape length :	30m / 100 ft	30m / 100 ft
Capacity of sampling bottle :	Approx. 0.5 l	Approx. 0.5 l
Capacity of laboratory bottle :	FFKM	0.47 l, 16 oz
Type of gaskets:	Stainless steel AISI 316, PTFE, PVDF	FFKM
Materials:	II 1 G c IIB T6	II 1 G c IIB T6
<b>Hazardous environments approvals</b>		
ATEX		

# HERMetric Large Volume Samplers with 4 Inch Valves

The **HERMetric Sampler A-4** is designed for restricted sampling and the **HERMetric Sampler GT4** for closed, gas tight sampling of liquids which present a fire, health or air pollution hazard.

The sampler housing is mounted on top of the HERMetric 4 Inch deck valve. The sample is taken by a vertical move of the bottle inside the liquid. The bottle is linked with a graduated tape. A reading window allows monitoring the bottle location. The opening of the bottle valve is realized by lowering the sampling bottle until it is sitting on the ball of the valve. The transfer of the liquid from the sampling bottle to a laboratory bottle occurs by opening the transfer valve at the bottom of the sampler. A pump can be connected to the winder to accelerate and complete the transfer of the sample. Choose the type of sampling bottle fitting your needs. See page 17.

The **HERMetric Sampler A-4** is dedicated for applications where restricted sampling is accepted and more than 0.5 litre of liquid is needed.

The **HERMetric Sampler GT4** is dedicated for closed sampling of liquids and where more than 0.5 litre of liquid is needed. Its gas tight construction avoids a pressure release from the tank and exposure to fumes during operation.

\* Stainless steel construction on request



HERMetric Deck Valve A-4-2-1 SS

2 inch quick connector

1 inch quick connector



4 inch connection

HERMetric Deck Valve A-4 SS

## TECHNICAL SPECIFICATIONS:

Maximum tank overpressure :

Unit height::

Weight :

Tape length:

On request:

Capacity of sampling bottle:

Materials:

**Hazardous environments approvals**

ATEX

### HERMetric Sampler A-4

0,3 bar

770 mm

7.4 kg

30 m / 100 ft

40 m tape length

Approx. 1.8 l.

AISI 316, Rilsan coated Aluminium

II 1 G c IIB T6

### HERMetric Sampler GT4

0,3 bar

770 mm

8.1 kg

30 m / 100 ft

50 m tape length

Approx. 1.8 l.

II 1 G c IIB T6

# Other HERMetric Samplers

The **HERMetric Sampler A-2** is dedicated to applications where restricted sampling is accepted. The sampler A-2 is for connection on 2" HERMetric vapour control valves. The liquid transfer from the sampling bottle to the laboratory bottle occurs under open conditions after closing the vapour control valve.

HERMetric Sampler A-2

The **HERMetric Sampler GT1** is fitted with a gas tight housing designed for closed sampling of liquids, which present a fire, health or air pollution hazard. It protects the storage facility from vapour emission and avoids a pressure release in the tank during sampling. The sampling height can be measured on the graduated tape.

## HERMetric Sampler GT1

- Easy installation on 1 Inch HERMetric vapour control valves with a quick connect coupling.
- The sampling bottle can be easily removed.

HERMetric Sampler GT1



2 Inch connection



HERMetric Compact valve C2-SS-BL

1 Inch connection



HERMetric Compact valve C1-SS-W



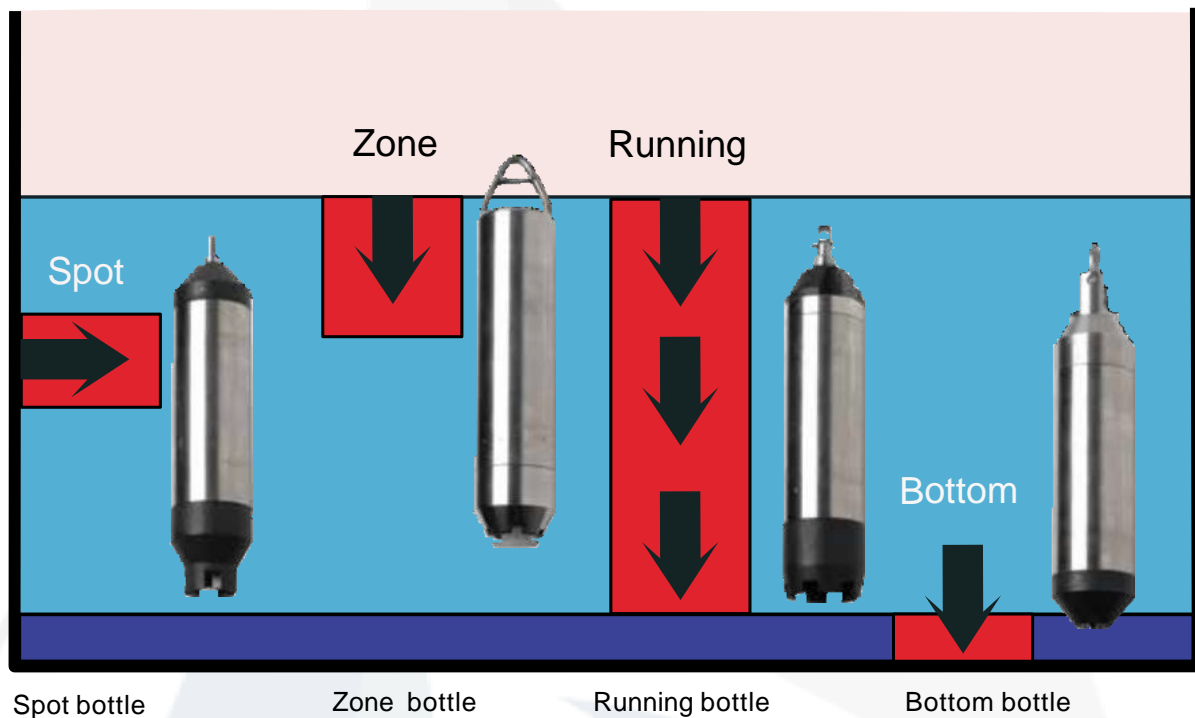
## TECHNICAL SPECIFICATIONS:

	<b>Sampler GT1</b>	<b>Sampler A-2</b>	Type of gaskets: Materials: FKM Stainless steel AISI 316, Brass, PTFE, PVDF
Unit height:	1260 mm	802 mm	
Weight:	4.2 kg	6.2 kg	
Tape length:	30 m, 100 ft	30 m, 100 ft	
Capacity of zone sampling bottles:~ 0.3 l			



# Sampling bottles

All HERMetic samplers are delivered with a zone sampling bottle. Additional spot, bottom or running sampling bottles are available for 2 Inch and 4 Inch type of HERMetic samplers.



## Special adapters

Storage tubes and adapters for HERMetic equipment (gauges and samplers) designed for connection on existing non- Tanksystem valves on board. Honeywell Marine can deliver most of its gauges and samplers with the suitable adaptor to fit on already installed valves.



**TS 55000**  
Used to connect all HERMetic units with 1Inch quick connect coupling to valves with UNF 2 1/2 Inch connection.

**TS 55115**  
Used to connect all HERMetic units with 2 Inch quick connector to valves with UNF 2 1/2 Inch connection.

A grounding cable has to be installed if HERMetic gauges are used with competitor valves.



\*Other special adapters on request

# Accessories

## HERMetric DIP 2

A 500 mm long graduated DIP rod, designed for easy penetration of sediments on tank bottom, is attached to a 30 metres. long stainless steel tape, which is coiled on a reel graduated in combined metric and English unit. The storage tube is fitted with a quick connect coupling for fast and easy installation on all 1 Inch quick connect nipples.

Weight. 3,3 kg

## HERMetric DIP 2 Gas tight

The HERMetric DIP 2 is also available in closed, gas tight version. The gas tight construction of this unit avoids a pressure release from the tank and exposure to toxic fumes during operation.

## HERMetric OXY

As per IMO requirement on Tanker Safety and Pollution Prevention, oxygen level shall be determined before start of crude oil washing. The HERMetric OXY samples inert gas ( or any other gas ) over full tank height without escape of gas to the atmosphere. Hollow brass plug fitted to the rubber hose of up to 30 meters length. Valve provided on hose before gas analyser ( analyser not supplied ) for air purging of hose. HERMetric OXY adapts to all 1 Inch quick connect nipples.

Weight: 3,8 kg

IMO requirements on Tanker Safety and Pollution Prevention, 1978 - resolution 15

Annex 6.6 : Before each tank is crude oil washed, the oxygen level shall be determined at a point 1 meter from the deck and at the middle region of the ullage space and neither of these determinations shall exceed 8 percent by volume.

## HERMetric PRESS

Tanker operation requires verification of tank pressure without potential for error due to signal conversion or remote transmission. This rugged high precision gauge provides reliable reading within the range of 1500 mm vacuum and 2500 mm pressure. Gauge is protected by thick rubber rim and mounted on top of vapour tight adaptor for closed tank operation. Quick connect coupling lower end for use with all 1 Inch quick connect nipples.

Weight. 1,5 kg

The IMO requirements on Tanker Safety and Pollution Prevention, 1978 - resolution A.446(XI), § 4.4.4 : Means such as level gauges, hand dipping, and stripping system performance gauges as referred to in paragraph 4.4.8 shall be provided for checking that the bottoms of cargo tanks are dry after the crude oil washing. Suitable arrangements for hand dipping must be provided at the aftermost portion of a cargo tank and in three other suitable locations.



HERMetric Dip2

*For connection on HERMetric valves with 2" connector, an additional adaptor can be supplied.*



HERMetric Dip2 GT



HERMetric OXY



HERMetric Press

# Vapour lock valves

**HERMetic Compact Valves for connection of portable HERMetic equipment, specially approved & certified for marine application.**

The **HERMetic Compact valves** are specially designed to fit all portable HERMetic equipment with a HERMetic quick connector and represent the base for the zero-ullage reference when installed at the appropriate height. They ensure a safe and reliable operation of all portable HERMetic units certified for use in classified areas. The valves are available in three different sizes: 1 Inch, 2 Inch and 4 Inch. HERMetic valves are approved by all major classification societies.

## **HERMetic Compact valves C1-SS-W**

1Inch full bore ball valve with 1Inch male BSP pipethread designed to support all portable HERMetic equipment with HERMetic 1Inch quick connector.

## **HERMetic Compact valves C1-SS-P**

1Inch valve fitted with a special pressure cap cover. This cover is specially designed for use with hazardous chemicals and protect against inadvertent opening.

## **HERMetic Compact valves C2-SS-BL**

2 Inch full bore ball valve made of corrosion resistant stainless steel with high Molybdenum content. The top part is designed to support HERMetic equipment with 2 Inch quick connector.

\*Option: Special handle for pad lock.

Weight: 4,8 kg

All HERMetic 2 Inch ball valve are available with 2 Inch female thread or with DUJ multistandard flange.

**DUJ multistandard flange fits following standards: DIN PN 10 DN 50**

**DIN PN 16 DN 50**

**DIN PN 25 DN 50**

**DIN PN 40 DN 50**

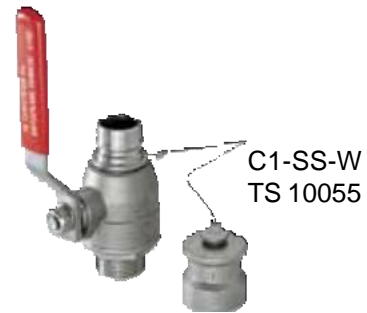
**JIS 5K 50**

**JIS 10K 50**

**ANSI 150 lbs 2 Inch**

Materials:

Stainless steel AISI 316 with minimal Mo content 2.7%,  
PTFE seats



C1-SS-W  
TS 10055



C1-SS-P  
TS 10080



C2-SS-BL  
TS 10081



C2-SS-BL Female  
TS 10085

# Vapour lock valves

## HERMetic Compact valves C2-SS-W

Same valve as HERMetic Compact valve C2-SS-BL except the cover, which is fitted with a 1 Inch quick-connect nipple identical to the one supplied on the smaller C1-SS-W Compact valve. This nipple matches with all HERMetic units and accessories with 1 Inch connection. The complete cover can be removed for connection of equipment with 2 Inch connector.

\*Option: Special handle for pad lock.

Weight: 5,1 kg

Materials: Stainless steel AISI 316, PTFE seats



C2-SS-W  
TS 10083

## HERMetic Compact valves C2-SS-SEC

Same valve as HERMetic Compact valve C2-SS-BL except a doubly locked security cover which prevents any water ingress and protects against inadvertent opening. The cover is secured to the valve with a stainless steel cable. Specially designed for hazardous chemicals.

\*Option: Special handle for pad lock.

Weight: 5,4 kg

Materials: Stainless steel AISI 316, PTFE seats



C2-SS-SEC  
TS 10082



C2-SS-SEC Female  
TS 10078



### HERMetric Deck Valve A-4 SS

Specially designed heavy-duty compact ball valve totally made of stainless steel 316 and with Teflon gaskets. The deck flange is according to ANSI 150 lbs. standard. This 4 Inch deck valve is provided with a swing away cover fitted with a 1 Inch quick-connect male coupling. This coupling takes all HERMetric equipment fitted with a 1 Inch female quick connector. For sampling, open the cover and install the HERMetric Sampler A-4 or Sampler GT4 on top of the valve. Three wing nuts are used to secure the cover or alternatively the sampler chamber.

Weight: 24 kg

Materials: Stainless steel AISI 316, PTFE seats



A-4 SS

### HERMetric Deck Valve A-4-2-1 SS

This valve has been specifically designed so that all the HERMetric equipment, with either 1", 2", or 4" connections, will be compatible. Organisations such as the American Petroleum Institute and the Energy Institute, recommend the size of the vapour valve to be 4" (100mm). The 4" valve will allow access to a larger number of gauging and sampling equipment than ever before, depending on the product and sample type required. Vapour valves smaller than 100mm in diameter are suitable for gauging but can severely limit the type of sampling equipment that can be used and, ultimately, the quality of the sample. The size and location of the vapour valve for closed system measurement and sampling is critical to the process. A valve of the proper size, located correctly, will allow more accurate measurements to be taken than one that is improperly located and of insufficient size. The new multi-purpose valve gives the flexibility to gauge products from crude to chemicals. Most importantly, it will allow the use of sampling equipment with the capabilities of retrieving sample quantities from 0.33 litres to 1.8 litres in one single operation.

Weight: 25 kg

Materials: Stainless steel AISI 316, PTFE seats



A-4-2-1 SS  
TS 98172

# HERMetic Onecal: Intrinsically safe portable digital thermometer

The **HERMetic Onecal** has been designed for use in hazardous environments with outstanding characteristics regarding safety, ease of operation, accuracy, reliability and cost efficient maintenance. Onecal stands for one reference point only for calibration. The reference point is the ice point which can easily be reproduced. The calibration is done by simply pushing a button. The characteristics of the RTD sensor are stored in the memory of the instrument and are the same for any individual sensor. Therefore a change of a sensor requires only an offset calibration. Replacing the cable only does not require a new calibration because of the built-in automatic cable compensation routine. Up to 9 individual values can be stored in the memory. An automatic average of the stored values can be achieved by entering the calculation menu. The ergonomic and rugged design of the housing allows for an easy and safe cable storage. The cable guides keeps the cable secured at all times. By counting the number of cable loops the fed cable length can be determined.

- **1 cable loop = 2 feet, 3 cable loops = 2 metres.**

- **Application**

Temperature measurement represents an important part in tank gauging since the density of petroleum products changes approximately by 0.1 % per degree Celsius. An error in the observed temperature will result in an error of the correction factor, which is used to calculate the standard volume. This electronic thermometer has been designed for field inspection of custody transfer of bulk liquids and meets all relevant standards in the industry.

- **Ambient temperature drift  
SCS Surroundings Compensation System**

In most cases, a PET will be checked or calibrated at room temperature ambient conditions, i.e. around +20°C/+68°F, although they can work in a wide range of operational ambient temperatures. From areas such as Alaska to equatorial climates, these conditions can vary over a range of around +100°C/+180°F. This difference can result in another form of drift error. The new concept named "SCS Surroundings Compensation System"(Registered) of the Onecal incorporates an internal reference that is constant and does not depend on the ambient temperature over a wide operational range, i.e. from -20°C / -4°F to +60°C / +96°F. This means, the accuracy of the measurements made with the Onecal is unaffected by the ambient temperature, and this error is avoided.

- **Re-calibration when exchanging the PET cable  
CRC Cable Resistance Compensation**

A traditional PET needs to be re-calibrated each time the cable is renewed, as the intrinsic resistance of the cable is incorporated in the temperature measurement sequence and any change in its value can affect the accuracy of reading, unless the unit is properly re-calibrated. The new concept named "CRC Cable Resistance Compensation"(Registered) of the Onecal measures the actual resistance of the cable every time the PET is used, and compensates for any change to eliminate this source of error. Changing the cable, whatever length it has, will not affect the accuracy of the thermometer and therefore does not require a re-calibration in a laboratory.



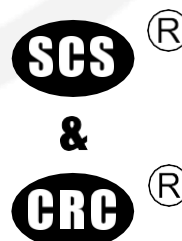
\* Option Load 300 gr.



\* Option  
Fully-cushioned carrying box  
This special box protects against any damage during storage and daily use .



With:



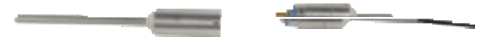
## • Response time

This thermometer has a response time (time to achieve 90% of the final temperature) of 15 seconds in water and 35 seconds in lubrication oil under dynamic conditions.

## • Maintenance

This instrument has been designed for users which require a high precision thermometer that is always ready to operate. Users can change the cable, the sensor or the display unit, and recalibrate it without the need of special tools or training. The unit cannot be calibrated incorrectly.

Cable replacement without needs of new calibration



The modular design of the HERMetic makes the exchange of components extremely easy and cost efficient as no special training or tools are required.

## TECHNICAL SPECIFICATIONS:

Measurement range :	-40°C to 163°C / -40°F to 325°F
Sensor temperature range:	-40°C to 200°C / -40°F to 392°F
Ambient temperature range:	-20°C to 40°C / -4°F to 104°F
Resolution :	0.1° or 0.01° selectable
Temperature scale :	°C or °F selectable
Temperature accuracy :	
-40°C to -30°C / -40°F to -22°F	± 0.25°C / ± 0.4°F
-30°C to 100°C / -22°F to 212°F	± 0.1 °C / ± 0.2°F
100°C to 163°C / 212°F to 325°F /	± 0.25°C / ± 0.4°F
Repeatability:	exceeds API MPMS Chapter 7
-40°C to 163°C / -40°F to 325°F	+/- 0.1°C / +/- 0.2°F
Calibration :	Digital, one point only 0°C / 32°F
Memory :	up to 9 individuals
Display :	LCD 8 digits, 10 mm character height
Power :	Approved 9 Volt battery
Battery saving:	aut. shut off /10 minutes after last action
Battery life :	Approximately 100 hours
Low battery indication:	On LCD display
Overall dim. length x width x depth:	336 x 202 x 94 mm/13.2" x 8" x 3.7"
Weight with 22.8 m / 75 ft cable :	< 1.4 kg / < 3 lbs
Probe size :	diam. 16 mm , 150 mm long / diam.5/8 " , 6" long
Probe material :	Stainless steel 1.4435
Cable length :	7.6 m/25 ft, 15.2 m/50 ft, 22.8 m/75 ft, 33.5 m/110 ft
Cable material :	FEP Teflon jacket
Instrument protection :	IP 54
Frame material :	Antistatic Polyamide base
Electronic box material:	Coated aluminium
Temperature sensor:	PT 1000 element

## Complies with:

EMC  
ATEX

EC directive 89/336/EEC  
EC directive 94/9/EC

## Hazardous environment Approvals:

IECEX	Zone 0, Ex ia IIB T4 Ga
ATEX	II 1 G Ex ia IIB T4 Ga
FM Approvals	CL I, DIV 1, C&D, T4 and CL I, ZN 0, AEx ia IIB T4
China:	NEPSI ExialIBT4

## Metrology approval:

Germany:	PTB, portable electronic thermometer
China:	Pattern approval



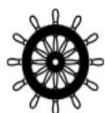
# HERMetic UTImeter Rtex

The HERMetic UTImeter Rtex is a portable liquid level gauge designed for restricted gauging of petroleum products. The unit is used for custody transfer, inventory control measurement and free water detection on marine vessels and shore tanks. The HERMetic UTImeter Rtex has to be connected to a HERMetic vapour control valve fixed on the tank.

The unit enables 3, optionally 4 measurements in one single operation:

- Ullage
- Temperature
- Oil-Water interface level
- Innage, Reference height (Visc version)

Storage tube SS1-Q2



Storage tube SS1-Q1





## A GAUGE DEDICATED TO YOUR APPLICATION:

### HERMetric UTImeter Rtex

- with 1" sensing probe, FKM gaskets for the main applications in hydrocarbons.

### HERMetric UTImeter Rtex Visc

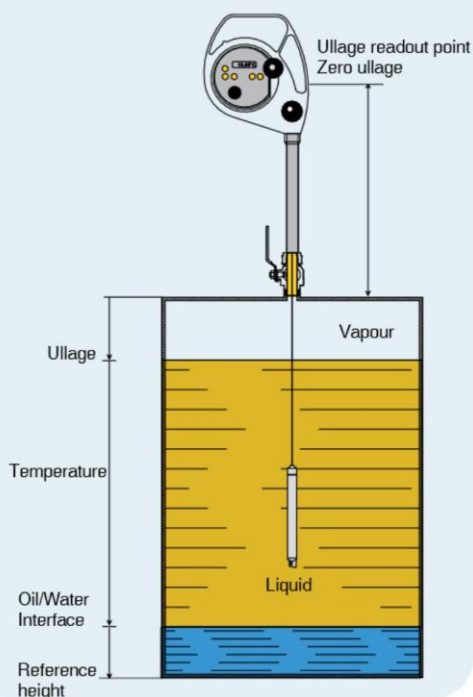
- with 2 Inch load on the sensing probe, recommended for operation in high viscous products or for innage measurements in hydrocarbons.
- Manual detection of tank bottom.

- IMO
  - Solas 74
  - MARPOL 73/78
- ISO, API, IP
- EC Directive 89/336/EEC
- EC Directive 94/9/EC
- EC Directive 96/98/EC
- ATEX, Factory Mutual, IECEx
- National authorities, (USCG, ..)
- All major classification societies

All HERMetric UTImeters are now equipped with the sensor "ULTRA" for use in low and high viscous liquids. The ULTRA sensing probe consists of a stainless steel tube terminated by a PEEK head. The sensing probe includes an ultrasonic liquid level sensor, a temperature sensor and a conductivity electrode. The sensitivity for ullage and interface measurement does not require any adjustment. The sensor is calibrated once at the factory and does not require subsequent calibration. The temperature transducer is a RTD element. The characteristics of the RTD element are stored inside the sensor. The sensor is sending true temperature values to the electronic box and display.



Principle of installation



## TECHNICAL SPECIFICATIONS:

Accuracy of ullage-interface detection:	± 2 mm (± 0.08" approx.)
Ullage, interface indication:	Audible and Visible selectable
Tape length:	15 m/50 ft, 30 m/100 ft, 35 m/115 ft
Tape graduation:	Metric/English
Tape resolution:	1 mm / 1/16"
Tape accuracy:	± 1.5 mm/30 m (±1/16"/100 ft approx.)

### **Meets API MPMS Chap 3.1A and ISO 4512 requirements**

Temperature accuracy:	± 0.1°C (0°C to 70°C);
<b>Meets API MPMS Chap 7 request</b>	± 0.2°F (32°F to 158°F)

### **Meets ISO 4268 , IP PMM Part IV**

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 194°F)
Temperature measurement resolution:	0.01° or 0.1° selectable
Temperature reading:	°C or °F selectable
LCD Display:	8 characters with backlight
Power:	Approved 9V batteries
Weight with 15 meter / 50ft tape:	3.7 kg / 8.1 Lbs.

### **Hazardous environments approvals**

ATEX	II 1 G Ex ia IIB T4 / Tamb 50°C
Factory Mutual	CL I, DIV 1, C&D, T4 Tamb 50°C and
	CL I, ZN 0, AEx ia IIB T4 Tamb 50°C
IECEX	Zone 0, Ex ia IIB T4

*The information contained in this document is subject to changes without notice*

# Portable closed gauging



The HERMetric UTImeter Gtex 2000 is a portable electronic level gauge for closed gas tight operation resulting in increased safety and efficiency.

The unit is used for temperature verification, inventory control measurement and free water detection on shore tanks. Connected to a HERMetric vapour control valve, the

UTImeter Gtex 2000 avoids any gas release during operation and enables 4 measurements in one single operation, ullage, temperature, oil-water interface level and detection of dip datum plate. By increasing safety and efficiency, Honeywell Enraf Tanksystem helps customers improve business performance.

# HERMetric UTImeter Gtex 2000

P/N: TS 14502

The HERMetric UTImeter Gtex 2000 is a portable gas tight liquid level gauge designed to operate on top of closed petroleum and chemical tanks. The unit is used for verification of the fixed gauging system, temperature measurement, inventory control measurement and free water detection on shore tanks. Connected to a HERMetric vapour control valve fixed on the tank, the HERMetric UTImeter Gtex 2000 avoids any gas release during operation.

The unit enables 4 measurements in one single operation:

- Ullage
- Temperature
- Oil-Water interface level
- Innage, Reference height (manual detection of dip datum plate)

A GAUGE DEDICATED TO YOUR APPLICATION:

## HERMetric UTImeter Gtex 2000

- with 2 inch load on the sensing probe, recommended for operation in any kind of products. The weight of the probe permits a manual detection of the dip datum plate.
- The unit is fitted with FFKM gaskets and tape connector for use in corrosive liquids.



Dip/datum plate      Water      Oil/Water Interface level



## ULTRA SENSING PROBE

### Benefits:

- Continuous temperature reading.
- 100 % repeatability of measures.
- High accuracy and stability.
- Chemically resistant to corrosive liquids.
- Easy access for battery exchange.
- Sensor exchange without need of new calibration.
- No temperature drift. No degradation of the sensitivity due to sensor ageing.
- Tape cleaning devices, window wiper and tape protection on all units as standard.
- Sensor fitted with load 500 gr. for high viscous products
- Heavy sensor permits manual detection of dip/datum plate.
- Reference height measurement

### Low maintenance cost:

Fully modular unit. Change tape, storage tube, sensor or instrument unit yourself.  
Easy and detailed instructions in Operation and Service Manual.



All HERMetric portable level gauges are delivered with a **tailor made plywood carrying case as a standard**. This special box avoids any damage during transport and storage.



Level reading on graduated tape through window



**Special tape protection** to protect the tape from inadvertent cut by closing the valve while the sensor is inside the tank. This mechanical safety device prevents damages on tape and reduce repair costs.



### Complies with:

- ISO, API, IP
- EC Directive 89/336/EEC
- EC Directive 94/9/EC
- EC Directive 96/98/EC

### Approved by:

- ATEX, Factory Mutual, CQST
- National authorities, (USCG, MSA, ..)

- ISO
  - 4512
  - 3170
  - 4268
- API
  - MPMS Chap 3.1A
  - MPMS Chap 7
  - MPMS Chap 8.1
- IP
  - PMM Part III-1
  - PMM Part IV"

## TECHNICAL SPECIFICATIONS:

Accuracy of ullage-interface detection:

Ullage, interface indication:

Maximum tank overpressure:

Tape length:

Tape graduation:

Tape resolution:

Tape accuracy:

**Meets API MPMS Chap 3.1A and ISO 4512 requirements**

Temperature accuracy:

**Meets API MPMS Chap 7**

**request Meets ISO 4268 , IP**

**PMM Part IV**

Ambient temperature range:

Temperature sensor measurement

range: Temperature measurement

resolution: Temperature reading:

LCD Display:

Power:

Weight with 30 meter / 100ft tape:

**Hazardous environments**

**approvals ATEX**

Factory Mutual

± 2 mm (± 0.08" approx.)

Audible or Visible selectable

0,3 bar (4,4 psi)

30 m/100 ft

Metric/English

1 mm / 1/16"

± 1.5 mm/30 m (±1/16"/100 ft approx.)

± 0.1°C (0°C to 70°C);

± 0.2°F (32°F to 158°F)

-20°C to 50°C / (-4°F to 122°F)

-40°C to 90°C / (-40°F to 194°F)

0.01° or 0.1° selectable

°C or °F selectable

8 characters with backlight

Approved 9V batteries

6.7 kg / 15 Lbs.

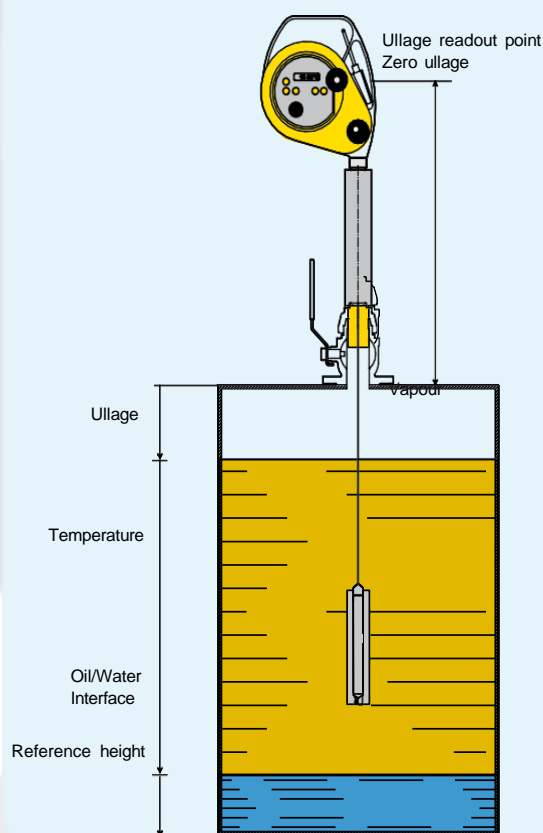
II 1 G EEx ia IIB T4 / Tamb 50°C

CL I, DIV 1, C&D, T4 Tamb 50°C and

CL I, ZN 0, AEx ia IIB T4 Tamb 50°C

ExialIBT4

Principle of installation



# Operation and Service Manual for HERMetic OXY all versions

	ND	TS	DESCRIPTION
	30276	10070	OXY 15m Tanol hose St.St. 1"
	30408	10011	OXY 15m Tanol hose 1"
	30409	10012	OXY 30m Tanol hose 1"
	30413	10009	OXY without hose
	30414	10071	OXY 30m Tanol hose St.St. 1"
	41039	22564	Adaptor 1"/2"



## **Disclaimer**

This manual is designed and written to provide information with regard to the subject matter involved..

Helltech Solutions assumes no responsibility for any inaccuracies in reproduction or errors in interpretation of any authority. Helltech Solutions reserves the right to modify or amend this manual, without prior notification, but Helltech Solutions assumes no responsibility to update or issue corrections.

### **Shipment note**

The following parts should be included in the shipment:

#### **1. Warranty**

12 months after installation but max.

18 months after delivery ex works. 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.

#### **2. This warranty**

Warranty does not apply to those items which by their nature are subject to deterioration or consumption in normal service, and which must be cleaned, or replaced on a routine basis.

When returned to HELLTECH 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 Purchaser decontaminates the said equipment.

The Purchaser shall notify by fax, telex or in writing of any defect immediately upon discovery, specifying the nature of the defect and/or the extend 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.

Damage or failure of any kind connected with the use if its products or failure of its products to function or operate properly.

Unauthorized repair or component replacement by non original spare parts by the Purchaser will void this guarantee and may impair the good functioning of the instrument.

This warranty is expressly in lieu of any and all other warranties and representations expressed or implied, and all other obligations or liabilities on the part of the Vendor including but not limited to, the warranty of merchantability or fitness for a particular purpose.

#### **3. 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 filled with the carrier immediately, and Enraf Tanksystem SA Sales or Service organization should be notified in order to facilitate the repair or replacement of the instrument.

#### **4. 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.

#### **5. 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 part to any authorized service center or to the factory.

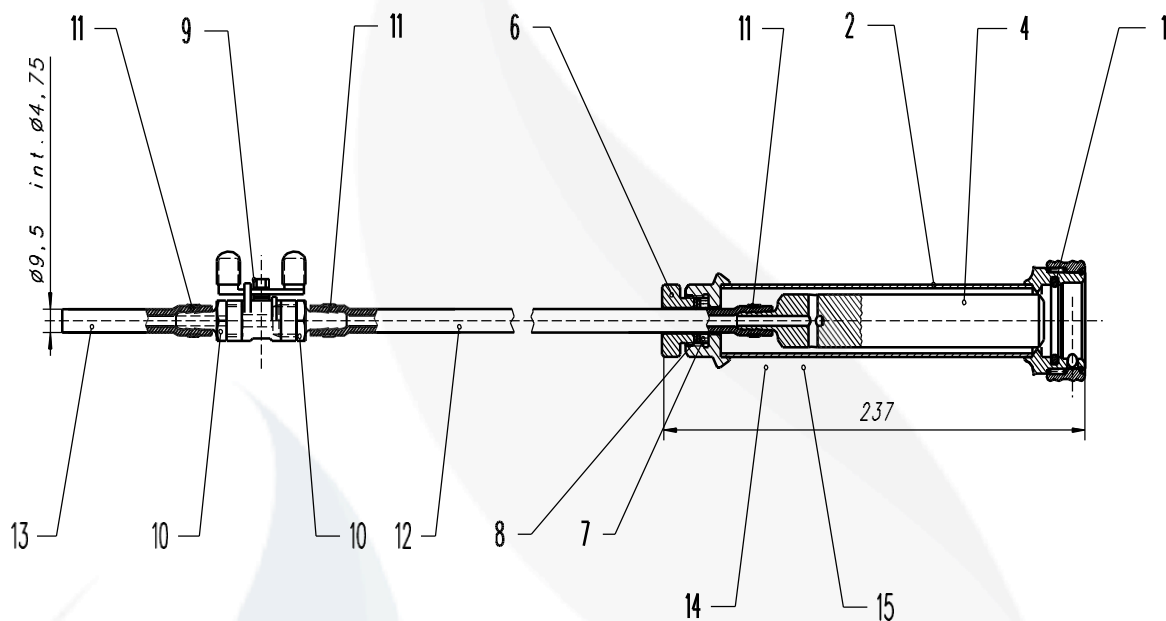
In case of urgency replacement units can be available while stocks last.

#### **6. Service and Repair**

The customer should take care of the freight and customs clearance charges. If units are sent on "freight collect " the charges will be invoiced to the customer.

When returning units or parts for repair to the factory please fill out a service request form (see next page).





Item	Qt	Weight	Description	Material	TS #	ND #
1	1	4	O-Ring Ø29.75x3.53	FFKM	11147	
2	1	493	Storage tube 1" Oxy Press Dip 1	AISI 304	16010	30595
4	1	449	Weight stainless steel	AISI 316	16005	40487
5	1	60	Wheel 6 3/2"	AISI 316	16007	40489
7	1	2	Seal	NBR	16520	
8	2	10	Pressure washer 10.5/16 x 1.6	AZ	16521	
9	1	59	Valve G1/4" female cylindrical thread	AZ	16521	14094
10	0	2	Clip Inox 9-11 1/4	AISI 304	16519	
10	2	20	Hose nipple	AISI 304	16518	
11	3	2	Clip max 9-11 1/4	AISI 304	16519	
12	1	114.0	Tantal hose 15m	Tanol	16544	
13	1	160	Tanol hose 3m	Tanol	16511	
14	1	1	Label "Oxy"	-	50009	40347
15	1	5	Label "Tanksystem"	-	50006	40345
2439 Th.						

All parts bonded with TS 50317

ISSUE 2 : 3.7.2002

Weight: 2

2505 C.F.

TS 10070

ND 10276

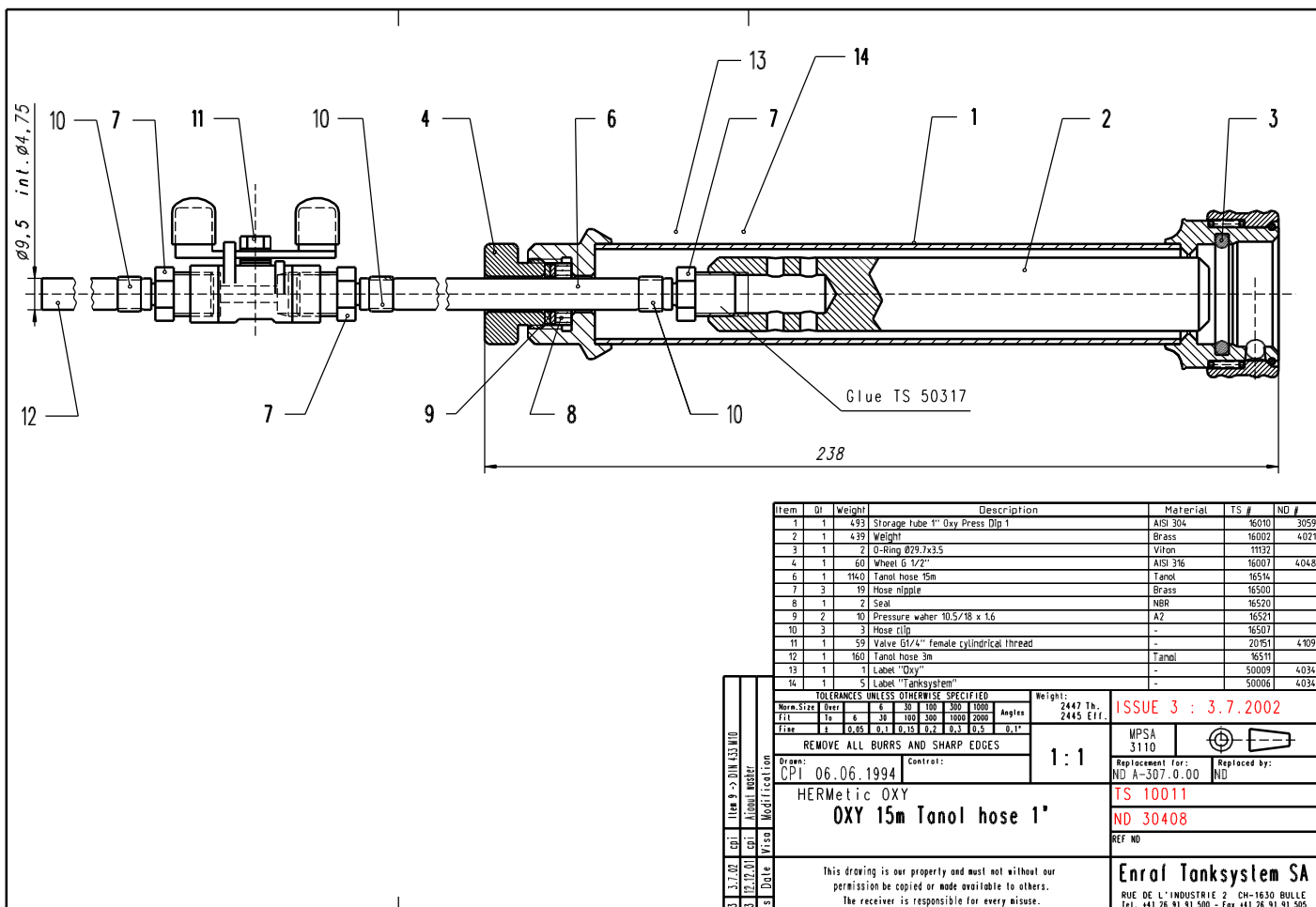
Replacement for: Replaced by:

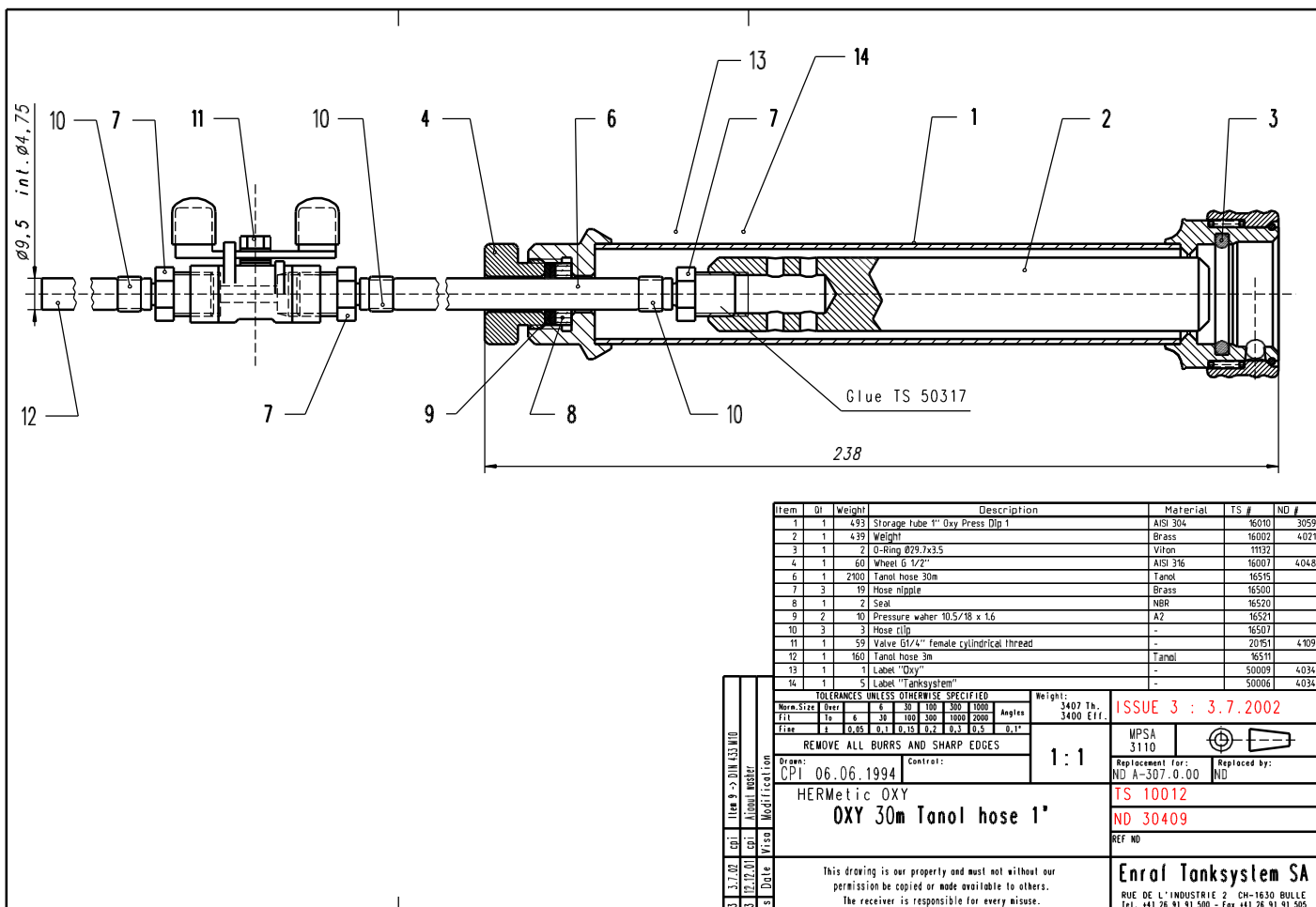
Enral Tanksystem SA

REF NO

This drawing is our property and must not without our permission be copied or made available to others. The receiver is responsible for every misuse.

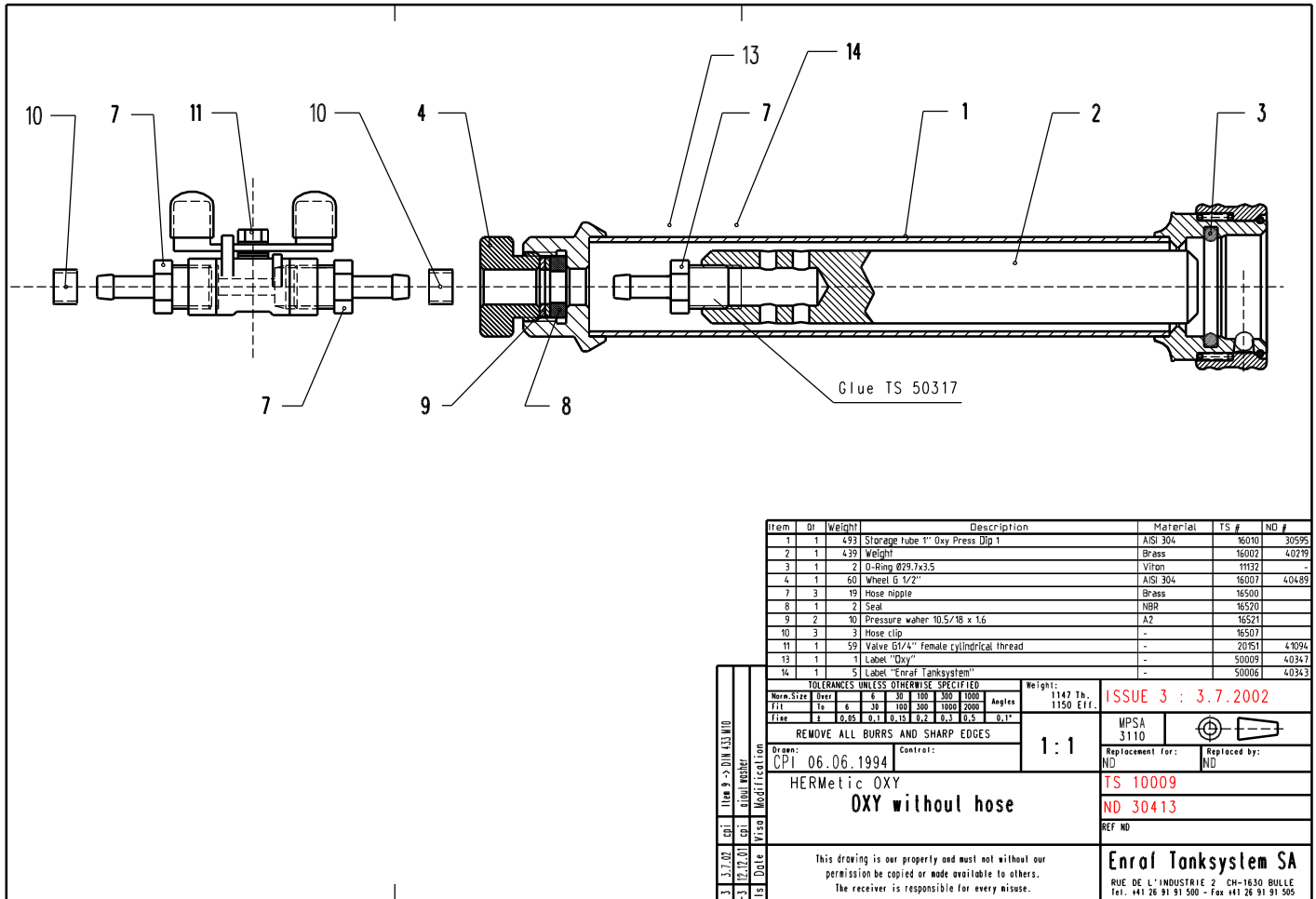
RUE DE L'INDUSTRIE 2 CH-1630 BULLE  
Tel. +41 26 91 91 500 - Fax +41 26 91 91 505



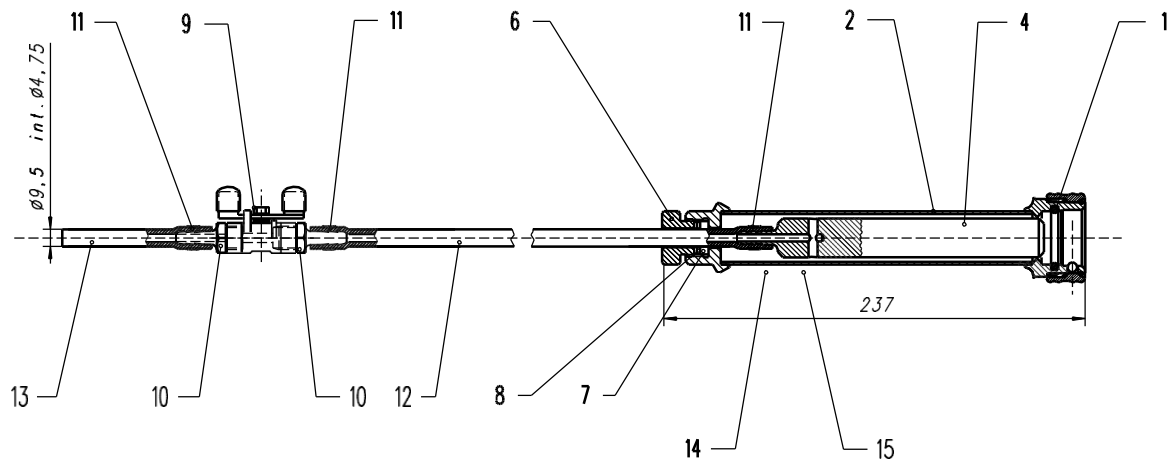


Item	Qt	Weight	Description	Material	TS #	ND #
1	1	493	Storage tube 1" Oxy Press Dlp 1	AISI 304	16010	30595
2	1	439	Weight	Brass	16002	40219
3	1	2	O-Ring Ø29.7x3.5	Viton	11132	-
4	1	60	Wheel G 1/2"	AISI 316	16007	40489
6	1	2100	Tanol hose 30m	Tanol	16515	-
7	3	19	Hose nipple	Brass	16530	-
8	1	2	Seal	NBR	16520	-
9	2	10	Pressure washer 10.5/18 x 1.6	A2	16521	-
10	3	3	Hose (rip)	-	16507	-
11	1	59	Valve G1/4" female cylindrical thread	-	20151	40494
12	1	160	Tanol hose 3m	Tanol	16511	-
13	1	1	Label "Oxy"	-	50009	40347
14	1	5	Label "Tanksystem"	-	50006	40343

Item 9 -> DIM 433 M10 12.12.01 3.7.02 3	Norm. Size 6 30 100 300 1000 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100	TOLERANCES UNLESS OTHERWISE SPECIFIED Fit 1x 6 30 100 300 1000 2000 Angles Fine 1x 0.05 0.1 0.15 0.2 0.3 0.5 0.1"	Weight: 3407 Th. 3400 Eff.	<b>ISSUE 3 : 3.7.2002</b>
	REMOVE ALL BURRS AND SHARP EDGES		1 : 1	MP3A 3110
	Drawn: CPI 06.06.1994 Control:		Replacement for: ND A-307.0.00	
	HERMeTic OXY OXY 30m Tanol hose 1"		TS 10012 ND 30409 REF ND	
This drawing is our property and must not without our permission be copied or made available to others. The receiver is responsible for every misuse.				<b>Enraf Tanksystem SA</b> RUE DE L'INDUSTRIE 2 CH-1630 BULLE Tel. +41 26 91 91 500 - Fax +41 26 91 91 505





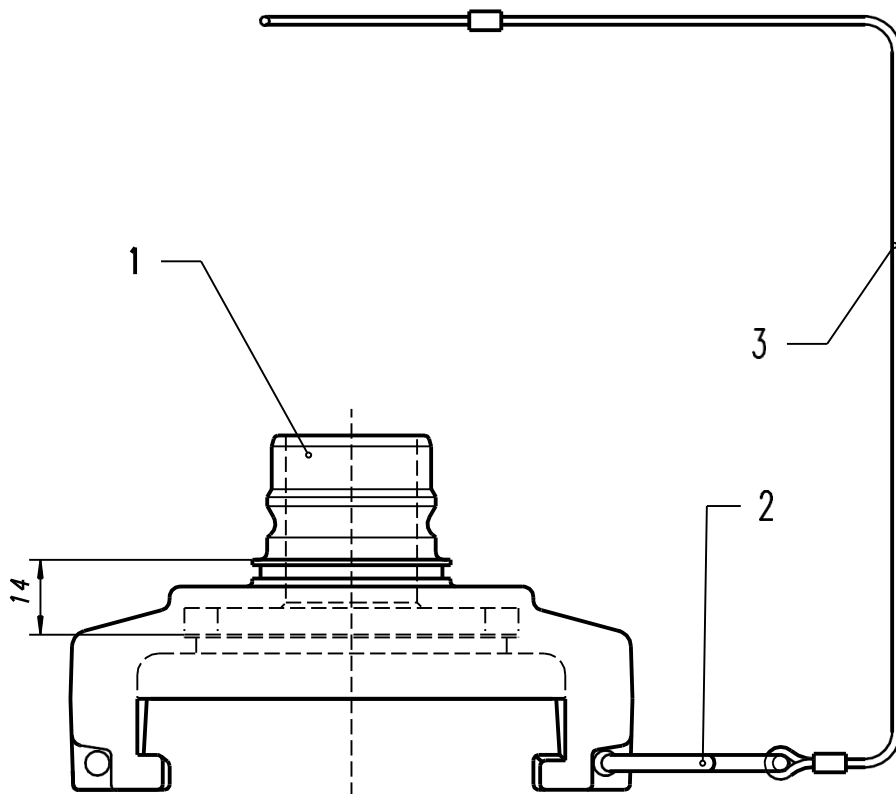


All parts bonded with TS 50317


Item	Qt	Weight	Description	Material	TS #	ND #
1	1	4	O-Ring Ø9.75x3.53	FFKM	11147	
2	1	493	Storage tube 1" Oxy Press Dip 1	AISI 304	16010	30595
4	1	449	Weight stainless steel	AISI 316	16005	40487
6	1	60	Wheel 6 1/2"	AISI 316	16007	40489
7	1	2	Seal	NBR	16520	
8	2	10	Pressure washer 10.5/16 x 1.6	A2	16521	
9	1	59	Valve G1/4" female cylindrical thread	-	20151	41094
10	0	2	Clip Inox 9-11 1/4	AISI 304	16519	
10	2	20	Hose nipple	AISI 304	16518	
11	3	2	Clip Inox 9-11 1/4	AISI 304	16519	
12	1	2100	Tanol hose 30m	Tanol	16515	-
13	1	160	Tanol hose 3m	Tanol	16511	-
14	1	1	Label "Oxy"	-	50009	40347
15	1	5	Label "Tanksystem"	-	50006	40343

TOLERANCES UNLESS OTHERWISE SPECIFIED										Weight:	ISSUE 2 : 3.7.2002	
Norm. Size	Dev.	6	30	100	300	1000	2000	Angles		3655 Eff.		
Fit	±	0.05	0.1	0.15	0.2	0.3	0.5	0.1°				
File	±	0.05	0.1	0.15	0.2	0.3	0.5	0.1°				
REMOVE ALL BURRS AND SHARP EDGES												
Drawn: CPI 08.06.1994										1:2		
Control:												
HERMeTic OXY												
OXY 30m Tanol hose St.St. 1'												
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Enraf Tanksystem SA												
RUE DE L'INDUSTRIE 2 CH-1630 BULLE												
Tel. +41 26 91 91 500 - Fax +41 26 91 91 505												

3399 Th.



Item	Qt	Weight	Description	Material	TS #	ND #
1	1	400	Connector 1" - 2" FKM	-	22563	41032
2	1	5	S Holder	AISI 304	11902	40537
3	1	4	Cable assy	-	55112	40525

TOLERANCES UNLESS OTHERWISE SPECIFIED										Weight:		409 Th. 0 Eff.		ISSUE 1 : 14.3.1997	
Norm. Size	Over	6	30	100	300	1000	Angles			1 : 1	MPSA 4110				
Fit	To	6	30	100	300	1000	2000								
Fine	±	0.05	0.1	0.15	0.2	0.3	0.5	0.1°							
REMOVE ALL BURRS AND SHARP EDGES															
Drawn:		UPR 14.03.1997				Control:						Replacement for:		Replaced by:	
												ND		ND	

Valves

Adaptor 1"-2"

TS 22564

ND 41039

REF ND

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