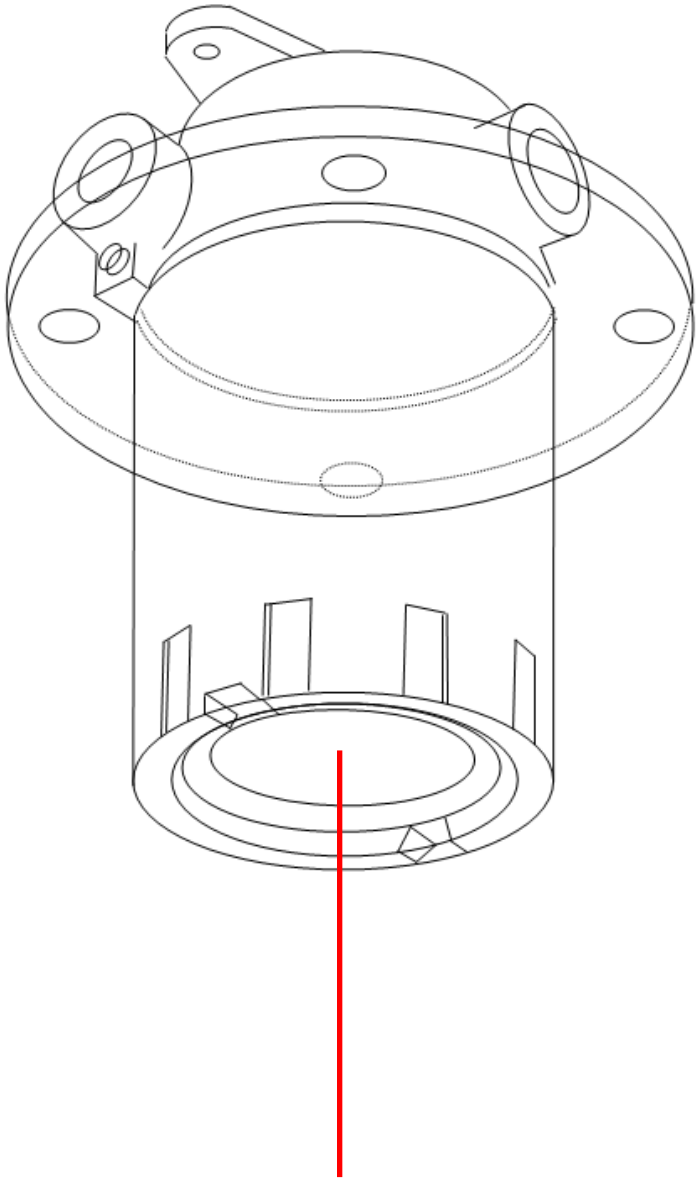
LASER LEVEL SYSTEM FOR TANK

series LSR-TG



FOR
TANK
UP TO
25m
ACCURACY
BEST
1mm

Indice

SAFETY

1. Qualification of personnel

Only technicians who are familiar with and understand the contents of this manual and the other relevant documentation are authorized to work on and with this system. The technicians must be able to detect potential dangers that may be caused by the operation of electrical and electronic equipment. The technicians must have suffcient technical training, knowledge and experience to recognise and avoid dangers. The technicians must be familiar with the relevant standards, regulations and safety regulations that must be observed when working on the system

2. Intended use

The TG system described here is product for use that conform to the state of the art in technology and are designed to prevent any danger. The possibility of unexpected or unbraked movements can never be totally excluded without additional safety equipment. For this reason personnel must never be in the danger zone of the TG system. This applies to operation of the machine during use and also to all service and maintenance work on the machine. In all cases the applicable safety regulations and the specif ed operating conditions, such as environmental conditions and specif ed technical data, must be observed. To prevent personal injury and damage to property damaged the TG systems must not be installed or operated. Changes and modif cations of the TG systems are not permitted and if made no warranty and liability will be accepted. The TG system must be operated only with the specific ed wiring and approved accessories. In general, use only original accessories and spare parts.
The system can be operated in an environment subject to explosion hazard (ex area).

3. Hazard Categories

Safety notes and general information are indicated by hazard messages in the manual. In addition there are symbols and instructions affixed to the product that warn of possible hazards and help to operate the product safely. Depending on the seriousness of the hazard, the messages are divided into three hazard categories.

! DANGER

DANGER indicates an imminently hazardous situation, which, if not avoided, will result in death, serious injury, or equipment damage.

! WARNING

WARNING indicates a potentially hazardous situation, which, if not avoided, can result in death, serious injury, or equipment damage.

! CAUTION

CAUTION indicates a potentially hazardous situation, which, if

not avoided, can result in injury or equipment damage.

4. General safety instructions

! DANGER **EXPOSED SIGNALS**

Hazardous voltage levels may be present if using an open frame power supply to power the product. Failure to follow these instructions will result in death or serious injury

! WARNING **LOSS OF CONTROL**

- Observe the accident prevention regulations.
- The system manufacturer must take the potential error possibilities of the signals and the critical functions into account to ensure a safe status during and after errors.
- The assessment of error possibilities must also include unexpected delays and the failure of signals or functions.
- Suitable redundant control paths must be in place for dangerous functions.
- Check that measures taken are effective. Failure to follow these instructions can result in death or serious injury.

! CAUTION **HOT PLUGGING!**

Do not connect or disconnect power, logic, or communications while the device is in a powered state. Failure to follow these instructions can result in equipment damage.

5. Power supply selection and connection

! DANGER **EXPOSED SIGNALS**

Hazardous voltage levels may be present if using an open frame power supply to power the product. Failure to follow these instructions will result in death or serious injury.

! CAUTION **MAXIMUM VOLTAGE INPUT**

Do not exceed the maximum rated voltage of the device! Failure to follow these instructions may result in damage to system components!

! CAUTION **GENERAL POWER SUPPLY PRACTICE**

Do not connect or disconnect the power supply while power is applied. Failure to follow these instructions may result in damage to system components!

! CAUTION **HOT PLUGGING!**

Do not connect or disconnect power, logic, or communications while the device is in a powered state. Failure to follow these instructions may result in damage to system components! Detailed specifications, voltage limits, current requirements and connectivity information are located in the product detail section.

GENERAL INFORMATION

- Do not look into laser radiation class 2.
- Do not direct the laser beam at people.
- In case of breakage or failure of the call only to authorized maintenance companies or directly from the manufacturer.
- The manufacturer declines all responsibility for any damage to persons and / or property resulting from failure to observe the requirements of health and safety.
- The safety instructions provided in this manual supplement, but not replace, those in force in the country where the device is installed. It is assumed that the device operators are aware of the safety requirements in force in their own countries.
- Never attempt to repair hasty that could affect the proper operation and safe use of the device.
- If you are unsure of the correct operation of the device, please contact your authorized maintenance companies, or directly from the manufacturer, in order to obtain the necessary information.
- The manufacturer will not be liable in the event of tampering with the device by the customer will be, in this case, the only one responsible to the competent authorities.

DESCRIPTION

This equipment allows to perform the measure of the level of a container, provided inspected from above.

the measure is performed directing the laser beam on the surface of the target floating in liquid to measure.

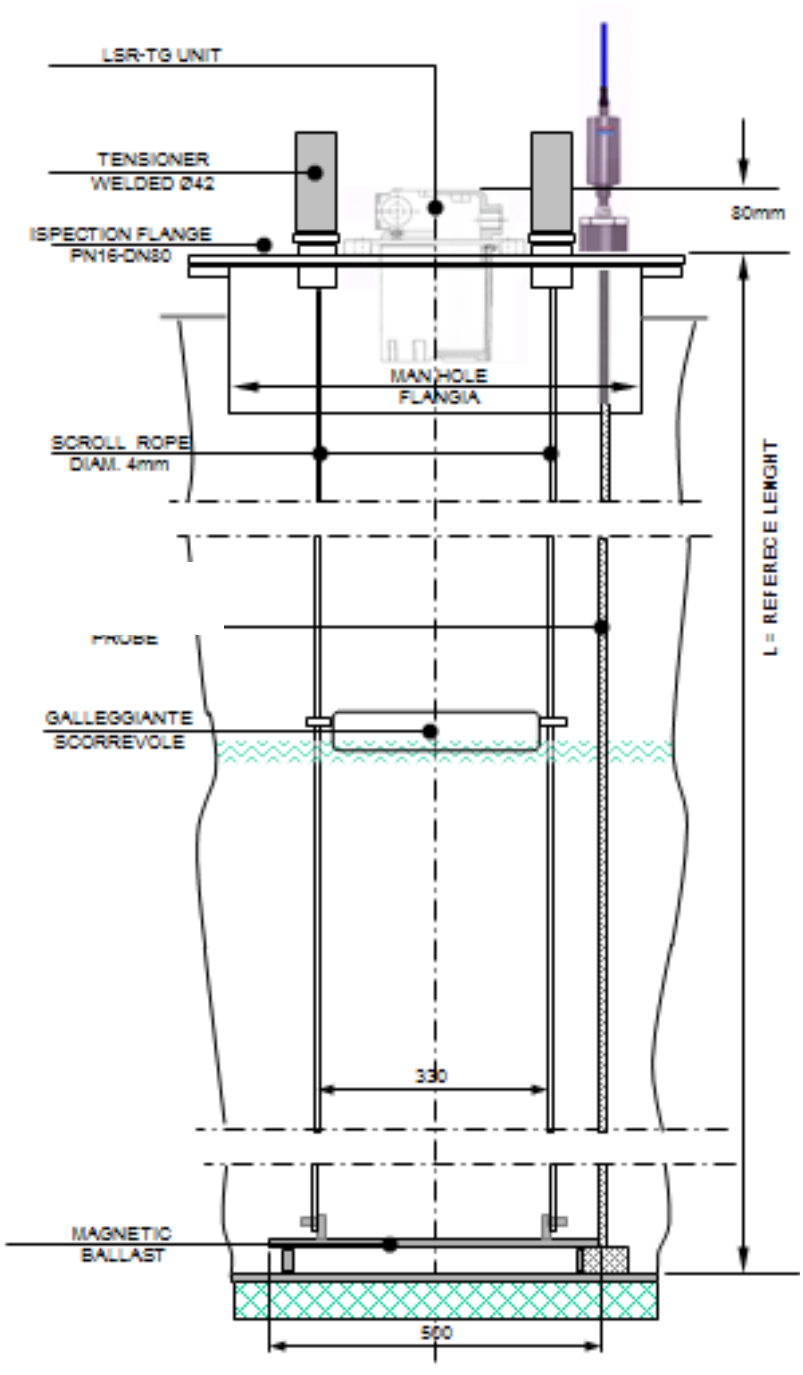
The absence of electromechanical components allows the use of the equipment in tanks with the presence of flammable liquids or vapors.

TECNICAL CARACTERISTICS AND CODES

• Power supply	9…30Vdc
• Consumption	0,6A
• Measure Range	0,5…25m
• Accuracy	± 1 mm
• Repeatability	<0,5 mm
• Measure speed	<10 sec
• Laser spot	4mm-5m, 8mm-10m, 12mm-25m
• Data output	Serial asynchronous interface RS485
• Analog output	4…20Ma two wire
• EMC	EN 61000 6-4, EN 61000 6-2
• Working temperature	-10°C ÷ +50°C
• Storage temperature	-40°C ÷ +70°C
• Degree Protection	IP65
• Dimension	210X300mm (version standard)
• Weight	10Kg (measure unit)

WORKING PRINCIPLE

the optical beam emitted from the laser meter (1) hits the floating target (2) which is driven by cables (3) tensioned along the height of the tank (4)



COMPONENTS

1 **LASER METER UNIT**
2 **CABLE TENSIONER**
3 **FLOAT SLIDING CABLES**
4 **TARGET FLOAT**
5 **BOTTOM PLATE**
6 **ISPECTION FLANGE**

PRECAUTION FOR USE

Precaution for the handling of the system

ATTENTION

The LSR-TG device includes electronic components, mechanical components and optical components, is required for it's correct use during all phases of handling and installation to use handled with extreme care to avoid damaging of it's parts.

Precaution for laser class 2

The Class 2 lasers emit only in the visible range and continuous emission have a maximum power of 1 mW.

Look directly into the laser beam accidentally produces a strong glare, but this does not cause any damage, thanks to the palpebral reflex, even when using optical instruments.

Note: the most recent studies it was observed that the palpebral reflex is not always effective. One more reason to avoid glare in the use of lasers.

We therefore recommend not to set the beam and also to avoid direct you to third.

SYSTEM USE

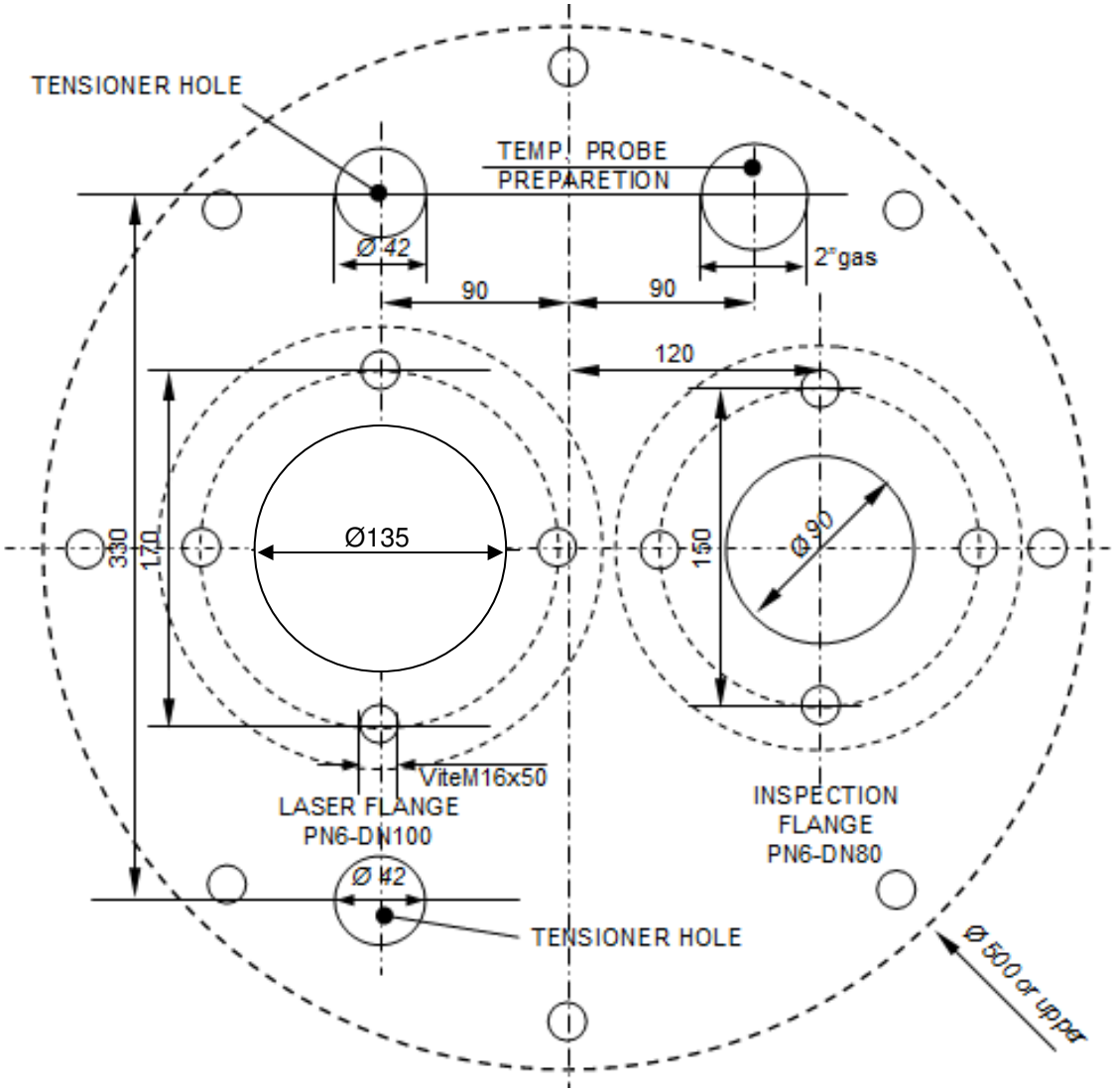
BEFORE USE

FOR A CORRECT USE OF THE SYSTEM IS ESSENTIAL TO ALWAYS HANDLE THE DEVICE WITH CARE AVOIDING KNOCKS

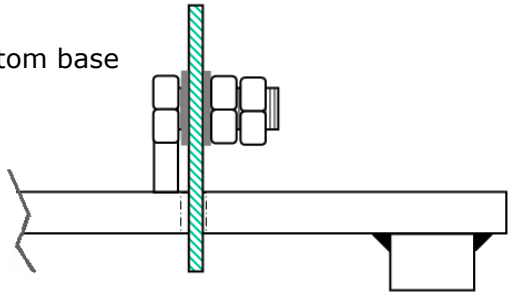
PREPARING AND MOUNTING

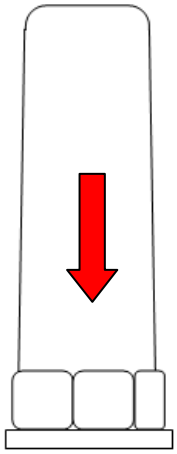
1. Before you start a work is important to preparing the flange on which mount the measuring system.

TANK'S FLANGE

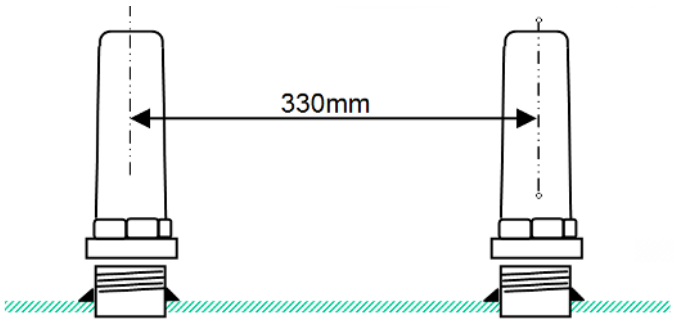


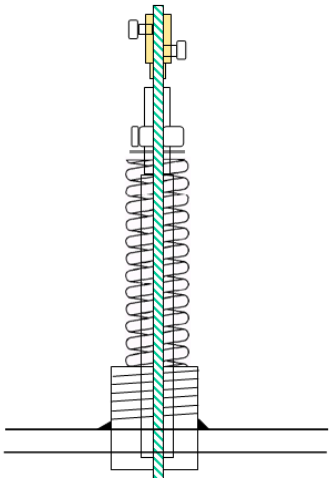
2. Fix the wires on the bottom base



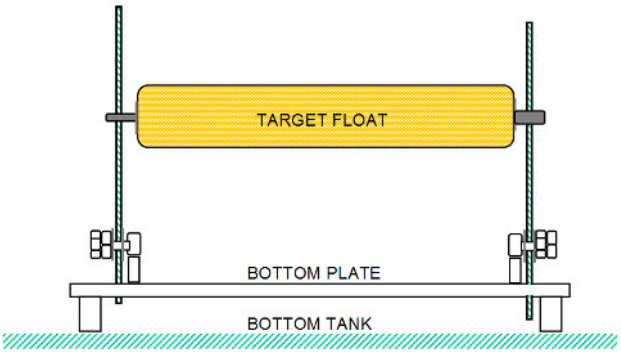


3. Solder the tensioners in the holes on the flange at a distance of 330mm

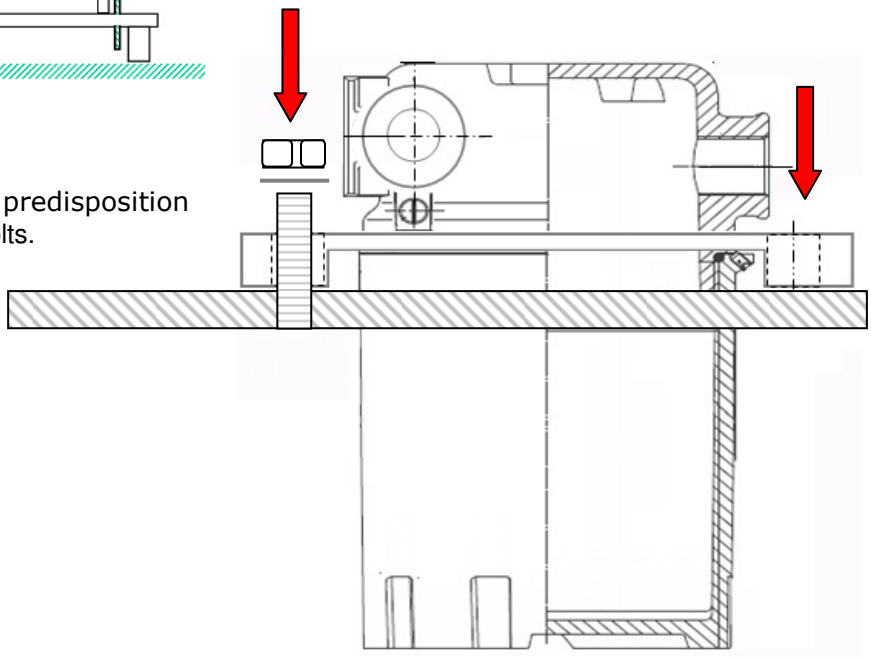




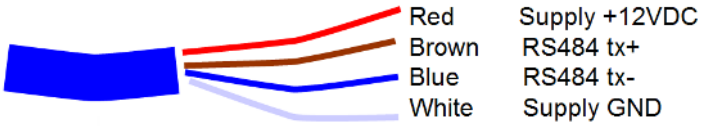
4. To do slide the wires inside the rings on the float and fix them to the tensioners

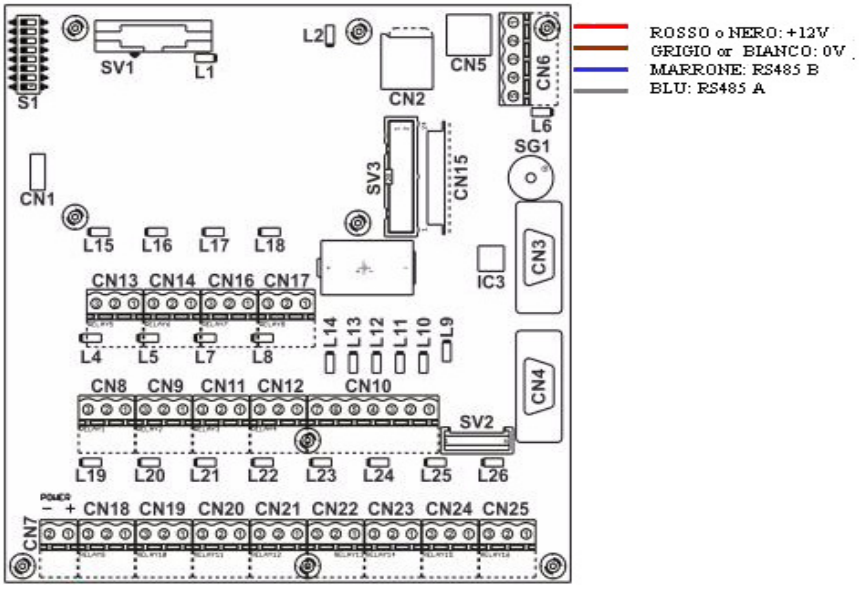


5. Position and fix the laser unit on the predisposition for the flange PN6 DN100 with M14 bolts.



6. Connect the laser meter at the MAGLINK consolle using cable with a minimum cross section of 1mmq.

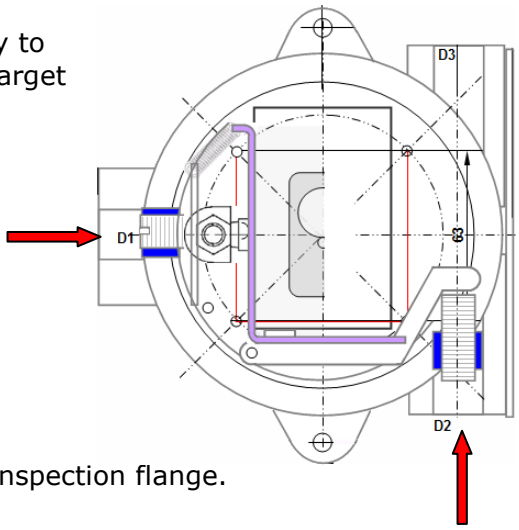




SETTING SYSTEM

1 Once installed and powered the device is necessary to proceed to align the laser unit of measure on the target floating.

2 To proceed is necessary to remove the inspection Plug D1-D2.

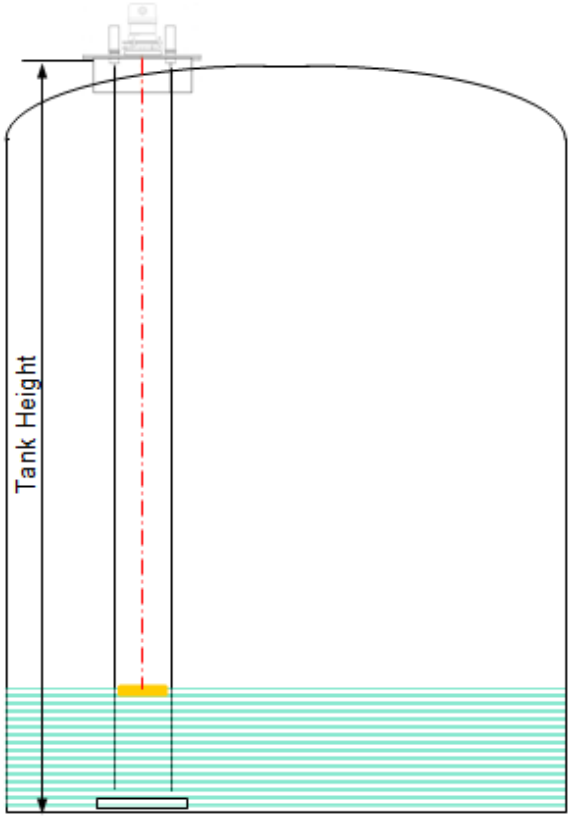


3 Act on the two micrometer screws placed in the cavity of the laser until the laser beam hits on the center of target floating, Look through the inspection flange.

4 Close the cavity D1-D2, with the plug screws

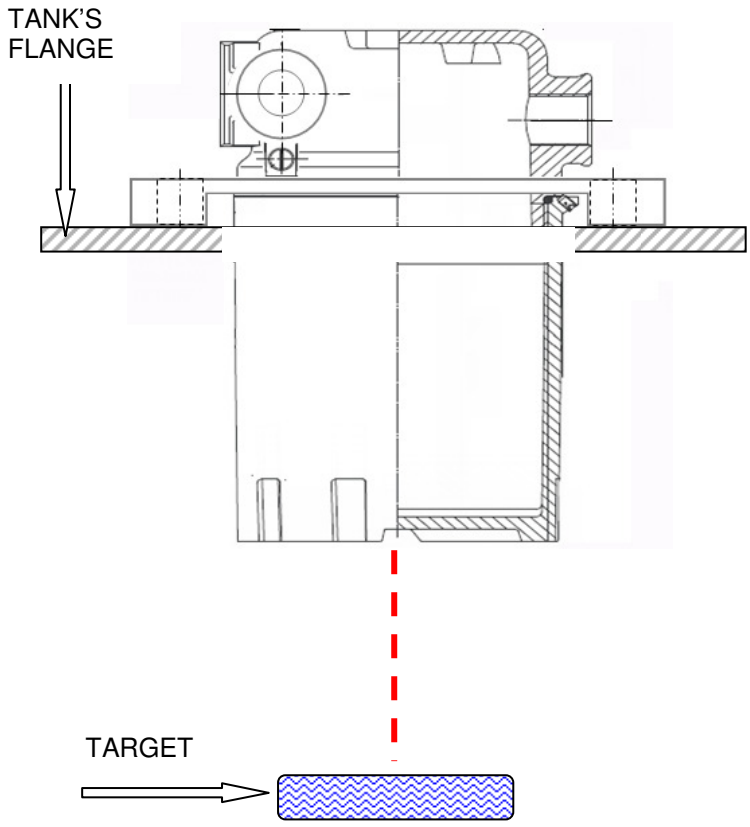
5 For proper programming of the system LSR-TG consult the user manual of the console START*italiana* MAGLINK 16T or other device management.

6 Clarification: the liquid level in the tank is obtained by making the difference between the height of the tank and the measurement detected by the laser.
To align the effective level of liquid present must be set an appropriate offset value in mm into apposite window.



OTHER APPLICATIONS

The device can be used in various applications in environments with explosive atmospheres, ATEX applications.



During the engineering evaluation, check the use conditions, the device use an optical principle and it is advisable to check the presence of umidity in the environment in reference to the dew point.
An other evaluation is the verification of the possibility that the target is never exposed to the direct rays of the sun, as well as avoid using the device in very dusty environment.