

## Installation and Maintenance Rules for: Swinging level gauge ILP 3

### STANDARD FEATURES

The swinging level gauge ILP 3 is made in compliance with the regulations in force in the European Union and specifically with:

- Die-cast aluminium casing UNI 5076. IP65 protection.
- Use contact capacity: 10 A. at 250 V AC.
- Operating temperature: from -20 to +70 °C.
- Weight: 0.800 Kg.

### SAFETY RULES

All the appropriate safety precautions must be taken when electrically operated equipment is used, in order to reduce the risk of fire outbreaks, electric shock and injuries to persons.

- Keep the work zone clean and orderly. Accidents are more likely to occur in untidy areas and environments.
- Before beginning work, make sure that the level gauge is in a perfect condition. Damaged or broken parts must be repaired or replaced by competent personnel authorized by the Manufacturer.
- All verifications, inspections, cleaning and maintenance operations, part changes and replacements must be carried out with the level gauge disconnected.
- It is absolutely forbidden for children, unauthorized and/or inexperienced persons to touch or use the level gauge.
- Make sure that the earthing is efficiently connected when the instrument is installed.
- Periodically check to be sure that the cable is in a perfect condition and replace it if is damaged. This operation must only be carried out by competent and authorized persons. Only use extension cables of the permitted type and marked.
- Protect the cable against high temperatures, lubricants and sharp edges. Do not twist or knot the cable.
- Do not allow children or unauthorized persons to touch the cable.

### DESCRIPTION

Swinging level gauges are used to indicate when granular, powdery and various other materials in silos, loading cells and so forth, have reached the required level. Their very simple operation is based on the fact that all materials in this state form a cone in the free upper part. While varying according to the type of material in question, the apex angle of this cone is always fairly pronounced ( Fig.1 ).

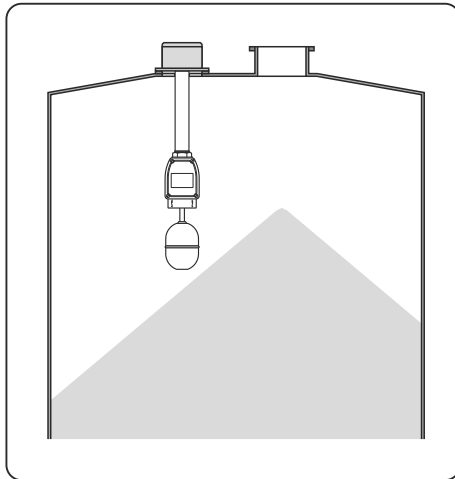


Fig.1

A pendulum set in the space to be subsequently occupied by the cone of material, will be obliged to shift from the vertical as the level of material gradually increases. This movement is used to operate an electric control.

Thanks to the presence of a small gimbals, the pendulum can move on a vertical plane positioned through 360°.

This means that the instrument need not be positioned during the installation phase. It also makes it particularly sensitive from all possible directions, as required in the case of cells loaded from several points.

The instrument consists of a rectangular shaped housing in die-cast light alloy, with a side cover fixed by four screws. It contains a precision micro-switch with lever operation and the pendulum hanging device.

The pendulum consists of a circular section rod in stainless steel, the lower part of which is screwed to a cylindrical shaped hollow brass plate casing with hemispherical bases.

The upper part articulates with the above mentioned gimbals.

The suspension unit is completely protected from the outside by an elastic casing in rubber to prevent foreign bodies from penetrating.

The microswitch is installed to that the terminal can be conveniently accessed after the cover has been removed. The microswitch should not

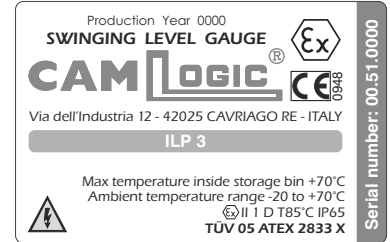
### OPERATION

need replacing but, if this should be required, the operation is very simple to carry out since adjustments are always possible by means of the slot that fixes the bracket supporting the microswitch and terminal.

When not operating, gravity keeps the pendulum in the vertical position. In the presence of material, it shifts from the vertical and this movement, converted into straight-line movement, acts on the microswitch and causes it to trip. The entity of this movement is about 10° in all directions. The microswitch installed is the switch contact type.

### INSTALLATION

Assembly on site generally occurs through a  $\varnothing$  100 hole or a quadrangular opening measuring 80 x 80 mm, hanging the instrument ( Fig.1 ) with a tube screwed into the 3/4" Gas threaded hole made for this purpose in the upper part of the casing, the linkage pipe must be such to guarantee IP degree of the connection with the box, moreover the external grounding must have continuity with the connection pipe/casing external to the silos. The electrical harness will also pass through this pipe.



The other end of the pipe generally fits into a switch box or similar, installed horizontally and with a hole so that the harness can pass through; verify the continuity electrical worker of the connection in order to guarantee the external grounding. The terminal box has to have its own certification for II 1 D. The connection between pipe/terminal box and pipe/level indicator has to meet IP65. The above mentioned equipment must be provided with cable entries and filler plugs which are at least certified according to directive 2014/34/EU, Category 1 and EN 61241-1. The instrument must obviously be installed with its housing perfectly vertical, only in this condition will its sensitivity be identical in all directions. This condition can be checked by moving the pendulum and listening for the characteristic trip of the microswitch which must occur symmetrically in all directions.

### ELECTRICAL WIRING

The conductors forming the signal carrying cable connected to the microswitch ( Fig.2 ) must be of adequate cross-section to prevent the current density from exceeding 4 A/mm<sup>2</sup> in each conductor. One of the conductor is used only for the earthing of the level gauge. The cross-section of the conductors must also be adequate in relation to the length of the cable used to avoid a drop in voltage along the cable over the values prescribed by the regulations on the subject. Use Faston cable terminals to connect the microswitch terminals.

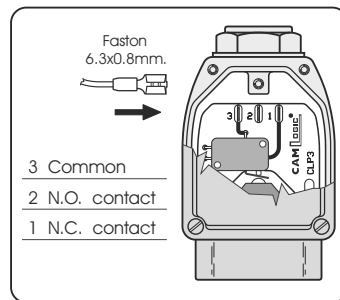


Fig.2

**CAUTION:** Inside the casing there is a screw whose position is marked by the ground symbol ( Fig.3 ). This is used for the earthing of the level gauge **ILP 3**. This screw must be connected to the yellow-green conductor (only green for the USA) of the signal carrying cable.

The ground connection of the swinging level gauge, through the yellow-green conductor, is compulsory.

- The external earthing has to be carried out by the installer.
- The equipment has to be protected against impact and electrostatic inside the silo.
- The user has to protect the equipment circuits with fuses against short circuit.
- The max. surface temperature considered is without dust and not safety distance.

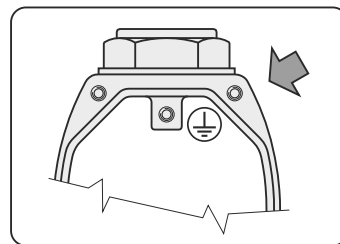


Fig.3

### MAINTENANCE

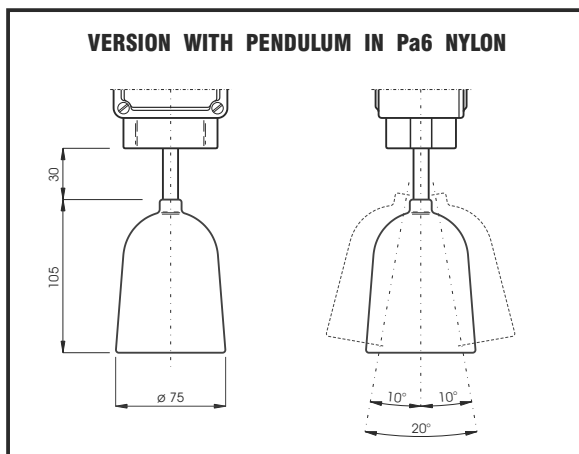
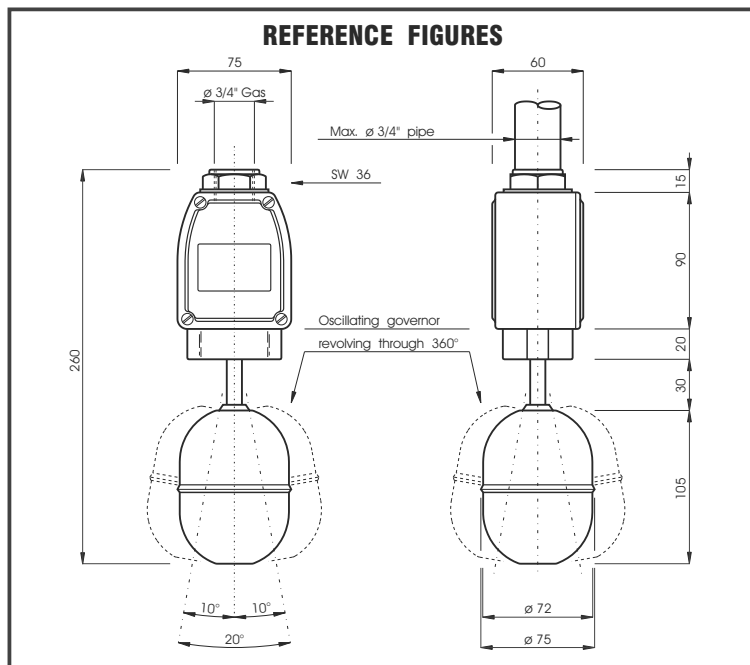
CAMLogic swinging level gauges need no routine maintenance.

It is advisable to periodically check the condition of the pendulum since it is subjected to the abrasive action of the tested product. Moreover it is necessary the change of the elastic casing within and not longer period of 2 years.

### WARRANTY

CAMLogic, in addition to the terms of the supply contract, guarantees its product for a period of twenty-four (24) months from the date of shipment. This warranty is expressed only in the repair or replacement free of charge of parts that, after careful examination by the Manufacturer, turn out to be defective. Warranty, excluding all liability for direct or indirect damage, is considered to be restricted to only defects in materials and has no effect if the parts returned turn out to have been anyhow dismantled, tampered with or repaired by anyone other than the Manufacturer. Warranty likewise excludes damage deriving from negligence, carelessness, bad or improper use of the level gauge, or from bad handling by the operator and faulty installation. Warranty is moreover forfeit if non-genuine spare parts have been used.

A returned level gauge, even if under warranty, must be shipped carriage free.



### EU DECLARATION OF CONFORMITY

The manufacturer **CAMLogic** declares under its own responsibility that the product **ILP3** answers to the requisites of the European Directive 2014/34/EU in consideration of the standards: ENIEC 60079-0:2018.

Marking: Ⓜ II 1 D T85 °C IP65. The permitted range ambient temperature is -20 to +70 °C.

Notified corporate body that releases the examination TÜV NORD. Certificate number TÜV 05 ATEX 2833 X.

Corporate body entrusted of the periodic overseeing TÜV ITALIA.

*Instructions Manual No. 01236 99.07 - Rev. 03* All the information contained in this manual is confidential and no part of it may be disclosed without written authorization from **CAMLogic**.

This manual, even after the sale of the level gauge, is lent and remains the property of the Manufacturer.