# OPERATING MANUEL

## Model : ELT

### VIBRATING TYPE LEVEL SWITCH

Information in this manual is reviewed and completely reliable. Responsibility is not assumed due to any typing error.
Products in this manual are available only for information purpose and they may be changed without notice.

## Models :

**ELT 101 , ELT 102 , ELT 103 , ELT 104**
**ELT 201 , ELT 202 , ELT 204**

CE

## Important Notes:

### Used Symbols :

: Caution  : Note  : Disposal

- Please read this manual carefully before installation of the **level switch**. User is responsible for accidents and losses arising from failure to comply with the warnings in this manual.
- In the event that **level switch** is broken, take measures in order to prevent accidents and losses which can occur in its system.
- There is not any fuse and circuit breaker on the instrument; they should have been added to the system by the user.
- This manual should be stored in an easily accessible place for subsequent use.
- The manufacturer's liability cannot exceed the purchase price of the device according to the law.
- Do not make any modification on the instrument and do not try to repair it. Reparation should be made by authorized service staff.
- Do not operate the system before making assembly in compliance with the assembly chart related to the instrument.
- Products which do not contain label and serial number are considered to be excluded from the warranty scope.
- The instrument's useful life, determined and announced by the ministry, is 10 years.

## Table of Contents :

## 1. General Information :

**1.1. Material Acceptance**

Check that there is no damage on the packages during the transportation immediately after the material acceptance. If packages are damaged, open the packages immediately and check whether products are affected or not, if there is any damage, send your complaint report to the transporter company and its photocopy to the address of our company.

**1.2. Information about Areas of Use**

ELT series single vibrating material level switch is one of the tuning fork material level switches. It is not afraid of hanging materials, not afraid of impact, without clamping problems, and has higher sensitivity.Its cylindrical single measuring rod structure determines its wider adaptability to industrial field.

**Areas of Application :**

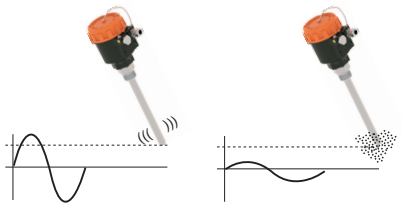
Sugar, Hazelnut, Clay, Sunflower Seed, Coffee, Various Granules, Wheat, Bauxite, Ceramic, Legumes, Cereal, Fish Feed, Sand, Pebble, Isolation Materials, Corn, Rice ...

**Ambient Conditions: Relative Humidity:** 5-95 %RH **Ambient temperature:** 60 °C (It is not used under -5 C)

**1.3. Working Principle**

Single rod vibrating level switch uses the "resonance" principle of tuning fork to generate vibration under the driving of piezoelectric elements.

Only when all around the probe rod are surrounded by materials, the vibration amplitude will be sharply reduced, resulting in switch action.



**1.4. Technical Specifications :**

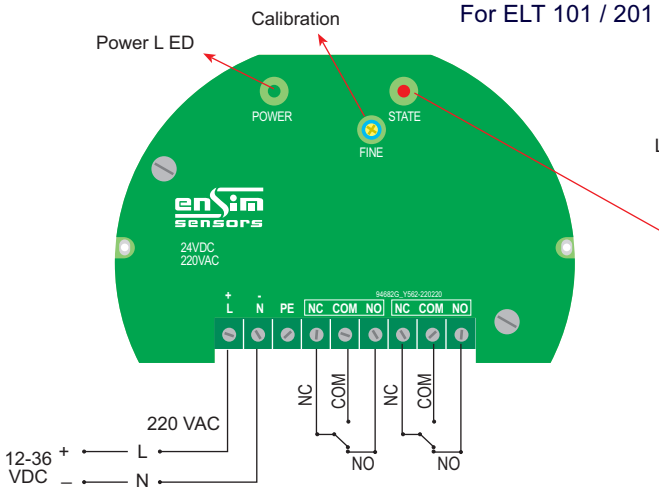
| | |
|---|---|
| Fluid | Liquid, Solid, Powder |
| Wet Parts | 316 Stainless Steel |
| Fork Material | 316 Stainless Steel |
| Housing Material | Aluminuim, Stainless Steel (For ELT103) |
| Max. Solid Particle Size | ⩽10 mm |
| Max. Liquid Viscosity | <1000 mm² / sec |
| Measurement Density | For Solid⩾ 0,1 g / cm³<br>For Liquid⩾ 0.7 g / cm³ |
| Vibration Frequency | 280 KHz (For ELT102,104, 202, 204)<br>300 ± 50KHz (For ELT101, 201) |
| Delay<br>Time | 0.5 sec (Vibration Stop)<br>1-2 sec (Vibration Start)<br>It can be adjusted between 1-60 seconds. |
| Exit (For ELT101, 201)<br>(For ELT103)<br>(For ELT102,104, 202, 204) | 2 x 5A NO / NC Relay 30 VDC / 220 VAC<br>1 x 5A NO / NC Relay 30 VDC / 220 VAC<br>2 x 8A NO / NC Relay 24 VDC / 220 VAC |
| Supply | 15-80 VDC, 15-260 VAC |
| Power consumption | 2.5 W, 1 W (For ELT103) |
| Connection | 1 ” BSP (Std.) Male Thread<br>Opt. Flanged |
| Working Pressure | Max. 20 bar (For ELT101, 201)<br>Max. 40 bar (For ELT102,104, 202, 204)<br>Max. 30 bar (For ELT103) |
| Working Temperature | (-) 20 °C ... (+) 150 °C (Std.)<br>Opt. 200 °C |
| Ambient Temperature | (-) 20 °C ... (+) 80 °C |
| Ambient Humidity | % 95 RH |
| Protection Class (EN60529) | IP 66, IP 67 (For ELT103) |

### 1.5. Electrical Installation

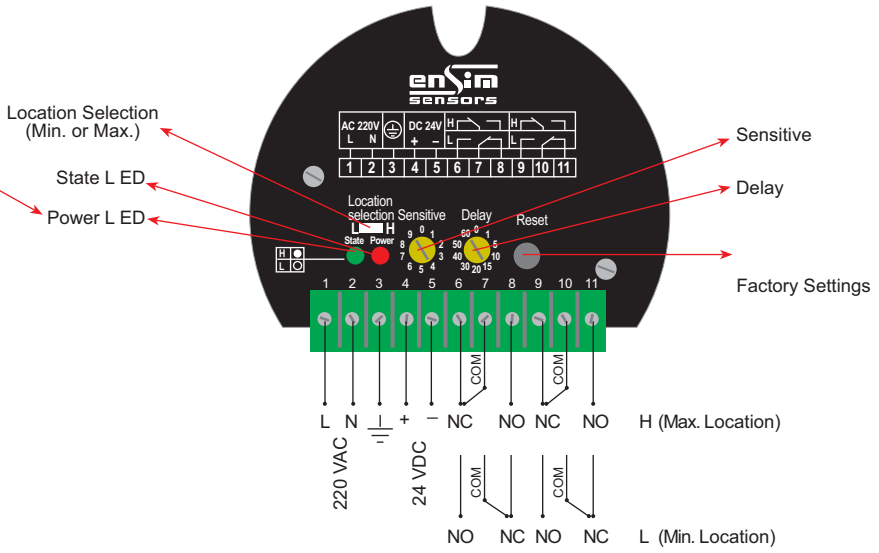
Make the electrical connection of the instrum ent according  to details on its label, table and cable figures in this manual.

**Electrical Connection :**

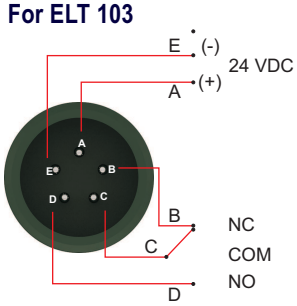
For ELT 101 / 201




For ELT 102 / 202




For ELT 103




**Protection Case:**

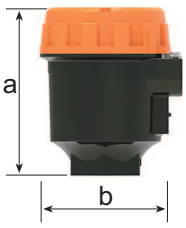
Material : 304 Stainless Steel
Welded manufacturing
Opens - Closes Hinged
To Protect Against external conditions.

**Housing :**

| ORDER CODE | TYPE | MATERIAL | PROTECTION CLASS | TEMPERATURE (°C) | SIZE a x b (mm) |
|---|---|---|---|---|---|
| 5240 | B20x | Aluminium | IP 66 | -40...+200 | 132 x 104 |

DO NOT OPEN WHEN ENERGIZED
KEEP TIGHT WHEN CIRCUIT ALIVE

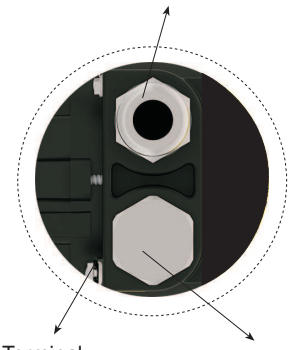
**Aluminium**



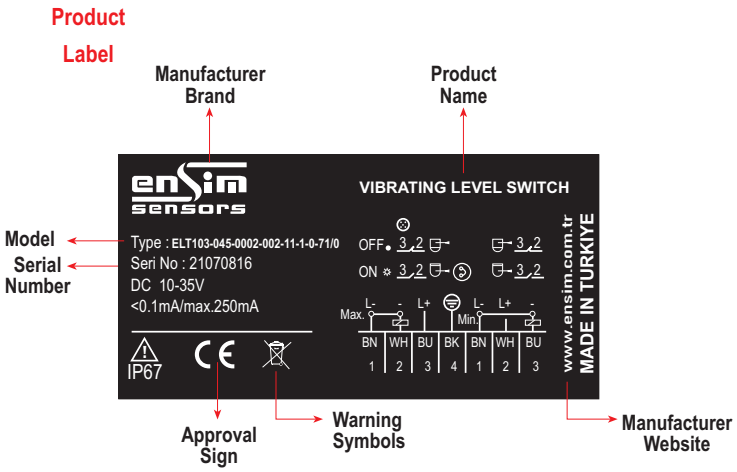

**B20x**

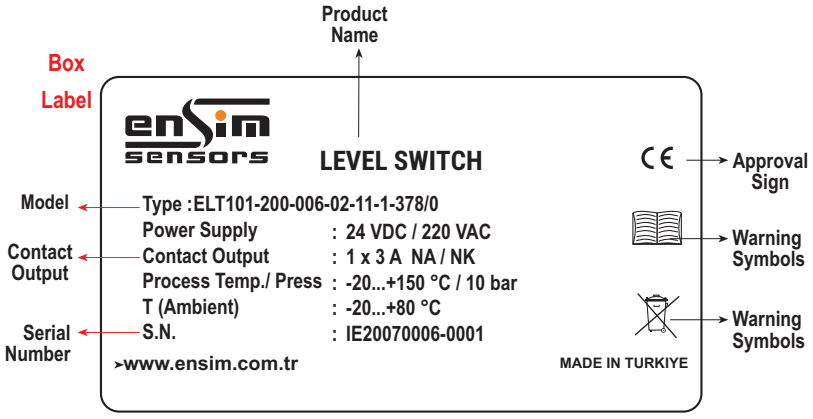
**Aluminium Housing**

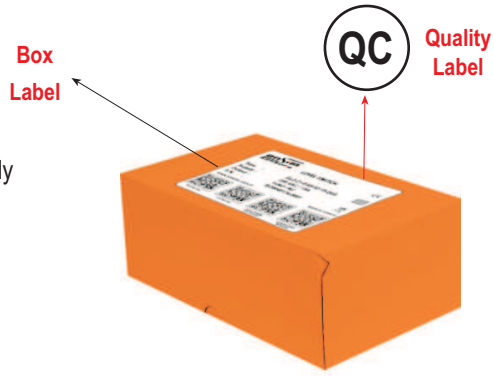
Cable Plug
(Suitable Cable Diameter : Ø 6-12mm)


## 1.6. Label Information :



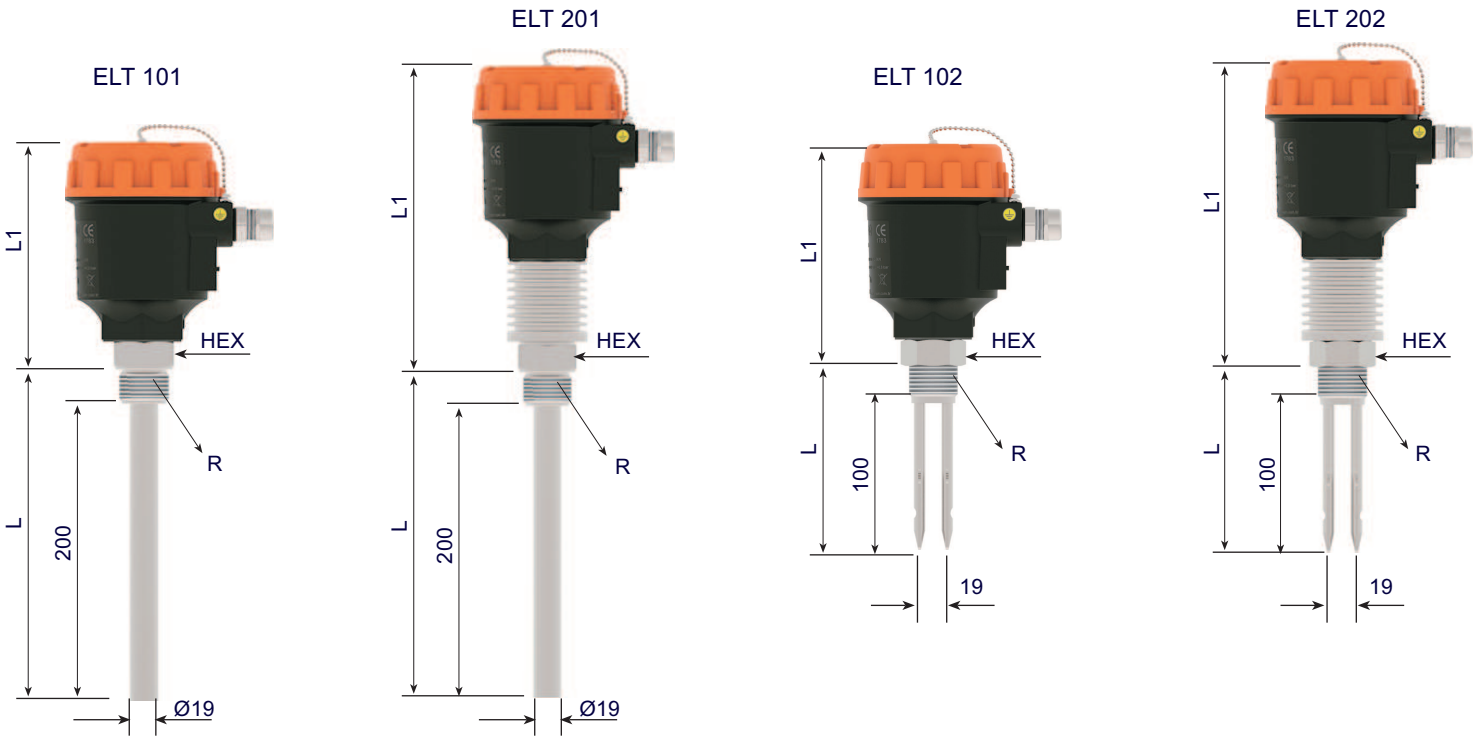




### 1.6.1. Content of Package

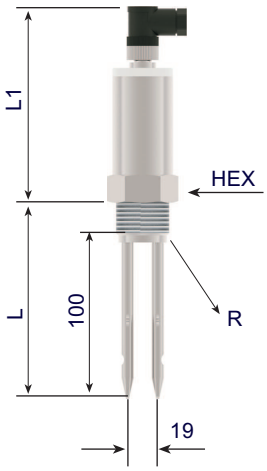
Please check whether you have taken delivery of below listed content completely or not and check its conformity with criterions in your order:

*Level switch
*This operating manual

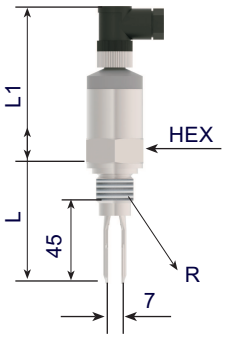
## 1.7. Dimensions :



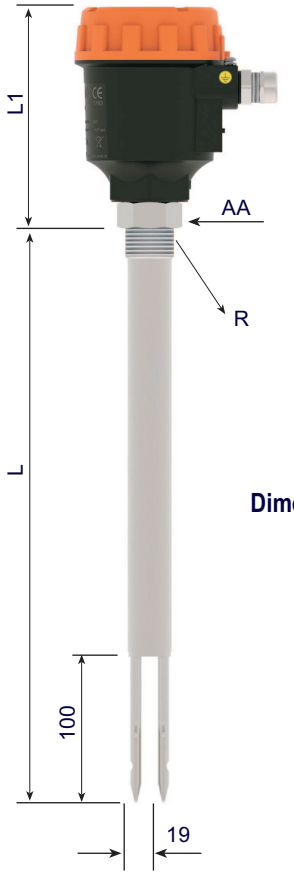
ELT 103




ELT 103




ELT 104




**Detachable Housing**

**Dimensions:**

| | Connection R (mm) | L (mm) | L1 (mm) | HEX (mm) |
|---|---|---|---|---|
| ELT 101 | 1"BSP | 220 | 134 | 40 |
| ELT 201 | 1"BSP | 220 | 217 | 40 |
| ELT 102 | 1"BSP | 125 | 134 | 38 |
| ELT 202 | 1"BSP | 125 | 217 | 38 |
| ELT 103 | 1"BSP | 125 | 115 | 38 |
| ELT 103 | 1/2"BSP | 63 | 100 | 32 |
| ELT 104 | 1"BSP | Max. | 134 | 38 |
| ELT 204 | 1"BSP | 1500 | 217 | 38 |

**1.8. Target Group**
This operating manual has been prepared for qualified technical personnel.

**1.9. Security Notes**

Following notes should be taken into consideration in order to avoid dangers which can occur on the operator and around the ambient:
Installation, operation and maintenance of this instrument should be made only by people who have read the operating manual and who are knowledgeable about work safety!
It should be complied with work safety, accident prevention regulations and national installation standards.
Product should be used only within the scope of stated specifications!
You can assemble the instrument only when pressure is not available!

## 2. Installation :

**2.1. General Notes**
Installation of the instrument should be made only by authorized personnel.
Do not apply force to the instrument during the installation!
Do not use the level indicator with a greater pressure than recommended pressure.
Do not forget that instrument is precise, carry it carefully and prevent to be damaged.
It should be guaranteed that there are not any magnetic particles.

**2.2. General Installation Stages**
*Remove level indicator from the box carefully
*Check whether gasket is appropriate for fluid or not. If is not appropriate, contact with the producer.
*Then, apply below mentioned explanations according to structure of the design.

**2.3. Special Notes**
*Please ensure that there is no mechanical stress on the shaft following installation.
Such case will cause slipping in thecharacteristic curve.
*Level switch should be mounted vertical on tank's plate
*Allocate valve certainly in the process connection while instrument is used.
*Allocate blowdown valve under bottom flange for blowdown.
*If instrument is mounted outside and if there is any danger of lightning or excessive pressure, take preventive measures by taking necessary measures.

**2.4. Installation For Mechanical Connections**
*Use appropriate O-Ring or gasket for tightness.
*Ensure that its surface is clean and smooth.
*Assemble the instrument manually.

**2.5. Order Form :**

## Order Form: Please consider sample models when coding!..

### 1 MODEL ELT

Std. Type.....1
High Temperature Type.....2

### 2 CERTIFICATE

None.....0
(EN10204-3-1) Material Certification.....1

### 3 CONNECTION TYPE

Thread Type.....1
Thread Fork Type.....2
Mini Fork Type.....3
Long Fork Type.....4
Long Rode Type.....5
Special.....x

### 4 STEM LENGHT (mm) L

Std. (For ELT103).....45
Std. .....100
Std. .....200
Std. .....1000
Special.....x

### 5 CONNECTION

1/2" BSP (Std.) Only For ELT 103.....0002
1" BSP (Std.).....0006
DN 50 - PN 16 (Std.).....0505
DN 80 - PN 16.....0507
DN 100 - PN 16.....0508
Special.....x

### 6 WETTED PART MATERIAL

316 Stainless Steel.....002
Special.....x

### 7 OUTPUT

1 x 5A NO / NC PNP (For ELT103) (Opt.)..... 05
1 x 5A NO / NC Relay (For ELT103) ..... 11
2 x 8A NO / NC Relay (For ELT102, 202) ..... 12
1 x 3A NO / NC Relay (For ELT101, 201) ..... 43
Special.....x

### 8 WORKING TEMPERATURE

(-) 20 °C...(+) 150 °C.....1
(-) 20 °C...(+) 200 °C.....2
Special.....x

### 9 HOUSING

Aluminium Housing , B20x IP 66.....5240
Plastic Housing .....103
Special.....x

### 10 ELECTRICAL CONNECTION

Terminal (For Housing Models).....00
Polyamide Large Socket P01.....50
M12 5 Pin.....71
Special.....x

### 11 OPTIONAL

None...../ 0
Protection Case - for Outside Tank. 304 St. St. ..../ K2
Detachable Housing...../ S
Special...../ x

**EXAMPLE** ELT 101 - 200 - 0006 - 002 - 43 - 1 - 5240 / 0

Vibrating Type Level Switch, Model ELT101 , L=250 mm , 1" BSP Male Thread , 1 Contact

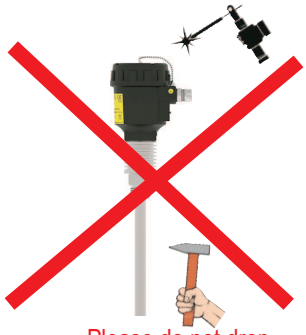
2.6.

# WARNING !!!

Please pay attention to following matters in order to operate your flow switch properly.

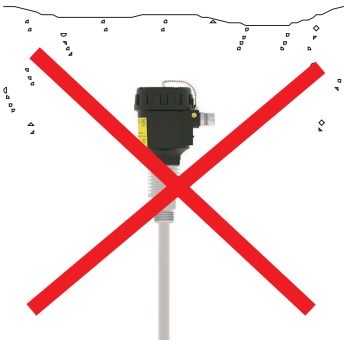
Please do not dip cables potting into liquids,otherwise instulation problem may cause.

Do not fasten switch reversely , otherwise its characteristics might be changed.

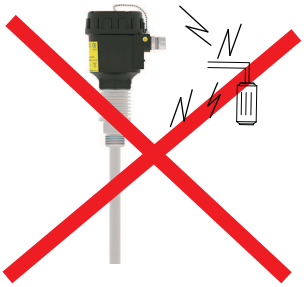


Please do not drop , otherwise the characteristics might be changed.

Vibration might be caused instability.

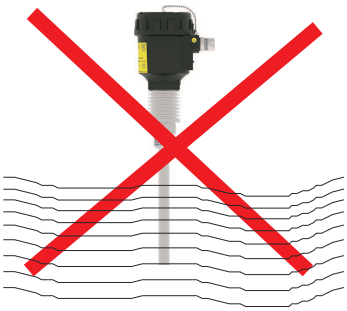


In case vapour splash cable potting points,insulation problem may cause.



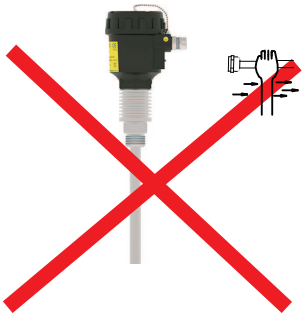
Excess current , to be drawn as a result of direct connection to motor, may burn relay of switch

Do not remove the plastic parts of the bottom of the switch body , do not loosen.



Please avoid using with liquids which damage materials of parts ,otherwise quality can not be maintained accurately.

Do not remove the float from connection part. Because its pin might be damaged.



Do not pull the cable strongly, otherwise the characteristics might be changed.

## 3. Failure Delection

| Breakdown | Probable cause | Failure detection\correction |
|---|---|---|
| No relay output<br>/ Continous relay output | -The contact may be burnt out.<br>-Connection angle is not properly connected.<br>-Applied values higher than the application current or voltage.<br>-Swich setting is not correct. | -Notify the authorized service.<br>-Adjust the connection angle to the proper position.<br>-Notify the authorized service.<br><br>-Check the swich setting. |
| Unstable Switch | -Product was dropped or hit from outside<br>-Swich setting is not correct.<br>-The product is exposed to excessive vibration | -Notify the authorized service.<br>-Check the swich setting.<br>-It should be prevented from vibration affecting the product or it must connected to a place where vibration will not occur. |
| Fork broken or bent | -The size of the particles are larger than measurable size | Appropriate products should be used<br>Please contact the manufacturer for another model selection. |
| Broken or dissolved housing | -Physical damage is received from working environment.<br>-Housing damaged from chemical effect. | -Outer physical effects must be prevented. Change of equipment position is advised.<br>-Housing type can be changed for more protection against outer effects, please contact with manufacturer with determined environment conditions. |

If you find an error, try to eliminate it by using this table or send the instrument to our service address for repair.

The instrument should be repaired only by authorized service!

## 4. Disassembly of Instrument

Instrument should be disassembled while feeding and pressure is not available!

## 5. Service

The instrument does not require maintenance. If it is desired, residue accumulated inside should be blown according to kind of fluid and instrument can be cleaned with soft cleaning solutions. Measures should be taken during the disassembly.

## 6. Recalibration

Calibration is not required during long period useful life of a level switch.

## 7. Repair – Manufacturer Address

If irreparable breakdowns occur, the instrument should be sent to us for repair purpose. Before this, the instrument should be cleaned carefully and packaged so as not to be broken. Furthermore, you should also add a detailed explanation which describes the breakdown while instrument is sent. If your instrument contacts with harmful substances, decontamination report should be also sent additionally. In the event that instrument does not have any decontamination report or our service department has doubts about instrument, repair process will not start until an acceptable report is sent.

If the instrument contacts with hazardous substances, necessary measures should be taken for decontamination!
Service -Manufacturer Company Name and Address:

LONCA MAK. SAN. TİC. A.Ş.Ferhatpaşa Mahallesi Gazipaşa Caddesi No:104 A 34888 Ataşehir / İSTANBUL - TÜRKİYE

Tel:+90 216 505 05 55 Faks:+90 216 515 45 84 E-Mail: **lonca@ensim.com.tr** Web: **www.ensim.com.tr**

## 8. Disposal

The instrument should be disposed according to 2002/96/EC and 2003/108/EC European Directives (waste electrical and electronic instruments). Waste electrical and electronic equipment should not be mixed with domestic wastes!

If the instrument has contacted with harmful substances, special attention should be paid for its disposal!

## 9. Terms of Warranty

The instrument has warranty legally for 24 months after delivery date. Warranty demands are not accepted in case of inappropriate operation, damage on the instrument or any modification on the instrument.

## 10. Terms of Return

In the return of materials, user should send an open list related to damage or problem, malfunction of the material to be returned or its operation in the different modification, with the instrument. If it is required to return the material, used in the dangerous, corrosive or toxic fluid, in this case, used part should be cleaned very carefully. Security of personnel should be ensured. All products to be returned should be sent to our company address, which we have stated.