Model: 03-2023-009

OPERATING MANUEL

Model : **DX-ELB**

LEVEL SWITCH-SIDE MOUNTED

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:
DX-ELB 11 , DX-ELB 12
DX-ELB 21 , DX-ELB 22
DX-ELB 31 ,
DX-ELB 61

CE 2284 Ex


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

Level Switch is designed for industrial plants. It should never be used in mines. Otherwise, the responsibility of the manufacturer is eliminated.

Food, ship, machine, boiler and storage tanks.

Advantages:

* Max. 25 bar operating pressure
* Max. 250 °C operating temperature
* Apparatus variety

Ambient Conditions: **Relative Humidity:** 0-98 %RH **Ambient temperature:** 60 °C (It is not used under -20 C)

1.3. Working Principle

DX-ELB level switches are used for measuring and checking level of tank.It is preferred in food, ship machine, boiler and storage tank applications with its advantages such as resistance to high temperature, long life contact structure, which is operable in each, vertical or horizontal connection.

1.4. Technicial Specifications and Material Information

Technicial Specifications **DX- ELB11 / 12 / 21 / 22 / 31 / 61**

Working Temperature (Tp)	Max. 125°C / 200°C / 250°C
Ambient Humidity	0-98 %Rh (Non-condensing)
Ambient Temperature (Ta)	(-) 20 ... (+) 60°C
Material Connection	Stainless Steel 1.4408 (CF=8M)
Housing	Aluminum Injection - AlSi12Fe (Std) Black (RAL:9005)
Float	Stainless Steel 1.4436 (316)
Wetted Parts	Stainless Steel 1.4436 (316)
Connection	92x92mm Flanged (Std.) Opt. Special flange can be made.
Min. Density	0,70 g. / cm³
Float Number	1 (Std.) A large number of available
Working Cressure	Max. 25 bar
Electrical Connection	Terminal
Cable and plug input	M20x1,5 (Std)
Output	250V AC12 10A 250V DC13 0,6A
Protection Class	IP 66 (EN60529)
Certifications and Approvals	CE Declaration , EMC , LVD , ATEX

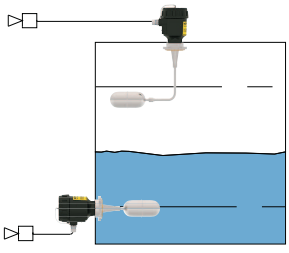
Certification

II 2G Ex db IIC Tx Gb	For Gas
II 1/2 G Ex h IIC Tx Ga/Gb	For Gas
II 2D Ex tb IIIC Tx Db	For Dust
II 1/2 D Ex h IIIC Tx Da/Db	For Dust

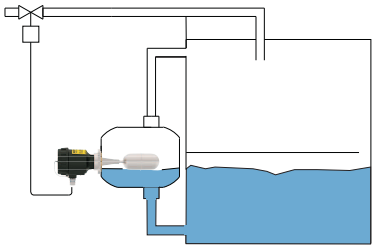
* Have a look at the temperature class chart.

1.5. Application Example

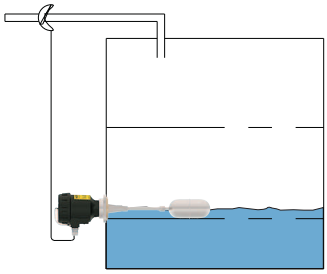
Min. or Max. Control



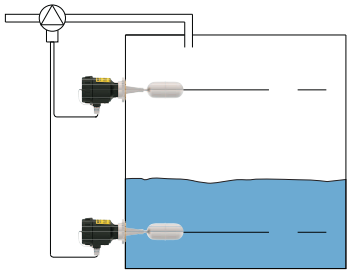
With External Tank

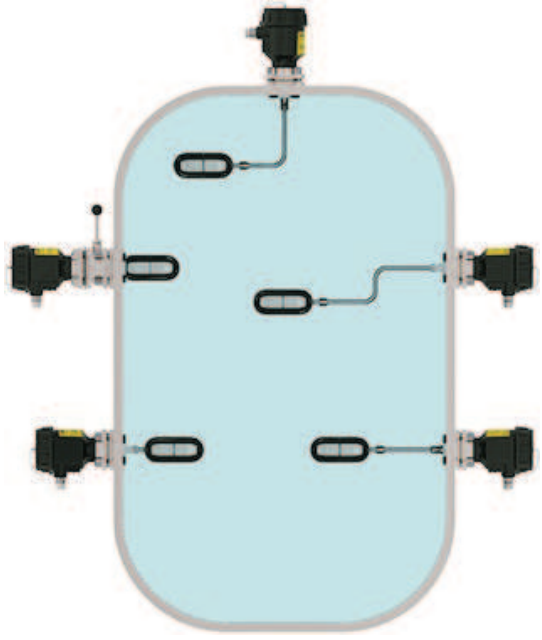


Valve and Pump Control

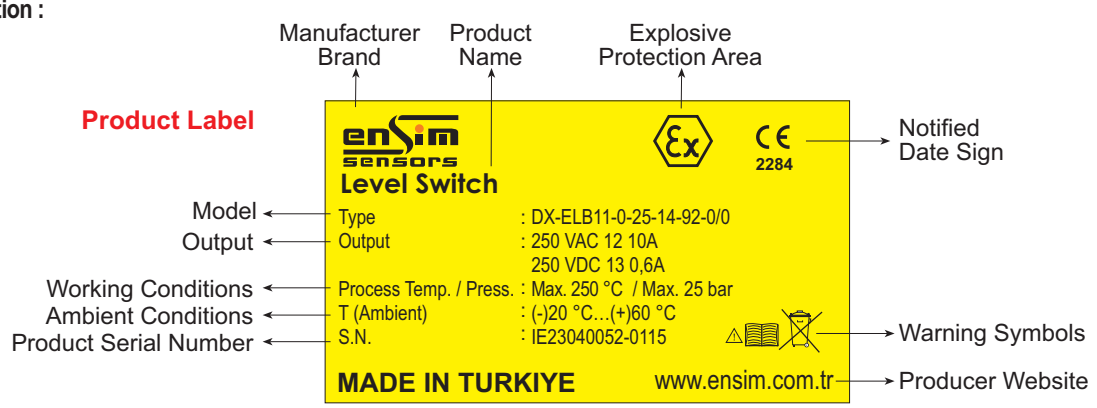


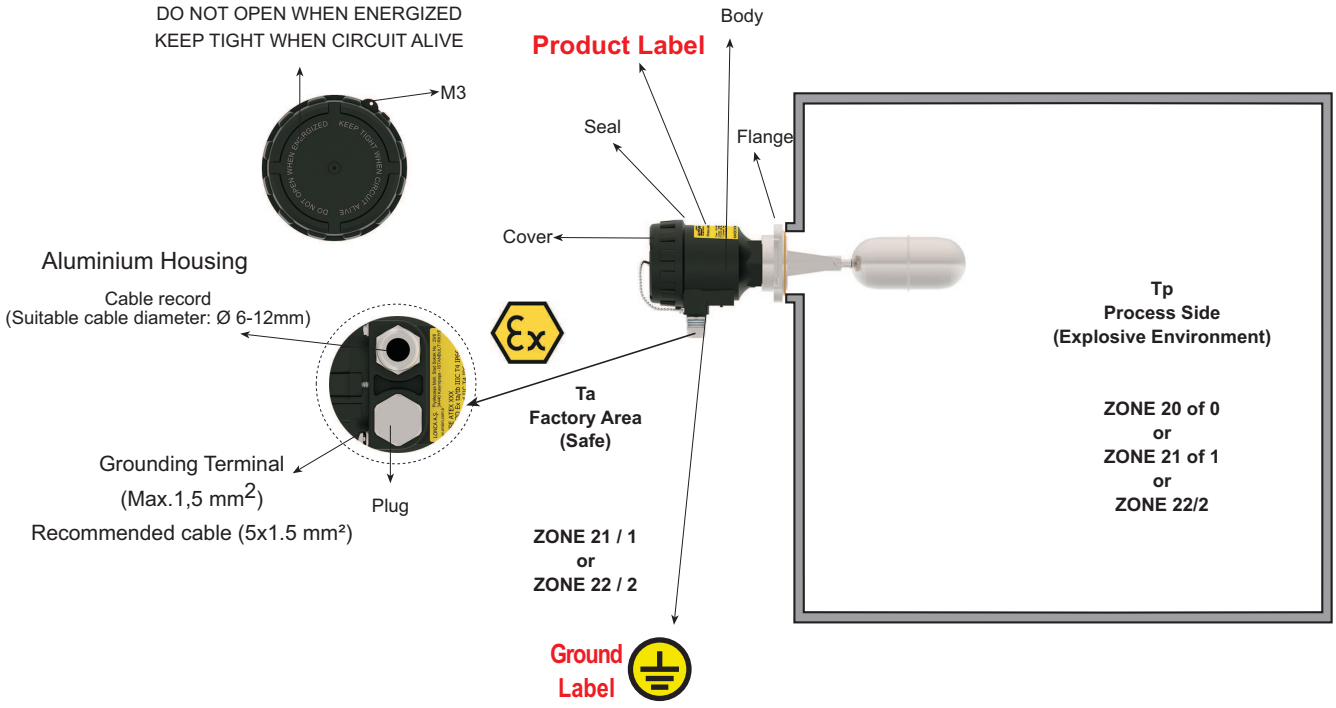
Pump Control

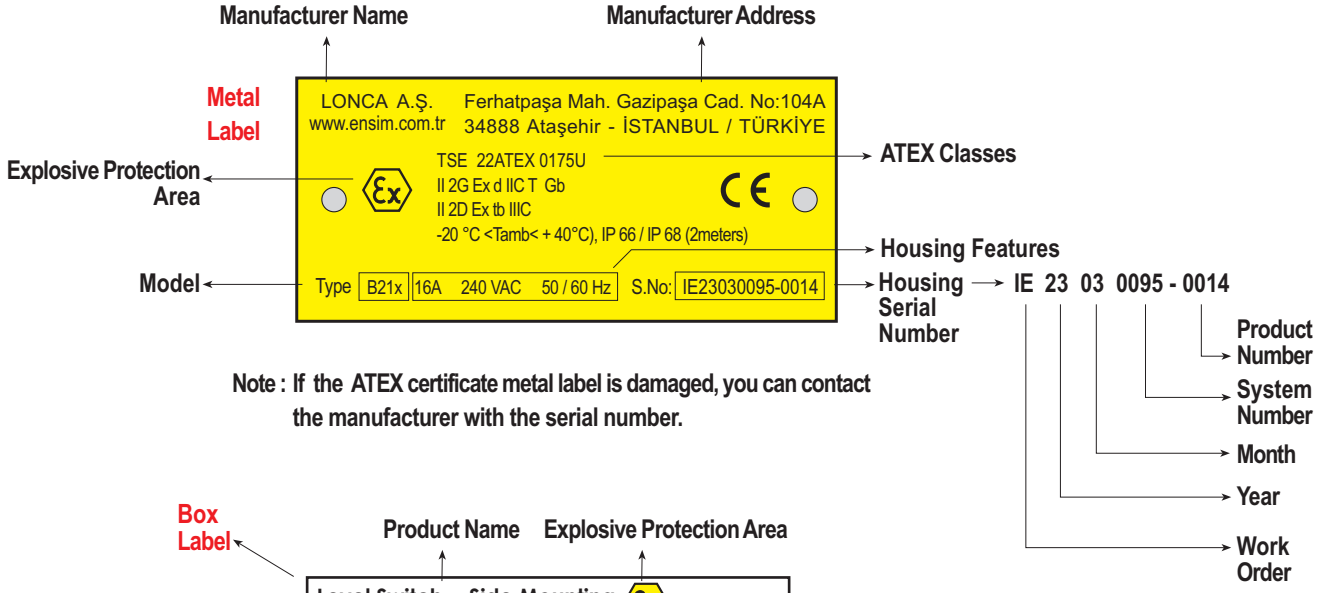




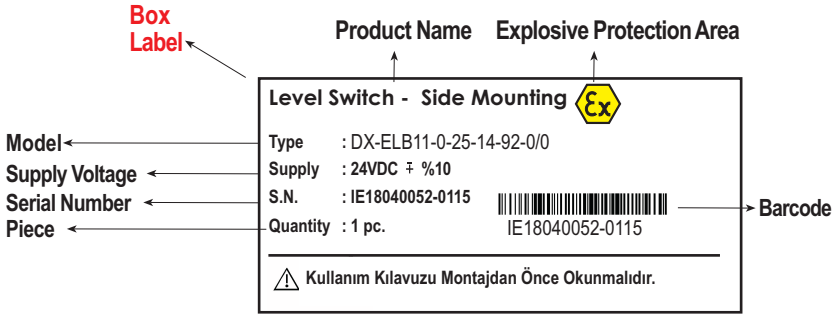
1.6. Label Information :







Note : If the ATEX certificate metal label is damaged, you can contact the manufacturer with the serial number.



1.7. Package and package contents :

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 - Side Mounting**

*This operating manual

Std. Package

1.8. Target Group

This operating manual has been prepared for qualified technical personnel.

1.9. Certifications and Approvals

CE	:	It shows that, product meets required conditions of EU with CE stamp and stipulate that product passed quality assessment stages
ATEX (2014 / 34 / AB)	:	TS EN IEC 60079 - 0 : 2018 TS EN 60079 - 1 : 2014 TS EN 60079 - 31 : 2014 TS EN 60079 - 36 : 2016
LVD (2014 / 35 / AB)	:	TS EN 60204 -1 : 2018
EMC (2014 / 108 / AT)	:	TS EN 61326 - 1 : 2021 TS 3033 EN 60529 : 2014

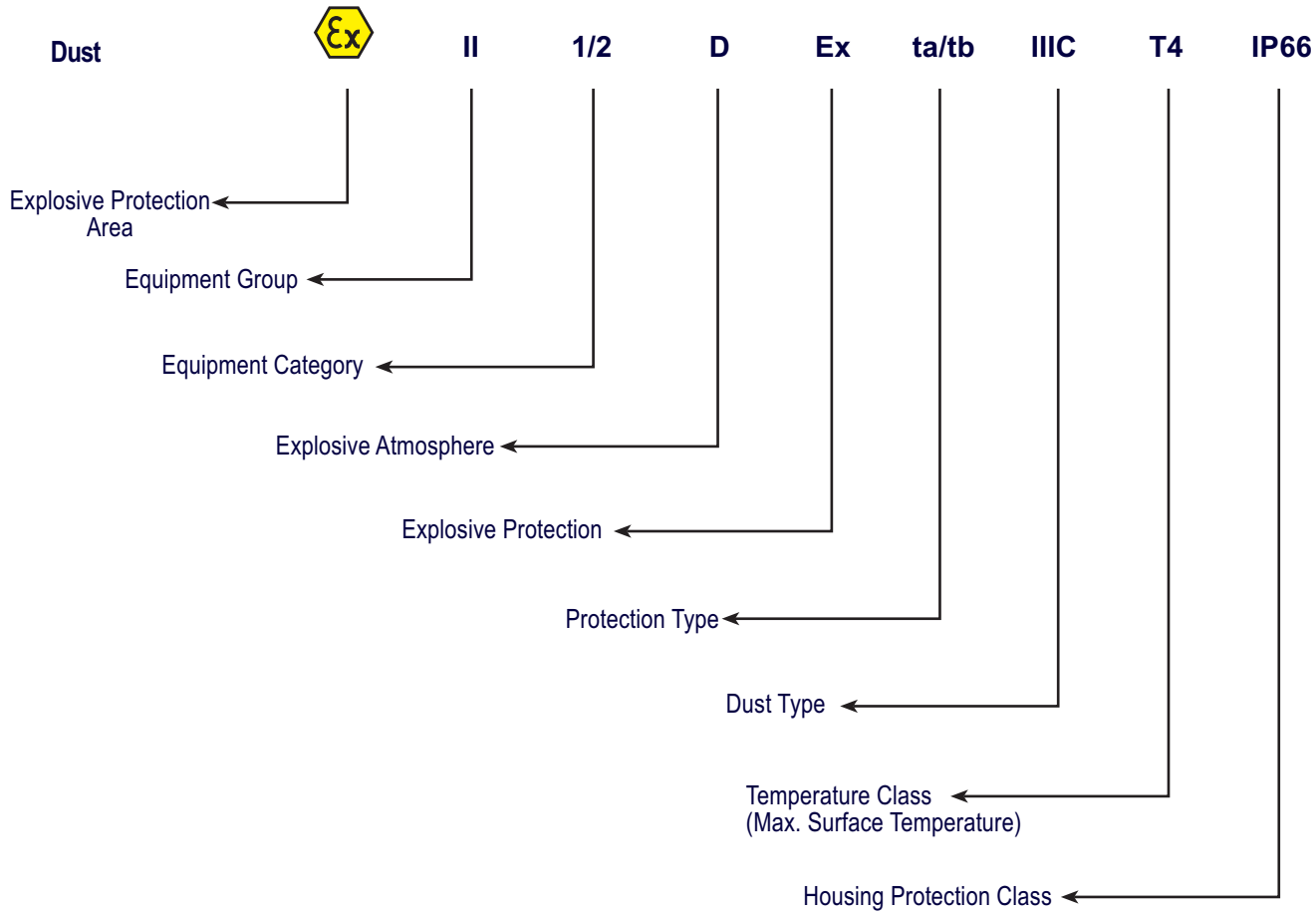
Note : All the features and tests on this decument has manufactured with **DX-ELB** models at LONCA Inc.

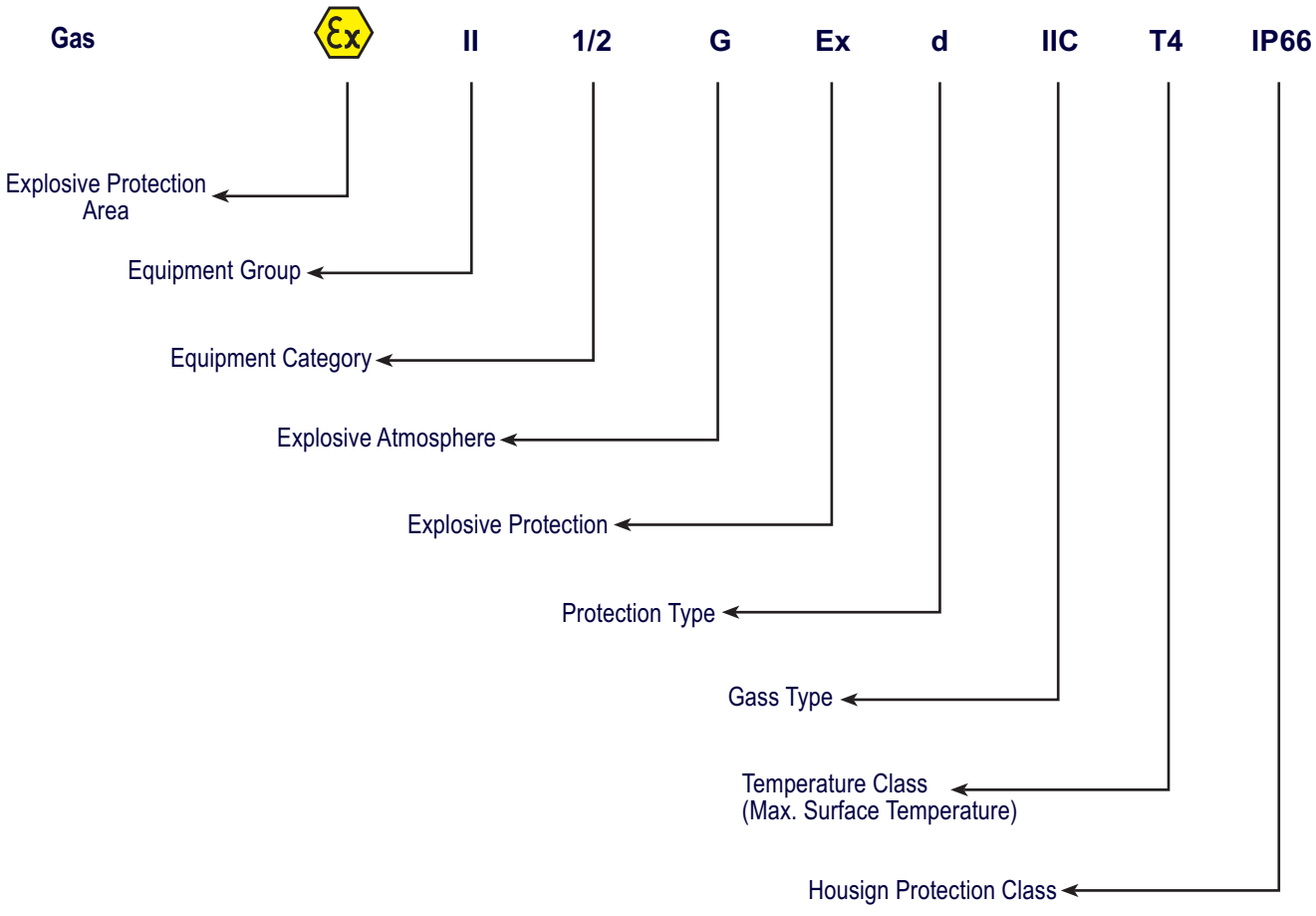
1.10. Safety İnstructions (ATEX)

Safety instructions should be read and applied to the end.

-The following notes must be taken into attention to protect the operator and the enviroment from possible hazards.
-The device setup and maintenance of this device must be done by knowledgeable persons who has read the instructions and is familiar with the safety at work.
-İt should be checked by the users that the products are fitted suitable to the zone maps.
-Work safety,must be observe by accident prevention regulations and national installation standards.
-The product should be used within the specification presented guideline.
-You can only mount the device when there is no presure.
-These safety instructions are protected in terms of 2G category for **DX-ELB** coded series and is compatible with IEP23ATEX1197X and CE certificate.
-The Label should be used in appropriate environments.
-Because the enviroment is max. 60 °C you should choose a suitable cable for use.
-Do not over tighten the cable gland in order not to affect the IP protection class.
-Make sure the cable entry and plug is tightened right.
-Ground connection must be done properly and checked without energizing.
-Before starting use make sure the lid is fully closed and the set screw is tightened.
-**DX-ELB** models are metal protected.İt is Compatible with different supply voltages specified in the catalog.
- The metal enclosure must be in the 1D zone. **The pipe and float** section must be located in the 1D and 1G zone.
-Max. working temperature,max. Surface temperature can change depending on the model, Please read the document carefully before using.
-During the mounting it should be checked that there is no mechanical stress or deformation in the tank wall.When this happens, the sensor should not be energized without the necessary correction measures.
-Check that the presure in the tank hasnt exceed the presure shown in the catalog.
-The mounting sensor must be mount properly in the tank filling system.In case it is not suitable, the sensor must be protected and the in-tank apparatus must be protected.
- Flange surface smoothness must be maintained in flanged connection.
- Flange seating surface should not be scratched, and suitable liquid gasket should be used instead of sealing with gasket in counter flange mounting.
- Flanged connections are welded with the sensor part.
-The sensor is designed to withstand the chemical effects of the materials.Check the suitability of different materials.
-The Sensors are in suitable storage conditions and protected from dust and damp.
-Device repairs should only be done at the manufacturer Lonca Inc.
-Protect the device from friction and cleaning should be done without water.
-In case of improper circuit conditions, the main energy must be completely disconnected and safety measures should be taken without replacing the temperature circuit breaker with its backup.Changes should be made in a safe area.

1.11. ATEX Marking Sample Description





2. Installation :

2.1. General Notes :

The device installation is in 2014 / 34 / EU criteria to ensure the safety of atmosphere and people from explosions, must only be done by staff who knows the safeguards.
Do not apply force to the instrument during the installation!
Do not use the **Level switch** with a greater pressure than recommended pressure.
Do not forget that instrument is precise, carry it carefully and prevent not to be damaged.
It should be guaranteed that there are not any magnetic particles.
The Max. working pesure should not be exceeded.

2.2. General Installation Stages

*Remove **Level switch** 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

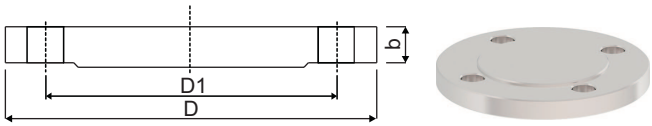
*Please ensure that there is no mechanical stress on the shaft following installation. Such case will cause slipping in thecharacteristic curve.
***Level switch** must be placed upright or horizontal.
*Allocate valve certainly in the process connection while instrument is used.
*Allocate blowdown valve 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.
*In the operating conditions, **Level switch** may be hot according
to situation of fluid, in this case, do not touch the indicator, otherwise your skin is damaged.
*Ürünün topraklaması uygun şekilde yapılmalıdır. (Dışarıdan veya muhafaza içinden yapılabilir.)
The grounding product must be done properly. (can be done outside or in housing)

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.
*Connect the contacts as shown in the figure.
(For G1" max. 20 Nm, G 1 1/4", for G" 1 1/2" max. 30Nm)

2.5. Mechanic Connections :

Flanged (Connection has been welded with sensor)



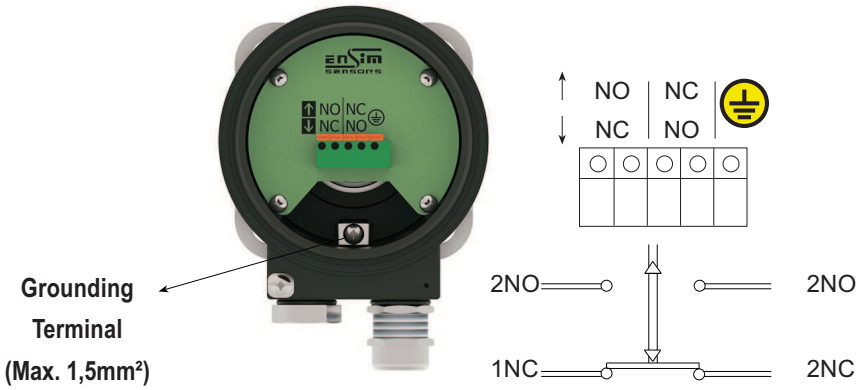
Order Code	(ISO1092-1) PN 16	D (mm)	D1 (mm)	b (mm)
0502	DN 25	165	85	16
0503	DN 32	140	100	16
0505	DN 50	165	125	18
0507	DN 80	200	160	20
0508	DN100	220	180	20

Order Code	(ISO1092-1) PN 40	D (mm)	D1 (mm)	b (mm)
0702	DN 25	115	85	18
0703	DN 32	140	100	20
0705	DN 50	165	125	20
0707	DN 80	200	160	20
0708	DN 100	235	190	24

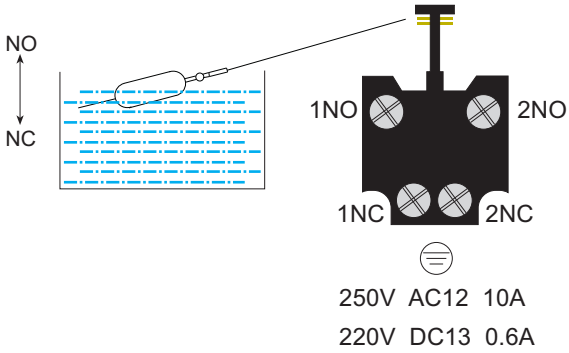
Order Code	(ANSI B16.5) 150 LBS	D (mm)	D1 (mm)	b (mm)
1005	DN 50	152,4	121	19
1006	DN 65	177,8	139,7	22,2
1007	DN 80	190,5	152,4	23,8
1008	DN 100	228,6	157,2	23,8

2.6.Electrical Installation

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



For DX-ELB 11 / 12 / 21 / 22 / 31 / 61



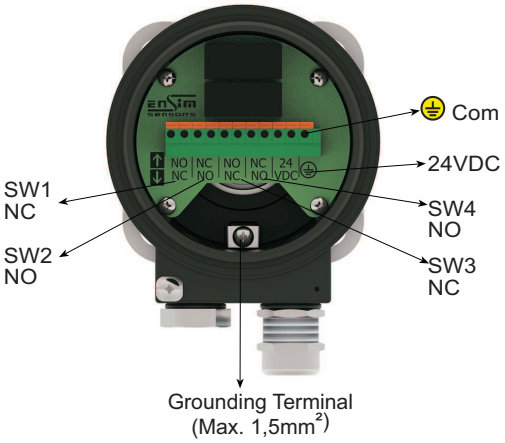
Contact Apparatus

DX-ELB level switch was four free contacts via en electronic card place in body. The contact can be produced NC or NO according to austomer needs.

Power Supply : 24 VDC

Output : 2 x NO + 2 x NC Relay

Working Temperature: Max. 100 C

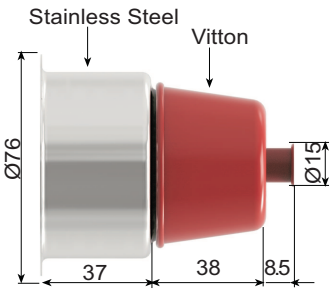


Protective Bellows Apparatus

Metal Part: Stainless Steel 1.4571

Rubber Part: Viton 200°C

The apparatus are used in order to enable operation of level switch in the tanks, containing particle inside.



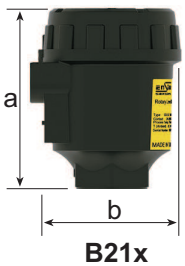
Note : It has been produced according to IPC A 600 class 2 conditions and tested with 100 % E-test. Moreover, HASL (non-lead) surface test has been applied.

2.7. Parts and Accessories

Housing :

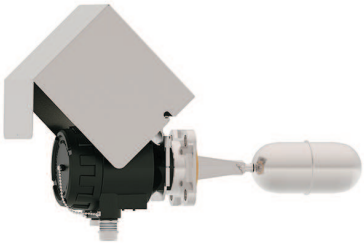
ORDER CODE	TYPE	MATERIAL	PROTECTION CLASS	TEMPERATURE (ºC)	SIZE a x b (mm)
704	B21x	Aluminium	IP 66	-40...+200	132 x 104

Aluminium



B21x

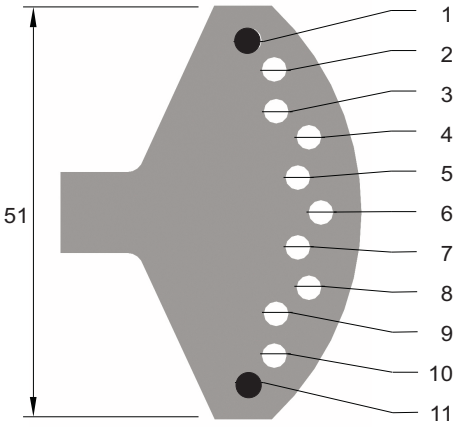
Protection Class :



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

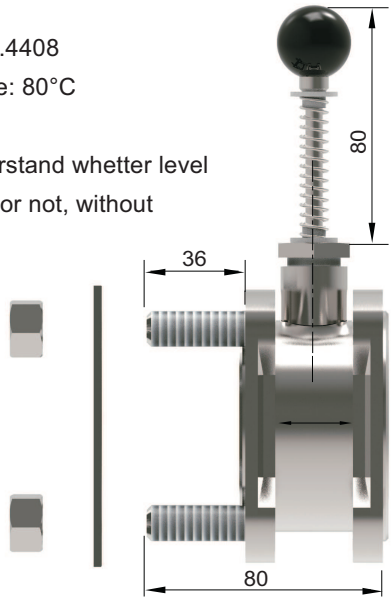
Adjustable Apparatus

Material: Stainless Steel 1.4571
11 Holes

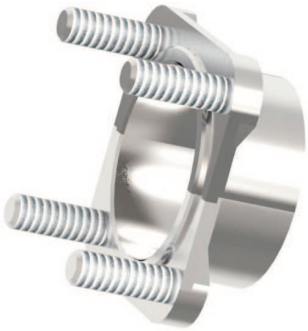


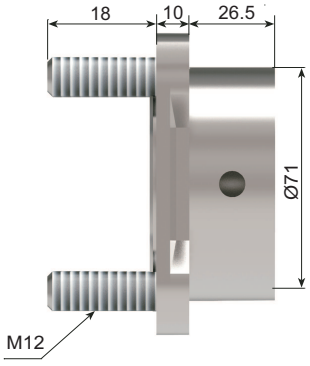
Test Apparatus

Material: Stainless Steel1.4408
Max.Working Temperature: 80°C
Bolt: M12x1.5, 4 pcs.
It is used in order to understand whetter level switch amkes its function or not, without discharging tank.

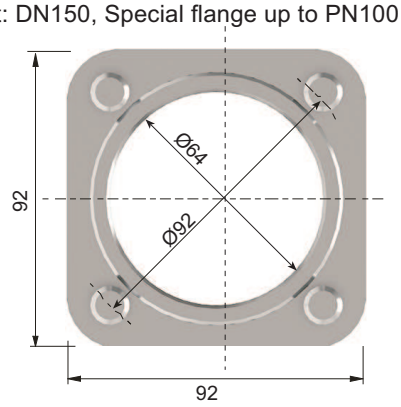


Counter Flange
Material: Stainless Steel 1.4408
Bolt: M12 x 1.5 mm 4 pcs.



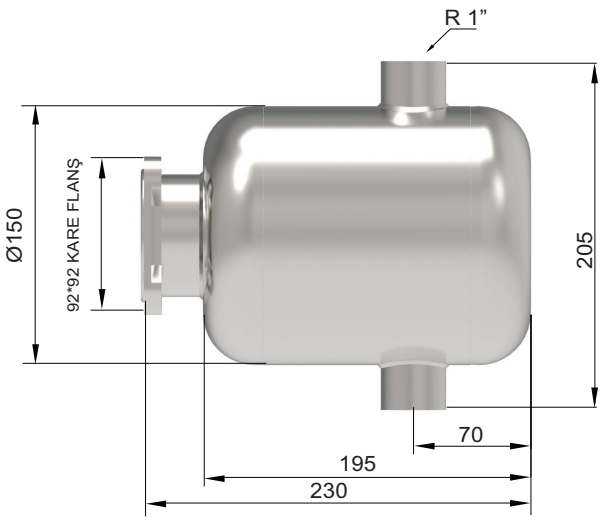


Flange
Material: Stainless Steel 1.4571
Measurement: 92 x 92 mm Square Type
Holes Diameter: Ø13 mm 4 Holes
Opt: DN150, Special flange up to PN100



External Tank

Material: Stainless Steel 1.4571
Connection: 92x92 mm. Square Flange
Process Connection:1"BSP Opt. Flange
Weight: 2.6 kg
It can be used as feeding device.
With bolt, nut and wasters.

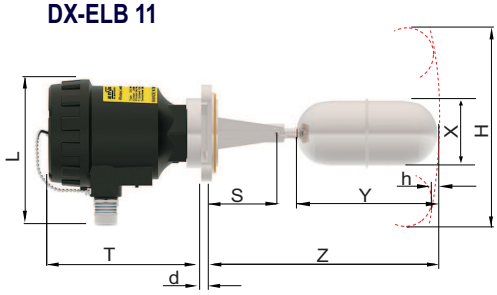


2.8. Sample Models :

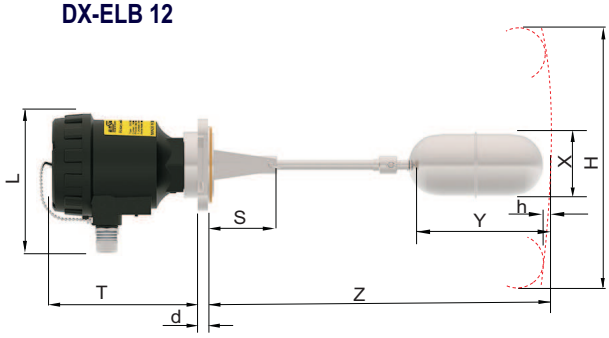
MODEL	DX-ELB 11
Z	225
T	110
S	57.5
L	142
Y	140
X	64
H	127
h	5
d	10

MODEL	DX-ELB 12		
Z	500	750	1000
T	110	110	110
S	57.5	57.5	57.5
L	142	142	142
Y	140	140	140
X	64	64	64
H	260	380	501
h	12	19.5	27
d	10	10	10

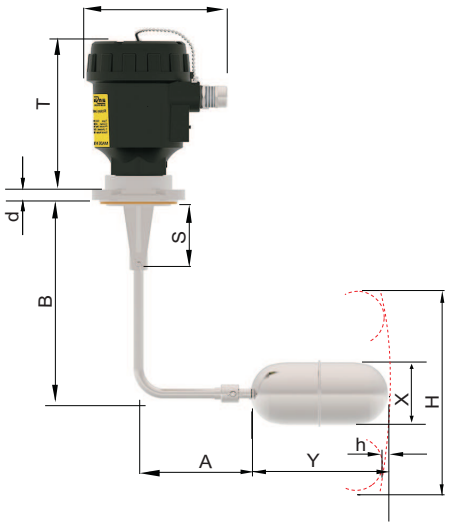
DX-ELB 11



DX-ELB 12

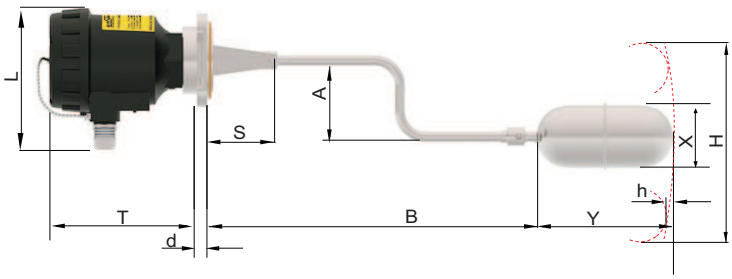


DX-ELB 21

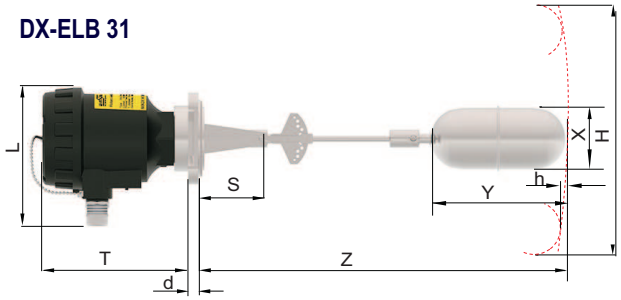


MODEL	DX-ELB 21	DX-ELB 22
A	Min.50	Min.50
B	Min.120	Min.120
A+B	Max.1000	Max.1000
T	110	110
S	57.5	57.5
L	142	142
Y	140	140
X	64	64
H	127	127
h	4	4
d	10	10

DX-ELB 22

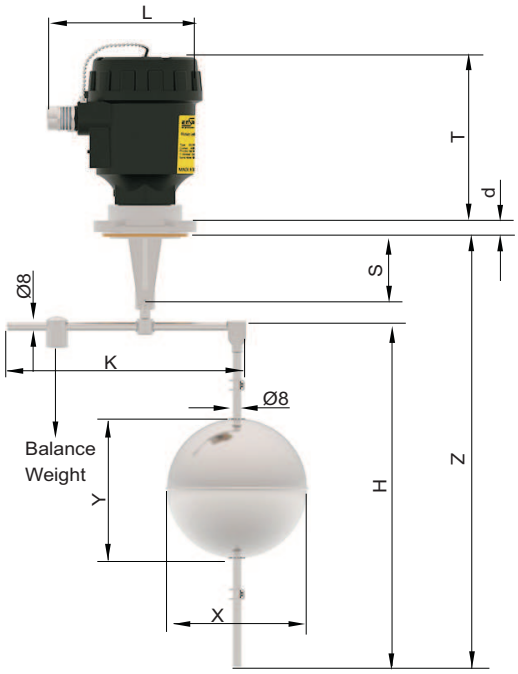


DX-ELB 31



MODEL	DX-ELB 31 (Number 1 and 11) between holes)		
Z	355	455	555
T	110 (91)	110 (91)	110 (91)
S	57.5	57.5	57.5
L	142	142	142
Y	140	140	140
X	64	64	64
H	424	562	702
h	73	101	129
d	10	10	10

DX-ELB 61



MODEL	DX-ELB 61
Z	Max.1080
T	91
S	57.5
L	142
K	214
Y	122
X	125
H	Max.1000
d	10

2.9. Maximum Surface Temperature

Temperature Class Table

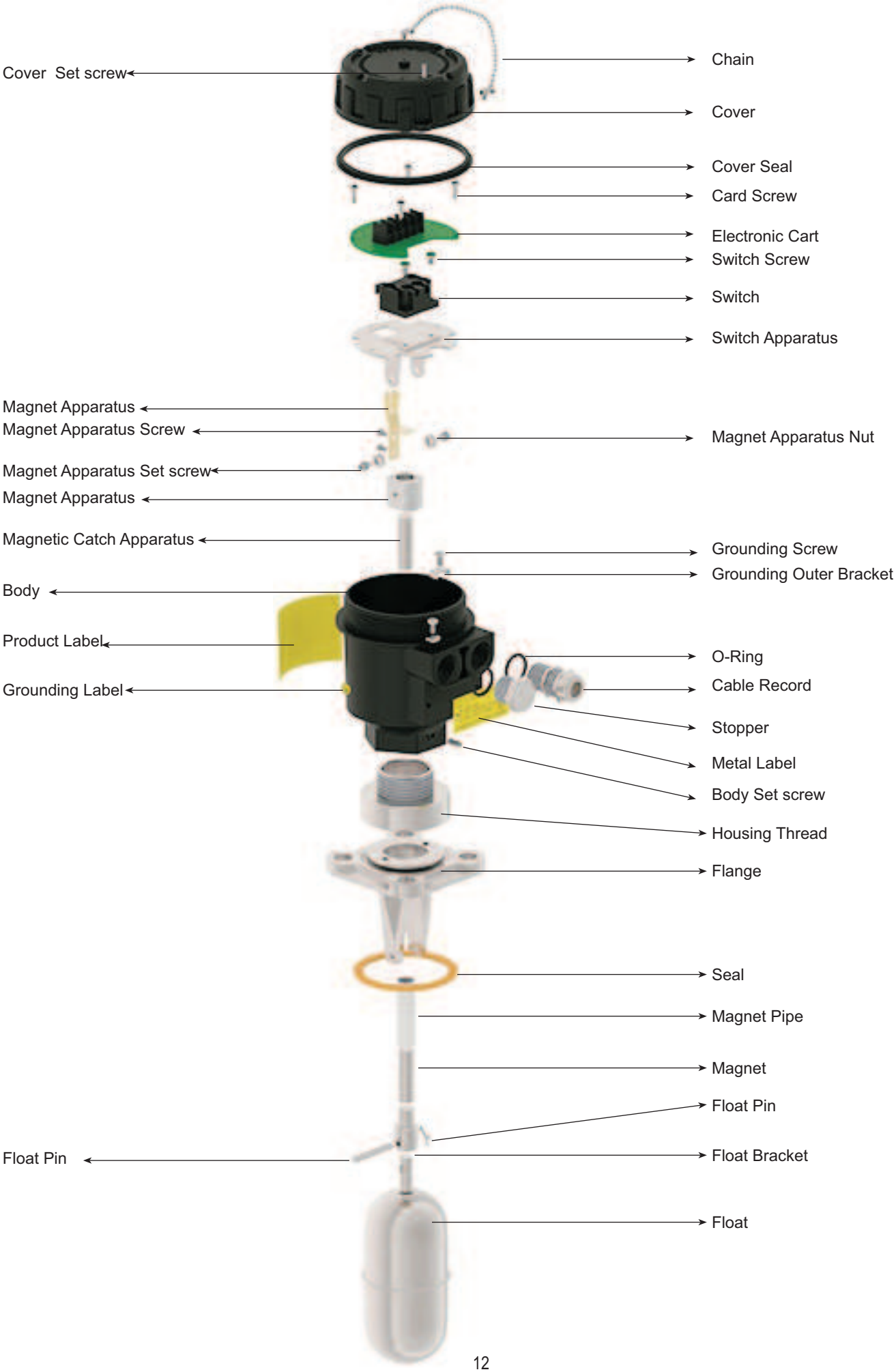
(-) 20° C ≤ Ta Ambient ≤ (+) 30° C...(+) 60°C Working Temperature: (-) 20°C … (+) 80°C / 90°C / 125°C / 190°C / 250°C		Group II
MODEL	DX-ELB	
Stand by time before opening the cover	20 sec.	
Ta AMBIENT TEMPERATURE	Tp PROCESS TEMPERATURE	TEMPERATURE CLASS
60°C	< 80°C	T6
60°C	< 90°C	T5
60°C	< 125°C	T4
60°C	< 190°C	T3
60°C	< 250°C	T2

(-) 20°C ≤ Ta Ambient ≤ (+) 30°C … (+) 60°C Working Temperature : (-) 20°C … (+) 80°C / 90°C / 125°C / 190°C / 250°C		Group III
MODEL	DX-ELB	
Stand by time before opening the cover	20 sec.	
Ta AMBIENT TEMPERATURE	Tp PROCESS TEMPERATURE	TEMPERATURE CLASS
60°C	< 60°C	T6

(-) 20° C ≤ Ta Ambient ≤ (+) 30° C...(+) 60°C Working Temperature : (-) 20°C … (+) 80°C / 90°C / 125°C / 190°C / 250°C		Group II
MODEL	DX-ELB	
Stand by time before opening the cover	5 sec.	
Ta AMBIENT TEMPERATURE	Tp PROCESS TEMPERATURE	TEMPERATURE CLASS
60°C	< 60°C	T6

(-) 20°C ≤ Ta Ambient ≤ (+) 30°C … (+) 60°C Working Temperature : (-) 20°C … (+) 80°C / 90°C / 125°C / 190°C / 250°C		Group III
MODEL	DX-ELB	
Stand by time before opening the cover	5 sec.	
Ta AMBIENT TEMPERATURE	Tp PROCESS TEMPERATURE	TEMPERATURE CLASS
60°C	< 60°C	T6

2.10. Part Names



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

1 MODEL DX-ELB

Standart.....11
Standart, Long Rod.....12
L Type Rod, Horizontal.....21
L Type Rod, Vertical.....22
Adjustable Rod.....31
Pneumatic Proportional Output.....61

2 CERTIFICATE

No.....0
(EN10204-3-1) Material Certification 1

3 HOUSING

Aluminium , B21x , IP66/68.....704
Special.....x

4 OUTPUT

Relay NO / NC (10A).....14
Relay NO / NC (5A).....15
Special.....x

5 CONNECTION (Connection has been welded with sensor)

92x92mm Flange.....92
Special.....x

6 ROD LENGHT (mm)

Std. 0
Special.....x

7 OPTIONAL

No...../ 0
Counter Flange...../ F
Bellows Apparatus ...../ K
Test Apparatus...../ A
Relay Apparatus...../ R
External Tank...../ T
Special Flange...../ X

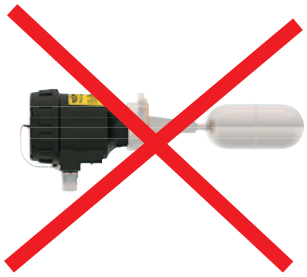
SAMPLE

DX-ELB 11 - 0 - 25 - 14 - 92 - 0 / 0 Standard Model , Relay Output , 92x92mm Flange

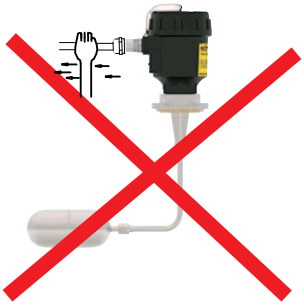
2.12.

WARNINGS !!!

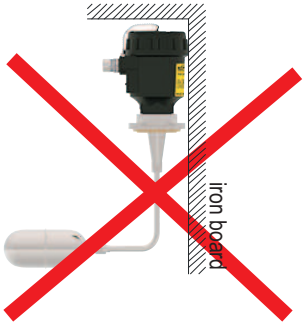
Please pay attention to following matters in order to operate your level switch properly.



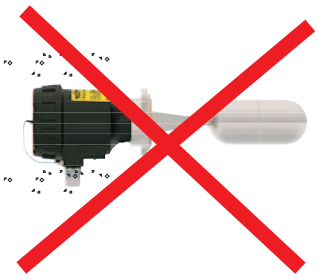
Please do not mount slant way, otherwise switch do not work correctly.



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

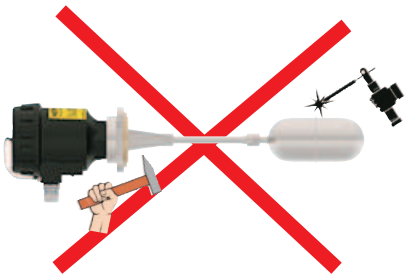


Please keep away from magnetic materials like iron board ; otherwise the characteristics might be affected.

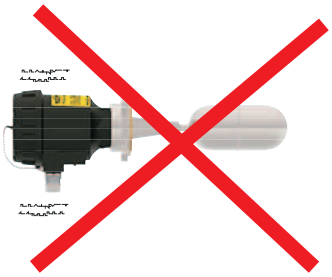


Please do not dip cables potting into liquids,otherwise instulation problem may cause.

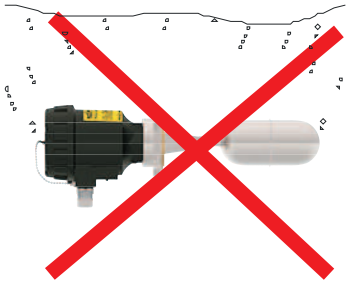
Please keep away from magnetic field ,otherwise it might be mis-operated.



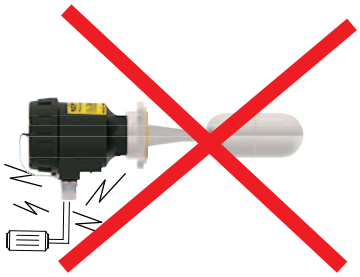
Please do not drop , otherwise the characteristics might be changed.



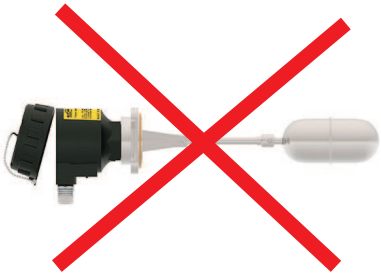
Vibration might be caused instability.



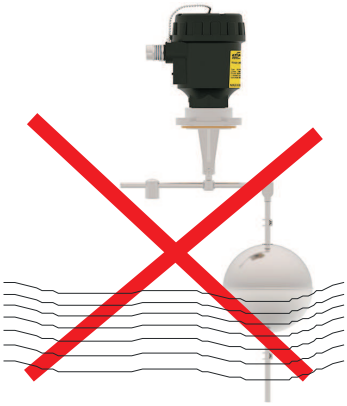
In case vapour splash cable potting points,insulation problem may cause.



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



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

3. Failure Delection

Breakdown	Probable cause	Failure detection\correction
Fluid is leaking	There is a hole on the body.	-Check that is worked under appropriate condition and then contact with producer company.
It does not contact or it contacts continuously	-Socket connection is not touched. -Product was exposed to the magnetic field in the ambient. -Connetion angle is not corrrect. -Contact may have been burned.	-Check for socket connections. -The factor which constitutes the magnetic field should be removed or insulated. -Correct assembly angle. -Inform authorized service.
Body was broken	-Tightening the screws more than adequate during the assembly. -Product falling or taking a blow from outside.	-Inform authorized service.
Unsteady operation in the contact	-Product was exposed to the magnetic field in the ambient. -Product was exposed to vibration. -Product was exposed to high temperature.	-The factor which constitutes the magnetic fieldshould be removed or insulated. -Vibration which will effect the product should be prevented or it should be attached to any place without vibration. -Use in the appropriate opearating temperature.

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! Serial number shall be indicated to the authorized service center.

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. Re-Calibration

During long period usage of level switch, there might be deviations on measurements. In those cases, recalibration is recomended. Re-calibration could be made by your technical staff or you could send to manufacturer company. According to IEC 60017, ex proof devices must be go through detailed inspection every 3 year from purchase date.Respobsibility of inspections are belong to the user (IEC: International Electrotechnical Commission)

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 Mah. Gazipaşa Cad. No: 104A Ataşehir - İSTANBUL - TÜRKİYE
Tel:+90 216 50 50 555 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.