MANUAL.ERH-01-18

APLISENS

PRESSURE CONVERTERS
AND MEASURING EQUIPMENT

OPERATION & MAINTENANCE

MANUAL

TYPE **ERH-01-18**
LEVEL INDICATOR

WARSAW, APRIL 2010

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TABLE OF CONTENTS

THE MANUFACTURER RESERVES A RIGHT TO MAKE MODIFICATIONS (NOT IN ANY WAY DETRIMENTAL TO USAGE OR METROLOGICAL PARAMETERS OF THE DEVICE) WITHOUT UPDATING THE CONTENTS OF THIS MAINTENANCE AND OPERATION MANUAL.

1. INTRODUCTION

1.1. GENERAL SAFETY INSTRUCTIONS

1.1.1. Scope of use.

ERH-01-18 liquid level indicator is used in liquid level regulatory and indication systems in both open and closed tanks, e.g. in a maximum / minimum level alerting system. The types of liquid that can be monitored with the device include: running or sea water, acid, base, salt, alcohol, oil, sewage, slime, etc.
Other uses require consulting the manufacturer.
The manufacturer will not be held liable for any damage resulting from using the indicator contrary to its aforementioned use. The end user bears full risk of such use.
In order to use the device properly, it is also recommended to follow the instructions contained in this operation and maintenance manual.

1.1.2. Terms used

- **Operator** – person that uses the device in accordance to its intended use (PN-EN61010-1, July 2004),
- **Technical supervision** – person or group of people responsible for the use and maintenance of the device and providing proper training for OPERATORS (PN-EN61010-1, July 2004).

1.1.3. Permitted range of actions:

- **for Operator** – operating the device.
- **Technical supervision** – all actions of Operator, plus mechanical assembly and adjustment procedures.

1.1.4. Power source connection.

All assembly work as well as startup of the indicator should be performed by qualified electricians or properly trained staff, supervised by them, with respect to all electro-technical regulations and instructions.

1.1.5. Guidelines and warnings.

Failure to follow the instructions and warnings may result in electric shock and serious damage. The staff operating the device must be properly trained and instructed on all safety guidelines and warnings.
Proper transport, storage, startup, as well as following the maintenance instructions are necessary to ensure safe and unfailing operation of the indicator. This operation and maintenance manual contains some important safety guidelines, marked with the following symbols:

	**Guideline** 'Guideline' indicates an action or process which has substantial significance for proper operation of the device. Failure to follow it may result in property damage.
	**Warning** 'Warning' indicates an action or process which, if performed improperly, may cause danger for the staff or serious property damage.

1.2. SUBJECT OF MANUAL

The subject of this Operation and Maintenance Manual is the operation, construction and assembly of level indicator.

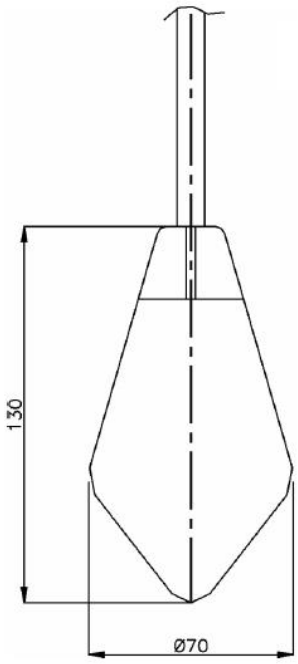
1.3. INTENDED USE AND DESIGNATION ACCORDING TO SWW AND PKWiU

Level indicators are intended to indicate two levels of liquid: minimum and maximum.
Designation according to PKWiU (Polish Classification of Products and Services): 33.20.70-90.00

Designation according to SWW (Product Listing): -0918-132

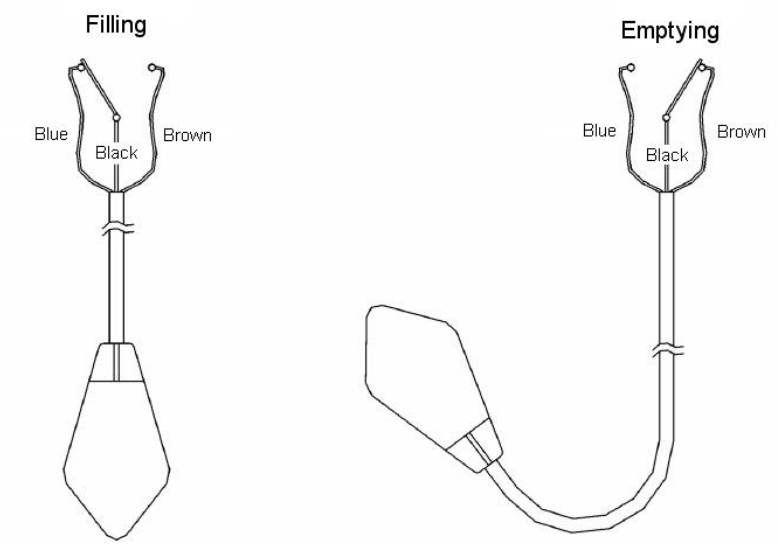
1.4. CONSTRUCTION AND OPERATION

ERH-01-18 indicator is composed of a float, a cord and weight. Inside the float there is a sealed switching system with a mechanically-triggered electric micro-switch.



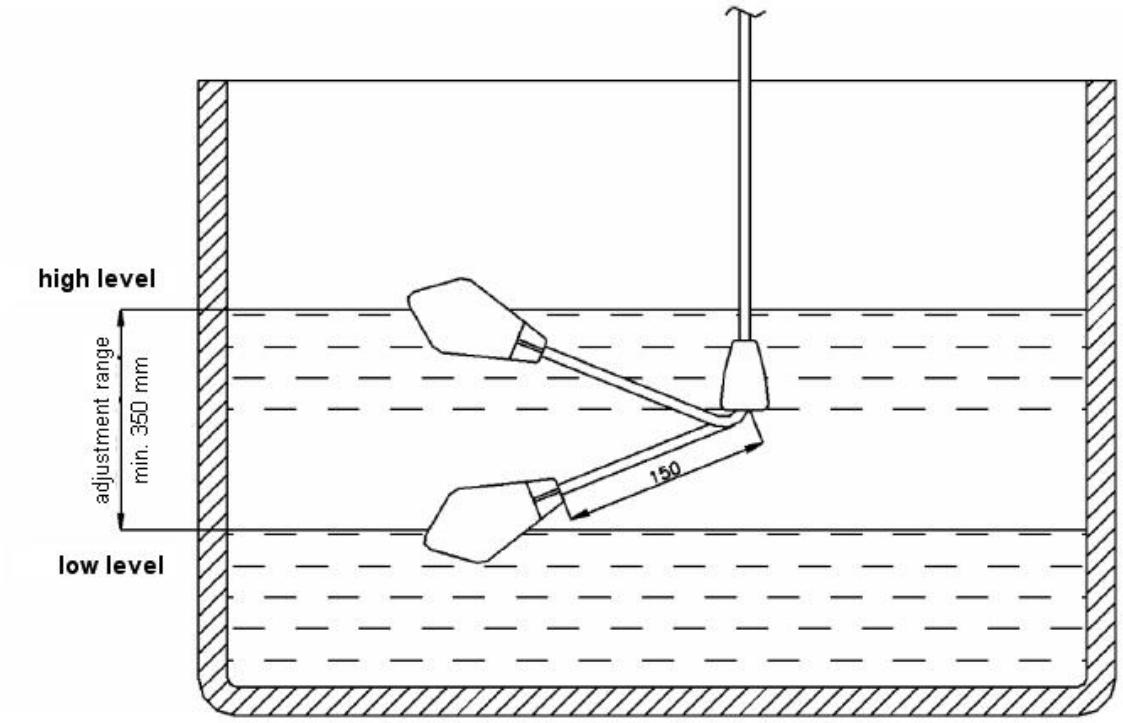
Dimensional drawing

ELECTRICAL DIAGRAM



At minimum level the contacts ‘black – blue’ are shorted (release condition). When the liquid level in tank rises, the contacts ‘black – blue’ remain shorted until maximum level is reached. Once maximum level is reached, snap action switching occurs, the contacts ‘black – blue’ break and the contacts ‘black – brown’ are shortened. They remain shortened until the float reaches minimum level.
Minimum adjustment range (with weight mounted 150 mm from the float) is 350 mm.

Figure 1 shows the operation of the device.



Disconnecting power while conducting assembly or repairs.

	There should be a 2-pole or a 3-pole switch, so that it disconnects power to two or three currently active cords of the regulator cable (art. 6.12.2.1. and 6.12.2.2. of PN-IEC 1010-1+A1:1996 – Safety requirements for electrical measuring equipment, laboratory equipment and automatons).

2. TECHNICAL SPECIFICATION

Table 1

No.	Parameter	Unit	ERH-01-18
1.	Minimum adjustment range	mm	350±15%
2.	Maximum liquid temperature	°C	85
3.	Maximum working pressure	MPa	0,35
4.	Rated power voltage	V	250V AC- 50/60Hz
5.	Rated continuous current I_{nc}	A	20
6.	Environment temperature	°C	25…+80
7.	housing class	-	IP68
8.			
9.	Cord length	running m	0,40; 0,50; 1; 3; 5;10; or 20
10.	Cord type		Neopren HR HY H07RN8-F 3x1mm^2
11.	Float	material	Copolymer polypropylen

Float and cord material is suitable for water-sewage purposes.
(The indicator is not approved to be used in food industry).

3. HOW TO ORDER

How to order ERH-01-18 regulators

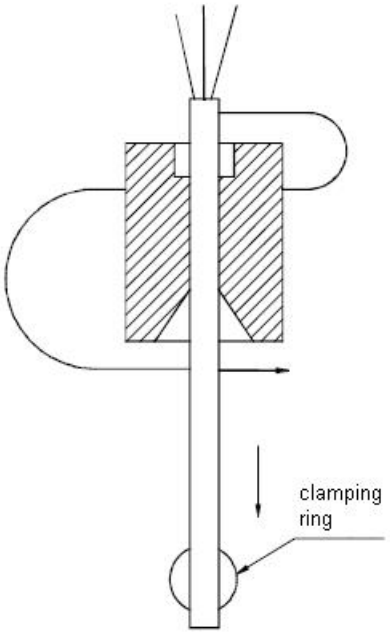
When placing an order, specify full name and type of the indicator and cord length in running meters.
Float level indicator type ERH -01-18-……. cord length in running meters.

4. OPERATING INSTRUCTIONS

4.1. ASSEMBLY INSTRUCTIONS

4.1.1. In order to adjust the measuring range, the position of the weight on the cord must be changed. The greater distance between the weight and the float, the bigger difference of levels.

4.1 2. The following figure shows how to mount the weight on the cord.



In order to mount the weight onto the cord, put the cord through the whole of the weight and rotate the weight to break away the clamping ring. Next, slide the clamping ring onto the cord at the desired spot and put the weight onto it, so that the weight is blocked on the cord. Make sure to connect power supply with power voltage disconnected from the device, following the attached diagram. Once power supply is connected, check the connection and insulation of live clamps.

4.2. STARTUP AND OPERATION INSTRUCTIONS

4.2.1. Preparation for startup

The indicators can operate both indoors and outdoors. After taking the indicator out of its packaging, inspect the device visually for any damage that may have occurred in transit. Then proceed with the assembly.

4.2.2. Operation instructions

Once the electric circuit has been connected and proper functioning of the entire electrical system has been checked, the indicator does not require any additional operation.

4.3. MAINTENANCE INSTRUCTIONS

	At least once a year the float level indicator must be thoroughly inspected, especially the condition of all parts which are exposed to liquid (float and cord). Once all maintenance work has been completed, the regulator must be reassembled.

4.4. SAFETY INSTRUCTIONS

	All staff performing assembly work of the indicator on site should have general knowledge of safety regulations and this Manual. Do not perform assembly of the indicator if it is live. Depending on the type of assembly site and existing security system, the indicator should be neutralized or grounded.

5. STORAGE AND TRANSPORT

All indicators delivered from the manufacturer must be stored in compartments free of chemical fumes, with ambient temperature between 5°C and 30°C and relative humidity between 30 and 80%. At least once a year the indicator must be inspected for wear or damage.
Indicators should be kept in packaging which protects them from sustaining mechanical damage.
Indicators should be transported in packaging and put in a fixed position while in transit.

6. DELIVERY SET

The delivered ERH-01-18 indicator set should also include the following:

- Operation & Maintenance Manual,
- Certificate of Conformity,
- Warranty card.

7. WARRANTY CONDITIONS

Warranty conditions are set forth in warranty card attached to each regulator.
NOTE : The manufacturer reserves the right to make construction modifications (not in any way detrimental to product quality).