VIBRATION LEVEL CONTROL Mod. VL-A170

① APPLICATIONS

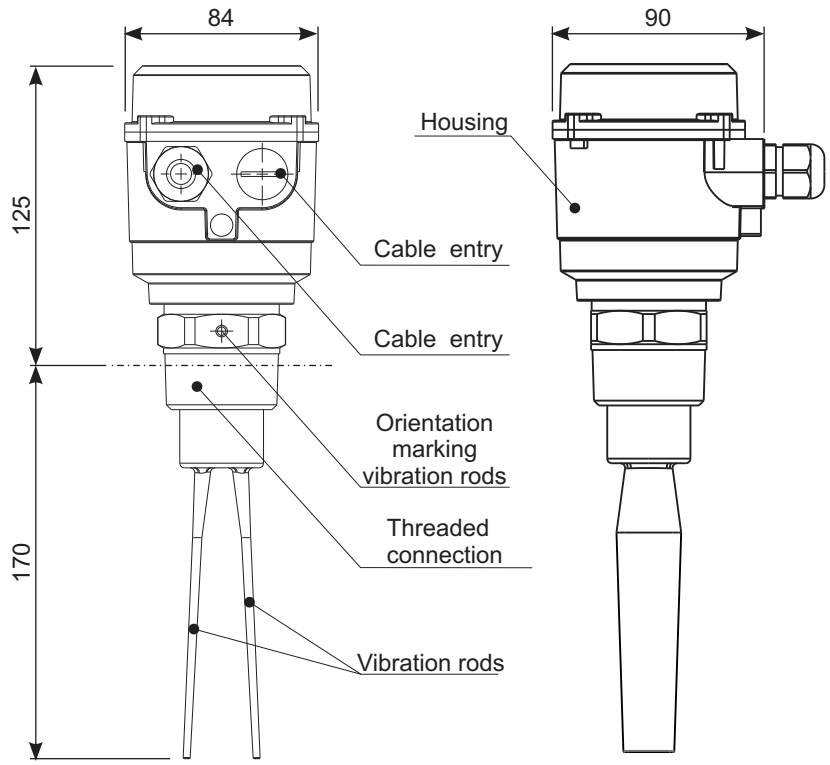
The device is used for level monitoring in all types of containers and silos. It can be used with all powdery and granulated bulk materials with a densitiy greater than 30 g/l that do not show a strong tendency to form crusts or deposits.
A selection of fields of application:

- ***Building materials industry***
  (lime, moulding sand, etc..);
- ***Food industry***
  (milk powder, flour, salt, etc..);
- ***Plastics industry***
  (*plastics granules etc..*);
- ***Timber industry***;
- ***Chemical industry***;
- ***Mechanical engineering***;

The Vibration Level control **VL-A170** is normally screwed into the lateral container wall so that it is leveled with the filling height to be registered and monitored. The device can also be mounted from the top of the container.

② WORKING PRICIPLE

The piezo-electrically stimulated oscillating fork vibrates at its mechanical resonance frequency. If the probe is covered by the bulk material, the damping thus generated is registered electronically and a corresponding signal output is actuated.
The oscillation of the fork ensures a certain self-cleaning effect..



③ TECHNICAL CHARACTERISTICS		**VL-A170** CLM000060
Power supply	V	**DC**: 20 ÷ 40 ±10% - **AC**: 20 ÷ 230 ±10% 50 ÷ 60 Hz
DC Max power dissipation	W	2
AC Max power dissipation	VA	22
Relay DPDT output		**AC**: max 250V, 8A not inductive load - **DC**: max 30V, 5A not inductive load
Output status signaling LED		Present on the internal circuit
Protection class		I
Connection terminals		0.14 ÷ 2.5 mm^2 (AWG 26 ÷ 14)
Cable entry		**Screwed cable gland:** M20 x 1.5 con with cable sheath diameter 6 ÷ 12 mm **CONDUIT:** NPT x ½" o NPT3/4"
Output activation delay		**Rods free** → **Rods covered**: c.a. 1 sec **Rods covered** → **Rods free** c.a. 1... 2 sec
Detection functions **FSH/FSL**		Settable on the circuit with selector switch (see sestion 7)
Vibration frequency	Hz	c.a. 200
Overvoltage category		II
Pollution degree		2 (inside the housing)
Housing		**Body:** Aluminium powder coated RAL5010 - **Seals:** NBR
Degree of protection		IP 67 according to EN 60529
Threaded connection		**Material:** AISI 316 (1.4581) - **Thread**: R 1½" conical
Vibrating rods		**Material:** AISI 316 (1.4581)
Sound level	dBA	50
Operating temperature	C°	**Ambient (Ta):** -40 ÷ +60 - **Process (Tp):** -40 ÷ +150 (see section 6)
Min. powder density	g/l	**Setting 'A' :** c.a. 150 - **Setting 'B' :** c.a. 30 (see section 9)
Features of bulk material		No strong tendency to cake or deposit. Max grain size 8 mm
Max. Mechanical load	N	500 laterally on vibrant rods (see section 8)
Max. process pressure	Bar	16
Vibration		1.5 $(m/s^2)^2$/Hz according to EN 60068-2-64
Relative Humidity		0 ÷ 100%, suitable for outdoor use
Weight	Kg	c.a 1.7

AECO S.r.l. via G. Leopardi, 5 20065 Inzago (MI) Italy - Tel. 02954381 Fax 029548528
http : // www.aecosensors.com E-mail : asc@aecosensors.com

VIBRATION LEVEL CONTROL Mod. VL-A170

④ APPROVALS

LVD - Electrical safety	Accoding to Low Voltage Directive 2014/35/EU and standard EN 61010-1
EMC	According to Electromagnetic Compatibility Directive 2014/30/EU and standard EN 61326 - A1
ROHS	Accordind to Directive 2011/65/EU

⑤ ELECTRICAL INSTALLATION

INTERNAL CIRCUIT VIEW

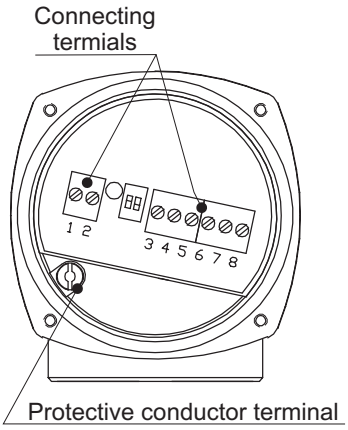


Fig.1

WIRING DIAGRAM

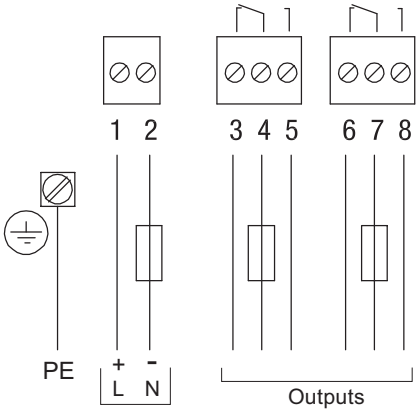


Fig. 2

Protect the power supply and relay outputs with 10A fuses, instantaneous or delayed, HBC, 250V.

⑥ OPERATIVE TEMPERATURE DIAGRAM

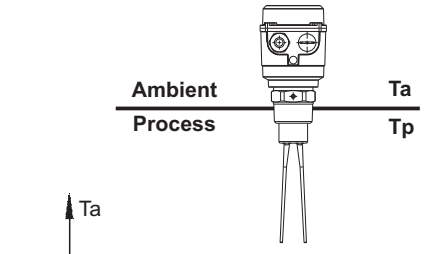


Fig.3

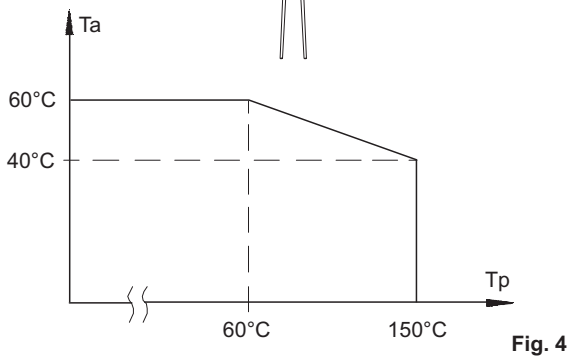


Fig. 4

⑦ MAXIMUM OR MINIMUM LEVEL SETTING AND REALAY OUTPUTS STATUS

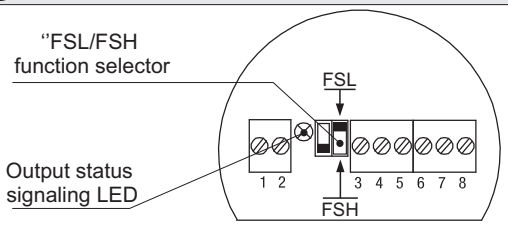


Fig.5

FSH MAX LEVEL SETTING(High level security)

If the VL-A170 control is used to indicate the maximum level, set the selector on FSH (Fail Safe High). With this selection, any interruption of the power supply (mains failure, cable break, etc.) is considered as a full tank signal, thus preventing out of the material from it.

FSL MIN LEVEL SETTING (Low level security)

If the VL-A170 control is used to indicate the minimum level, set the selector on FSL (Fail Safe Low). With this selection, any interruption of the power supply (mains failure, cable break, etc.) is considered as an empty tank signal, thus preventing the unloaded run of the drain.

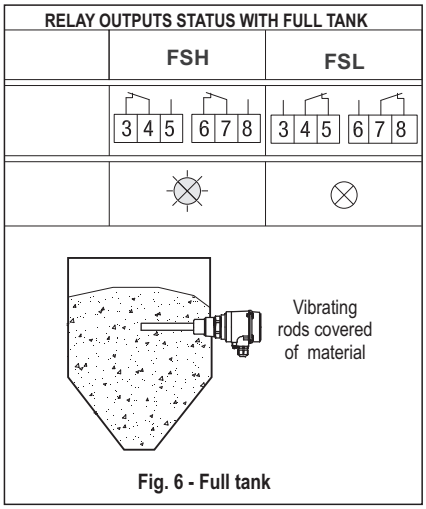


Fig. 6 - Full tank

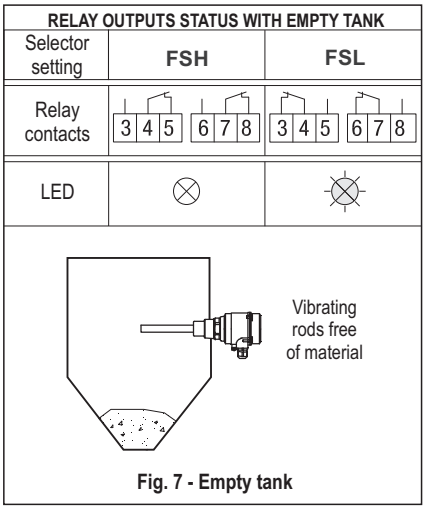


Fig. 7 - Empty tank

⑧ INSTALLATION

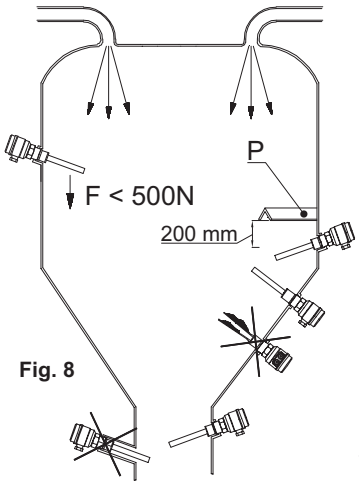


Fig. 8

P= Steel angle in case of high mechanical loading.

F= Mechanical load on the vibrant rods.

d= Maximum grain size of the bulk material.

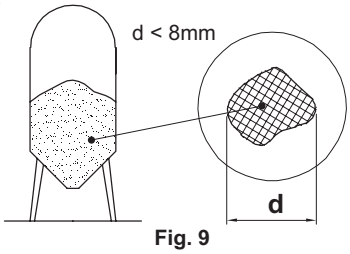


Fig. 9

⑨ SENSITIVITY SETTING

The VL-A170 control is factory setted. Therefore, It usually do not have to be re-setted. If the bulk material has a strong tendency to cake or deposit, the setting selector can be set to position ''**A**'' so as to decrease the sensitivity. (Factory presetting = position ''**B**'').

The minimum apparent densities that can be set using the sensitivity selector are as follows:

A Low sensitivity	B High sensitivity
150 g/l	30 g/l

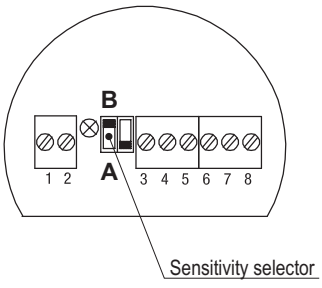


Fig. 10