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Non impact level and load measurement for your tank

Alfa Laval Weighing Systems UltraPure

Application

The Alfa Laval weighing system is designed to be integrated with Alfa Laval tanks legs and offers a high precision and non impact measurement of weight, ideal for mixing, dosing, level or batch tasks.

Main features:

- Robust and shockproof, can tolerate up to 300% overload or side load
- Load cells are produced in stainless steel and hermitically sealed to IP68
- Designed for Clean rooms
- Hygienic design for sanitary installation
- Simple and fast mechanical installation without mounting kits
- Load cells are pre-calibrated
- Load cell calibration are independent of cable length
- Simple electrical installation, plug and play
- Integrated diagnostic feature for detailed diagnostic and surveillance of weighing system
- Load cells are ATEX certified for zone 1 and 2
- Load cell cable lengths up to 50 mtr

Standard range

The Alfa Laval weighing system is a complete process solution offered for process weighing installation where level measurement, mixing, dosing or batching is required.

The weighing solution is as standard delivered in three different accuracy ranges: 2%, 0,1% and 0,05% with a total measuring range from 0 to 32000 kg.

Each weighing system consists of a number of load cells including load cell modules and an electronic output module. The output modules are available with both analog 4-20 mA and digital (Profibus DP and DeviceNet) outputs.

For high hygienic demands the load cells are offered as electropolished and hermitically sealed to IP68 with laser welding.

Alfa Laval offers an additional range of tank legs that fits to the load cells ensuring a robust and reliable connection between the tank and the load cells.

In hazardous areas, Alfa Laval offers Load cells suited for installation in ATEX Zone 1 and 2.



Working principle

The Alfa Laval shockproof digital load cells are based on a patented capacitive measurement principle where a non-contacting capacitive sensor is mounted inside the load cell body. As the capacitive sensor is not in contact with the load cell body, the load cells are to a very high degree unaffected by overloads, sideloads, shocks and welding voltages. Therefore straightforward mechanical installation of the load cells can be done without expensive complicated mounting kits and overload protection devices.

The electrical installation of the digital load cells is pure plug-and-play as the signal from the non-contacting capacitive sensor is directly converted, compensated and calibrated by a patented ASIC. The digital signal is transmitted as RS485 data on a low-cost RG-58 single wire coaxial cable which may be up to 50 meters long. The calibration of the digital load cells is independent of the load cell cable length.

Technical data

Measuring range: from 230 to 32000 kg
 depending on system
 selection.
 Accuracy: 2%, 0.1%, 0.05% (option
 0.025%)
 Non-Repeatability accuracy: 0.03% max.
 Hysteresis: 0.02% max.
 Compensated temperature range: -10 to 40 °C
 Overload and side-overload : 300% at 300 kg capacity
 systems and 100 % at
 32000t capacity

Mechanical data

Weight

Loadcell

Type TE67JJ, TE67JH TE67JK: 7 kg.
 Other types: 2.1 kg
 Electronic modules: approx 500 gr.

Materials

Load cell: AISI 316 and 17-4 PH

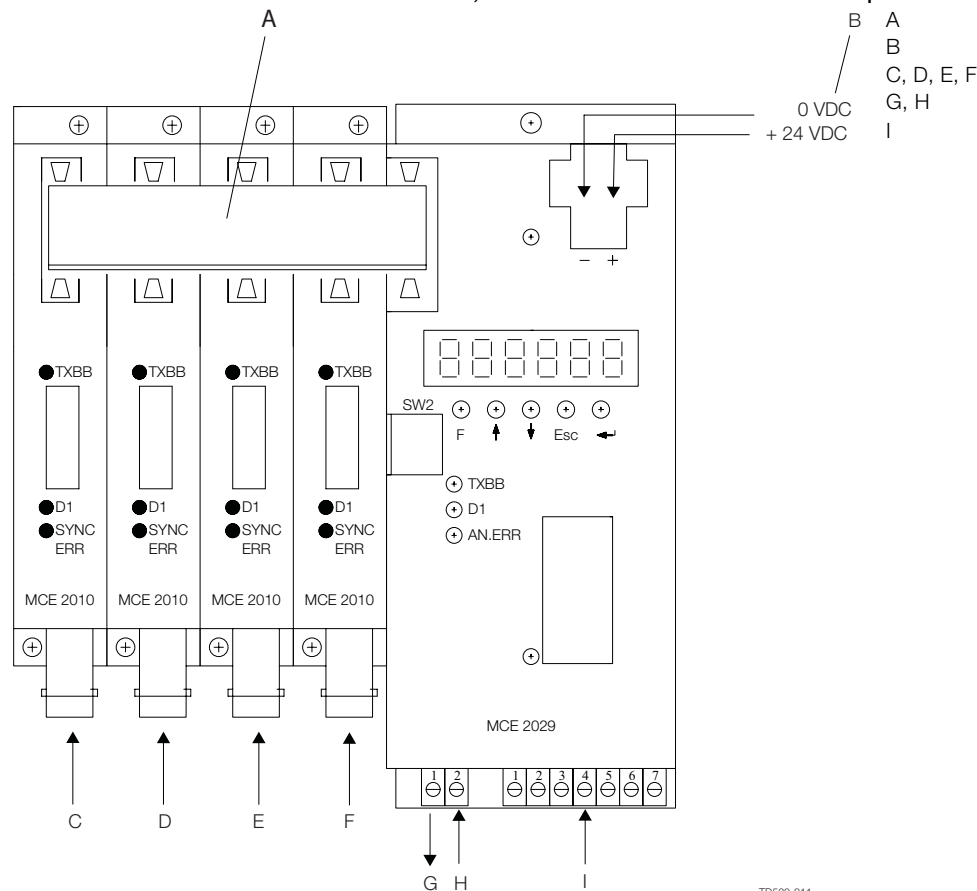
Operating temperature

Load cell range: -10 to 60 °C
 Electronics range: -20 to 50 °C

Protection class

Load cells: IP68
 Electronic modules: IP20

Electrical connection schematic of 4 load cells, 4 load cell modules and a 4-20 mA output module:



Ribbon cable for loadcell bus
 Power Supply
 BNC connections for load cells
 4-20mA output (active)
 Zero

Certificates

- Atex Zone 1 and 2 - II 2G Eex ia IIC T6 (option)
- CE marked
- Calibration certificate (Option)
- 3.1B certificate (option)

Electrical data

Each load cell is connected to a load cell module which is connected to the output module with a ribbon cable. Through the output module setup is quickly and easily executed with a 6 digit LED display and pushbuttons.

Power supply: 24 VDC (2A)

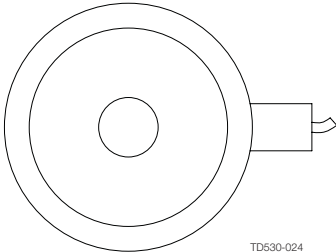
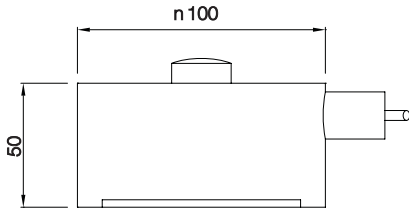
Output: 4-20 mA
 Profibus DP
 DeviceNet

Cable from Load cell to electronic

module: 6 mtr standard RG58 with
 BNC connector (option: 10,
 20, or 50 mtr.)

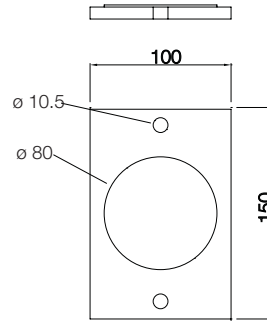
Cable between electronic modules: Ribbon cable

Dimensions



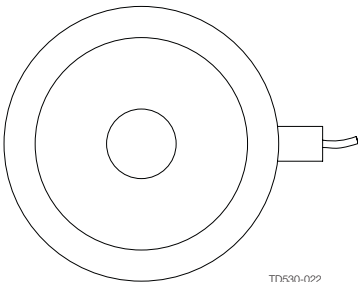
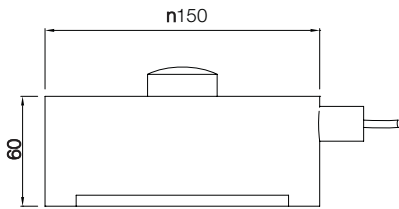
TD630-024

Load cells except TE67JJxxxxxxx, TE67JKxxxxxxx, and TE67IHxxxxxxx.



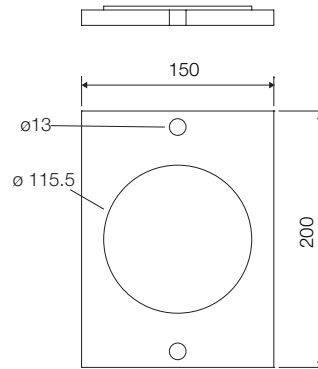
TD630-017

Base plate except TE67JJxxxxxxx, TE67JKxxxxxxx, and TE67IHxxxxxxx.



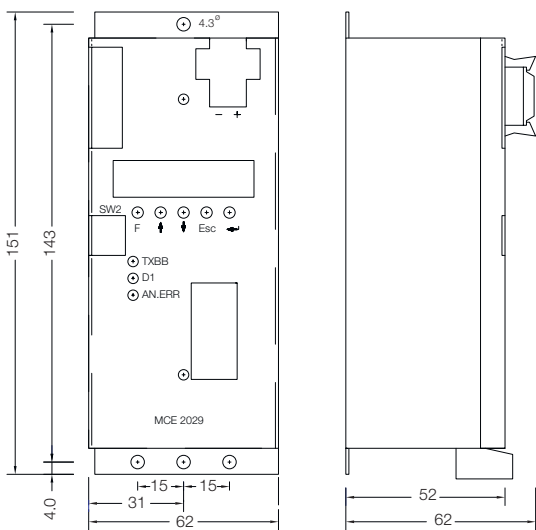
TD630-022

Load cells type TE67JJxxxxxxx, TE67JKxxxxxxx, and TE67IHxxxxxxx.

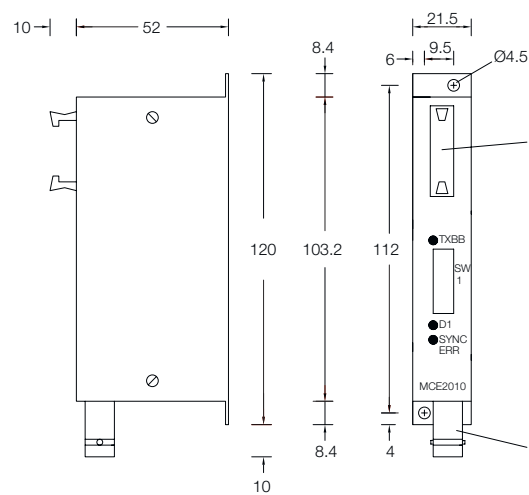


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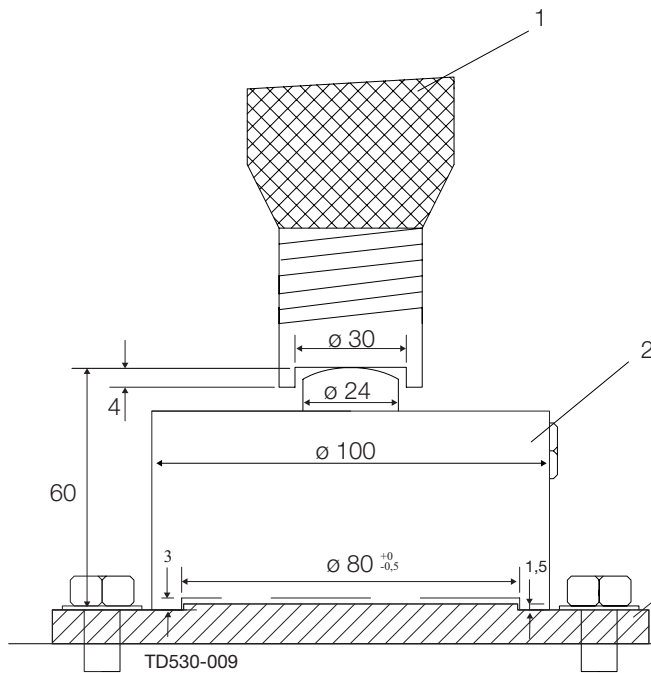
Base plate to TE67JJxxxxxxx, TE67JKxxxxxxx, and TE67IHxxxxxxx.



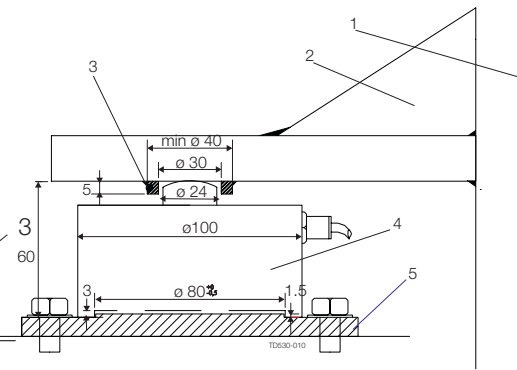
Electronic output module 4-20 mA (TE67X000002029)



Control module for load cell (TE67X000002010)



Exampel: Installation of load cell integrated with tank leg



Exampel: Installation of load cell with bracket lugs

Selection guide

When configuring a weighing system you need the following information:

- Number of tank legs
- Total weight of tank incl. product in kg
- Signal output
- Application (eg. dosing weighing, level measurement)

With this information the below steps will guide you to the right solution;

Step 1:

For 3 legged tanks multiply total weight of tank inclusive product with safety factor 1.3

For 4 legged tanks multiply total weight of tank inclusive product with safety factor 1.25

Step 2:

Result from step one is rounded up to the nearest standard load cell system

Step 3:

Decide on accuracy and output type

2% accuracy systems are suitable for level measurement tasks

0.1% accuracy systems are suitable for mixing tasks

0.05% accuracy systems are suitable for dosing tasks

0,025 % accuracy systems are suitable for very precise dosing and batch task

Step 4:

From ordering leaflet Item nr. is found

Selection example:

Question: what system is needed for a tank with 3 legs and a total weight of 4000 kg. Inclusive product?

Answer:

1. Multiply total weight of tank inclusive product with safety factor 1.3 [4000 kg x 1.3= 5200 kg.]
2. Round up to the nearest standard load cell system [the system with range 0-6000 kr. is chosen]
3. Deicide on accuracy 2%, 0.1%, 0.05 or 0.025% [in this case we choose the high accuracy, 0.05%]
4. From ordering leaflet Item nr. is found [item nr is TE67JB1111200]



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The information contained herein is correct at the time of issue, but may be subject to change without prior notice.