



Non impact level and load measurement for your tank

Alfa Laval Weighing Systems UltraPure

Application

The Alfa Laval weighing system offers an easy to install, high precision and non impact measurement of weight, which is ideal for mixing, dosing, level or batch tasks.

Standard UltraPure range

The weighing solution is as standard delivered in four different accuracy ranges: 2%, 0.1%, 0.05% and 0.025% with measuring ranges from 0-300 kg to a maximum measuring range of 0 to 100.000 kg. (220500 lb.) 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 Profibus DP, DeviceNet or Ethernet IP interface or analog 4-20 mA or 0-10 Vdc output. The weighing system is tested and pre-calibrated in the factory, on-site calibration is not included in the package.

Working principle

The Alfa Laval robust digital load cells are based on a patented capacitive measurement principle where a non-contacting capacitive sensor is mounted inside the load cell body. The load cells are to a very high degree unaffected by overloads, sideloads, shocks and welding voltages. Therefore straightforward hygienic installation of the load cells can be done without expensive and complicated mounting kits and overload protection devices.

TECHNICAL DATA

Measuring range: Min. 0-300 kg
 Max. 0-100.000 kg
 (depending on system selection)

Protection class

Load cells: IP68
 Electronic modules: IP20

Electrical data

Power supply: 24 VDC (2A)
 Output: 4-20 mA
 Profibus DP (option)
 DeviceNet (option)
 Ethernet IP (option)

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

Certificates

- Calibration certificate (option)
- 3.1 certificate (option)



PHYSICAL DATA

Materials

Load cell: AISI 316 and 17-4 PH

Operating temperature

Load cell range: -10 to 60°C
 Electronics range: -40 to 50°C
 Temperature compensated range: . . . -10 to 50°C

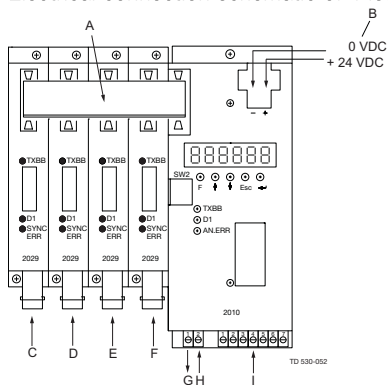
Weight

Type TE67JH, TE67JJ, TE67JK, TE67JN, TE67JO, TE67JP, TE67JL, TE67JS, TE67JT, TE67JU: 7 kg.
 Other types: 2.1 kg.
 Electronic modules: Approx. 500 gr.



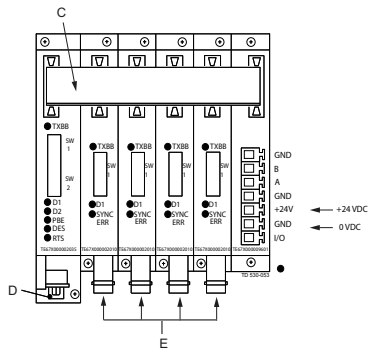
Rated accuracy in %	0.10%	0.05%	0.025%	0.10%	0.05%
	100 kg, 250 kg		6.000 kg		
Rated capacity	500 kg, 1000 kg		8000 kg		
(Emax) Kg	1500 kg, 2000 kg		10000 kg		
	3000 kg, 4000 kg		15000 kg		
	5.000 kg		20.000 kg		
Safe overload limit % of Emax	200 to 500		200 to 400		
Safe sideload limit % of Emax	300 to 1.000		200 to 500		
Minimum dead load % of Emax	0				
Accuracy % of Emax	0.1	0.05	0.025	0.1	0.05
Repeatability % of Emax	0.03	0.02	0.012	0.03	0.02
Hysteresis % of Emax	0.055	0.04	0.02	0.055	0.04
Creep 30 min. % of Emax	0.06	0.04	0.025	0.06	0.04
Temperature effect on zero % / 10 °C	0.06	0.045	0.03	0.06	0.045
Temperature effect on sensitivity % / 10 °C	0.06	0.045	0.03	0.06	0.045
Measuring rate					200 Hz
Resolution					24 bit

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



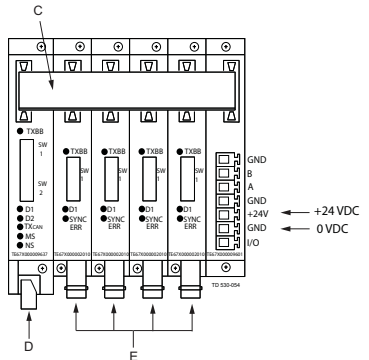
- A Ribbon cable for load cell bus
- B Power supply
- C, D, E, F BNC connections for load cells
- G, H 4-20mA output (active)
- I Zero

Electrical connection schematic of 4 load cells, 4 load cell modules and a profibus DP output module:



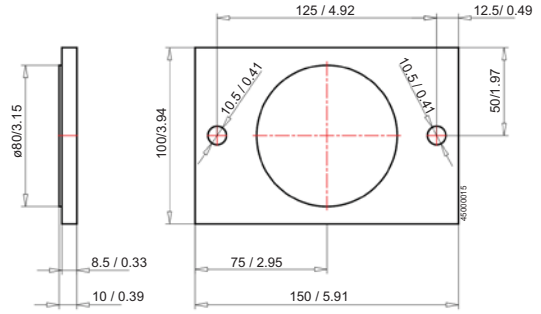
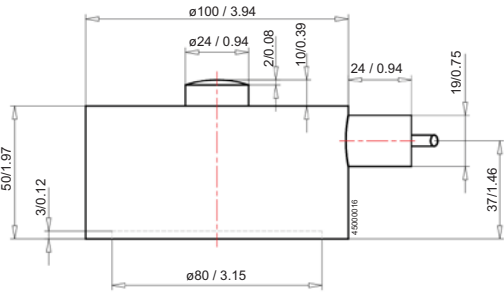
- C Ribbon cable for load cell bus
- D 9 pole SUB-D connector for profibus
 - 1.
 - 2.
 3. RS485-A (positive line)/(Siemens: B-line)
 4. RTS, Request to send
 5. RTS, Request to send
 6. +5 VDC (Vout)
 - 7.
 8. RS485-B (negative line) / (Siemens: A-line)
 - 9.
- E BNC connectors for load cells

Electrical connection schematic of 4 load cells, 4 load cell modules and a Devicenet output module:



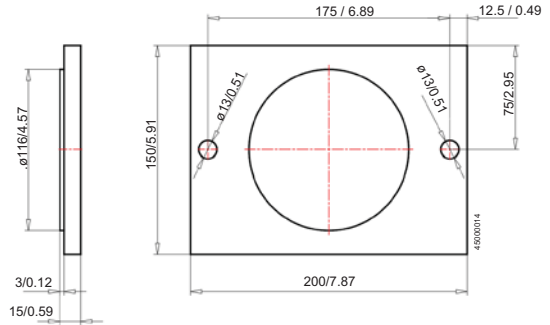
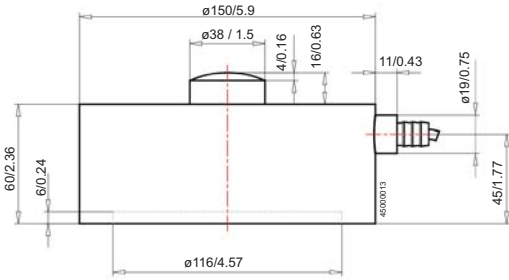
- C Ribbon cable for load cell bus
- D
 1. V- Black
 2. CAN_L Blue
 3. SHIELD Grey
 4. CAN_H White
 5. V+ Red
- E BNC connectors for load cells

Dimensions (mm/inch)



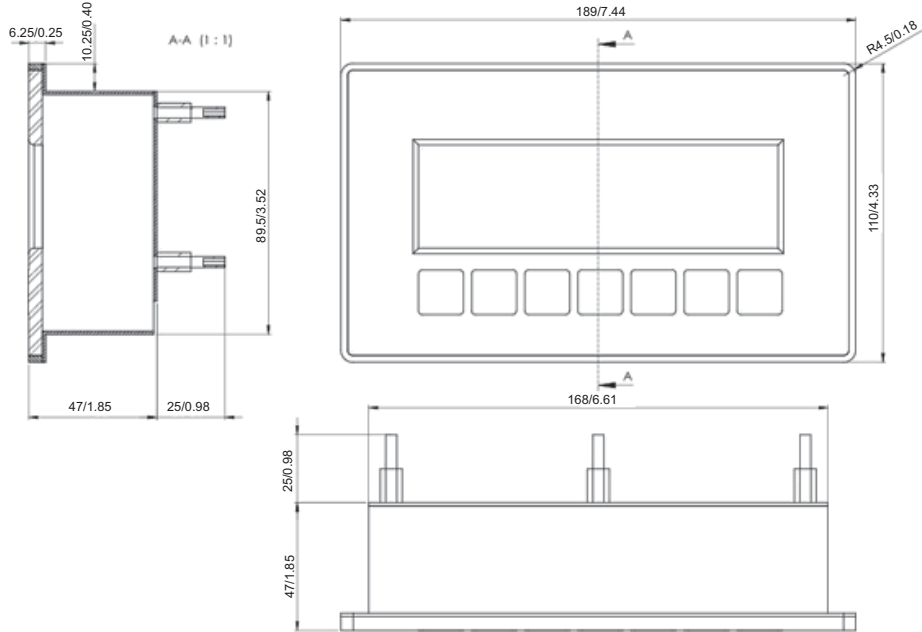
Load cells TE67J0, TE67J1, TE67J4, TE67J5, TE67J6, TE67J7, TE67J8, TE67J9, TE67JB, TE67JC, TE67JD, TE67JE, TE67JF, TE67JG, TE67JI

TE67J0, TE67J1, TE67J4, TE67J5, TE67J6, TE67J7, TE67J8, TE67J9, TE67JB, TE67JC, TE67JD, TE67JE, TE67JF, TE67JG, TE67JI

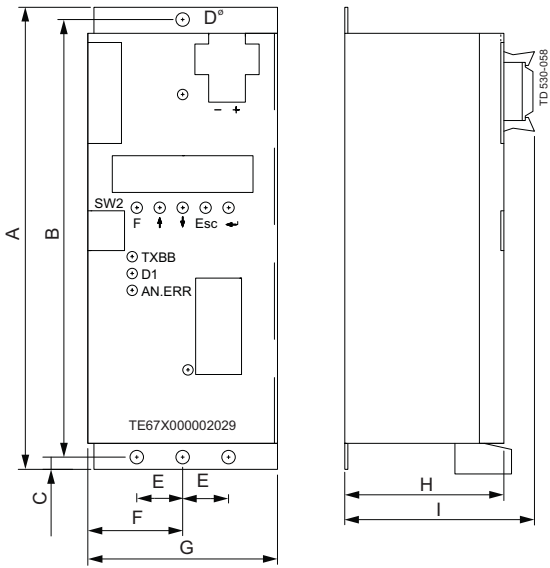


Load cells type TE67JH, TE67JJ, TE67JK, TE67JN, TE67JO, TE67JP, TE67JL, TE67JS, TE67JT, TE67JU

Base plate to TE67JH, TE67JJ, TE67JK, TE67JN, TE67JO, TE67JP, TE67JL, TE67JS, TE67JT, TE67JU

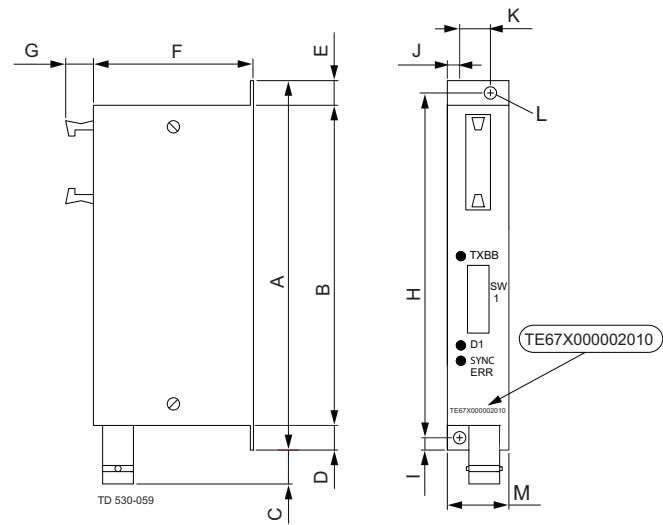


Electronic output module 4-20 mA (TE67X000002029)

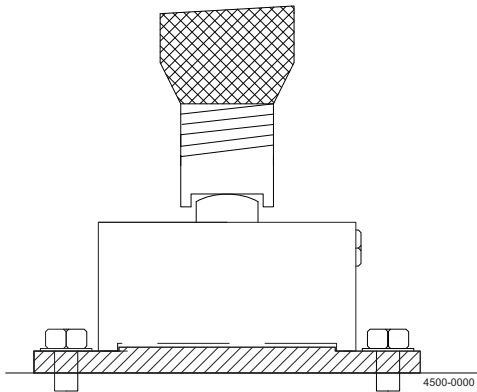


A	B	C	D	E	F	G	H	I
151	143	4	∅4.3	15	31	62	52	62

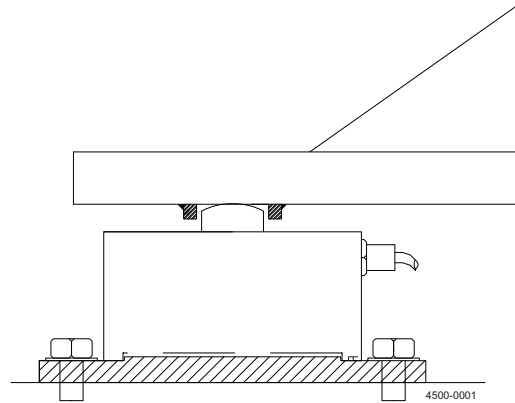
Control module for load cell (TE67X000002010)



A	B	C	D	E	F	G	H	I	J	K	L
120	103.2	10	8.4	52	10	112	4	6	9.5	4.5	21.5



Example: Installation of load cell integrated with tank leg



Example: 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:

Calculate the total weight of the tank inclusive the product in kg and round up to the nearest standard load cell system.

Step 2:

Decide on accuracy required by the process task.

- 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 tasks

Step 3:

Decide on the output signal type:

- Profibus DP
- DeviceNet
- Ethernet IP
- 4-20 mA

Step 4:

Decide on the electric module storage in stainless steel box and display.

You have the following options:

- Without stainless steel box
- In stainless steel box without display
- In stainless steel box with display

Step 5:

Select the surface finish required on the non-wetted part

- Ra<[0.8µm]
- Ra<[0.4µm]

Step 6:

Decide on the length of the cable (the length of the cable is interchangeable without need for recalibration)

- 6 m
- 10 m
- 20 m
- 50 m

Step 7:

Decide on certificates

- Calibration certificate
- 3.1 certificate

Step 8:

From ordering leaflet item number 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. The total weight of tank inclusive product is 4000 kg. Round up to the nearest standard load cell system for 3 legged tanks is the system with range 0-6000kg is chosen.
2. Decide on accuracy 2%, 0,1%, 0,05% or 0,025%. In this case we choose the high accuracy of 0,05%.
3. Decide on output signal. In this case we choose Profibus DP output.
4. Decide on the electric module storage in stainless steel box and display. In this case we choose the stainless steel box with display.
5. Select the surface finish required on the non-wetted part. We choose Ra<0.8µm.
6. Decide on the length of the cable. In this case we choose 20 m.
7. Decide on certificates. In this case we choose both 3.1 and calibration certificates.
8. From the ordering leaflet item number is found: TE67JB12312225

Theoretical statistical weighing system accuracy

Item nr	System range 3 legs		System range 4 legs		Number of loadcells and lc-type in system	System type	0.10%		System type		0.05%		System type		0.025%		
	kg	lb	kg	lb			kg	lb	kg	lb	kg	lb	kg	lb	kg	lb	kg
TE67J0xxxxxxx	0- 300	(661.5)			(3*100)	0.200	(0.441)	0.100	(0.220)	0.050	(0.110)						
TE67J1xxxxxxx			0- 400	(882)	(4*100)	0.200	(0.441)	0.100	(0.220)	0.050	(0.110)						
TE67J4xxxxxxx	0- 750	(1653.75)			(3*250)	0.500	(1.102)	0.200	(0.441)	0.100	(0.220)						
TE67J5xxxxxxx			0- 1000	(2205)	(4*250)	0.500	(1.102)	0.200	(0.441)	0.100	(0.220)						
TE67J6xxxxxxx	0- 1500	(3370.5)			(3*500)	1.000	(2.205)	0.500	(1.102)	0.200	(0.441)						
TE67J7xxxxxxx			0- 2000	(4410)	(4*500)	1.000	(2.205)	0.500	(1.102)	0.200	(0.441)						
TE67J8xxxxxxx	0- 3000	(6615)			(3*1000)	2.000	(4.409)	1.000	(2.205)	0.500	(1.102)						
TE67J9xxxxxxx			0- 4000	(8820)	(4*1000)	2.000	(4.409)	1.000	(2.205)	0.500	(1.102)						
TE67JBxxxxxxx	0- 6000	(13230)			(3*2000)	5.000	(11.023)	2.000	(4.409)	1.000	(2.205)						
TE67JCxxxxxxx			0- 8000	(17640)	(4*2000)	5.000	(11.023)	2.000	(4.409)	1.000	(2.205)						
TE67JDxxxxxxx	0- 9000	(19845)			(3*3000)	5.000	(11.023)	2.000	(4.409)	1.000	(2.205)						
TE67JExxxxxxx			0- 12000	(26460)	(4*3000)	10.000	(22.046)	5.000	(11.023)	2.000	(4.409)						
TE67JExxxxxxx	0- 12000	(26460)			(3*4000)	10.000	(22.046)	5.000	(11.023)	2.000	(4.409)						
TE67JGxxxxxxx			0- 16000	(35280)	(4*4000)	10.000	(22.046)	5.000	(11.023)	2.000	(4.409)						
TE67JFxxxxxxx	0- 15000	(33075)			(3*5000)	10.000	(22.046)	5.000	(11.023)	2.000	(4.409)						
TE67JLxxxxxxx			0- 20000	(44100)	(4*5000)	10.000	(22.046)	5.000	(11.023)	2.000	(4.409)						
TE67JHxxxxxxx	0- 18000	(39690)			(3*6000)	10.000	(22.046)	5.000	(11.023)	N/A							
TE67JJxxxxxxx			0- 24000	(52920)	(4*6000)	10.000	(22.046)	5.000	(11.023)	N/A							
TE67JJxxxxxxx	0- 24000	(52920)			(3*8000)	20.000	(44.092)	10.000	(22.046)	N/A							
TE67JKxxxxxxx			0- 32000	(70560)	(4*8000)	20.000	(44.092)	10.000	(22.046)	N/A							
TE67JNxxxxxxx	0- 30000	(66150)			(3*10000)	20.000	(44.092)	10.000	(22.046)	N/A							
TE67JOxxxxxxx			0- 40000	(88200)	(4*10000)	20.000	(44.092)	10.000	(22.046)	N/A							
TE67JPxxxxxxx	0- 45000	(99225)			(3*15000)	50.000	(110.231)	20.000	(44.092)	N/A							
TE67JLxxxxxxx			0- 60000	(132300)	(4*15000)	50.000	(110.231)	20.000	(44.092)	N/A							
TE67JLxxxxxxx	0- 60000	(132300)			(3*20000)	50.000	(110.231)	20.000	(44.092)	N/A							
TE67JSxxxxxxx			0- 80000	(176400)	(4*20000)	50.000	(110.231)	20.000	(44.092)	N/A							
TE67JTxxxxxxx	0- 75000	(165375)			(3*25000)	50.000	(110.231)	20.000	(44.092)	N/A							
TE67JUxxxxxxx			0- 100000	(220500)	(4*25000)	50.000	(110.231)	20.000	(44.092)	N/A							

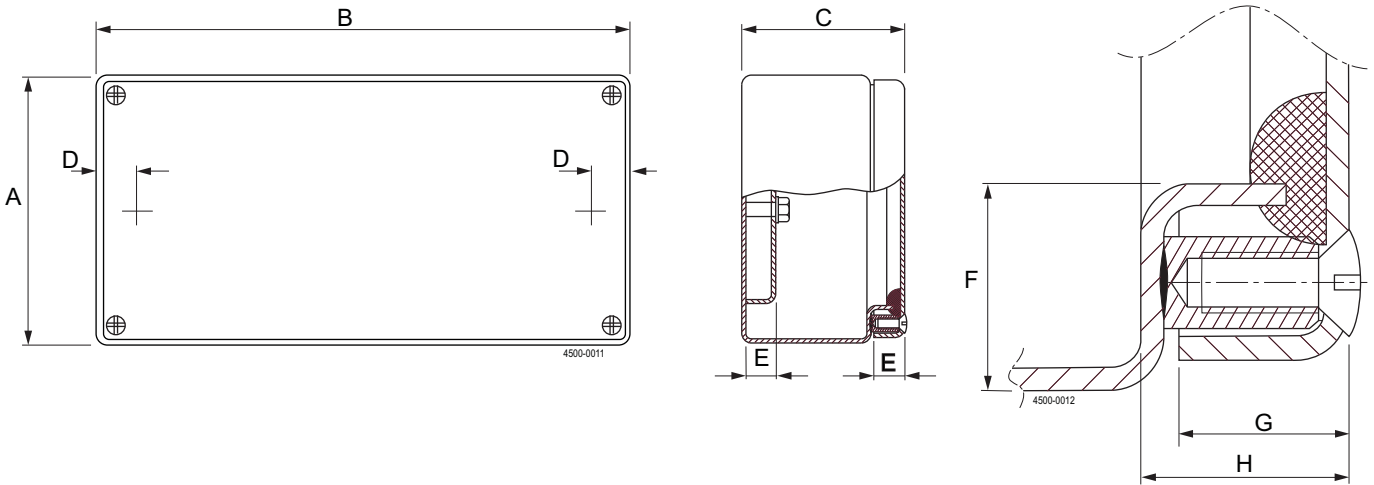
Stainless Steel Box with display



Range H: 200 mm B: 300 mm D:
120 mm
Material 1.5 mm stainless steel AISI
304.
Surface Polished 4N
Imperviousness IP 69k
Mounting Read more link
The junction box is fitted
inside with
2 pcs. M5 x 15 welding bolts
for mounting of DIN-rail.
Earth All enclosed parts are
earthed.

Lid screws DIN 966S - stainless steel.
Screws are mounted with lock
washers.
Accessories Mounting Plates
2,0 mm galvanised plate.
Available for KLM 202012
and upwards.
Mounting brackets for
DIN-rails:
2 rows of DIN-rails or a cable
duct can be mounted on the
bracket.
Available for KLM 151510
and upwards. Order no. TLB
2950
Link for accessories
Stock status This product can be supplied
from stock.

Dimensions (mm)



A	B	C	D	E	F	G	H
200	300	120	15	11	13.5	11	13.5

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