



Non impact level and load measurement for your tank

Weighing Systems UltraPure

Application

The Alfa Laval weighing system offers a high precision and non impact measurement of weight, ideal for mixing, dosing, level or batch tasks.

Standard 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 both analog 4-20 mA, Profibus DP or DeviceNet outputs.

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. 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.



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)

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

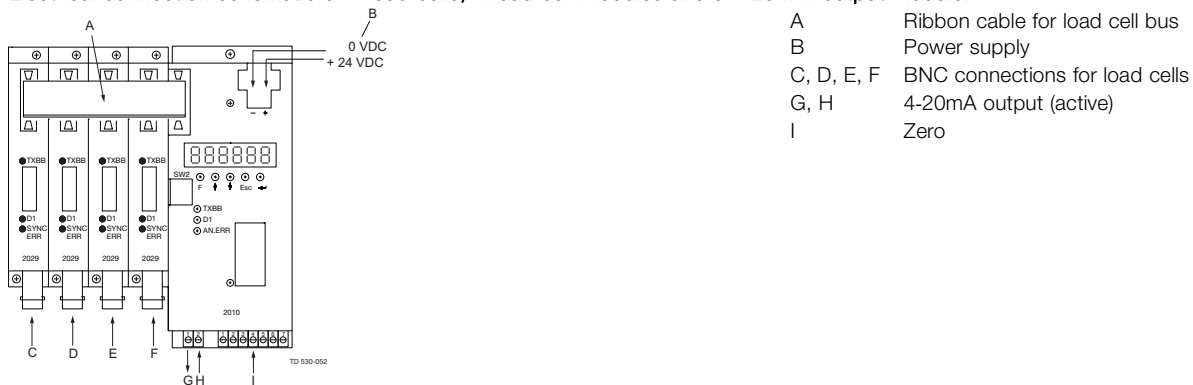
Weight

Type TE67JH, TE67JI, TE67JJ, TE67JK, TE67JM, TE67JN, TE67JO, TE67JP, TE67JL, TE67JS, TE67JT, TE67JU: . . . 7 kg.
 Other types: 2.1 kg.
 Electronic modules: Approx. 500 gr.

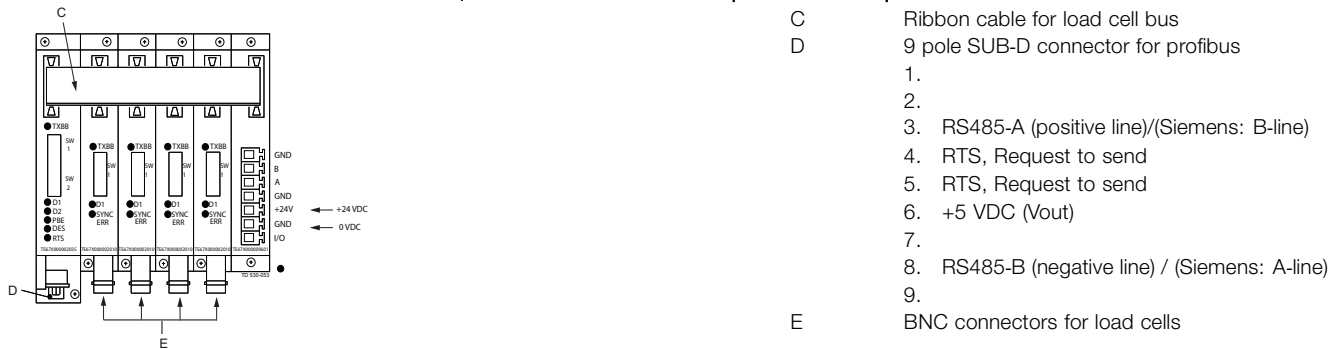


Rated accuracy in %	0.10%	0.05%	0.025%	0.10%	0.05%
Rated capacity (Emax) Kg	100 kg, 250 kg		6.000 kg		
	500 kg, 1000 kg		8000 kg		
	1500 kg, 2000 kg		10000 kg		
	3000 kg, 4000 kg		15000 kg		
Safe overload limit % of Emax	5.000 kg		20.000 kg		
Safe sideload limit % of Emax	200 to 500		200 to 400		
Minimum dead load % of Emax	300 to 1.000				
Accuracy % of Emax	0				
Repeatability % 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:



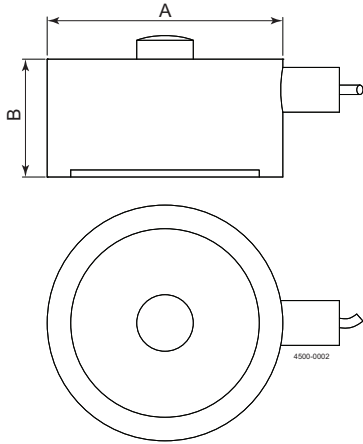
Electrical connection schematic of 4 load cells, 4 load cell modules and a profibus DP output module:



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

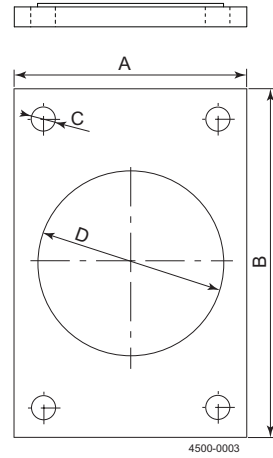


Dimensions (mm)



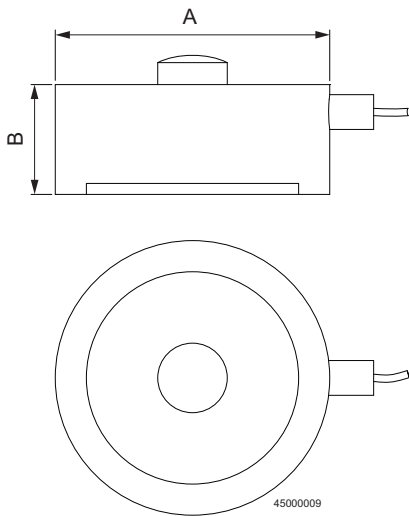
Load cells TE67J0, TE67J1, TE67J4, TE67J5, TE67J6, TE67J7, TE67J8, TE67J9, TE67JB, TE67JC, TE67JD, TE67JE, TE67F, TE67JG.

A	B
100 mm	50 mm



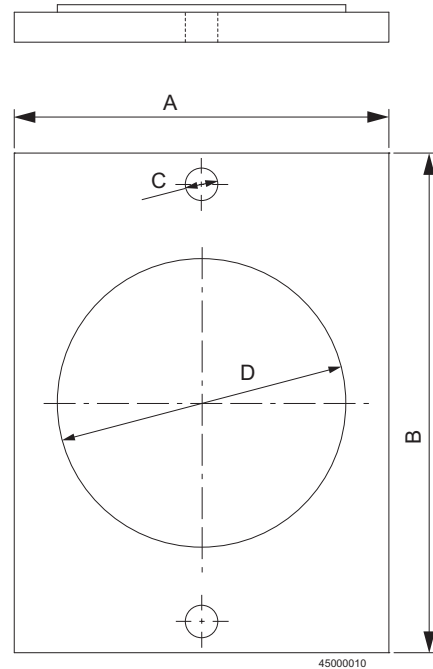
TE67J0, TE67J1, TE67J4, TE67J5, TE67J6, TE67J7, TE67J8, TE67J9, TE67JB, TE67JC, TE67JD, TE67JE, TE67F, TE67JG.

A	B	C	D
100 mm	150 mm	∅10.5 mm	∅80 mm



Load cells type TE67JH, TE67JI, TE67JJ, TE67JK, TE67JM, TE67JN, TE67JO, TE67JP, TE67JL, TE67JS, TE67JT, TE67JU.

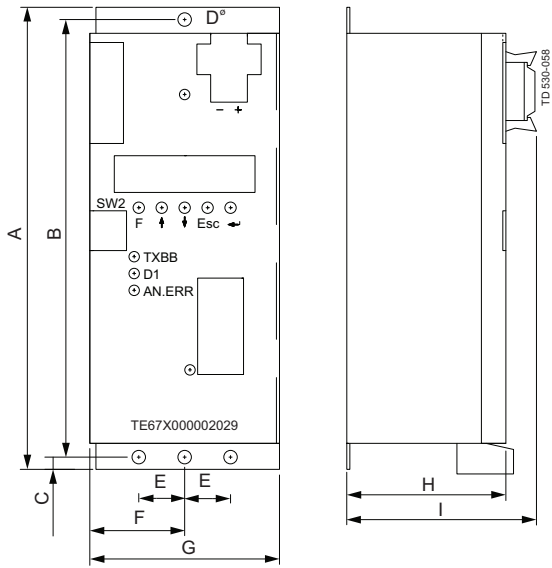
A	B
150 mm	60 mm



Base plate to TE67JH, TE67JI, TE67JJ, TE67JK, TE67JM, TE67JN, TE67JO, TE67JP, TE67JL, TE67JS, TE67JT, TE67JU.

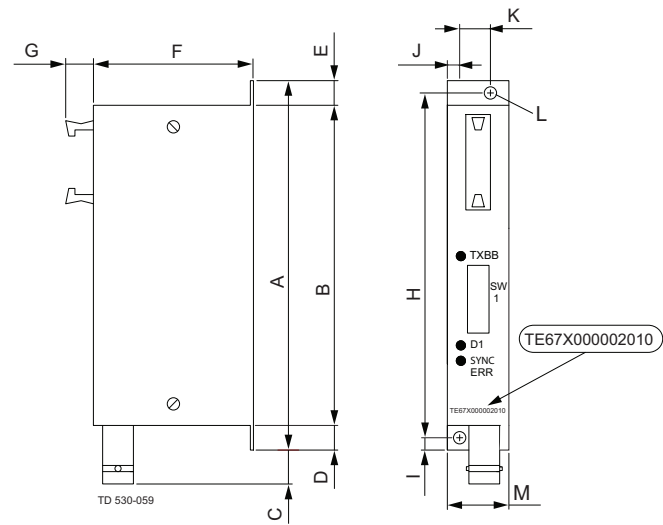
A	B	C	D
150 mm	200 mm	∅13 mm	∅115.5 mm

Electronic output module 4-20 mA (TE67X000002029)

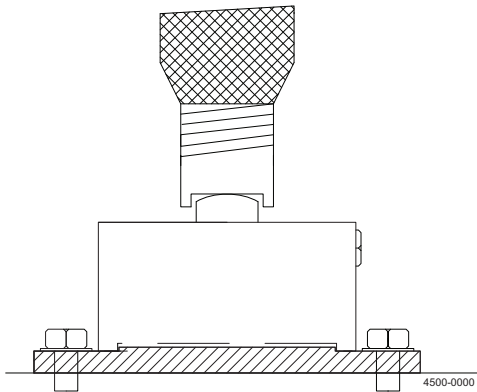


A	B	C	D	E	F	G	H	I
151	143	4	∅4.3	15	31	62	52	62

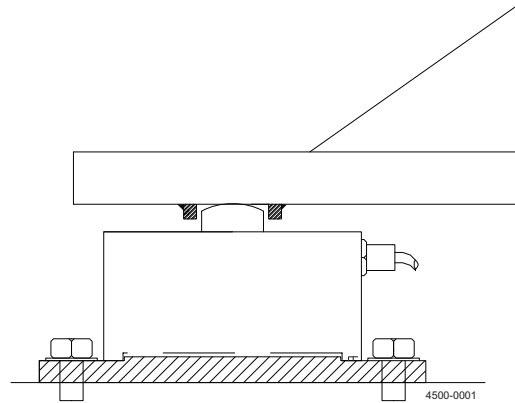
Control module for load cell (TE67X000002010)



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:

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 no. 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 kg. is chosen]
3. Decide 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 no. is found [item no. is TE67JB11111200]

Theoretical statistical weighing system accuracy

Item nr	System range		Number of loadcells and lc-type in system	System type		
	3 legs	4 legs		0.10%	0.05%	0.025%
TE67J0xxxxxxx	0- 300 kg		(3*100 kg lc)	± 0.17 kg.	± 0.09 kg.	± 0.04 kg.
TE67J1xxxxxxx		0- 400 kg	(4*100 kg lc)	± 0.20 kg.	± 0.10 kg.	± 0.05 kg.
TE67J4xxxxxxx	0- 750 kg		(3*250 kg lc)	± 0.43 kg.	± 0.22 kg.	± 0.11 kg.
TE67J5xxxxxxx		0- 1000 kg	(4*250 kg lc)	± 0.50 kg.	± 0.25 kg.	± 0.13 kg.
TE67J6xxxxxxx	0- 1500 kg		(3*500 kg lc)	± 0.87 kg.	± 0.43 kg.	± 0.22 kg.
TE67J7xxxxxxx		0- 2000 kg	(4*500 kg lc)	± 1.00 kg.	± 0.50 kg.	± 0.25 kg.
TE67J8xxxxxxx	0- 3000 kg		(3*1000 kg lc)	± 1.73 kg.	± 0.87 kg.	± 0.43 kg.
TE67J9xxxxxxx		0- 4000 kg	(4*1000 kg lc)	± 2.00 kg.	± 1.00 kg.	± 0.50 kg.
TE67JBxxxxxxx	0- 6000 kg		(3*2000 kg lc)	± 3.46 kg.	± 1.73 kg.	± 0.87 kg.
TE67JCxxxxxxx		0- 8000 kg	(4*2000 kg lc)	± 4.00 kg.	± 2.00 kg.	± 1.00 kg.
TE67JDxxxxxxx	0- 9000 kg		(3*3000 kg lc)	± 5.20 kg.	± 2.60 kg.	± 1.30 kg.
TE67JExxxxxxx		0- 12000 kg	(4*3000 kg lc)	± 6.00 kg.	± 3.00 kg.	± 1.50 kg.
TE67JExxxxxxx	0- 12000 kg		(3*4000 kg lc)	± 6.93 kg.	± 3.46 kg.	± 1.73 kg.
TE67JGxxxxxxx		0- 16000 kg	(4*4000 kg lc)	± 8.00 kg.	± 4.00 kg.	± 2.00 kg.
TE67JFxxxxxxx	0- 15000 kg		(3*5000 kg lc)	± 8.66 kg.	± 4.33 kg.	± 2.17 kg.
TE67JLxxxxxxx		0- 20000 kg	(4*5000 kg lc)	± 10.00 kg.	± 5.00 kg.	± 2.50 kg.
TE67JHxxxxxxx	0- 18000 kg		(3*6000 kg lc)	± 10.39 kg.	± 5.20 kg.	N/A
TE67JJxxxxxxx		0- 24000 kg	(4*6000 kg lc)	± 12.00 kg.	± 6.00 kg.	N/A
TE67JJxxxxxxx	0- 24000 kg		(3*8000 kg lc)	± 13.86 kg.	± 6.93 kg.	N/A
TE67JKxxxxxxx		0- 32000 kg	(4*8000 kg lc)	± 16.00 kg.	± 8.00 kg.	N/A
TE67JNxxxxxxx	0- 30000 kg		(3*10000 kg lc)	± 17.32 kg.	± 8.66 kg.	N/A
TE67JOxxxxxxx		0- 40000 kg	(4*10000 kg lc)	± 20.00 kg.	± 10.00 kg.	N/A
TE67JPxxxxxxx	0- 45000 kg		(3*15000 kg lc)	± 25.98 kg.	± 12.99 kg.	N/A
TE67JLxxxxxxx		0- 60000 kg	(4*15000 kg lc)	± 30.00 kg.	± 15.00 kg.	N/A
TE67JLxxxxxxx	0- 60000 kg		(3*20000 kg lc)	± 34.64 kg.	± 17.32 kg.	N/A
TE67JSxxxxxxx		0- 80000 kg	(4*20000 kg lc)	± 40.00 kg.	± 20.00 kg.	N/A
TE67JTxxxxxxx	0- 75000 kg		(3*25000 kg lc)	± 43.30 kg.	± 21.65 kg.	N/A
TE67JUxxxxxxx		0- 100000 kg	(4*25000 kg lc)	± 50.00 kg.	± 25.00 kg.	N/A

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