



## Alfa Laval Weighing Systems UltraPure with digital beam load cell

Reliable and accurate digital beam load cells for process weighing

### Application

The Alfa Laval digital beam load cells offer reliable and accurate weighing. The main applications are belt scales, platform scales, small vessels, filling machines and process equipment.

### Main features:

- Robust load cells which can tolerate up to 300% overload or sideload
- High accuracy up to 0.025% of full scale
- Load cells are produced in stainless steel and hermetically sealed to IP68
- Simple and easy mechanical installation without complicated and expensive mounting kits
- Load cells are pre-calibrated
- Load cell calibration is independent of the load cell cable length
- Simple plug-and-play electrical installation
- Integrated diagnostic feature for detailed diagnostic and surveillance of weighing system
- Load cell cable lengths up to 50 meters

### Standard range

The Alfa Laval weighing system is a complete solution offered for process weighing installation, where level measurement, mixing, filling, dosing or batching is required. The weighing solution is as standard delivered in three different accuracy ranges: 0.10%, 0.05% and 0.025% with a total measuring range from 0 to 4000 kg. Each weighing system consists of 1 to 4 load cells and a weighing module. The weighing modules are available with both analog 4-20 mA output and fieldbus interface (PROFINET, Profibus DP or EtherNet IP). For high hygienic demands, the Alfa Laval load cells are supplied electropolished and hermetically sealed to IP68 (laser welded).



### Capacitive measurement principle (patented)

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. 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, torsion and welding voltages. Therefore, a straightforward and hygienic mechanical installation of the load cells can be done without expensive and 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 reliable RG-58 single wire coaxial cable which may be up to 50 meters long. The factory calibration of the digital load cells is independent of the load cell cable length.

## Technical data

Measuring range: . . . . . from 0 to 4000 kg depending on system selection.  
 Accuracy: . . . . . 0.10%, 0.05%, 0.025%  
 Compensated temperature range: . . . -10 to 50 °C  
 Overload and sideload : . . . . . 300% overload tolerance  
 Power supply: . . . . . 24 VDC, ±10% min. 2A

## Mechanical data

### Weight:

Load cell: . . . . . BL 2.3 kg  
 Weighing modules: . . . . . approx. 0.5kg

### Materials:

Load cells: . . . . . AISI 316 and 17-4 PH  
 Mounting kit: . . . . . AISI 304 / AISI 316 (welding cylinder)

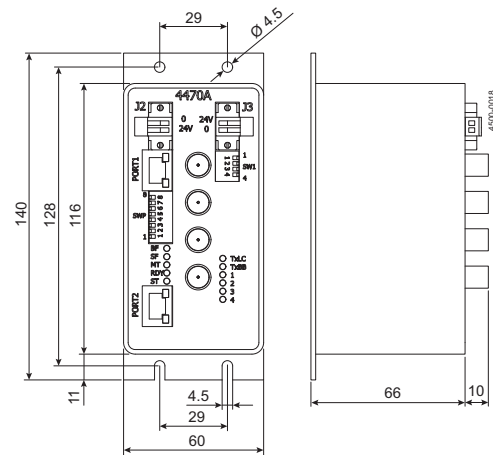
### Operating temperature range:

Load cells: . . . . . -50 to 70 (100\*) °C  
 Weighing modules: . . . . . -10 to 50 °C  
 \*with teflon cable.

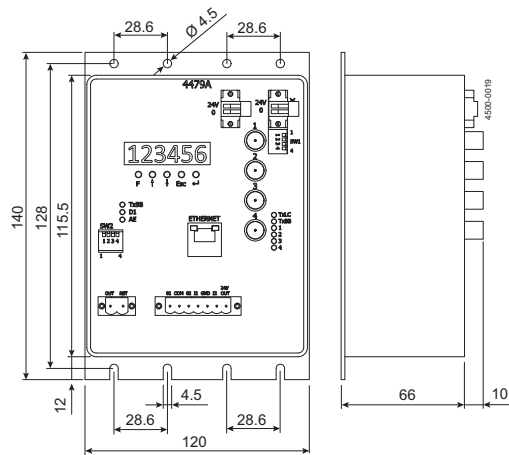
### Protection class:

Load cells: . . . . . IP68  
 Weighing modules: . . . . . IP20

### Layout and electrical connection schematic of the load cell and weighing module:



Weighing module with display



Weighing module without display

## Certificates

- CE marked
- Calibration certificate (option)
- 3.1B certificate (option)

## Options

OUTPUT:  
 4-20mA  
 PROFINET  
 EtherNet IP  
 Profibus DP  
 RS485

### Local weighing display:

Alfa Laval weighing terminal (options)

### Load cell cable:

6m standard coaxial RG58 with BNC connector (option: 10, 20 or 50m)

### Mounting:

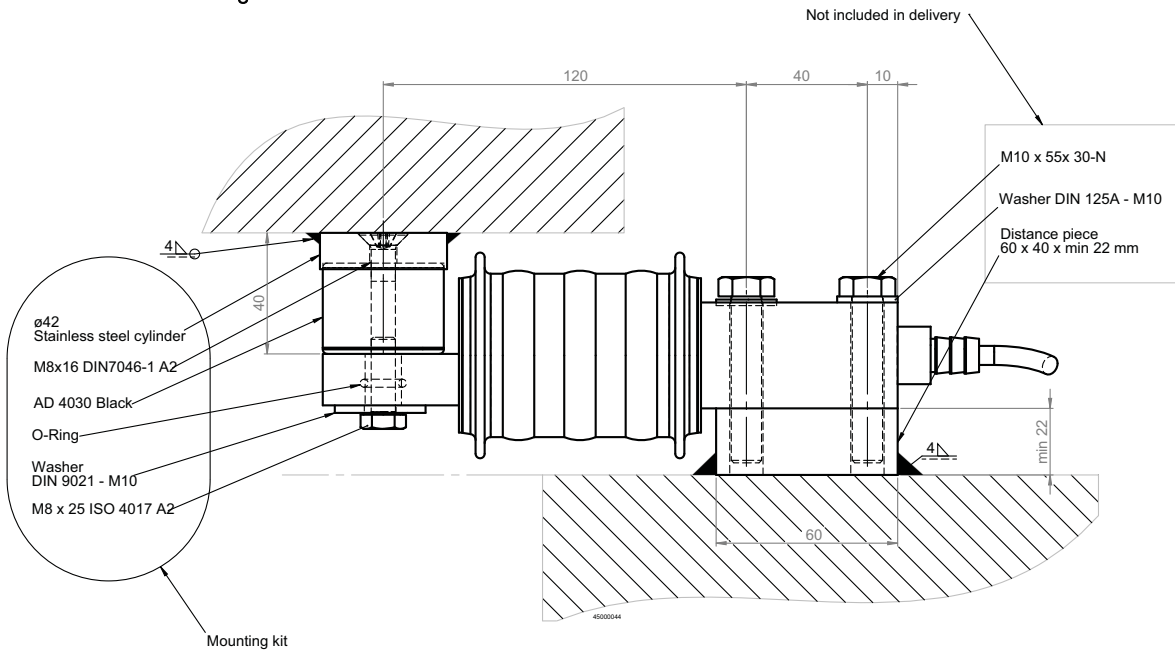
Mounting kit for BL beam load cell

## Specification

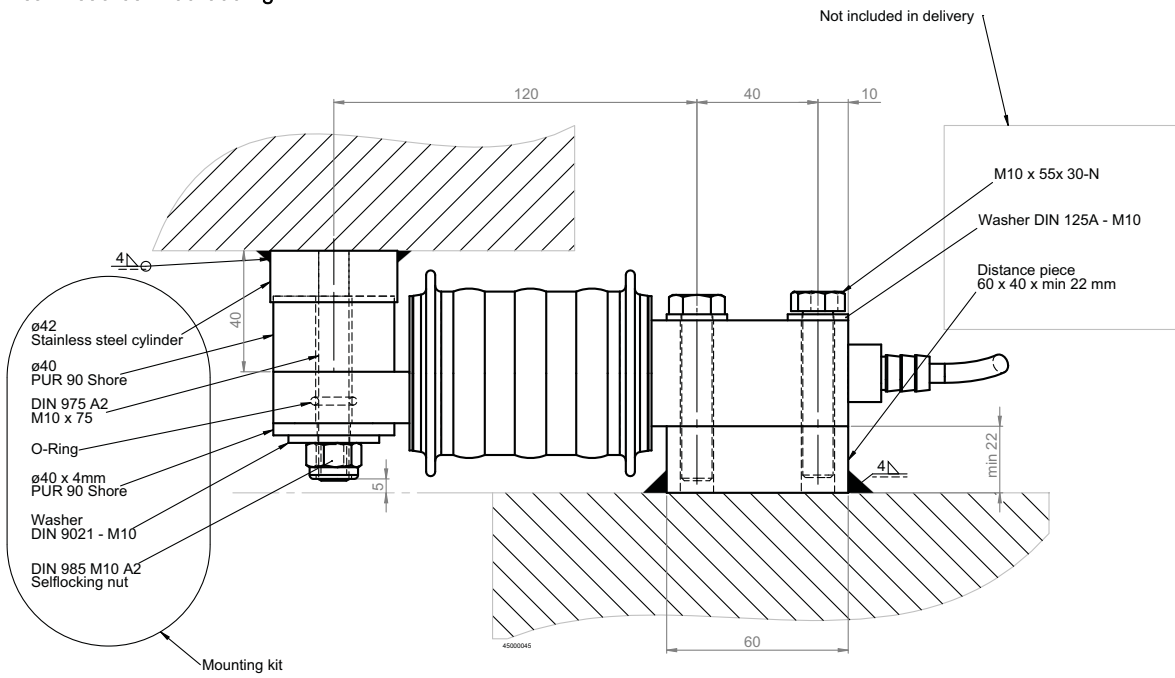
Parameter	Unit	0.10%	0.05%	0.025%
Rated capacity (E <sub>max</sub> ) per load cell	kg	10, 20, 50, 100, 150, 250, 500, 1000		
Safe overload limit	% of E <sub>max</sub>	300 to 1000		
Safe sideload limit	% of E <sub>max</sub>	500 to 2000		
Minimum dead load	% of E <sub>max</sub>	0		
Accuracy	% of E <sub>max</sub>	0.100	0.050	0.025
Repeatability	% of E <sub>max</sub>	0.018	0.015	0.010
Hysteresis	% of E <sub>max</sub>	0.033	0.020	0.017
Creep 30 min.	% of E <sub>max</sub>	0.035	0.025	0.017
Temperature effect on zero	%/10 °C	0.040	0.030	0.016
Temperature effect on sensitivity	%/10 °C	0.040	0.030	0.016
Deflection at E <sub>max</sub>	mm	max. 0.10		
Mesuring rate	Hz	up to 1000		
Internal resolution	Bit	24		
Maximum cable length	m	100		

Dimensional drawings

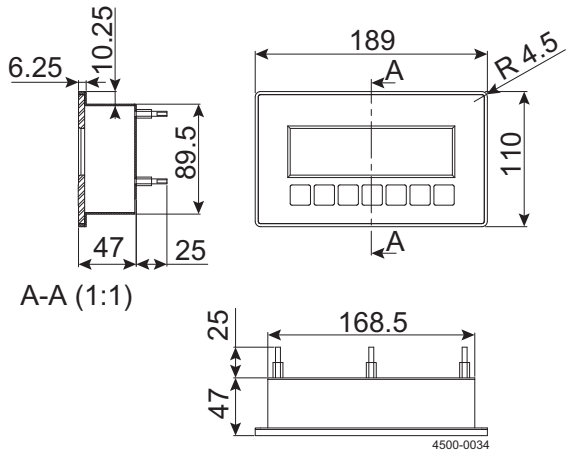
Beam load cell 0-100 kg



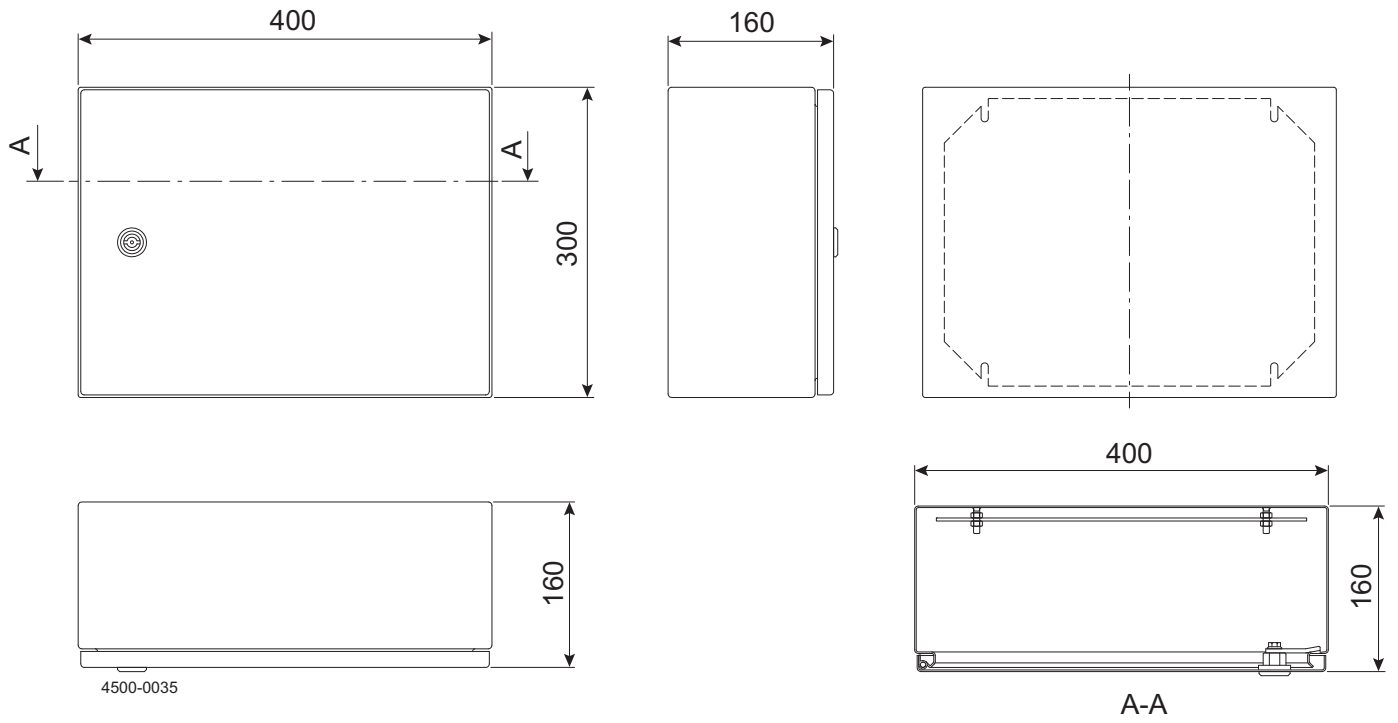
Beam load cell 100-500 kg



Display



Stainless steel box



### Selection guide

When configuring a weighing system, you need the following information:

- Number of tank legs
- Total weight of tank incl. product in kg
- Required output and/or local display
- Required accuracy for the application (e.g. dosing, mixing, level measurement etc.)

With this information, you are able to find the configuration you need in the pricelist or in the online configuration tool:

#### 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 application

- 0.10% accuracy systems are suitable for mixing applications
- 0.05% accuracy systems are suitable for dosing applications
- 0.025% accuracy systems are suitable for very precise dosing and batching applications

#### Step 3:

Decide on the output signal type and/or a local weighing display:

- 4-20mA
- PROFINET
- EtherNet IP
- Profibus DP

#### Step 4:

Decide if you want the display and/or weighing modules supplied mounted in a stainless steel box

You have the following options:

- Without stainless steel box
- Weighing module mounted in stainless steel box (without display)
- Display mounted in stainless steel box

#### Step 5:

Decide on the length of the load cell cables (the length of the cable is can be shortened without the need for recalibration)

- 6m (standard)
- 10m
- 20m
- 50m

#### Step 6:

Decide on if you need calibration certificate

### Theoretical statistical weighing system accuracy

System range System range

Item no.	3 supporting points	4 supporting points	Number of		System type	0.10%	System type	0.05%	System type	0.025%
			loadcells and	lc type in system						
TE67WB9KXXXXXX	0- 60 kg. (132 lb)		(3*20 kg. lc)		0.035 kg. (0.076 lb)	0,017 kg (0.038 lb)	0,009 kg. (0.019 lb)			
TE67WBBJXXXXXX		0- 80 kg. (176 lb)	(4*20 kg. lc)		0.040 kg. (0.088 lb)	0,020 kg. (0.044 lb)	0,010 kg. (0.022 lb)			
TE67WBCKXXXXXX	0- 90 kg. (198 lb)		(3*30 kg. lc)		0.052 kg. (0.115 lb)	0,026 kg. (0.057 lb)	0,013 kg. (0.029 lb)			
TE67WBEXXXXXXX		0- 120 kg. (265 lb)	(4*30 kg. lc)		0.060 kg. (0.132 lb)	0,030 kg. (0.066 lb)	0,015 kg. (0.033 lb)			
TE67WBFKXXXXXX	0- 150 kg. (331 lb)		(3*50 kg. lc)		0.087 kg. (0.191 lb)	0,043 kg. (0.095 lb)	0,022 kg. (0.048 lb)			
TE67WBGKXXXXXX		0- 200 kg. (441 lb)	(4*50 kg. lc)		0.100 kg. (0.220 lb)	0,050 kg. (0.110 lb)	0,025 kg. (0.055 lb)			
TE67WBIXXXXXXX	0- 300 kg. (661 lb)		(3*100 kg. lc)		0.173 kg. (0.382 lb)	0,087 kg. (0.191 lb)	0,043 kg. (0.095 lb)			
TE67WBJKXXXXXX		0- 400 kg. (882 lb)	(14*100 kg. lc)		0.200 kg. (0.441 lb)	0,100 kg. (0.220 lb)	0,050 kg. (0.110 lb)			
TE67WBKNXXXXXX	0- 450 kg. (992 lb)		(3*150 kg. lc)		0.260 kg. (0.573 lb)	0,130 kg. (0.211 lb)	0,065 kg. (0.143 lb)			
TE67WBOKXXXXXX		0- 600 kg. (1323 lb)	(4*150 kg. lc)		0.300 kg. (0.661 lb)	0,150 kg. (0.331 lb)	0,075 kg. (0.165 lb)			
TE67WBPKXXXXXX	0- 750 kg. (1653 lb)		(3*250 kg. lc)		0.433 kg. (0.955 lb)	0,217 kg. (0.477 lb)	0,108 kg. (0.239 lb)			
TE67WBLKXXXXXX		0- 1000 kg. (2205 lb)	(4*250 kg. lc)		0.500 kg. (1.102 lb)	0,250 kg. (0.551 lb)	0,125 kg. (0.276 lb)			
TE67WBSKXXXXXX	0- 1500 kg. (3307 lb)		(3*500 kg. lc)		0.866 kg. (1.909 lb)	0,433 kg. (0.955 lb)	0,217 kg. (0.477 lb)			
TE67WBTKXXXXXX		0- 2000 kg. (4409 lb)	(4*500 kg. lc)		1.000 kg. (2.205 lb)	0,500 kg. (1.102 lb)	0,250 kg. (0.551 lb)			
TE67WBUKXXXXXX	0- 3000 kg. (6614 lb)		(3*1000 kg. lc)		1.732 kg. (3.819 lb)	0,866 kg. (1.909 lb)	N/A			
TE67WBVKXXXXXX		0- 4000 kg. (8818 lb)	(4*1000 kg. lc)		2.000 kg. (4.409 lb)	1,000 kg. (2.205 lb)	N/A			

Note: All calculations are the theoretical worst case accuracy that can be obtained with the Alfa laval weighing system solutions. The presented data is solely for informational purpose, all real life accuracies is highly dependable of proper weighing system installation





Alfa Laval reserves the right to change specifications without prior notification.

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**How to contact Alfa Laval**

Contact details for all countries  
are continually updated on our website.  
Please visit [www.alfalaval.com](http://www.alfalaval.com) to  
access the information direct.