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## ZB Series Load Cells

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### FEATURES

- 10 kg to 1000 kg (100 N to 10 kN)
- Approved for use in calibrated weighing systems (PTB Test Report)
- Hermetically sealed case (IP 67)
- Made of stainless steel
- Appliances for easy assembly
- Compatible with products of well-known manufacturers
- 6-wire configuration
- EU approval



### DESCRIPTION

The load cells of the **ZB** series have been designed for use under industrial conditions in hybrid type weighing systems up to Class III, for which calibration is obligatory. Made entirely of stainless steel, they are an excellent choice for weighing systems in the foodstuff industry. The sensing element itself is a twin-bend design with metal foil strain gauges. A metal folding bellow welded over this unit forms a hermetically sealed chamber, which when filled with dry nitrogen constantly ensures stable measuring characteristics irrespective of environmental influences. There is a second hermetically sealed chamber containing components for compensation and adjustment, which are required for

the exact setting of the guaranteed technical parameters. The load cell is for measuring tensile or pressure forces. The assembly appliances, which will be delivered as a separate order, include an integrated overload protection, thus enabling the user to integrate the load cell in his weighing system without any problem or safety risk. As a standard, the load cells are equipped with a 3 m connection cable. It is a matter of course that these load cells, after calibration in N, can also be supplied as high-precision force transducers up to the accuracy class 0.05%. Moreover, the load cells can be supplied with an integrated amplifier (model **ZB-E**). The output voltages (0 to 10) V or (4 to 20) mA can be selected.

**FORCE TRANSDUCERS / LOAD CELLS**

Accuracy class		0.1	0.05	C1	C2	C3	
Nominal force (=F <sub>N</sub> )	kN	0.1/0.2/0.5/1/2/5/10					
Nominal load (=F <sub>N</sub> )	kg				10/20/50/100/200/500/1000		
Max. permissible force/load	%F <sub>N</sub>	150					
Ultimate overload	%F <sub>N</sub>	>500					
Max. transverse force/load	%F <sub>N</sub>	100					
Minimum application range	%F <sub>N</sub>				18		
Reference temperature	°C	+23					
Nominal temperature range	°C	-20 to +60		-10 to +40			
Operating temperature range	°C	-30 to +70					
Storage temperature range	°C	-40 to +70					
Enclosure protection (DIN 40050)		IP 67					
Nominal sensitivity (=S)	mV/V	2.000 ±0.002					
Zero tolerance band	%S	≤1					
Max. supply voltage	V	12					
Input resistance	Ω	380 ±30					
Output resistance	Ω	352 ±1.5					
Insulation resistance	Ω	>5 × 10 <sup>9</sup>					
Combined error *	%S				≤0.030	≤0.023	≤0.021
Variability **	%S				≤0.030	≤0.010	≤0.010
Linearity error **	%S	≤0.1	≤0.05				
Width of backlash **	%S	≤0.1	≤0.05				
TC of zero per 10 K	%S	≤0.05	≤0.025	≤0.025	≤0.012	≤0.008	
TC of sensitivity per 10 K	%S	≤0.10	≤0.05	≤0.017	≤0.010	≤0.008	
Zero recovery error (30 min)	%S	≤0.10	≤0.05	≤0.050	≤0.025	≤0.017	
Creepage error (30 min)	%S	≤0.10	≤0.05	≤0.049	≤0.024	≤0.024	

\* According to VDI 2637

\*\* According to VDI 2638

**Option :** The transducers can be delivered with an internal amplifier delivering an output signal of 0(4) - 20 mA or 0 - 10 V within precision classes 0.2 and 0.5.

**PIN CONNECTIONS**
**Pin**

Supply voltage (+)	brown
Supply voltage (-)	green
Measuring voltage (+)	red
Measuring voltage (-)	white
Sensing line (+)	grey (In 6-wire configuration only)
Sensing line (-)	blue (In 6-wire configuration only)
Shield	black
Cable length	3 m

**Note :** In the ZB-E type cells, the pins for supply voltage (-) and measuring voltage (-) are interconnected internally.

**MOUNTING INSTRUCTIONS**

When being loaded, the load cells and force transducers of the ZB type series are slightly deflected in the measuring direction at the end where load or force is introduced. This is why these transducers must be so mounted that this deflection will not any case be limited or inhibited within their range of operation.

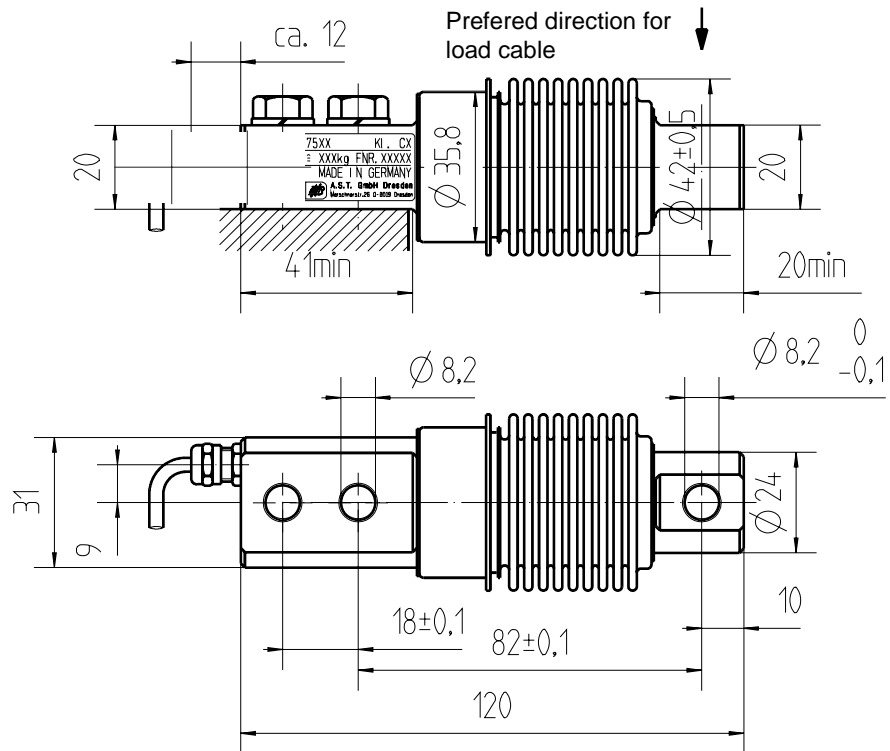
**ZB 10 kg to 200 kg (100 N to 2 kN)**

**MODELS**

**Nominal load / force**

- 10 kg / 100 N
- 20 kg / 200 N
- 50 kg / 500 N
- 100 kg / 1 kN
- 200 kg / 2 kN

Weight: 0.6 kg



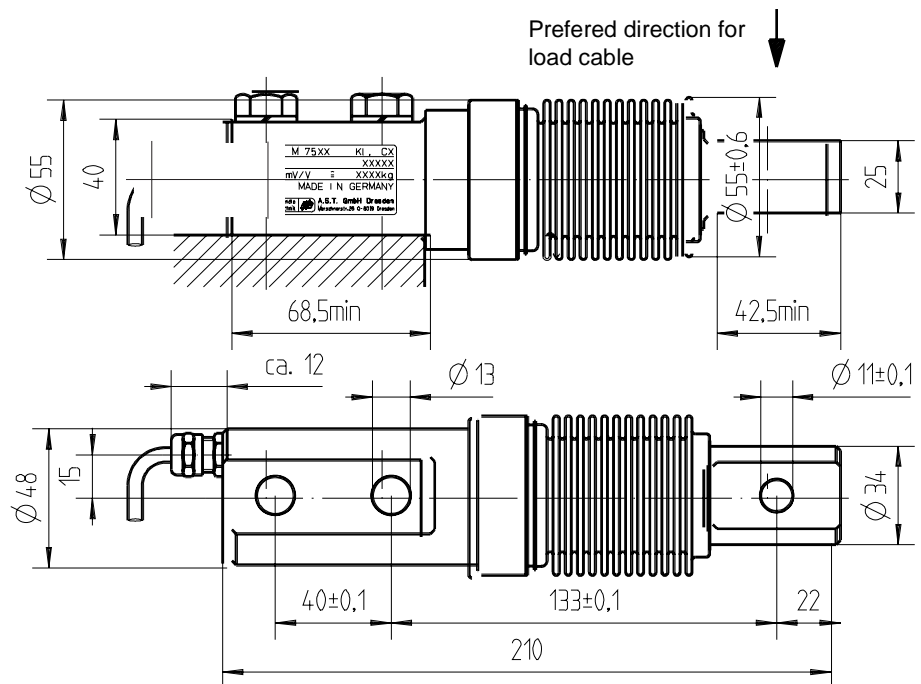
**ZB 500 kg and 1000 kg (5 kN and 10 kN)**

**MODELS**

**Nominal load / force**

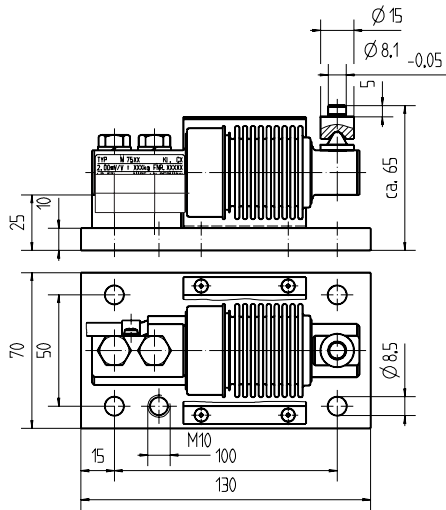
- 500 kg / 5 kN
- 1 t / 10 kN

Weight: 2.3 kg



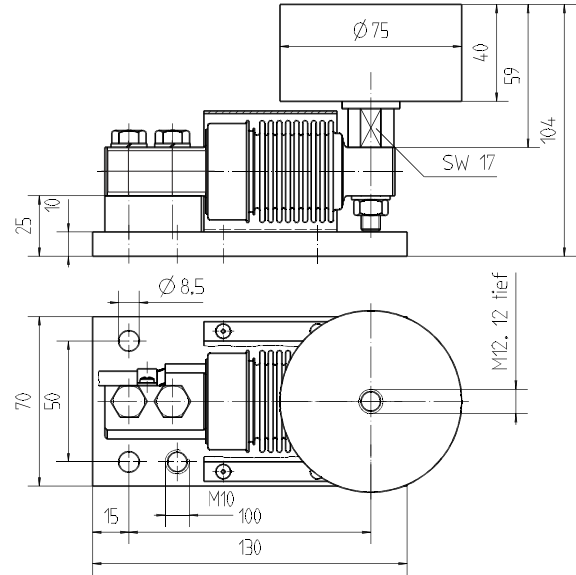
**AM 001**

Assembly trestle for ZB 10 kg to 200 kg with cone point/  
cone socket AM 060 and protective casing



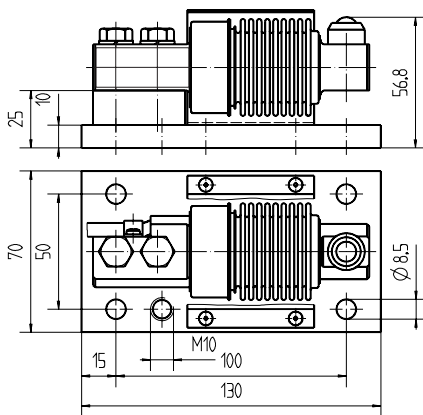
**AM 001**

Assembly trestle for ZB 200 kg with protective casing  
and elastomer bearing AM 053



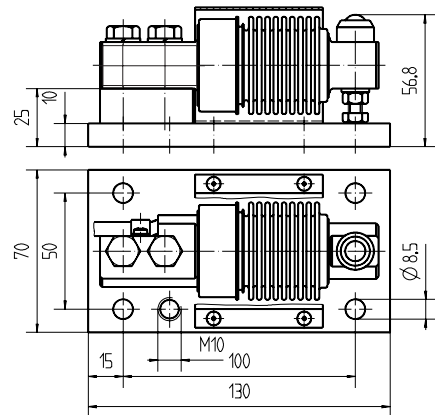
**AM 002**

Assembly trestle for ZB 10 kg to 200 kg with universal  
ball joint, insertable and protective casing



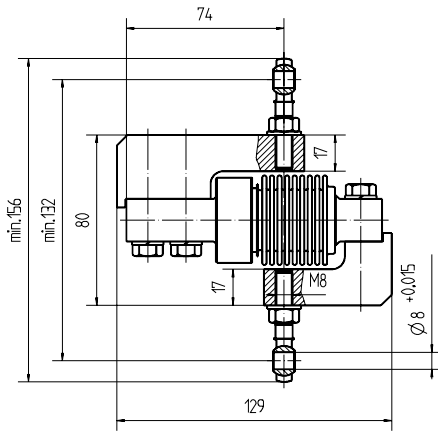
**AM 003**

Assembly trestle for ZB 10 kg to 200 kg with universal  
ball joint and protective casing, screwed to overload fuse



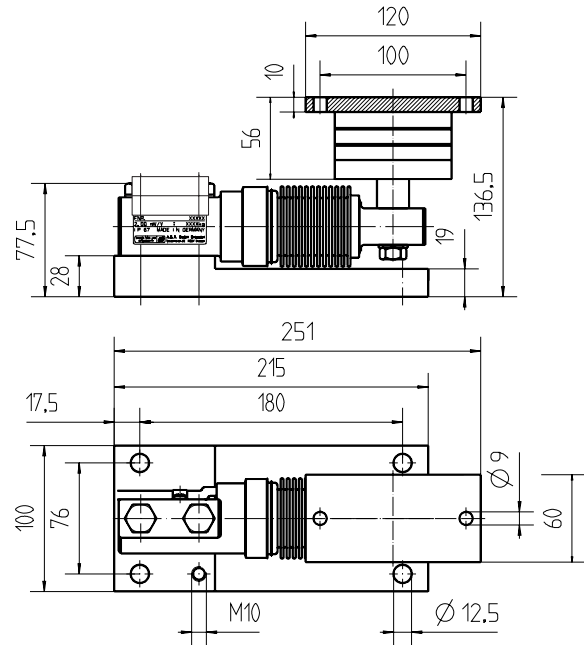
**AM 004**

Assembly angle for ZB 10 kg to 200 kg with flexible head AA 8



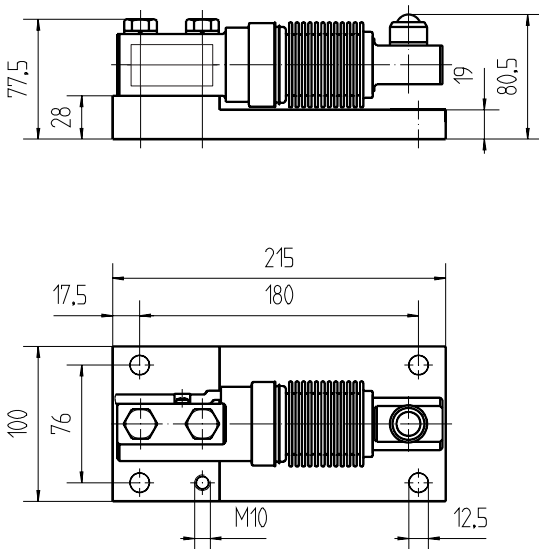
**AM 005**

Assembly trestle with ZB 500 kg and 1000 kg with elastomer bearing AM 051



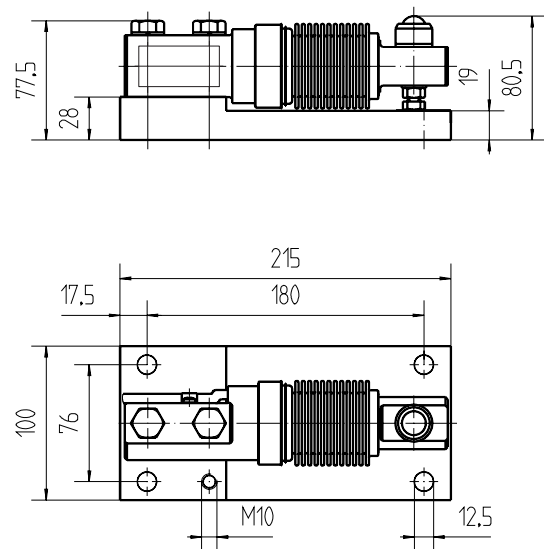
**AM 006**

Assembly trestle AM 006 for ZB 500 kg and 1000 kg with universal ball joint, insertable



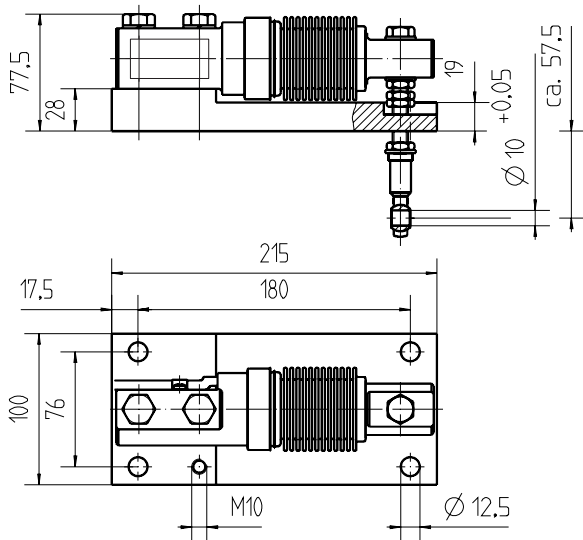
**AM 007**

Assembly trestle for ZB 500 kg and 1000 kg with universal ball joint, screwed to overload fuse



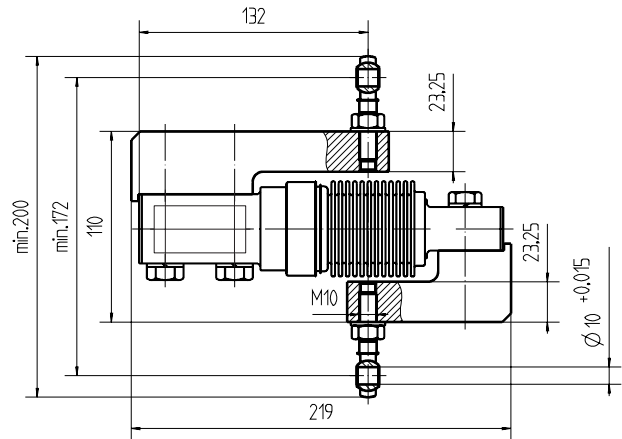
## AM 008

Assembly trestle for ZB 500 kg and 1000 kg with flexible head AI 10 (internal screw thread) and bolt



## AM 009

Assembly angle for ZB 500 kg with flexible head AA 10



## ORDERING INFORMATION FOR MECHANICAL ACCESSORIES

### ZB 100 N/10 kg to 2 kN/200 kg

AM 001	Assembly trestle with protective casing without force/load input elements
AM 002	Assembly trestle with universal ball joint, insertable and protective casing
AM 003	Assembly trestle with universal ball joint, screwed to overload fuse and protective casing
AM 004	Assembly angle with flexible head AA 8
AM 104	Assembly angle made of stainless steel with flexible head AA 8
AA 8	Flexible head with counter nut
AI 8	Flexible head (internal screw thread) with bolt and counter nut
AM 060	Cone point/cone socket
AC 009.01	Protection cable for ZB
AM 053	Elastomer bearing *
AM 053.01	for ZB 100 N (10 kg) and ZB 200 N (20 kg) transverse stiffness 70 N/mm
AM 053.02	for ZB 500 N (50 kg) and ZB 1 kN (100 kg) transverse stiffness 140 N/mm
AM 053.03	for ZB 2 kN (200 kg) transverse stiffness 300 N/mm

### ZB 5 kN/500 kg and 10 kN/1000 kg

AM 005	Assembly trestle without force/load input elements
AM 006	Assembly trestle with universal ball joint, insertable
AM 007	Assembly trestle with universal ball joint, screwed to overload fuse
AM 108	Assembly trestle with AI 10 and bolt
AM 009	Assembly angle with flexible head AA 10 for ZB 5 kN/500 kg
AA 10	Flexible head (external screw thread) with counter nut
AI 10	Flexible head (internal screw thread) with bolt and counter nut
AM 061	Cone point/cone socket
AC 009.02	Protection cable for ZB
AM 051	Elastomer bearing **
AM 051.01	for ZB 5 kN (500 kg) transverse stiffness 1200 N/mm
AM 051.02	for ZB 10 kN (1000 kg) transverse stiffness 3000 N/mm

\* For platform size (1000 × 1000) mm with 4 load cells

\*\* For platform size (1500 × 1500) mm with 4 load cells

## ORDERING INFORMATION

### Explanation of Type Code (Ordering Example)

for Load Cells

for Force Transducers

Type, construction	Output signal (option) 0(4) - 20 mA or 0 - 10 V	Nominal force Nominal load	Accuracy class	
<b>ZB</b>		<b>100 kg</b>	<b>C3 - PTB</b>	= <b>ZB / 100 kg / C3 - PTB</b>
<b>ZB</b>	<b>E</b>	<b>1 kN</b>	<b>0.2</b>	= <b>ZB-E / 1 kN / 0.2</b>

## SYSTEM OPTIONS

Model No.	Product Description	Ordering Number
LMU 112	Load monitoring unit containing 2 level detectors, 1 current and 1 voltage O/Ps	224-112-000-XXX
LMU 116	Load monitoring unit containing 4 level detectors, taring and 4 summer functions	224-116-000-XXX
LMU 117	Dual channel load monitoring unit (2 x LMU 112)	224-117-000-XXX
AN 2000 C	Digital process monitor for strain gauge transducers	AN 2000 C /X/X/XX/XX/X

*Due to the continual development of our products, we reserve the right to modify specifications without forewarning.*



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