Web load cell PD 25 / PD 26

Reliable monitoring of the web tension helps to reduce web tears and therefore production costs. Load cells from E+L continuously measure the tensile force on a moving web and provide this value as an analog signal. In this way, they create the prerequisites for reliable web tension measurement and control.

Alongside the standard series PD 21 and PD 22 for high-precision web tension measurement and control, the newly developed load cell PD 25/PD 26 offers an extremely cost effective alternative for web tension measurement. The tried and tested measuring principle with a double bending beam guarantees highly reliable operation and excellent reproducibility.

Technical features

- High operational reliability thanks to overload protection for up to 10 times the nominal measuring force.
- When installed horizontally, the roller weight has no impact on the measuring result.
- Wide measuring range from 1 : 25 (e.g. at F-nominal = 1000 N linear signal from 40 N to 1000 N)
- Good temperature behavior and highly linear response from the measuring elements thanks to the application of the strain gauge on a flat surface.
- Many mounting options are available for easy installation in multiple positions, including flange bearings, pedestal bearings, inner or outer fastenings.
- High maximum permitted operating speed of the measuring roller thanks to the high spring constant of the web load cell.
- Compatible with the standard series PD 21 and PD 22 thanks to identical basic design and construction.
- Thanks to the new surface made of anodized aluminum, this unit can now also be used in battery production.

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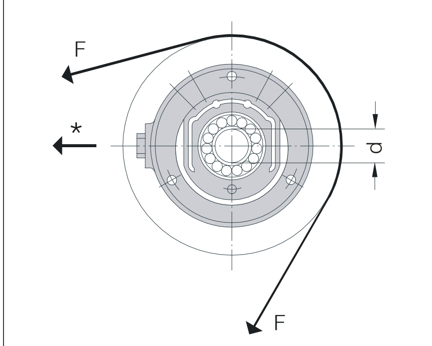
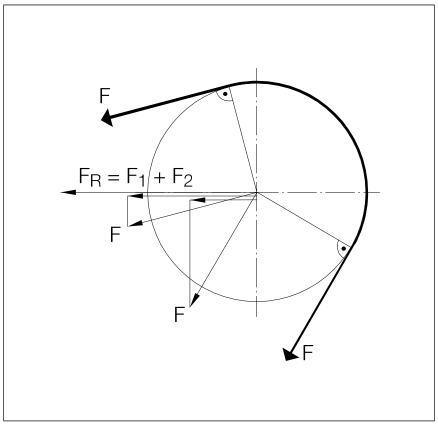
Function

In essence, the load cell consists of an outer ring with a cover and centering flange and an inner ring designed as a measuring element, which also holds the bearings for the measuring roller. The latter records the radial bearing forces of the measuring roller, around which the material web is wrapped. The inner ring is designed as a double bending beam, onto which strain gauges are attached and electrically connected to a measuring bridge. The forces being measured cause a change in resistance in the strain gauges and therefore a variation in the electric output signal as a function of the radial force components.



* Measuring direction

Calculation



For the calculation, only the components F_1 and F_2 acting in the measuring direction are relevant. The resulting measuring force is determined from $F_1 + F_2$. Provided the web is running centrally, this force is evenly distributed between the two load cells.

You can calculate the load cell values using our free calculator.
Software download
"ELTENS-Calculator":

Selection table

Type Bore on one side	 Bore on both sides	d (mm)	Nominal measuring force (kN)		
PD 2517	PD 2617	17	0.1	0.2	0.5
PD 2525	PD 2625	25	0.15	0.3	0.75
PD 2535	PD 2635	35	0.3	0.6	1.5

Technical data PD 25 / PD 26

Accuracy class	1
Nominal characteristic value (sensitivity)	1 mV/V
Combined error Hysteresis/non-linearity	< 1%
Characteristic value tolerance	0.2%
Measuring principle	Full bridge strain gauge
Nominal resistance of the strain gauge bridge	700 Ohm
Bridge supply voltage - Nominal value - Max. permitted value	 10 V 14 V
Mechanical stop Operating load Limit load	1.8 to 2.4 x F_N depending on type 1.8 to 2.4 x F_N 10 x F_N
Nominal measuring deflection	0.1 to 0.25 mm depending on type
Nominal temperature range Temperature range for use	-10 to +60°C -10 to +90°C
Temperature coefficient - of the characteristic value - of the zero signal	 ±0.5% / 10 K ±0.5% / 10 K
Protection class	max. IP 54 with suitable connector plugged in
Max. permissible axial lateral force	1 x F_N
Weight	0.8 kg (d = 17 mm) 1.25 kg (d = 25 mm) 2.94 kg (d = 35 mm)
Material	Anodized aluminum with stainless steel screws

Subject to technical change without notice