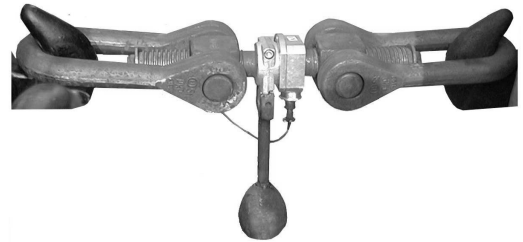


### Force sensor CL 15K for locomotives

- Precise and reliable
- High stability and repeatability
- Tensile forces
- Three year warranty and after market service



Strain gauge force sensor CL 15K is assigned for measurement of locomotive tractive forces. The sensor was build as a reconstruction of standard railway screw coupling. A fragment of screw coupling is an elastic element of sensor working tensile. The elastic element is bonded with strain gauges building a balanced and thermal compensated bridge. The sensor can cooperate with measurement instruments from other producers.

CL 15 can be loaded only with tensile forces. The forces are converted due to metal elastic element with strain gauges.

For the protection degree IP40 the sensor is provided with joints and for the protection degree IP66 the sensor is provided with stuffing on the connecting cable.

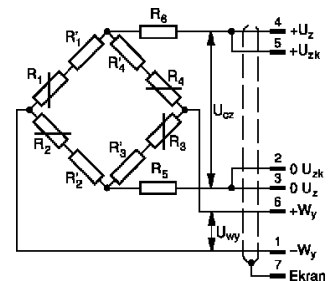
Specification:

Range	[kN]	700
Accuracy class		0,5
Signal of unbalance	[%]	± 2
Signal of unbalance from zero after nominal load take away (30 min)	[%]	≤ 0,05
Zero point deviation	[%/30 min]	≤ 0,05
Temperature effect on the sensitivity	[%/10K]	≤ 0,05
Temperature effect on the zero point	[%/10K]	≤ 0,05
Nominal supply voltage	[V]	10
Sensitivity	[mV/V]	2
Input resistance	[Ω]	380 ± 25
Output resistance	[Ω]	350 ± 5
Breaking force	[%]	150
Operating temperature	[°C]	0 ÷ 80
Compensation temperature	[°C]	0 ÷ 80
Maximal displacement	[mm]	0,2
Connector		LUMBERG (Z1) or gland with stay wire (01)
Protection degree		IP40, IP66
Dimensions		as in chart below
Material		steel
Cable length		3 m or on request

Designations and cable outlets:

1 brown	-W <sub>y</sub>
2 pink	0 U <sub>zk</sub>
3 white	0 U <sub>z</sub>
4 yellow	+U <sub>z</sub>
5 gray	+U <sub>zk</sub>
6 green	+W <sub>y</sub>
7 black	shield

R1, R2



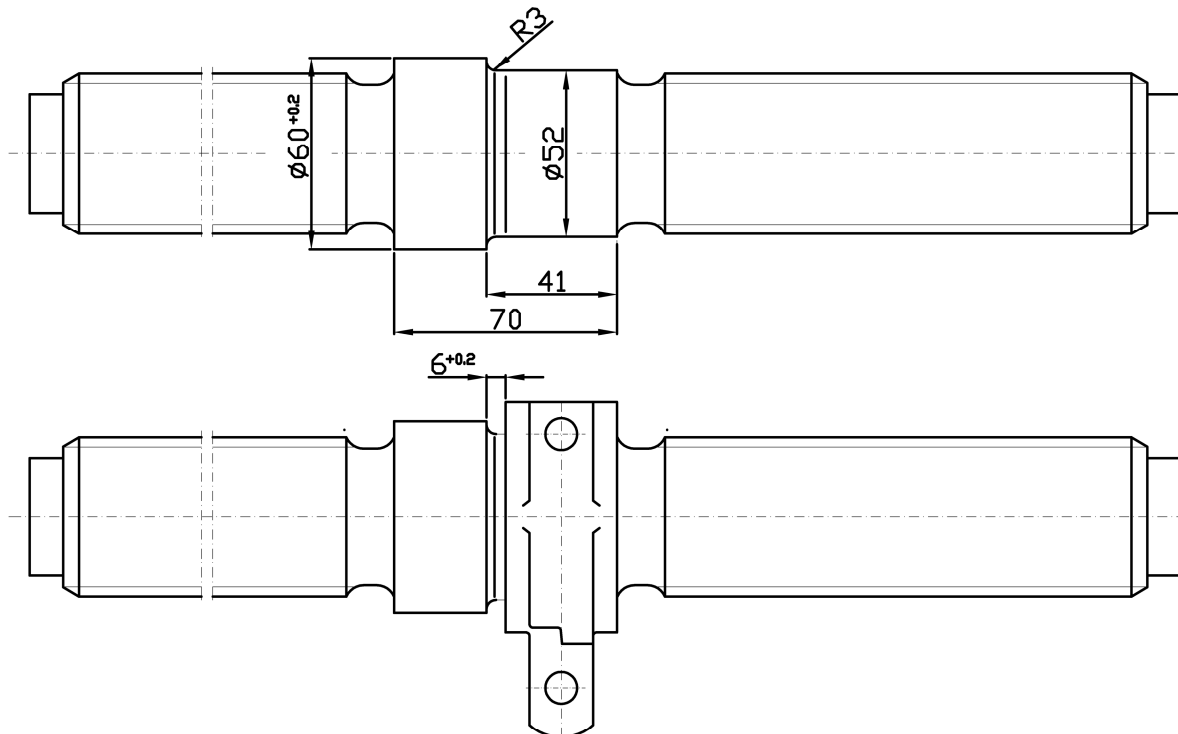
## Force sensor CL 15K for locomotives

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### Quality assurance:

Each sensor is detailed examined after manufacturing process.

The producer offers 36 month warranty for the sensor and after that time also repair and calibration services.



Coupler bolt by card UIC 520 page 29 with changes for force measurement.

Manufacturer

ZEPWN J. Czerwiński i Wspólnicy – spółka jawna, 05-270 Marki, ul. Kołtątaja 8

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