



MAGPOWR

The MAGPOWR TLC series of load cells are extremely accurate devices used to measure web tension in any unwind, rewind or intermediate web processing application.

The TLC line of load cells deliver precise web tension measurement with low temperature drift due to a full Wheatstone bridge construction on each load cell. The load cells allow for force measurement and 10 times overload protection in both force directions.

With a low profile design, space between the machine frames dedicated to the load cell is minimized. The load cells can also be mounted on the outside of the machine frames, eliminating any space required for the load cells.

The TLC is flange mounted to any vertical machine surface or on top of horizontal surfaces utilizing the optional pillow block bracket.



GENERAL SPECIFICATIONS

Product Name

TLCA and TLCB Load Cell Series

Gage Resistance

350 ohms nominal

Excitation Voltage

10 VDC maximum

Output Signal

1.5 mV/V, 15 mVDC maximum per sensor at full load rating

Operating Temperature

-20°C to 80°C (-4°F to 176 °F)

Combined non-linearity and hysteresis

0.5% of full scale maximum

Temperature effect on zero

0.02% of rating per °C

Repeatability

0.2% of full scale maximum

Load Ratings

TLCA: 50, 100, 250, 500, 750, 1000 Newtons (11, 23, 56, 112, 168, 225 pounds)

TLCB: 500, 1000, 2000, 3000 Newtons (112, 225, 450, 675 pounds)

Construction

Nickel plated steel (beam)
Nickel plated aluminum (covers)

Overload Stops Engagement

105% to 150% of full load rating

Overload Protection

10X full load rating

Deflection at Full Load

Size A: 0.17 mm (0.007 inch)

Size B: 0.15 mm (0.006 inch)

Mating Cable

LCC series with straight connector
LCCRA series with right-angle connector

Climate Class

3K3 (EN60721)

Certifications

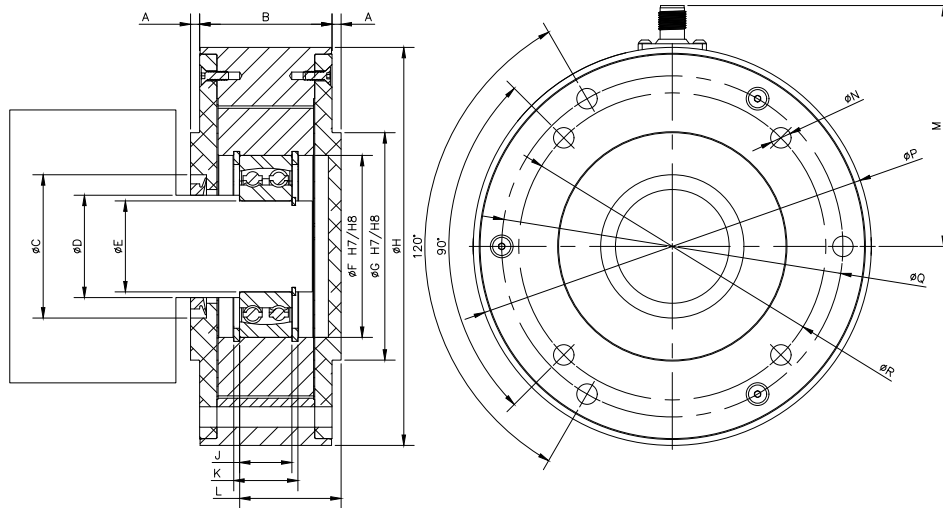
IP67
CE
RoHS
UL (when used with IS-2)

KEY FEATURES

- Used in live shaft applications
- Standard in metric models
- Flange and pillow block mounting
- Six load ratings from 50 to 1000 newtons (11 to 225 pounds) in size A, four load ratings from 500 to 3000 newtons (112 to 675 pounds) in size B
- Ruggedly constructed for long life and dependability
- Mechanical overload stops for 10x protection under severe overloads
- Full Wheatstone bridge design for measurement accuracy and low temperature drift
- Can be mounted on the inside of machine frames or hidden on the backside of the machine frames
- Size A can be mounted using three bolts on a 90 mm bolt circle or four bolts on a 75 mm bolt circle
- Size B can be mounted using three bolts on a 150 mm bolt circle or four bolts on a 135 mm bolt circle

TLC THIN LOAD CELLS

DIMENSIONS



Dimensions shown in mm (inches)

	A	B	C	D	E	F	G	H
TLCAXXXEC12M	2.5[0.098]	32.2[1.268]	36[1.417]	22[0.866]	17[0.669]	40[1.575]	60[2.362]	105[4.134]
TLCBXXXEC12M	4[0.157]	58.2[2.291]	63[2.48]	45[1.772]	40[1.575]	80[3.15]	100[3.937]	175[6.89]
	J	K	L	N	M	P	Q	R
TLCAXXXEC12M	12[0.472]	15.7[0.618]	24.65[0.97]	71.3[2.807]	6.5[0.256]	105[4.134]	90[3.543]	75[2.953]
TLCBXXXEC12M	23[0.906]	28.3[1.114]	44.6[1.756]	105.9[4.169]	9[0.354]	175[6.89]	150[5.906]	135[5.315]

MODEL NUMBER KEY

TLC

LOAD CELL
MODEL

A or B

SIZE

xxxx

LOAD CELL
RATING
(IN NEWTONS)

EC12

CONNECTOR

M

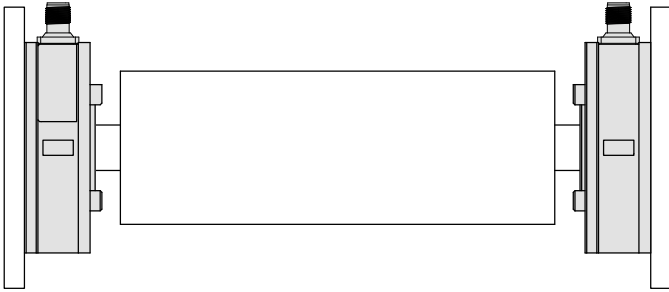
METRIC

AVAILABLE MODELS

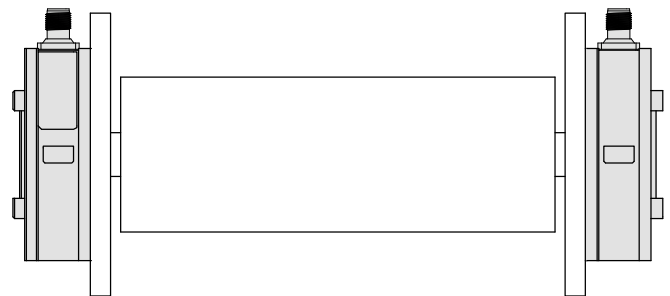
MODEL NUMBER	LOAD RATING		
	Newton (N)	Pound Force (lbf)	Kilogram (Kg)
TLCA-50-EC12M	50N	11 lbf	5 Kg
TLCA-100-EC12M	100N	23 lbf	10 Kg
TLCA-250-EC12M	250N	56 lbf	26 Kg
TLCA-500-EC12M	500N	113 lbf	51 Kg
TLCA-750-EC12M	750N	168 lbf	76 Kg
TLCA-1000-EC12M	1000N	225 lbf	102 Kg
TLCB-500-EC12M	500N	113 lbf	51 Kg
TLCB-1000-EC12M	1000N	225 lbf	102 Kg
TLCB-2000-EC12M	2000N	450 lbf	204 Kg
TLCB-3000-EC12M	3000N	675 lbf	306 Kg

TYPICAL INSTALLATION

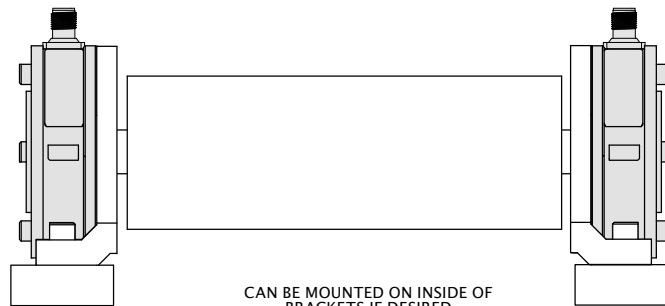
FLANGE MOUNT (INSIDE OF VERTICAL FRAMES)



FLANGE MOUNT (OUTSIDE OF VERTICAL FRAMES)

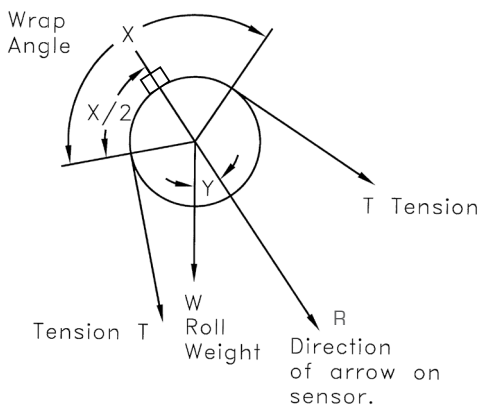


PILLOW BLOCK (ON TOP OF HORIZONTAL FRAMES)



CAN BE MOUNTED ON INSIDE OF BRACKETS IF DESIRED

SIZING



To size and select the tension sensors, the total load on the sensing roll must be calculated. This load consists of the tension components plus the roll weight components in the sensing plane. Using the known maximum tension, roll weight and angles as shown, apply the equation below to calculate the actual load.

$$\text{LOAD} = 2T (\sin (X/2)) \pm (W (\cos Y))$$

This is the total load, but since tension transients are generally quite large, the "T" should be multiplied by 2, and since there are two sensors supporting this load, the total load is divided by 2. The final equation for load rating required for each sensor is then:

$$L = (4T (\sin (X/2)) \pm (W (\cos Y))) \div 2$$

Note: Use + W (cos Y) if the resultant force is in the direction opposite the connector on the load cell and - W (cos Y) if pulling towards the connector.

After calculating L, select 2 sensors, each with a load rating greater than L.

For example, if the roll weight is 10 pounds, the maximum tension is 25 pounds, the angle Y is 60 degrees, the wrap angle is 90 degrees and the resultant force is away from the connector the resulting TLC sensor is:

$$L = (4(25)(\sin(90/2)) + (10 \cos 60)) \div 2$$

$$L = 37.85 \text{ pounds (168.4 Newtons)}$$

Use (2) TLCA-250-EC12M Load Cells

T= web tension

X= web wrap angle

R= resultant force direction from web tension that bisects the wrap angle

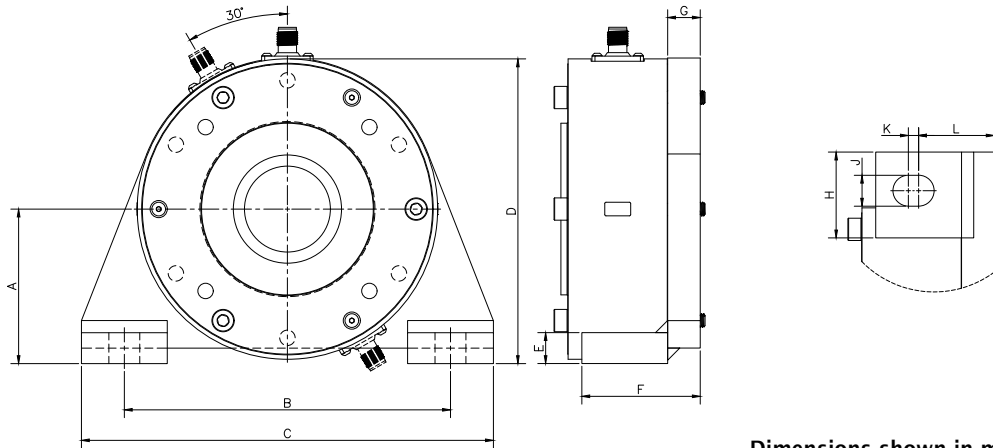
Y= angle between wrap angle midpoint (R) and the roll weight

Note: connector should always be aligned with (R)

L= calculated minimum force rating for each load cell

TLC THIN LOAD CELLS

MOUNTED ON PILLOW BLOCK BRACKETS



Dimensions shown in mm (inches)

	A	B	C	D	E	F
TLCAXXXEC12M	56 [2.205]	115 [4.528]	140 [5.512]	109 [4.291]	13 [0.512]	40 [1.575]
TLCBXXXEC12M	90 [3.543]	190 [7.480]	240 [9.449]	178 [7.008]	18 [0.709]	69 [2.717]
	G	H	J	K	L	
TLCAXXXEC12M	10 [0.394]	25 [0.984]	9 [0.354]	3 [0.118]	24 [0.945]	
TLCBXXXEC12M	19 [0.748]	50 [1.969]	18 [0.709]	6 [0.236]	44 [1.732]	

OPTIONAL EQUIPMENT

PART NUMBER	DESCRIPTION
29L30A23-4	Self-aligning bearings to use in TLCA load cells, 17 mm bore (one per load cell needed)
29LTLCA-PBK	Pillow block bracket for mounting TLCA on top of machine frames (one per load cell needed)
29L30A23-7	Self-aligning bearings to use in TLCB load cells, 40 mm bore (one per load cell needed)
29LTLCB-PBK	Pillow block bracket for mounting TLCB on top of machine frames (one per load cell needed)
29LLCC-XX-M	Load cell cable with straight connector XX= length in 5 meter increments (5 to 50 m)
29LLCCRA-XX-M	Load cell cable with right-angle connector XX= length in 5 meter increments (5 to 50 m)



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