

OWECON OWL500 Roller Load Cell Series

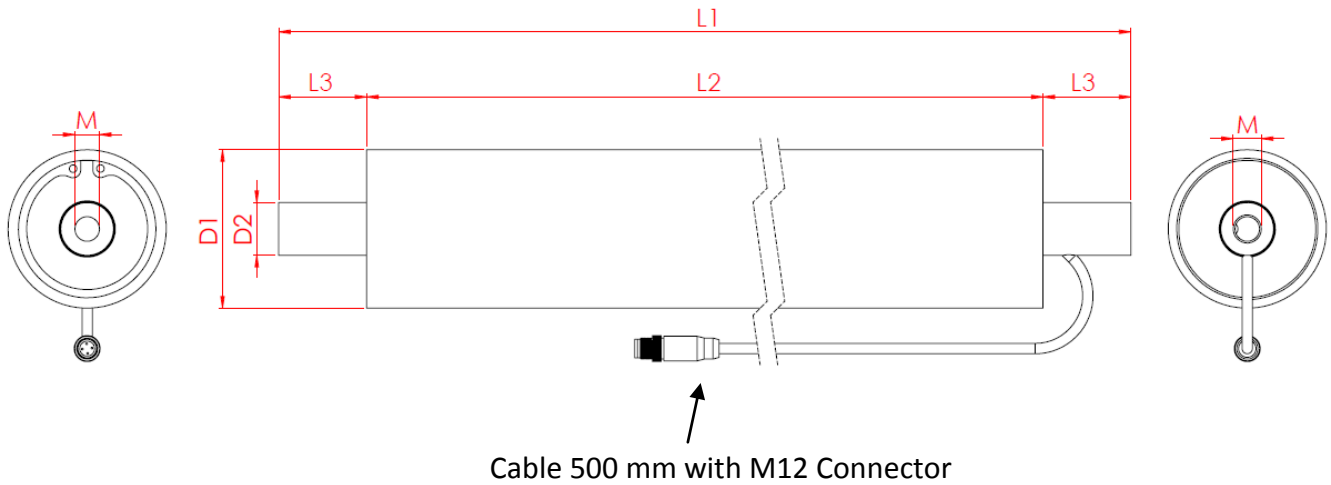


The OWECON Roller Load cell has two dual beams placed in each end of the roller and is designed to mount between the two machine sides. The dual load cell beam design reduces load cell deflection. Lower deflection means fewer tracking and steering problem on your machine and greater accuracy in the control. The total tension reading is always accurate across the face of the roller, so once the load cell is calibrated, you can align the web anywhere along the face of the roller and roller load cell will accurately measure tension.

Advantages:

- ✓ Compact design with a clean closed surface
- ✓ Dual beam giving lowest possible deflection
- ✓ Choose between Semiconductor or Foil strain gauge
- ✓ Pigtail with industry standard M12x1 connector.
- ✓ Overload ratings typical 200 – 500%
- ✓ As standard available in 50mm, 80mm, 100mm and 120mm roller diameter
- ✓ Custom load cells and rollers made to your application

Metric dimensions for OWL500 Roller Load Cell



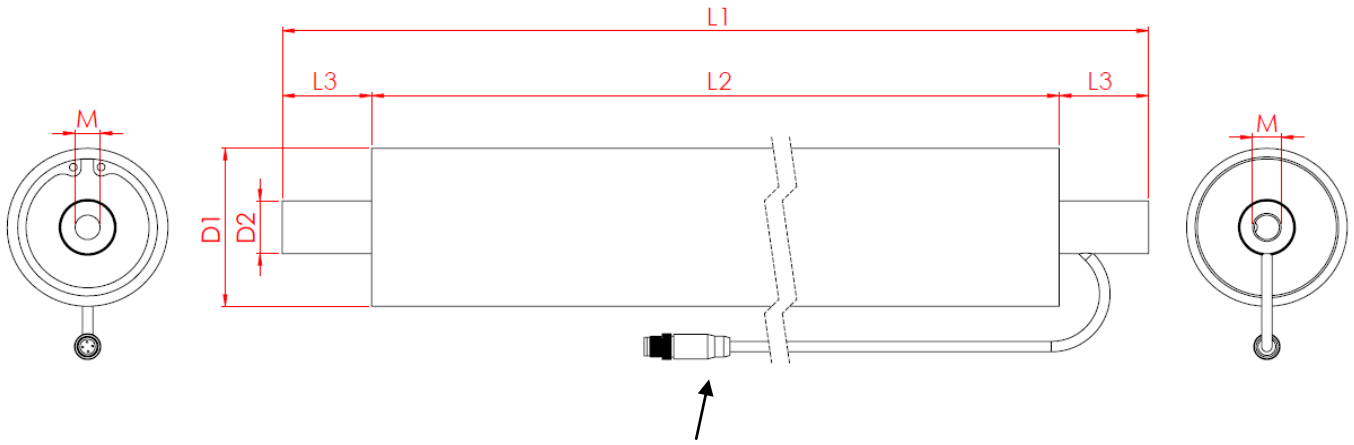
Dimension mm							
Type		D1	D2	L1	L2	L3	M
OWL5050	mm	50	25	=L2+2*L3	See below	30	M10
OWL5080	mm	80	30	=L2+2*L3	See below	50	M16
OWL5090	mm	90	30	=L2+2*L3	See below	50	M16
OWL5100	mm	100	30	=L2+2*L3	See below	50	M16
OWL5120	mm	120	30	=L2+2*L3	See below	50	M16

Type	L2 = standard length available in mm																			
OWL5050	mm	150	200	250	300	350	400	450	500	600										
OWL5080	mm	150	200	250	300	350	400	450	500	600	700	800	900	1.000	1.100	1.200				
OWL5090	mm	150	200	250	300	350	400	450	500	600	700	800	900	1.000	1.100	1.200				
OWL5100	mm	150	200	250	300	350	400	450	500	600	700	800	900	1.000	1.100	1.200				
OWL5120	mm						400		500	600	700	800	900	1.000	1.100	1.200	1.300	1.400	1.500	1.600

Other dimensions available on request

		Load rating N																		
OWL5050	N	50	125	250																
OWL5080	N		125	250	500	1.000														
OWL5090	N		125	250	500	1.000														
OWL5100	N		125	250	500	1.000														
OWL5120	N			250	500	1.000														

Imperial dimensions for OWL500 Roller Load Cell



Cable 19.69 in with M12 Connector

Dimension in Inches							
Type		D1	D2	L1	L2	L3	M
OWL5050	in	1.97	0.98	=L2+(2*L3)	See below	1.18	M10
OWL5080	in	3.15	1.18	=L2+(2*L3)	See below	1.97	M16
OWL5090	in	3.45	1.18	=L2+(2*L3)	See below	1.97	M16
OWL5100	in	3.94	1.18	=L2+(2*L3)	See below	1.97	M16
OWL5120	in	4.72	1.18	=L2+(2*L3)	See below	1.97	M16

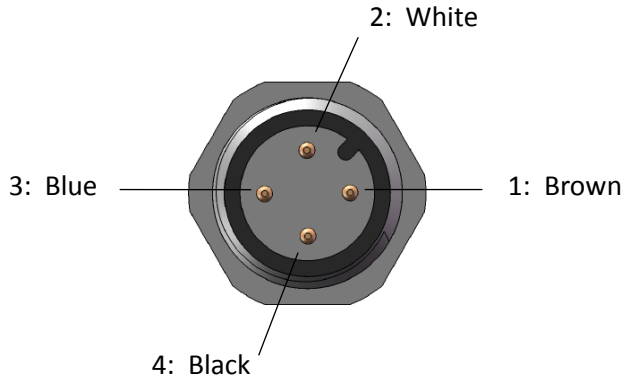
Type	L2 = standard length available in Inches																			
OWL5050	in	5.9	7.87	9.84	11.81	13.78	16.48	18.49												
OWL5090	in	5.9	7.87	9.84	11.81	13.78	16.48	18.49	19.69	24.76	28.80	31.50	35.43	39.37	45.25	49.35				
OWL5090	in	5.9	7.87	9.84	11.81	13.78	16.48	18.49	19.69	24.76	28.80	31.50	35.43	39.37	45.25	49.35				
OWL5090	in	5.9	7.87	9.84	11.81	13.78	16.48	18.49	19.69	24.76	28.80	31.50	35.43	39.37	45.25	49.35				
OWL5120	in						16.48		19.69	24.76	28.80	31.50	35.43	39.37	45.25	49.35	53.42	56.98	47.24	62.99

Other dimensions available on request

		Load rating in Lbs.																	
OWL5050	Lbs	11	28	56															
OWL5080	Lbs		28	56	112	225													
OWL5090	Lbs		28	56	112	225													
OWL5100	Lbs		28	56	112	225													
OWL5120	Lbs			56	112	225													

Electrical connector:

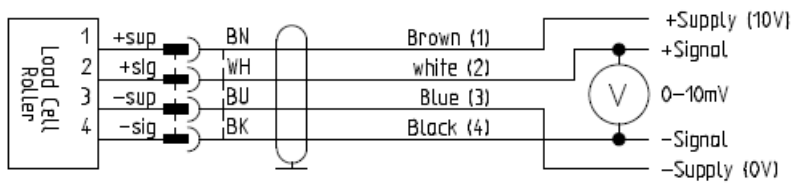
M12 – 4 pin male, Code A, IEC61076-2-101



Half bridge wiring diagram:



Full bridge wiring diagram:



Cable position and load direction

All OWL500 series Load Cells come with one pigtail with an M12x1 standard connector. The pigtail connects with the load cell through the dead shaft and is as standard positioned in the load direction, but available in different positions on request.



Calculating the force sizing for OWL500 Load Cell:

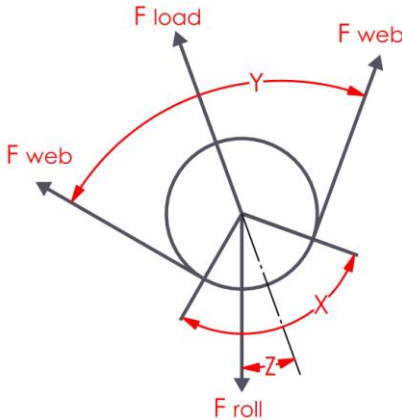
The correct Load Cell load rating for an application is determined by maximum web tension, web wrap angle around the roller, and mass of the roll.

The force $F_{(roll)}$ from the mass $m_{(roll)}$ of the roll, is determined as $F_{(roll)} = m_{(roll)} \times 9.82 \text{ (N)}$

The force $F_{(Load)}$, from the web tension $F_{(web)}$, is determined as $F_{(Load)} = 2 \times F_{(web)} \times \text{Sin}(X/2)$

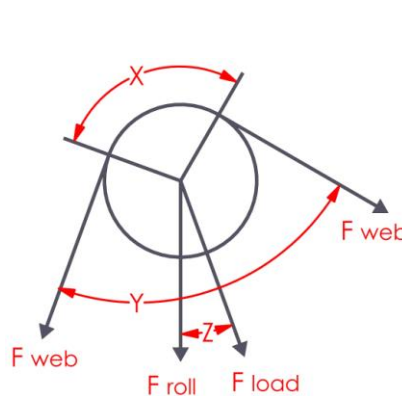
To determine the load cell size the 2 forces must be added together

Load direction upwards:



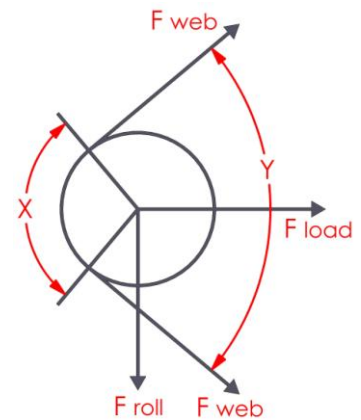
$$((\frac{1}{2} \times F_{(Load)} \times 1,5) - (\frac{1}{2} F_{(roll)} \times \text{COS}(Z)))$$

Load direction downwards:



$$((\frac{1}{2} \times F_{(Load)} \times 1,5) + (\frac{1}{2} F_{(roll)} \times \text{COS}(Z)))$$

Load direction Sideways:



$$(\frac{1}{2} \times F_{(Load)} \times 1,5)$$

Note: The minimum load cell size has to be $> \frac{1}{2} \times F_{(roll)}$ and 1,5 = safety factor

$m_{(roll)}$ = The mass of the roller in kg, $F_{(web)}$ = Maximum web tension, Z = Angle between $F_{(Load)}$ and vertical, X = Web wrap angle = $180^\circ - Y^\circ$

Roller weight		Aluminum	Stainless Steel	
OWL5050	Kg	0,012 kg/cm	0,034 kg/cm	
	Lbs	0.068 lb/in	0.190 lb/in	
OWL5080	Kg	0,032 kg/cm	0,076 kg/cm	
	Lbs	0.179 lb/in	0.425 lb/in	
OWL5090	Kg	0,053 kg/cm	0,106 kg/cm	
	Lbs	0.297 lb/in	0.596 lb/in	
OWL5100	Kg	0,061 kg/cm	0,120 kg/cm	
	Lbs	0.341 lb/in	0.672 lb/in	
OWL5120	Kg	0,073 Kg/cm	0,130 kg/cm	
	Lbs	0.409 lb/in	0.728 lb/in	

Specifications half bridge:

Max operating force relative to F_n150%
 Force limit relative to F_n200%
 Strain gauge resistance.....80 to 120 ohm
 Strain gauge configuration.....half bridge
 Supply.....5VDC
 Nominal output.....50mV/V
 Combined error relative to F_n< 0.5%
 Temperature coefficient.....<0.4% / 10K
 Operating temperature range..... -20 to +85⁰ C
 Deflection at F_n0.1 to 0.2 mm

Specifications full bridge:

.....150%
200%
 Foil gauge resistance.....350 ohm
 Foil gauge configuration.....full bridge
10 VDC
1mV/V
< 0.5%
<0.4% / 10K
 -20 to +85⁰ C
0.1 to 0.2 mm

