OWECON OWL210R Ribbon Load Cell Series

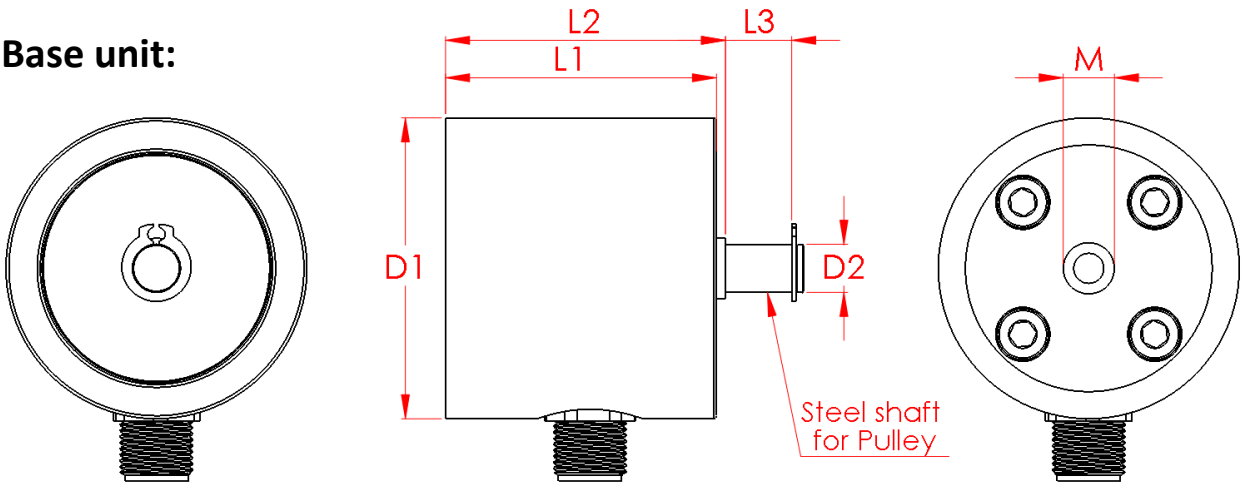
The OWECON Ribbon Load Cell is single side mounted and designed as a modular build unit. The standard base unit comes with a shaft for easy mounting of either the standard pulley or any pulley designed to meet our customer request. The load cell has a dual beam design reducing load cell deflection and ensures a parallel movement when force is added to the pulley. Lower deflection and a perfect parallel movement mean fewer tracking and control problems on your machine and greater accuracy in the tension control. The tension reading is always linear over the whole measuring range.

Advantages:

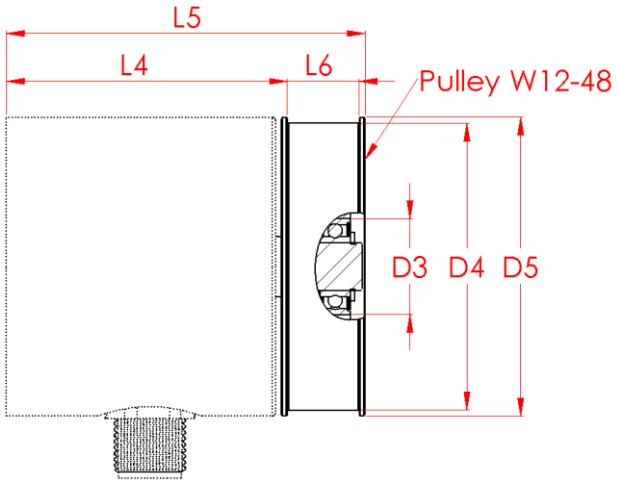
- ✓ Compact design easy to install
- ✓ Dual beam giving lowest possible deflection
- ✓ A parallel movement when force is added to the pulley
- ✓ Industry standard M12x1 connector
- ✓ Standard base unit able to adapt various designs of pulleys
- ✓ Custom Pulley made to your application

Metric dimensions for OWL210R Ribbon Load Cell

Base unit:



Pulley W12-48:



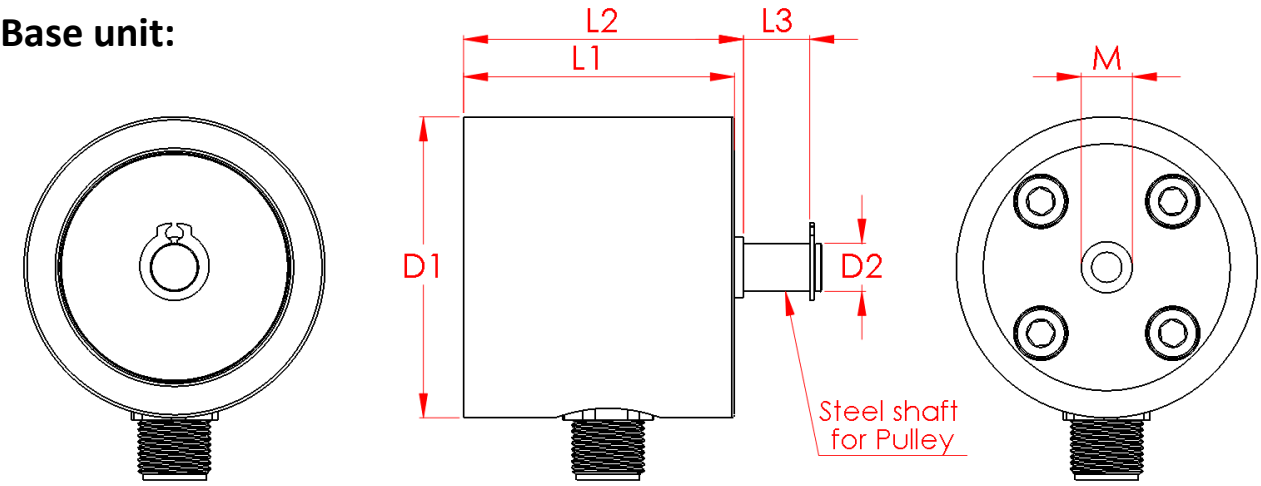
Dimensions mm							
Type		**D1**	**D2**	**L1**	**L2**	**L3**	**M**
OWL210R	**mm**	50	8	45	46,5	11	M10 x 12

		D3	**D4**	**D5**	**L4**	**L5**	**L6**
Pulley W12-48	**mm**	16	48	50	47	60	12

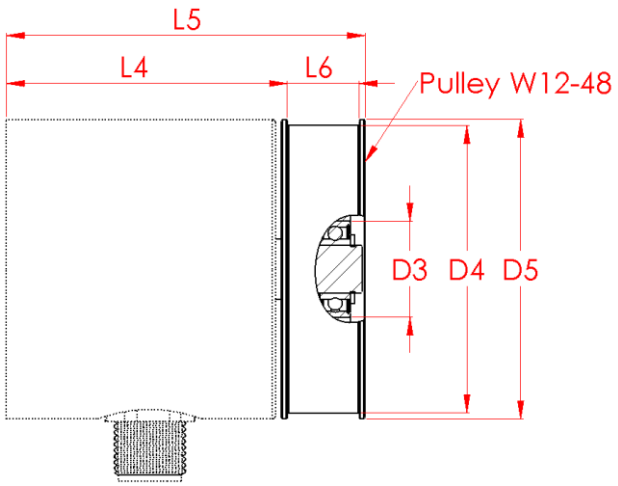
Load rating in N							
OWL210R	**N**	25	50	125	250		

Imperial dimensions for OWL210R Ribbon Load Cell

Base unit:



Pulley W12-48:



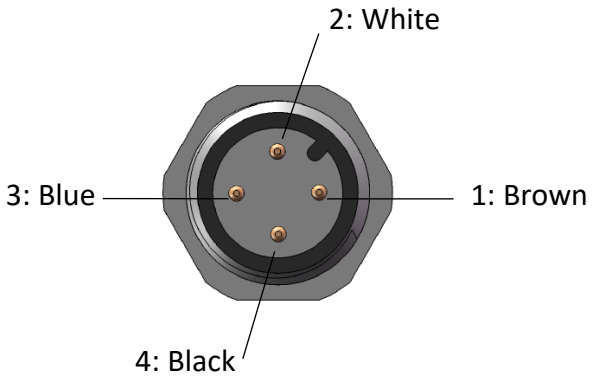
Dimensions mm							
Type		**D1**	**D2**	**L1**	**L2**	**L3**	**M**
OWL210R	**in**	1.97	0.32	1.77	1.83	0.43	M10 x 0.47

		D3	**D4**	**D5**	**L4**	**L5**	**L6**
Pulley W12-48	**in**	0.63	1.89	1.97	1.85	2.36	0.47

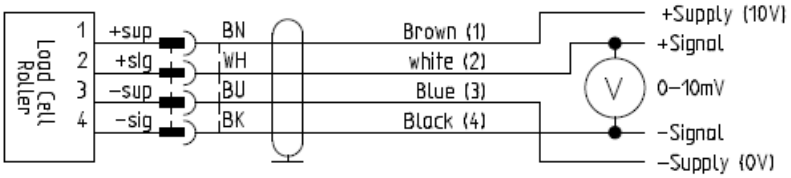
Load rating in Lbs.							
OWL210R	**Lbs.**	5.6	11	28	56		

Electrical connector:

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



Full bridge wiring diagram:



Connector orientation and position:

The OWL210R series Load Cells come with an M12x1 standard connector. The connector is always radial oriented, but available in different positions and if not mentioned on order the following standards will be used.

Connector orientation:

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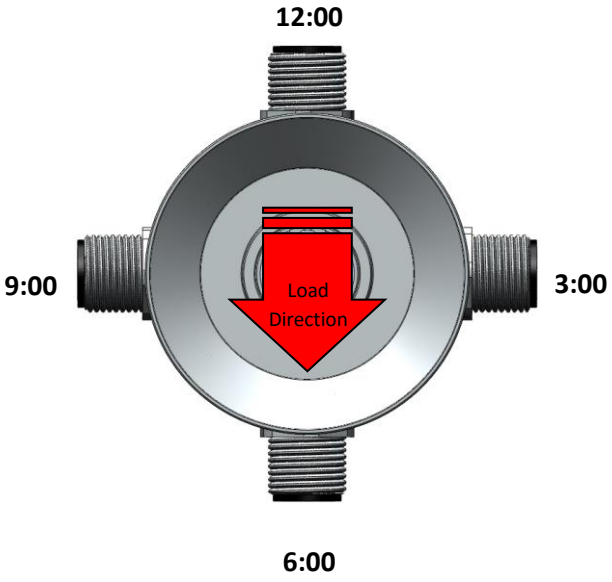
Connector position and load direction:

For the radial oriented connector there are 4 possible mounting positions named as 3:00 o'clock, 6:00 o'clock, 9:00 o'clock and 12:00 o'clock, please see illustration.
As standard the Load Cells come with the 6:00 o'clock connector position and load direction will be the same. The actual load direction is always shown on the label. Any other connector position has to be specified on order.



Calculating the force sizing for OWL210R Load Cell:

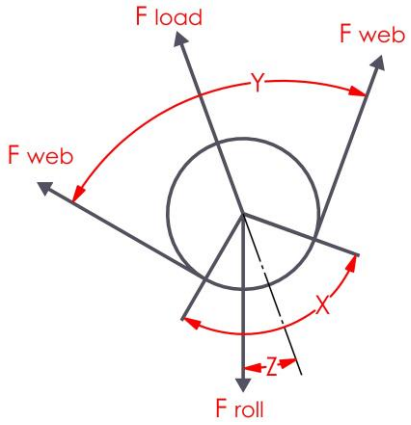
The correct Load Cell load rating for an application is determined by maximum web tension, web wrap angle around the pulley and mass of the pulley.

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

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

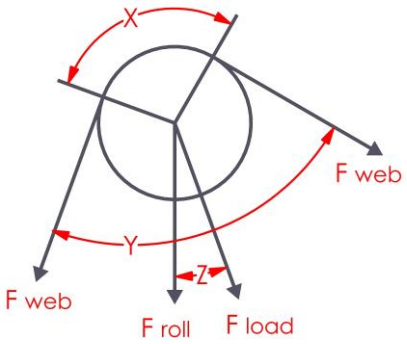
To determine the load cell size the 2 forces must be added together

Load direction upwards:



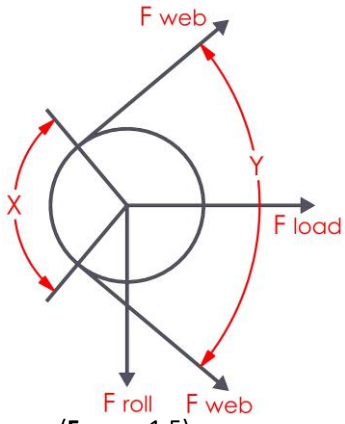
$((\mathbf{F_{(Load)}} \times 1{,}5) - (\mathbf{F_{(roll)}} \times \cos(\mathbf{Z}))$

Load direction downwards:



$((\mathbf{F_{(Load)}} \times 1{,}5) + (\mathbf{F_{(roll)}} \times \cos(\mathbf{Z}))$

Load direction sidewards:



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

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

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

Specifications full bridge:

Max operating force relative to F_n 150%
Force limit relative to F_n 200%
Foil gauge resistance.....350 ohm
Foil gauge configuration.....full bridge
Supply .....10 VDC
Nominal output 1mV/V
Combined error relative to F_n .....< 0.5%
Temperature coefficient .....<0.4% / 10K
Operating temperature range ..... to 185°F) -20 to +85° C
Deflection at F_n .....(< 0.0039") < 0.1 mm