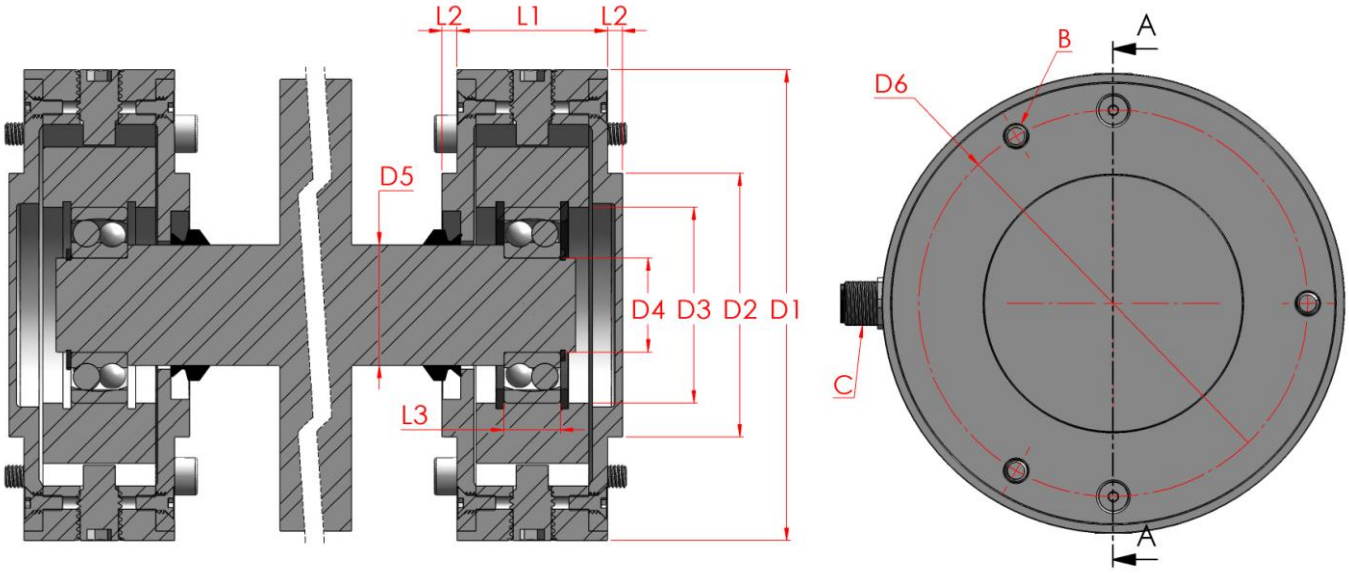
OWECON OWL100 Series Load cell

The OWECON Load cell Type OWL100 Series is an all new designed, slim style load cell to meet todays demands of foil, wire and paper converting machines. Featuring a unique beam design, it is a very precise, long life product.
The OWL100 is for use with either rotating or dead shaft rollers, is available in more build sizes – each offering various load ratings.

Advantages:

- ✓ Beam design ensuring high accuracy at a minimum deflection.
- ✓ Slim profile, designed for use under tight mounting space conditions.
- ✓ All metric dimensions, stainless steel or aluminum design.
- ✓ Industry standard M12 connector. L – plug turnable in socket for optimum wiring ease.
- ✓ Overload ratings typical up to 500%.

Design specifications OWL100

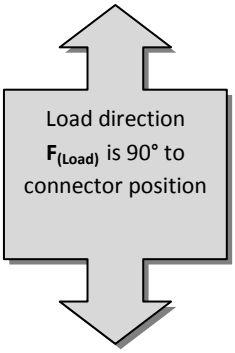


Installation

The roller shaft is fixed to the bearing inner ring on both sides.

The bearing outer ring is only fixed to the load cell on one side.

The bearing outer ring is not fixed on the other side for installation and to accommodate shaft expansion



Dimension mm												Self-aligning ball bearing
Type	**D1**	**D2**	**D3**	**D4**	**D5**	**D6**	**L1**	**L2**	**L3**	**B**	**C**	
OWL112	105 g6	60 g6	32 H7	12 j6	16	90	32	3	10	M6	M12x1	1201
OWL117	105 g6	60 g6	40 H7	17 j6	22	90	32	3	12	M6	M12x1	1203
OWL125	125 g6	70 g6	52 H7	25 j6	32	105	40	4	15	M6	M12x1	1205

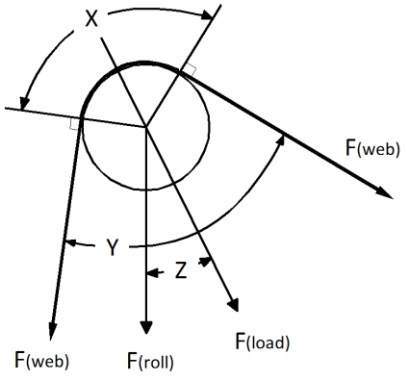
Nominal Force F_n											
OWL112	50N	125N	250N	500N							
OWL117		125N	250N	500N	750N	1000N					
OWL125			250N	500N	750N	1000N	1500N				

Dimensioning the OWL100 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 $\mathbf{F_{(roll)}}$ from the mass $\mathbf{m_{(roll)}}$ of the roll, is determined as

$\mathbf{F_{(roll)}} = \mathbf{m_{(roll)}} \times 9.82$ (N) (9,82 = mass acceleration m/s^2)



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 Cell size = $(½ \times \mathbf{F_{(Load)}} \times 1,5) + (½ \mathbf{F_{(roll)}} \times \cos(\mathbf{Z}))$

(1,5 = Safety factor)

Note:

The minimum load cell size has to be > ½ x $\mathbf{F_{(roll)}}$

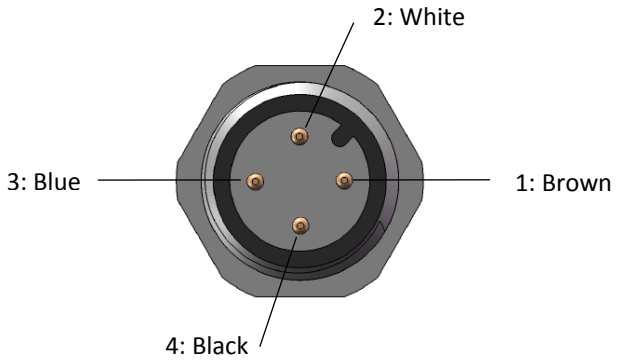
$\mathbf{m_{(roll)}}$ = The mass of the roller in kg, $\mathbf{F_{(web)}}$ = Maximum web tension, **Z** = Angle between $\mathbf{F_{(Load)}}$ and vertical, **X** = Web wrap angle = 180° - **Y°**

Specifications:

Max operating force relative to F_n	150%
Force limit relative to F_n	up to 500%
Foil gauge resistance	350 ohm
Foil gauge configuration	full bridge
Supply	10 VDC
Nominal output	1 mV/V
Combined error relative to F_n	< 0.5%
Temperature coefficient	<0.4% / 10K
Operating temperature range	-20 to +85^0 C
Deflection at F_n	0.1 to 0.2 mm

Electrical connector:

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



Full bridge wiring diagram: