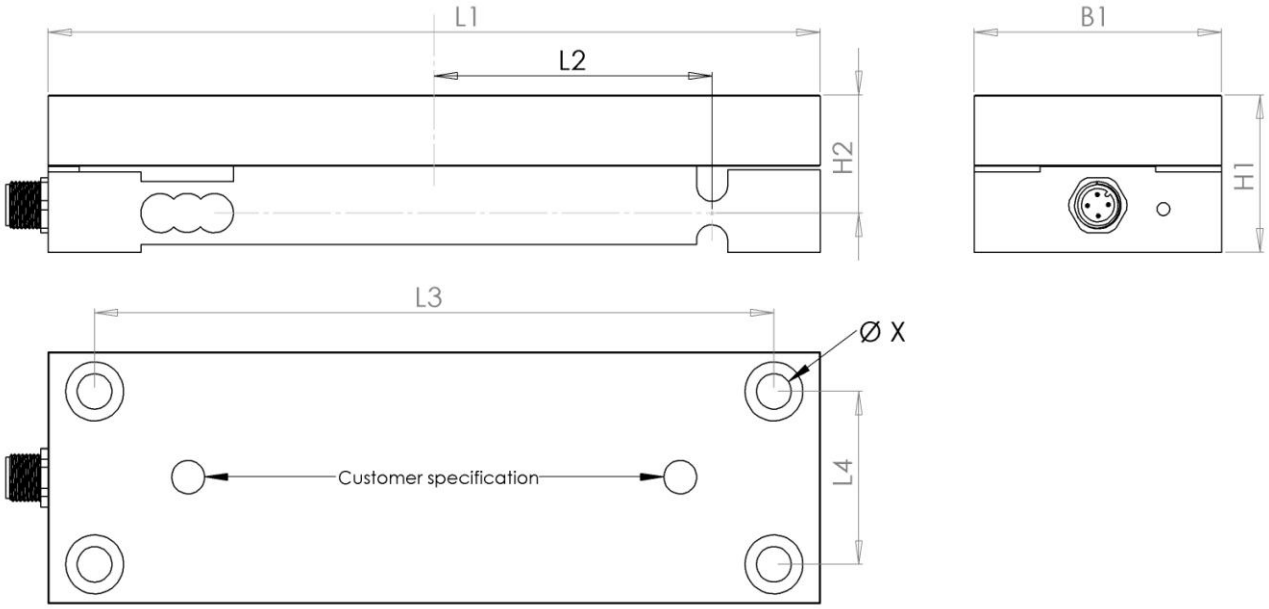
OWECON OWL300 Series Load Cell

The OWECON Load cell Type OWL300 Series is an all new designed load cell to meet todays demands of wide webs, rotating live shaft applications in paper - and converting machines. Featuring a unique beam design, it is a very long life product.
The OWL300 is a block type load cell for use with a top mounted pillow block bearing, for very high load applications. Various load ratings available.
The OWL300 Series cover a load range from 100N to 50.000N

Advantages:

- ✓ Compact, sleek design, clean closed surface. Aluminum housing, available in stainless steel.
- ✓ OWECON beam design ensuring very precise, repetitive performance and long life.
- ✓ All metric dimensions.
- ✓ Wash down duty, corrosive and chemical resisting
- ✓ Industry standard M12 connector.
- ✓ Easy to install.
- ✓ Price / performance competitive.

Design specifications OWL300



Dimension mm									
Typ	**L1**	**L2**	**H1**	**H2**	**B1**	**L3**	**L4**	**X**	**Connector**
OWL305	134	47	28	25	44	118	28	7	M12x1 on cable
OWL310	200	72	40	30	64	176	44	9	M12x1 integrated
OWL315	210	77	40	25	68	180	44	9	M12x1 integrated
OWL320	280	95	48	42	94	230	66	13	M12x1 integrated

Size	**Nominal Force F_n**									
OWL305	100N	250N	500N	1.000N						
OWL310		250N	500N		1.250N	2.500N	5.000N			
OWL315			500N		1.250N	2.500N	5.000N			
OWL320							5.000N	12.500N	25.000N	50.000N

Specifications half bridge:

Max operating force relative to F_n.....150%
Overload capacity relative to F_n typical.....500%
Strain gauge resistance.....80 to 130 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 +85^{0}C
Deflection at F_n.....0.1 to 0.2 mm
Material finish.....Aluminum or Stainless steel

Specifications full bridge:

.....150%
.....500%
Foil gauge resistance.....350 ohm
Foil gauge configuration..... .....full bridge
.....10VDC
.....1mV/V
.....< 0.5%
.....<0.4% / 10K
..... -20 to +85^{0}C
.....0.1 to 0.2 mm
.....Aluminum or Stainless steel

Dimensioning the OWL300 Load cell:

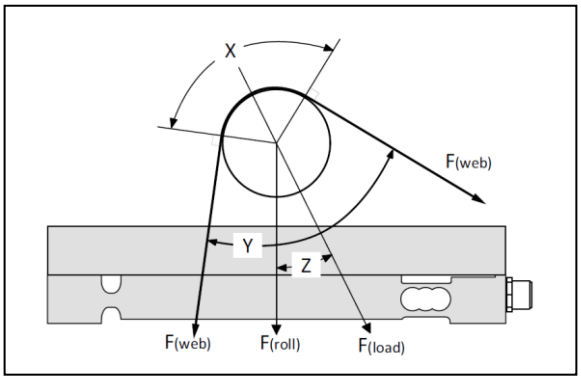
The correct Load Cell load rating for an application is determined by maximum web tension, web wrap angle around the roller, and mass of the roll.

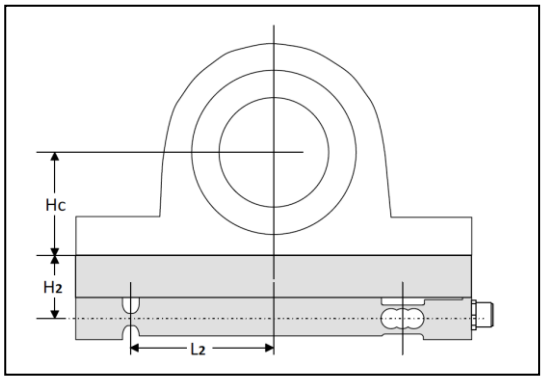
The force $\mathbf{F_{(roll)}}$ from the mass $\mathbf{m_{(roll)}}$ of the roll, is determined as

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

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

Force action arm $\mathbf{H} = \mathbf{H_c}+\mathbf{H_2}$





$$\mathbf{F_{(dim)}} = \frac{2\mathbf{K}\,\mathbf{F_{(Load)}}\,(\mathbf{H}\sin\mathbf{Z})\,(+/-)^{*}\mathbf{F_{roll}}\,\mathbf{L_2}}{2\mathbf{L_2}}$$

(*: If **Z** is below horizontal, use "+"; above horizontal, use "–")

Select the next higher nominal load for the right size of OWL300 load cell.

Note:

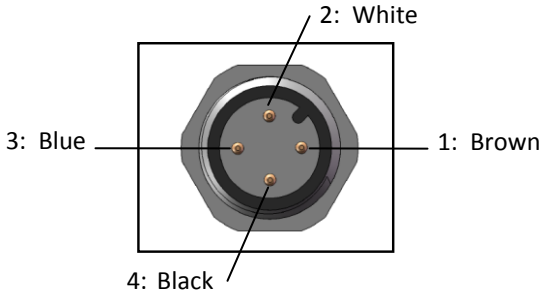
The minimum load cell size must be > ½ x $\mathbf{F_{(roll)}}$

For mounting situations different from horizontal or vertical, ask your OWECON team for advice.

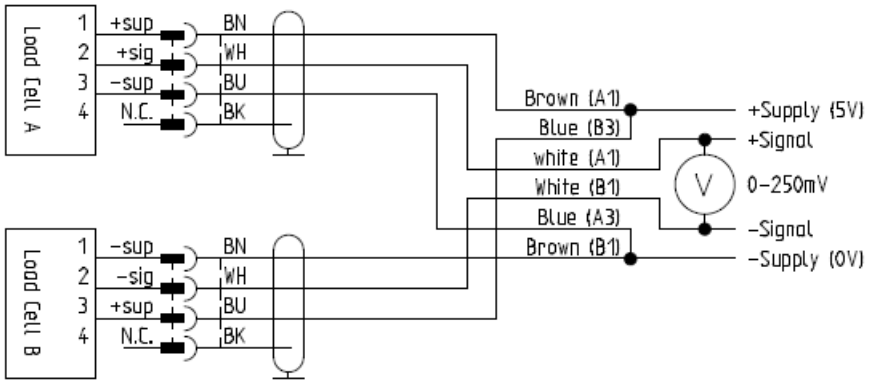
$\mathbf{m_{(roll)}}$ = The mass of the roller/shaft in kg; $\mathbf{F_{(web)}}$ = Maximum web tension; **Z** = Angle between $\mathbf{F_{(Load)}}$ and vertical; **X** = Web wrap angle; $\mathbf{H}= \mathbf{H_2}+\mathbf{H_C}$ (center height of bearing); **K** = Transient safety factor(1.5); $\mathbf{L_2}$ = Center-Hinge distance (table page 2)

Electrical connector:

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



Half bridge wiring diagram:



Full bridge wiring diagram: