ABL300 Pillow Block

The ABL300 Series is an all new designed load cell to meet today's 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.

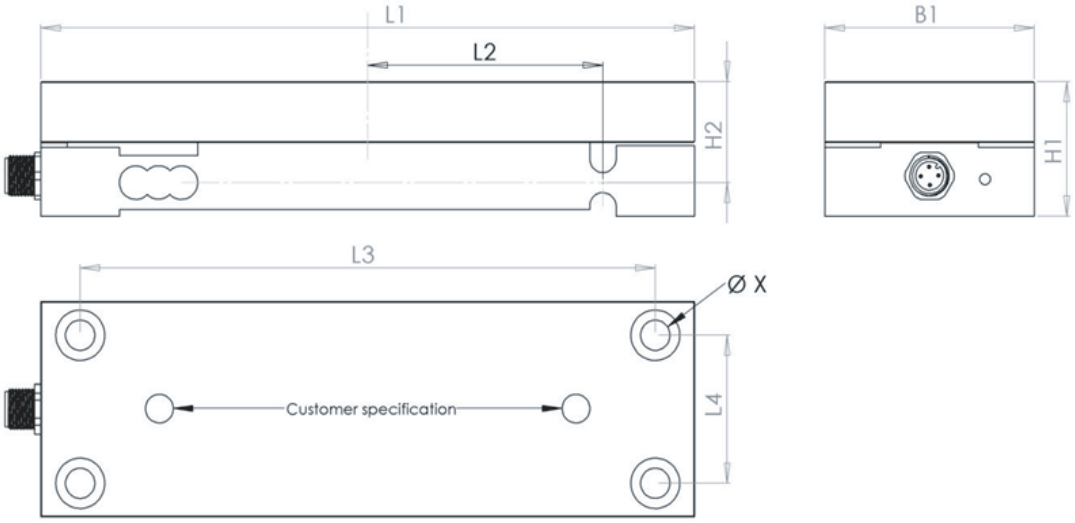
The ABL300 is a block type load cell for use with a top mounted pillow block bearing, for very high load applications. Various load ratings available. The ABL300 Series cover a load range from 100N to 50.000N

Key Features

- Compact, sleek design, clean closed surface. Aluminum housing, available in stainless steel.
- BST 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.

Technical Specification

2.1 Dimensions



Dimension mm									
Typ	**L1**	**L2**	**H1**	**H2**	**B1**	**L3**	**L4**	**X**	**Connector**
ABL305	134	47	28	25	44	118	28	7	M12x1 on cable
ABL310	200	72	40	30	64	176	44	9	M12x1 integrated
ABL315	210	77	40	25	68	180	44	9	M12x1 integrated
ABL320	280	95	48	42	94	230	66	13	M12x1 integrated

Size	**Nominal Force F_n**									
ABL305	100N	250N	500N	1.000N						
ABL310		250N	500N		1.250N	2.500N	5.000N			
ABL315			500N		1.250N	2.500N	5.000N			
ABL320							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... ..... 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
Material finish ..... Aluminum or Stainless steel

Specifications full bridge:

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

Dimensioning the ABL300 Load cell:

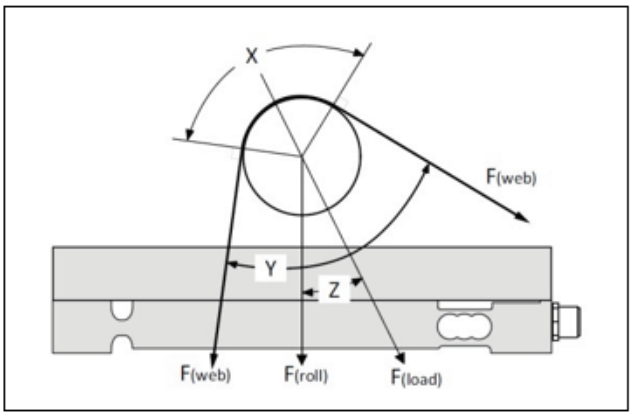
The correct Load Cell load rating for an application is determined by maximum web tension, web wrap angle around the roller, and mass of the roll.

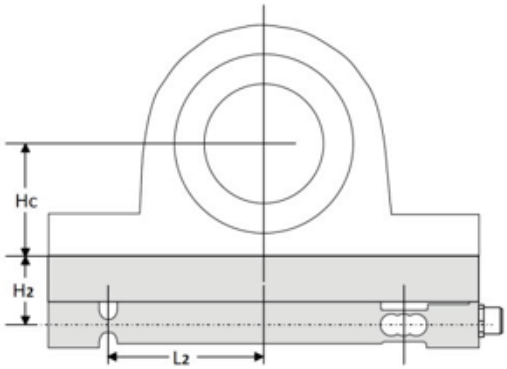
The force $\mathbf{F_{(roll)}}$ from the mass $\mathbf{m_{(roll)}}$ of the roll, is determined as

$\mathbf{F_{(roll)}} = \mathbf{m_{(roll)}} \times 9.82$ (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 $\mathbf{H} = \mathbf{H_c}+\mathbf{H_2}$





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

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

Select the next higher nominal load for the right size of ABL300 load cell.

Note:

The minimum load cell size must be > ½ x F(roll)

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

m(roll) = The mass of the roller/shaft in kg;

Z = Angle between F(Load) and vertical;

H= H2+HC (center height of bearing);

L2 = Center-Hinge distance (table page 2)

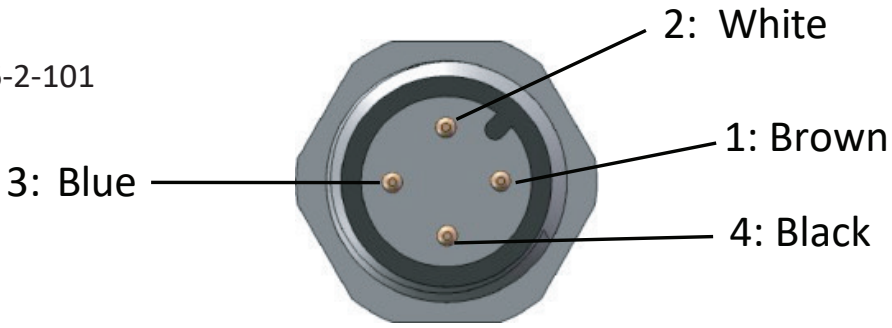
F(web) = Maximum web tension;

X = Web wrap angle;

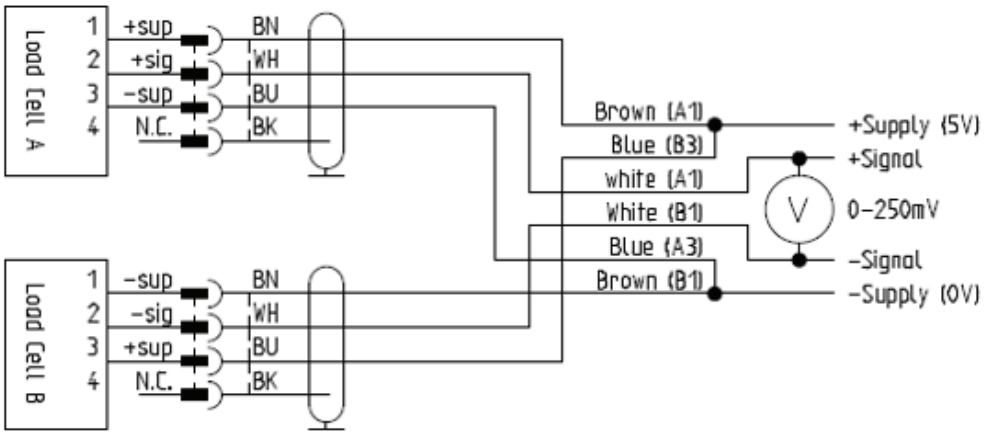
K = Transient safety factor(1.5);

Electrical connector:

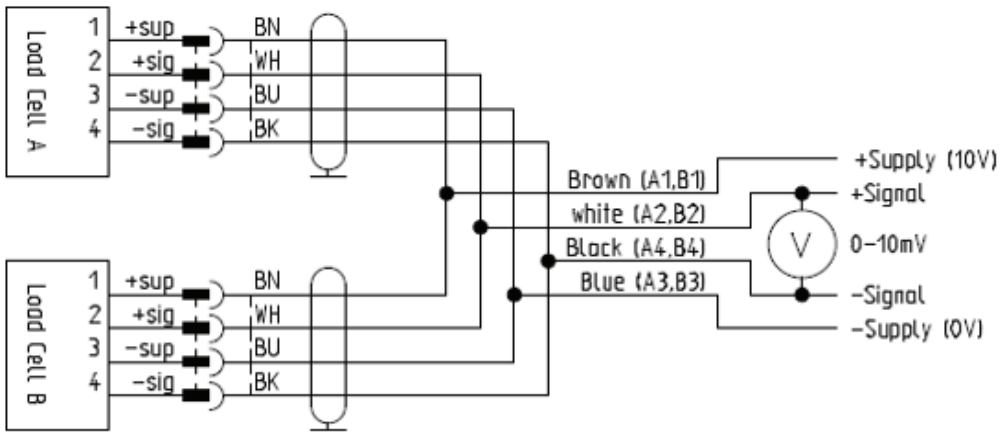
M12 - 4 pin male, Code A, IEC61076-2-101



Half bridge wiring diagram:



Full bridge wiring diagram:



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