montalvo
Better Web Control®

Stainless Steel Construction
Excellent Linearity
Waterproof (IP-66)
Low Hysteresis
High Output

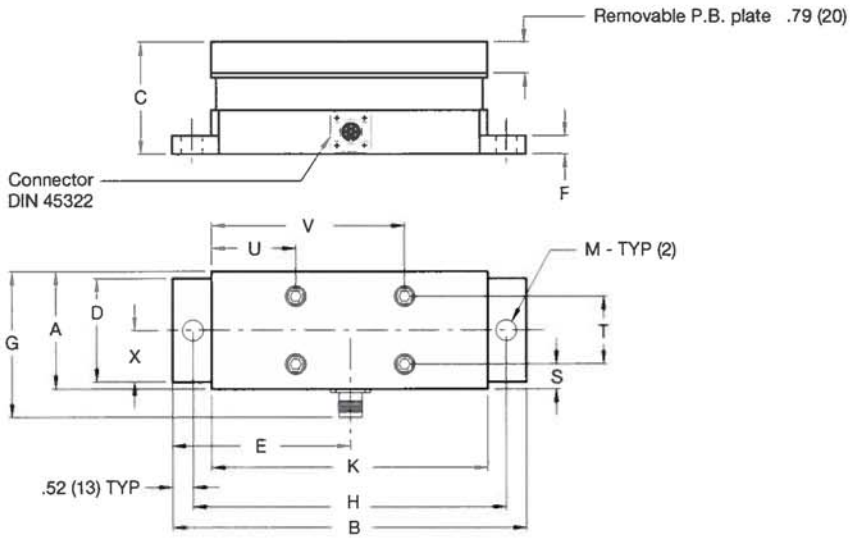
IP66

Montalvo Load Cells

UPB-Series Under Pillow Block Load Cells

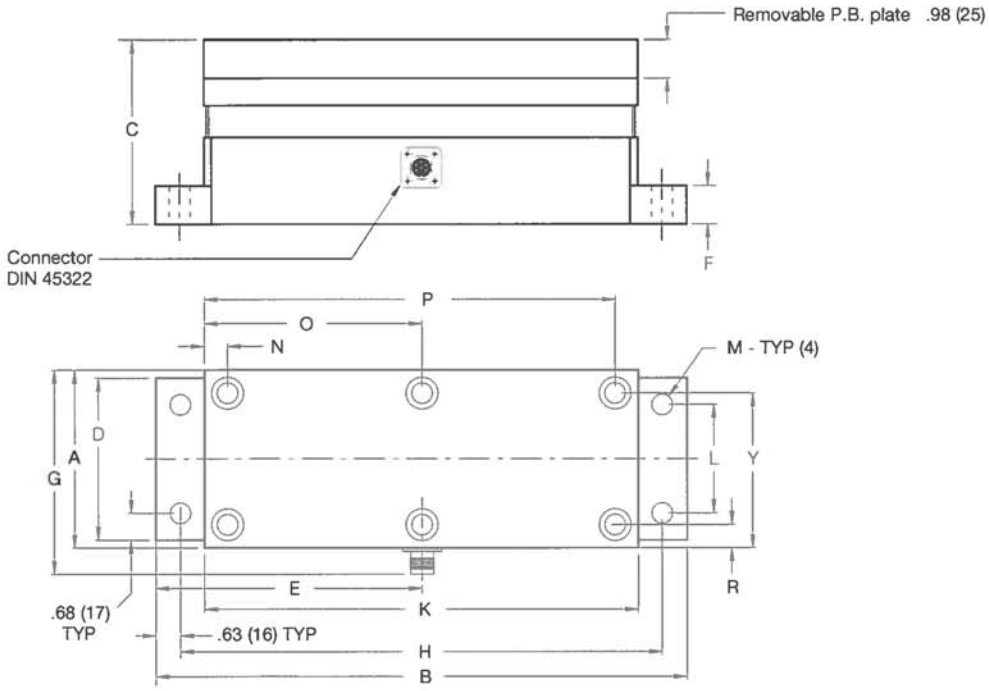
Montalvo's new UPB Series stainless steel load cells are rugged and waterproof. They are designed for measuring web tension where live shaft idler rolls are mounted in pillow block bearings. These load cells are most commonly used in heavy-duty applications involving materials ranging from paper to metal webs. Made to handle the harshest environments, they are rated IP66.

Size 5



A	B	C	D	E	F	G	H	K	M	S	T	U	V	X
2.99	8.98	2.85	2.64	4.49	.47	3.72	7.95	7.01	.531	63	1.73	2.13	4.88	1.32
(76)	(228)	(72.5)	(67)	(114)	(12)	(94)	(202)	(178)	(13.5)	(16)	(44)	(54)	(124)	(33.5)

Size 10

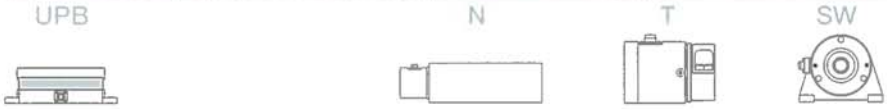


A	B	C	D	E	F	G	H	K	L	M	N	O	P	R	Y
4.53	13.50	4.70	4.13	6.75	.98	5.20	12.24	11.02	2.76	.531	.59	5.51	10.43	.59	3.94
(115)	(343)	(119.5)	(105)	(172)	(25)	(132)	(311)	(280)	(70)	(13.5)	(15)	(140)	(265)	(15)	(100)

How to specify a Montalvo UNDER PILLOW BLOCK load cell

Series

UPB, T, N or SW



Size

5 or 10

Consider the following:
Load rating & size of pillow block bearing to be installed

Lower Loads
Smaller Shafts
Smaller Dimensions

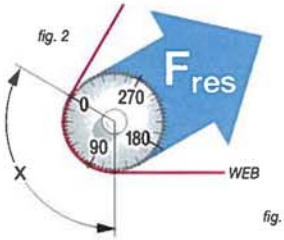
Higher Loads
Larger Rollers
Larger Dimensions

Load Rating

Step 1 Determine Weight of Roll, F_g (*fig. 1*) :
F_g = weight of roll (lb) = _____
lb represents pounds force

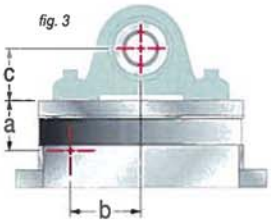
fig. 1

fig. 2



Step 2 Determine Resulting Force, F_{res} (*fig. 2*) :
$F_{res} = 2 \times F_{web} \times \sin X/2$ = _____
F_{web} = maximum web tension (lb) = _____
X = wrap angle of web (°) = _____

fig. 3

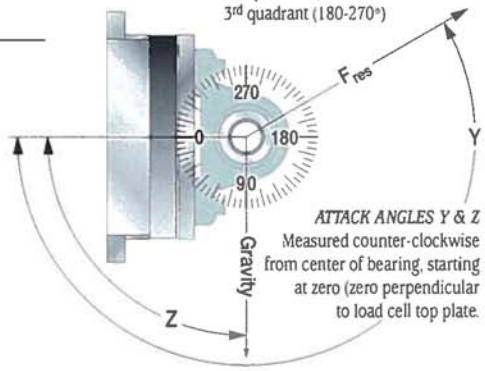


Step 3 Determine Height Factor, d (*fig. 3*) :
$d = (a + c) / b$ = _____
a = perpendicular distance from hinge to mounting surface (in) = 1.81 (2.87*)
b = parallel distance from hinge to center of load cell (in) = 2.44 (3.74*)
c = center height of selected bearing housing = _____
* use this value for UPB 10

Step 4 Determine Load Value, F_{dim} (*fig. 4*) :
$F_{dim} = 1/2 \times F_{res} \times (\cos Z + d \times \sin Z) \times k_{dim} + 1/2 \times F_g \times (\cos Y + d \times \sin Y)$ = _____
Y = attacking angle of resulting force (°) = _____
Z = attacking angle of gravity (°) = _____
K_{dim} = safety factor = 1.6

fig. 4

Hinge End of load cell must mount so that Resulting Force F_{res} attacks in: 1st quadrant (0-90°) or 3rd quadrant (180-270°)



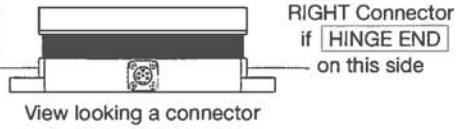
ATTACK ANGLES Y & Z
Measured counter-clockwise from center of bearing, starting at zero (zero perpendicular to load cell top plate.

Step 5 Determine Load Rating:
Select nearest rating equal to or greater than larger value F_g or F_{dim}
F_g = answer to *Step 1* = _____
F_{dim} = answer to *Step 4* = _____
Rating - Size 5 100 / 250 / 500 / 1000 lb
Rating - Size10 1000 / 2500 / 5000 lb

Connector Position

LEFT or RIGHT

Position is determined while looking at the connector



View looking a connector

Example

UPB 10 - 2500 - L

Series - UPB
Size - 10
Load Rating - 2500
Connector Position - LEFT

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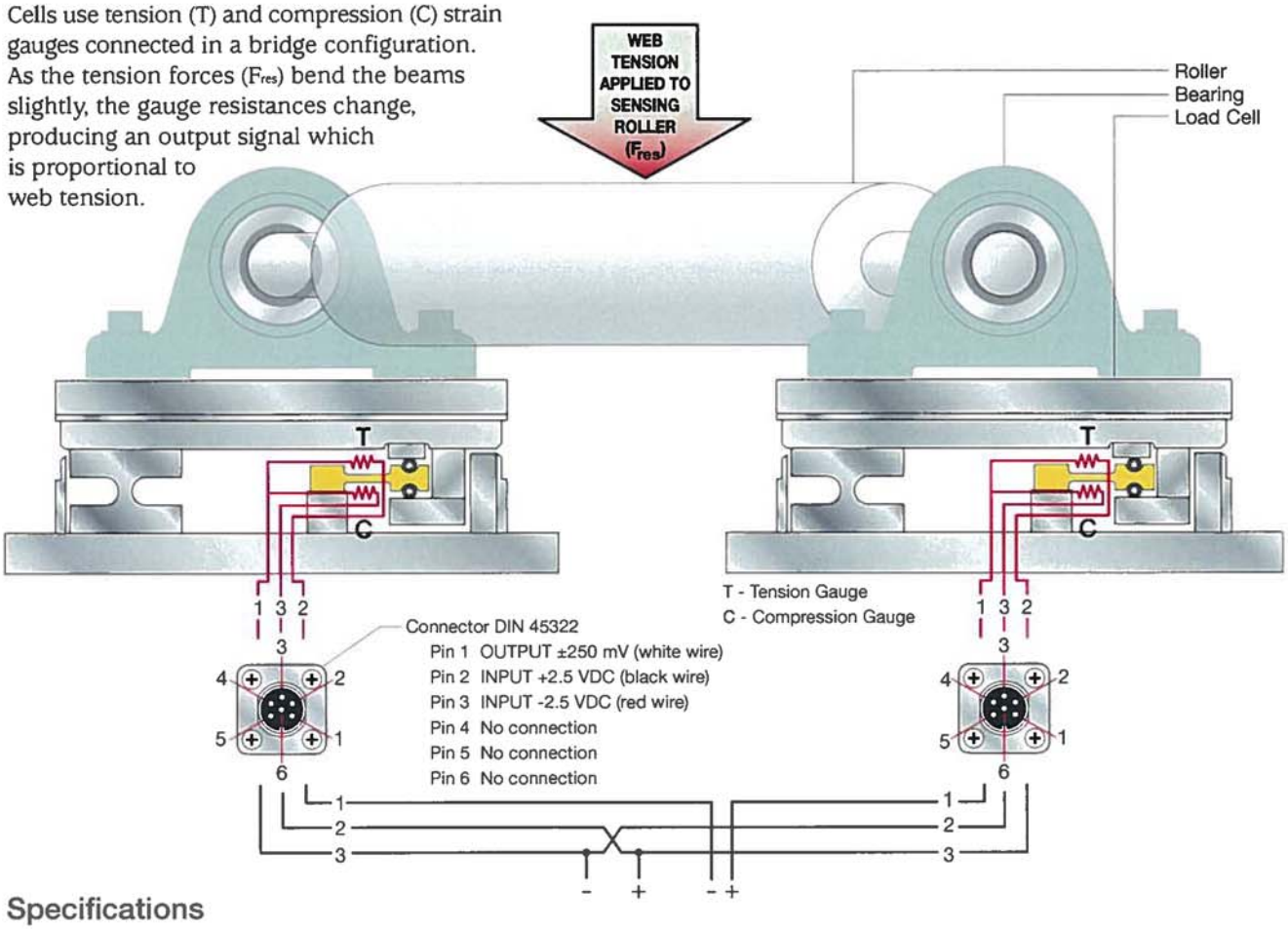
How it works...

Montalvo UPB-Series Under Pillow Block Load Cells use tension (T) and compression (C) strain gauges connected in a bridge configuration. As the tension forces (F_{res}) bend the beams slightly, the gauge resistances change, producing an output signal which is proportional to web tension.



Specifications

Electrical

Excitation	5 VDC
Output	250 mV, nominal @ full load
Gauge Resistance	80 - 130 Ω
Type	semi-conductor
Non-Repeatability	±0.2% full span
Non-Linearity and hysteresis (combined)	±0.5% full span

Connector

Type	DIN 45322 (6 pin)
Pin 1	±250 mV output
Pin 2	+2.5 VDC input
Pin 3	-2.5 VDC input
Pin 4	no connection
Pin 5	no connection
Pin 6	no connection

Loading

Rated*	Size 5	100 (500), 250 (1250), 500 (2500), 1000 (5000)
	Size 10	1000 (5000), 2500 (12500), 5000 (25000)
Overload	Size 5	3000 (15000)
	Size 10	15000 (75000)
	UM	lb (N)
Overload stops		Factory set @ 110%

Environmental

Classification	IP 66
Temperature Operationg range	-10 to 150°F (-24 to 65°C)

Mechanical

Deflection		0.005 to 0.010 (.127 to .254) typ.
Finish		stainless steel
Dimensions (WxDxH)	Size 5	8.98 x 3.72 x 2.85 (228 x 94 x 72.5)
	Size 10	13.50 x 5.20 x 4.7 (343 x 132 x 119.5)
	UN	inches (mm)
Weight[1]	Size 5	~ 15 (6.82)
	Size 10	~ 55 (25)
	UN	lb (kg)

Bearings

Self-aligning	Recommended
Allow roller to float axially	Recommended
Factory supplied	By request

* It is recommended that Montalvo be contacted to ensure proper sizing.
[1] Not including bearing.
UM Unit of Measure

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