

U-Series

Under Pillow Block Load Cells



IP67

Montalvo U-Series Under Pillow Block Load Cells

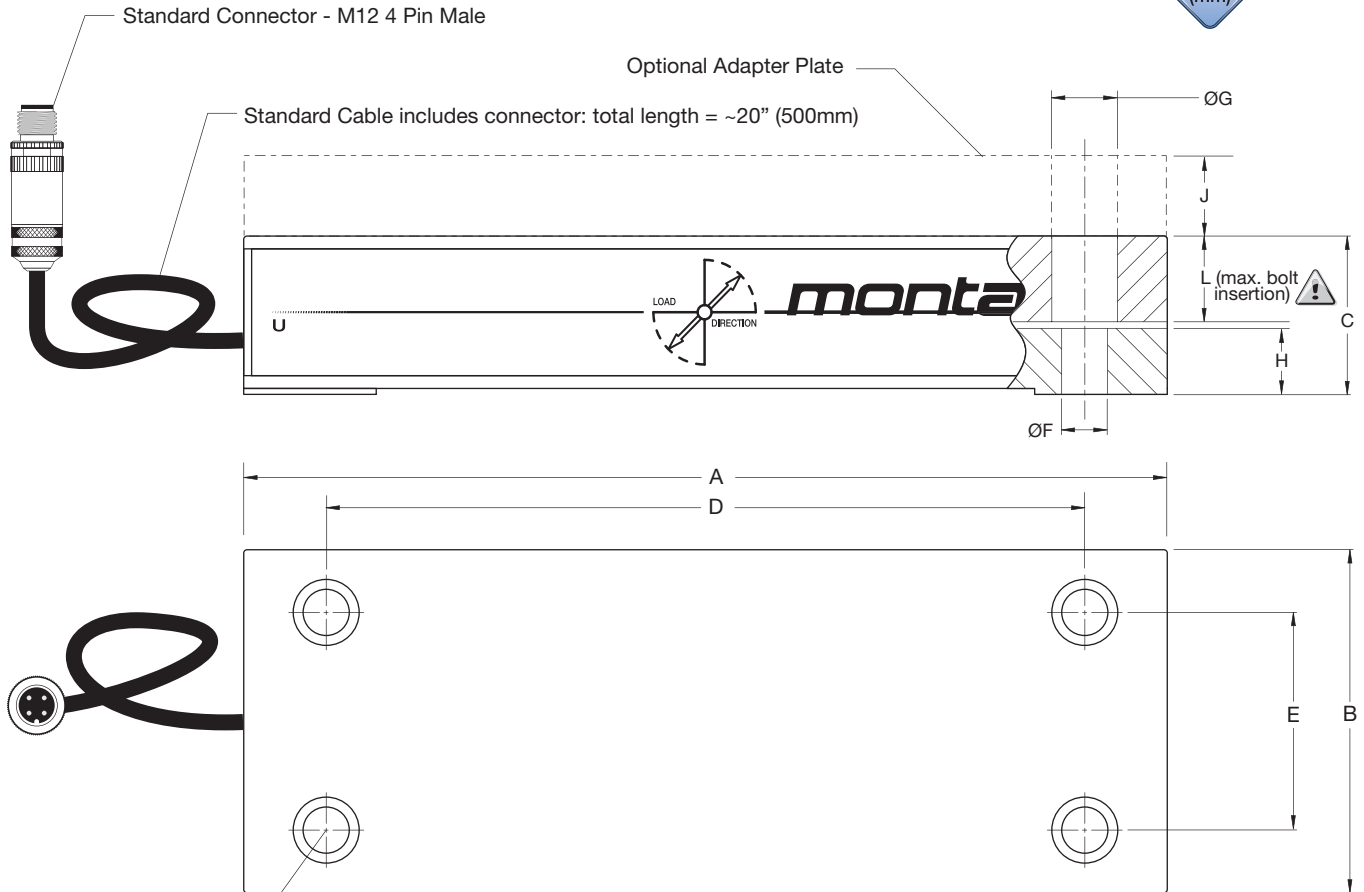
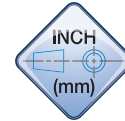
Montalvo's U-Series are used in conjunction with pillow block mounted bearings and a shaft to create a durable and precise tension roll that's easy to install. With an IP67 rating the U-Series offers an extreme level of protection and performance for applications in wet, dusty, chemical, corrosive or other harsh environments.

Features

- ▶ Industry leading 1550X Sensitivity
- ▶ Enhanced reliability simplifies tension control protection and repeatability
- ▶ Full Semiconductor Wheatstone Bridge (when used in pairs)
- ▶ Built-in overload stops
- ▶ Chemical and corrosion resistant
- ▶ High overload protection protects workers, equipment and product
- ▶ Drilled and tapped to customer bearing specifications



Dimensions



Mounting Bolt Pattern (bearing to load cell)

Montalvo only will drill/tap load cell to customer supplied bearing specifications.
 An optional adapter plate may be drilled/tapped by Montalvo or customer.
 Note: See dimension L for maximum bolt insertion length.

K Mounting Bolt Hole (load cell to machine frame)

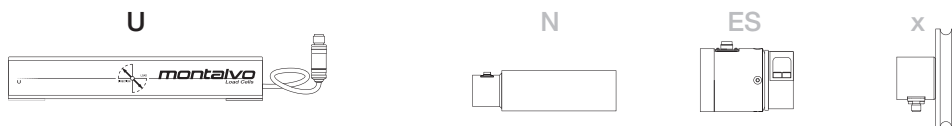
Bolts to be customer supplied.
 SHCS - Typ.

| Size | A | B | C | D | E | ØF | ØG | H | J | K | L |
|------|----------------|---------------|--------------|----------------|--------------|--------------|--------------|--------------|--------------|---------------|--------------|
| U25 | 5.28 (134) | 1.74 (44) | 1.10 (28) | 4.65 (118) | 1.10 (28) | 0.27 (7) | 0.47 (12) | 0.44 (11) | 0.50 (12) | 1/4" (M6) | 0.63 (16) |
| U50 | 8.27 (210) | 2.68 (68) | 1.42 (36) | 7.09 (180) | 1.73 (44) | 0.35 (9) | 0.59 (15) | 0.55 (14) | 0.70 (19) | 5/16" (M8) | 0.78 (20) |
| U75 | 11.02 (280) | 4.09 (104) | 1.89 (48) | 9.06 (230) | 2.60 (66) | 0.55 (14) | 0.79 (20) | 0.83 (21) | 1.00 (25) | 1/2" (M12) | 1.02 (26) |
| U120 | 16.54 (420) | 5.91 (150) | 2.60 (66) | 12.60 (320) | 3.54 (90) | 0.87 (22) | 1.34 (34) | 1.18 (30) | 1.30 (34) | 3/4" (M20) | 1.34 (34) |

How To Specify

Series

U, N, ES or X



Size

25, 50, 75 or 120

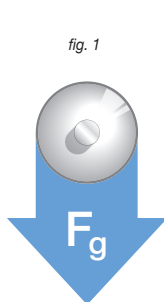
Consider the following:
Load rating & size of pillow
block bearing to be installed



Load Rating

Step 1 Determine Weight of Roll, F_g (fig. 1) :

F_g = weight of roll (lb)



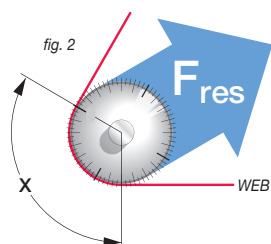
Step 2 Determine Resulting Force, F_{res} (fig. 2) :

$F_{res} = 2 \cdot F_{web} \cdot \sin X / 2$

F_{web} maximum web tension (lb)

X wrap angle of web (°)

lb represents pounds force (TOTAL tension)



| table 1 in (mm) | | |
|-----------------|----------------|---------------|
| Size | a | b |
| U25 | 0.97 (24.6) | 1.5 (38) |
| U50 | 1.18 (30) | 2.99 (76) |
| U75 | 1.61 (41) | 3.74 (95) |
| U120 | 2.17 (55) | 5.24 (133) |

Step 3 Determine Height Factor, d (fig. 3) :

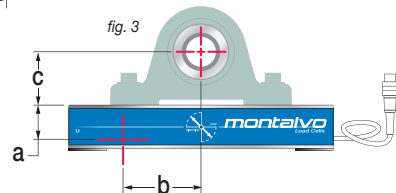
$d = (a + c) / b$

a* perpendicular distance from hinge to mounting surface (in) (see table 1)

b parallel distance from hinge to center of load cell (in) (see table 1)

c center height of selected bearing housing

* add thickness of adapter plate if used (dimension J)



Step 4 Determine Load Value, F_{dim} (fig. 4) :

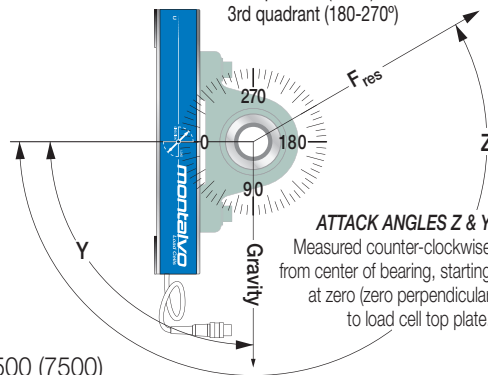
$F_{dim} = \frac{1}{2} \cdot F_{res} \cdot (\cos Z + d \cdot \sin Z) \cdot k_{dim} + \frac{1}{2} \cdot F_g \cdot (\cos Y + d \cdot \sin Y)$

Z attacking angle of resulting force (°)

Y attacking angle of F_g

k_{dim} dimensional 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°)



Step 5 Determine Load Rating - lb (N) :

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 25 | 100 (500) / 225 (1000) / 450 (2000) |
| Rating - Size 50 | 100 (500) / 250 (1250) / 500 (2500) / 1000 (5000) / 1500 (7500) |
| Rating - Size 75 | 1000 (5000) / 1500 / (7500) / <u>2500</u> (12500) / 5000 (25000) |
| Rating - Size 120 | 5000 (25000) / 10000 (50000) / 20000 (100000) |

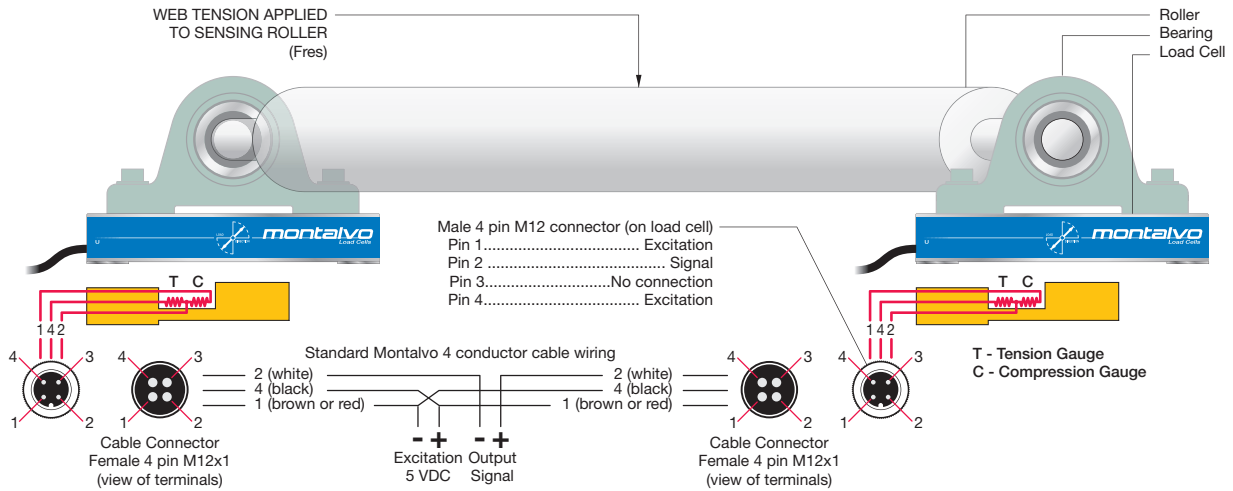
Example

U - 75 - 2500 LB

Series - U Size - 75 Load Rating - 2500LB (12500N)

Include bearing bolt info and cable length option.

How They Work



Specifications

Electrical

Supply voltage.....5 VDC
 Output..... 250 mV, nominal @ full load
 Gauge: Resistance.....80 - 130 Ω
 Typehalf bridge semi-conductor strain
 Non-Repeatability±0.2% full span
 Non-Linearity & hysteresis (combined)±0.5% full span

Connector (standard)

TypeMale 4 pin M12
 Pin 1.....Excitation
 Pin 2..... Signal
 Pin 3..... No connection
 Pin 4.....Excitation
 Cable length (including connector) 20 in. (500mm)
 Non-standard cable (optional)..... By request
 No connector (optional) By request

Load Rating* - lb (N)

25 100 (500) / 225 (1000) / 450 (2000)
 50 100 (500) / 250 (1250) / 500 (2500) / 1000 (5000) / 1500 (7500)
 75 1000 (5000) / 1500 (7500) / 2500 (12500) / 5000 (25000)
 120 5000 (25000) / 10000 (50000) / 20000 (100000)
 Overload Rating.....300% of Load Rating
 Overload stopsFactory set @ 110% Load Rating
 * Recommended that Montalvo be contacted to ensure proper sizing.

Environmental

Enclosure protection class.....IP 67
 Operating temp. °F (°C)-4 to +176 (-20 to +80)

Mechanical - in (mm)

Deflection (at nominal force) 0.005 to 0.010 (0.3 to 0.25) typ.
 Material stainless steel

Dimensions in (mm)

25 5.28 x 1.73 x 1.10 (134 x 44 x 28)
 50 8.27 x 2.68 x 1.42 (210 x 68 x 36)
 75 11.02 x 4.09 x 1.89 (280 x 104 x 48)
 120 16.54 x 5.91 x 2.60 (420 x 150 x 66)

Weight - lb (kg) approximate (does not include bearing)

252.5 (1.1)
 50 6 (2.5)
 75 18 (8)
 120 60 (26)

Bearings

Self-aligning.....Recommended

Related Montalvo Products

The Z4 Hybrid Digital Tension Controller
 The S4 Digital Tension Controller
 The A4 Digital Load Cell Amplifier
 Montalvo Tension Indicators
 and... Cables

| | |
|--|-----------------------------|
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