

# 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

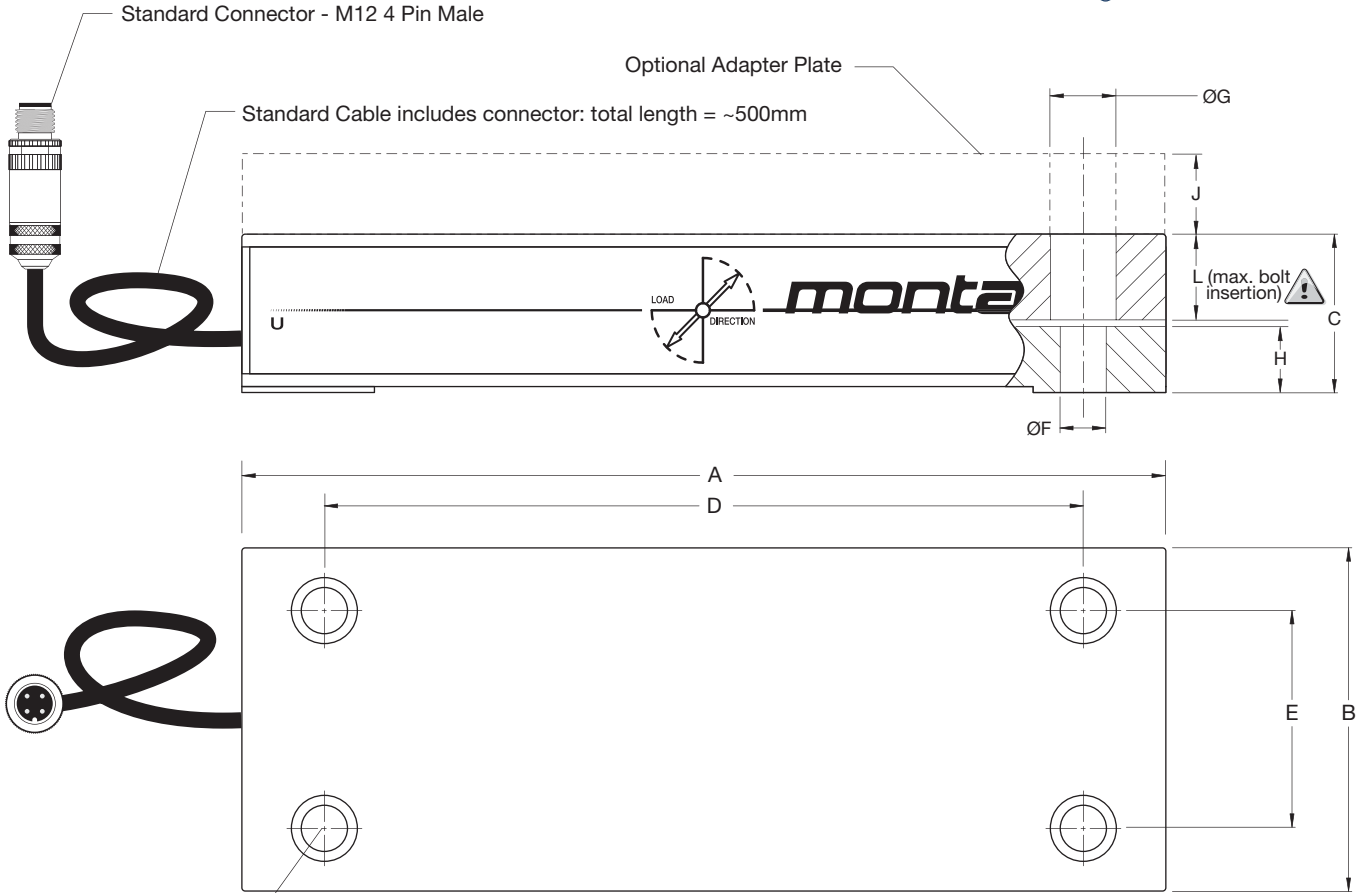
- ▶ Industry leading 1550X Sensitivity
- ▶ Enhanced reliability simplifies tension control protection and repeatability
- ▶ Full Semiconductor Wheatstone Bridge (when used in pairs)
- ▶ Built-in overload stops
- ▶ Chemical and corrosion resistant
- ▶ High overload protection protects workers, equipment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



# U-Series

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## 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)

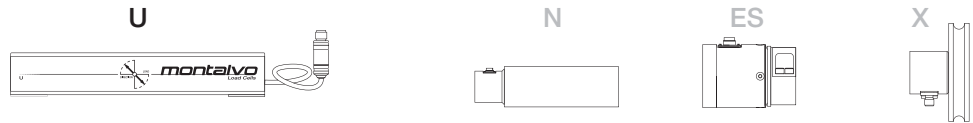
Bolts to be customer supplied.  
SHCS - Typ.

Size	A	B	C	D	E	ØF	ØG	H	J	K	L
U25	134	44	28	118	28	7	12	11	12	M6	16
U50	210	68	36	180	44	9	15	14	19	M8	20
U75	280	104	48	230	66	14	20	21	25	M12	26
U120	420	150	66	320	90	22	34	30	34	M20	34

## How To Specify

### Series

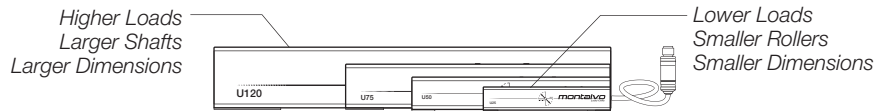
U, N, ES or X



### Size

25, 50, 75 or 120

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



### Load Rating

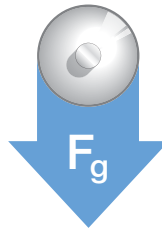
**Step 1** Determine Gravity of Roll,  $F_g$  (fig. 1) :

$$F_g = m_{roll} \cdot g$$

$m_{roll}$  the net weight of the roll in kg

$g$  the acceleration of gravity (9,82m/s<sup>2</sup>)

fig. 1



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

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

$F_{web}$  maximum web tension (N)

$X$  wrap angle of web (°)

fig. 2

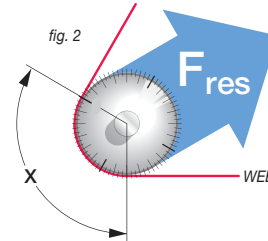


table 1 mm

Size	a	b
U25	24.6	38
U50	30	76
U75	41	95
U120	55	133

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

$$d = (a + c) / b$$

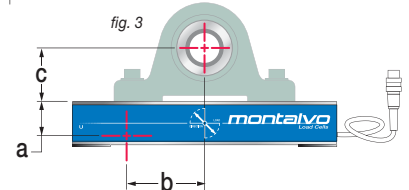
$a^*$  perpendicular distance from hinge to mounting surface (mm) (see table 1)

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

$c$  center height of selected bearing housing

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

fig. 3



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

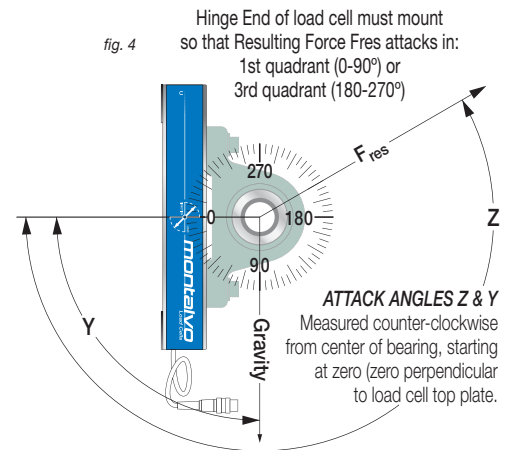
$$F_{dim} = \frac{1}{2} \cdot F_{res} \cdot (\cos Z + d \cdot \sin Z) \cdot k_{dim} + \frac{1}{2} \cdot F_g \cdot (\cos Y + d \cdot \sin Y)$$

$Z$  attacking angle of resulting force (°)

$Y$  attacking angle of  $F_g$

$k_{dim}$  dimensional factor = 1.6

fig. 4



**Step 5** Determine Load Rating - 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 25 500 / 1000 / 2000

Rating - Size 50 500 / 1250 / 2500 / 5000

Rating - Size 75 5000 / 12500 / 25000

Rating - Size 120 25000 / 50000 / 100000

### Example\*

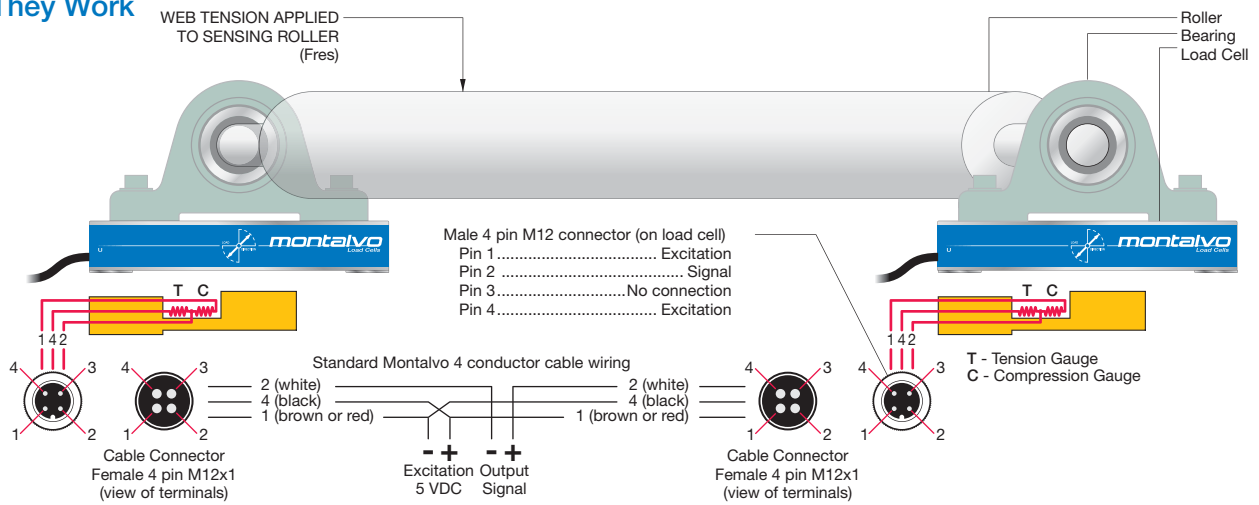
**U - 75 - 1250 N**

Series  $\rightarrow$  U      Size  $\rightarrow$  75      Load Rating (include unit of measure N)  $\rightarrow$  1250 N

\*Also include bearing bolt info and cable length option.

Montalvo  
**U-Series**  
 Under Pillow Block Load Cells

**How They Work**



**Specifications**

**Electrical**

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

**Connector (standard)**

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

**Load Rating\* (N)**

25 ..... 500 / 1000 / 2000  
 50 ..... 500 / 1250 / 2500 / 5000  
 75 ..... 5000 / 12500 / 25000  
 120 ..... 25000 / 50000 / 100000

**Overload Rating (N)**

25 ..... 3000  
 50 ..... 15000  
 75 ..... 75000  
 120 ..... 300000  
 Overload stops ..... Factory set @ 110%

\* Recommended that Montalvo be contacted to ensure proper sizing.

**Environmental**

Enclosure protection class ..... IP 67  
 Operating temperature ..... -20 to +85°C

**Mechanical**

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

**Dimensions (mm)**

25 ..... 134 x 44 x 28  
 50 ..... 210 x 68 x 36  
 75 ..... 280 x 104 x 48  
 120 ..... 420 x 150 x 66

**Weight (kg) approximate (does not include bearing)**

25 ..... 1.1  
 50 ..... 2.5  
 75 ..... 8  
 120 ..... 26

**Bearings**

Self-aligning ..... Recommended

**Related Montalvo Products**

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



The Montalvo Corporation

EST. 1947



Better Web Control®

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