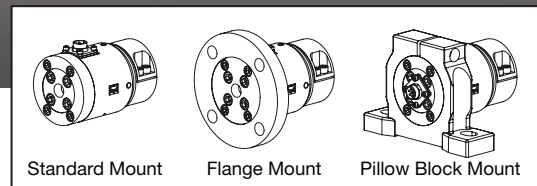


ES-Series

Extended Sensitivity Dead Shaft Idler Roller Load Cells



IP54



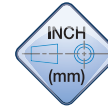
Montalvo ES-Series Extended Sensitivity Dead Shaft Idler Roller Load Cells

ES Dead Shaft Idler roller (ES-I) load cells deliver industry leading signal sensitivity to measure the slightest tension changes ensuring maximum product quality from full roll to core. Exclusive mechanical variance compensation and stainless steel construction gives you maximum performance and a longer service life. ES-I load cells are available in multiple load ratings, three mounting configurations and three different body sizes to meet the specific requirements of your application. The ES series is available with either half or full bridge semi-conductor strain gauges.

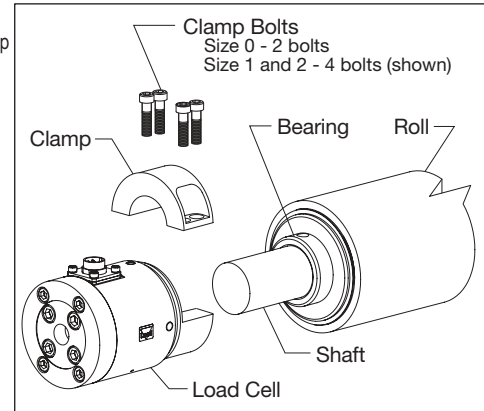
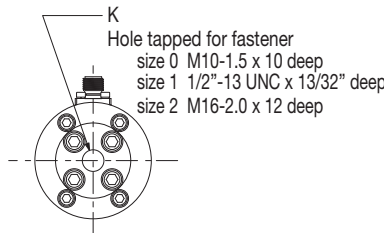
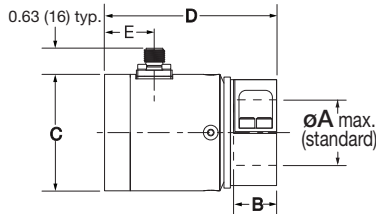
Features & Benefits

- ▶ **Industry Leading Resolution** - and sensitivity for superior accuracy and response
- ▶ **Drop-In Design** - whether replacing load cells or adding new, the ES-I is available in three different sizes to meet the dimensional requirements of your machine
- ▶ **M12 Connector** - industry standard for wide cable selection
- ▶ **Multiple Mounting Options** - standard, flange or pillow block to fit most any machine frame
- ▶ **Stainless Steel Construction** - and dust proof (IP54) rating for durability and extended, dependable service life
- ▶ **Mechanical Variance Compensation** - for shaft expansion and misalignment from installation variables
- ▶ **360° Overload Protection**
- ▶ **Gauge Options** - half or full bridge semi-conductor strain gauge

Dimensions



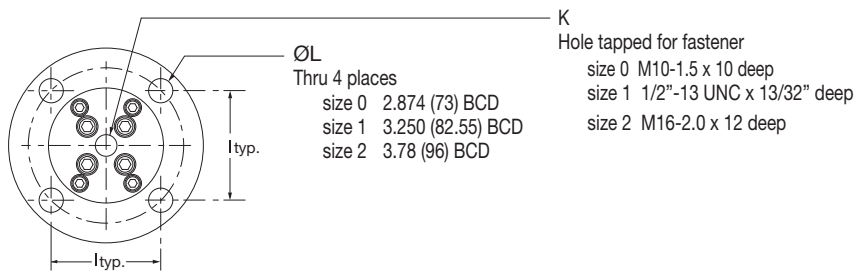
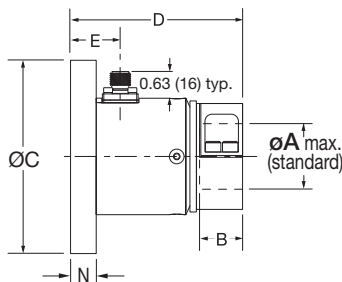
Standard Mount (S)



Model	A	A (metric option)	B	C	D	E	K
ES-I-S0	1.125	25mm	0.53 (13)	2.26 (57.50)	3.00 (76)	1.12 (28.50)	M10-1.5x10
ES-I-S1	1.50	40mm	1.03 (26.2)	2.26 (57.50)	3.63 (92.2)	1.12 (28.50)	1/2"-13 x 13/32"
ES-I-S2	1.50	40mm	1.10 (28.07)	2.85 (72.50)	4.28 (108.79)	1.22 (31)	M16-2.0x12

Dimension A indicates actual inch or optional metric bore size. Bushings available for smaller bore sizes.

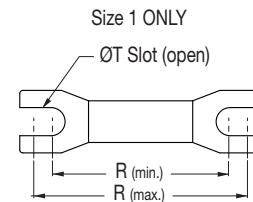
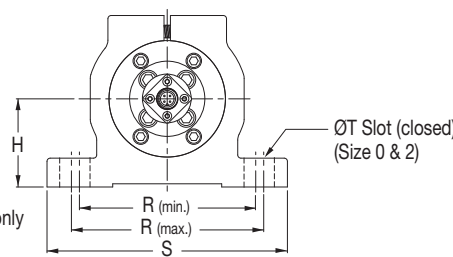
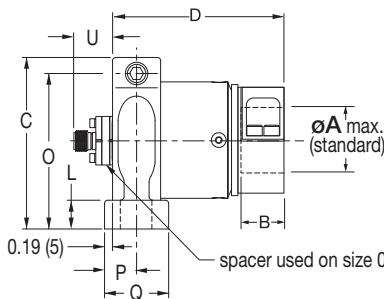
Flange Mount (F)



Model	A	A (metric option)	B	C	D	E	I typ.	K	L	N
ES-I-F0	1.125	25mm	0.53 (13)	3.50 (89)	3.00 (76)	1.12 (28.50)	2.03 (51.62)	M10-1.5x10	0.35 (9)	0.59 (15)
ES-I-F1	1.50	40mm	1.03 (26.2)	4.00 (101.6)	3.63 (92.2)	1.12 (28.50)	2.298 (58.4)	1/2"-13 x 13/32"	0.354 (9)	0.59 (15)
ES-I-F2	1.50	40mm	1.10 (28.07)	4.72 (120)	4.28 (108.79)	1.22 (31)	2.67 (67.88)	M16-2.0x12	0.53 (13.50)	0.63 (16)

Dimension A indicates actual inch or optional metric bore size. Bushings available for smaller bore sizes.

Pillow Block Mount (P)



Model	A	A (metric option)	B	C	D	H	L	O	P	Q	R (min.)	R (max.)	S	T	U
ES-I-P0	1.125	25mm	0.53 (13)	3.27 (83)	3.00 (76)	1.65 (42)	0.47 (12)	2.99 (76)	0.59 (15)	1.18 (30)	3.39 (86)	3.71 (94)	4.57 (116)	0.35(9)	1.08 (28)
ES-I-P1	1.50	40mm	1.03 (26.2)	3.24 (82.3)	3.63 (92.2)	1.626 (41.3)	0.445 (11.3)	2.96 (75.2)	0.59 (15)	1.18 (30)	3.39 (86.1)	4.00 (101.6)	4.57 (116)	-	1.08 (28)
ES-I-P2	1.50	40mm	1.10 (28.07)	4.21 (107)	4.28 (108.79)	2.17 (55)	0.71 (18)	3.82 (97)	0.79 (20)	1.57 (40)	4.33 (110)	4.73 (120)	5.91 (150)	0.55 (14)	0.75 (19)

Dimension A indicates actual inch or optional metric bore size. Bushings available for smaller bore sizes.

How To Specify

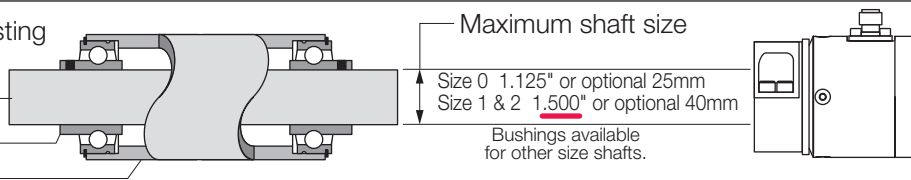
Series

ES, DR-C, DR-D, X, N, LP or U



Shaft / Shaft Size in or mm

- I - Dead Shaft Idler Roller consisting of the following components:
 - Shaft
 - Bearing
 - Roller



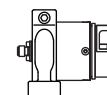
Mount

S, F, or P

S (standard)

F (flange)

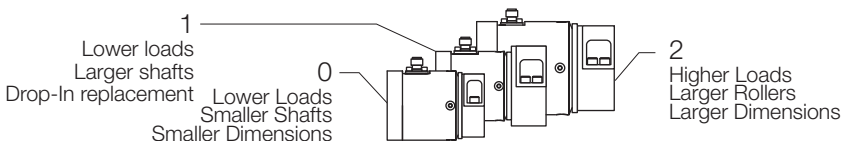
P (pillow block)



Size

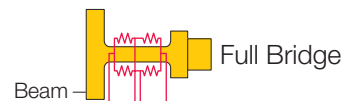
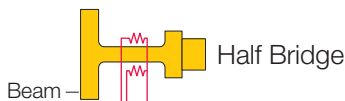
0, 1 or 2

Consider the following:
Load rating, shaft size, dimensions and replacement mounting



Strain Gauge (semi-conductor)

H (Half Bridge) or F (Full Bridge)



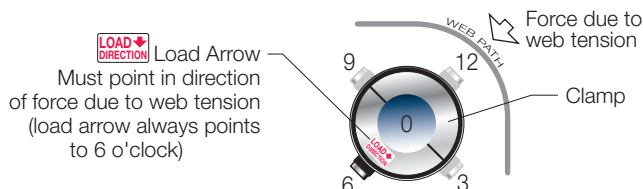
Connector Position

6 (standard on S and F mounts)

3, 9 or 12 (available upon request)

0 (only position available for P mount)

Position is relative to LOAD ARROW (except P mount), which is always 6, as observed from clamp end of load cell.



Load Rating lb (N)

Size 0 25(125), 50(250), 75(375), 100(500), 150(750)

Size 1 50(250), 75(375), 100(500), 150(750), 250(1250)

Size 2 75(375), 100(500), 150(750), 250(1250), 500(2500), 1000*(5000)*

LR load rating

P maximum tension (pull) on web

B wrap angle

W weight of roller in pounds

A angle between Ft and vertical axis

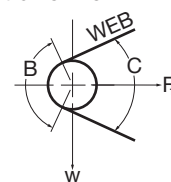
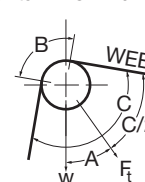
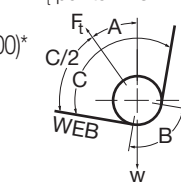
C angle between entering and exiting web

F resultant force

Ft points ABOVE horizon

Ft points BELOW horizon

Ft is HORIZONTAL



$$LR = \frac{4P \sin(B/2) - W \cos(A)}{2}$$

$$LR = \frac{4P \sin(B/2) + W \cos(A)}{2}$$

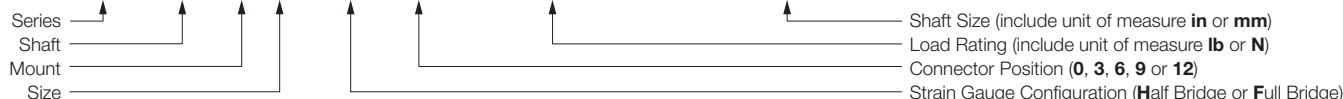
$$LR = \frac{4P \sin(B/2)}{2}$$

* For F and P mounts only.

Note: It is recommended that Montalvo be contacted to ensure proper sizing.

Example

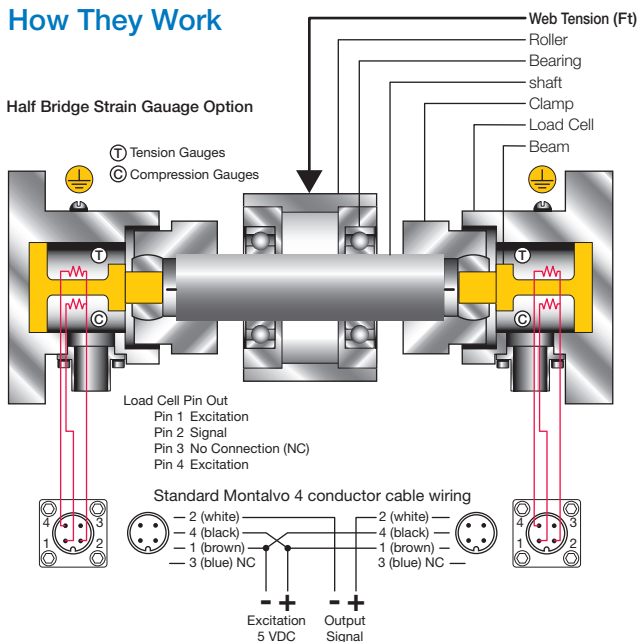
ES-I-F2-H-6-500lb-1.500in



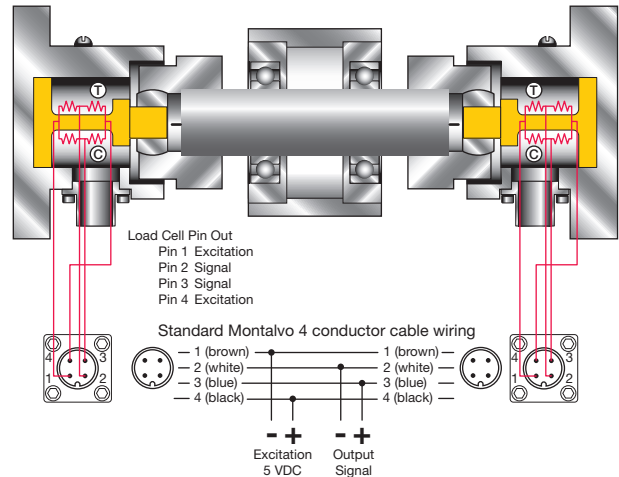
Montalvo ES-Series

Extended Sensitivity Dead Shaft Idler Roller Load Cells

How They Work



Full Bridge Strain Gauge Option



Specifications

Electrical
Excitation 5 VDC
Output (Half Bridge Option).....250 mV, nominal @ full load
Output (Full Bridge Option)500 mV, nominal @ full load
Gauge Resistance..... 80 - 130 Ω
Type semi-conductor
Non-Repeatability..... ±1/4% full span
Non-Linearity and Hysteresis (combined)..... ±1/2% full span

Connector (Male 4 pin M12) - Pin Out

	Half Bridge Option	Full Bridge Option
Pin 1	Excitation	Excitation
Pin 2	Signal	Signal
Pin 3	No connection	Signal
Pin 4	Excitation	Excitation

Load Ratings - lb (N)

Size 0	25(125), 50(250), 75(375), 100(500), 150(750)
Size 1	50(250), 75(375), 100(500), 150(750), 250(1250)
Size 2	75(375), 100(500), 150(750), 250(1250), 500(2500), 1000*(5000)*
Overload Stops	110% of Load Rating
Overload Rating	300% of Load Rating

* For F and P mounts only.

Note: It is recommended that Montalvo be contacted to ensure proper sizing.

Environmental
ClassificationIP54
Temperature °F (°C)
Operating range -4 to +150 (-20 to +70)
Coefficient (% per degree)..... 0.02 (0.01) typ.

Mechanical
Deflection in (mm)..... 0.008 to 0.015 (0.203 to 0.381)
Alignment 1° max.
Max. Bore (standard)** Size 0 1-1/8" or 25 mm std.
Size 1 1-1/2" or 40 mm std.
Size 2 1-1/2" or 40 mm std.

**Bushings available for smaller shaft sizes.

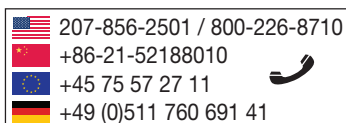
Finish stainless steel

Weight lb (kg) approximately

ES-I-S0	2.25 (1.02)
ES-I-S1	3.00 (1.37)
ES-I-S2	4.67 (2.12)
ES I-F0	3.11 (1.41)
ES I-F1	3.86 (1.76)
ES-I-F2	6.48 (2.95)
ES-I-P0	3.39 (1.54)
ES-I-P1	4.14 (1.88)
ES-I-P2	7.52 (3.42)

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Tension Indicators
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EST. 1947

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