

N-Series

Cantilevered Load Cells

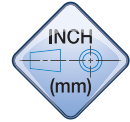


Montalvo N-Series Cantilevered Load Cells

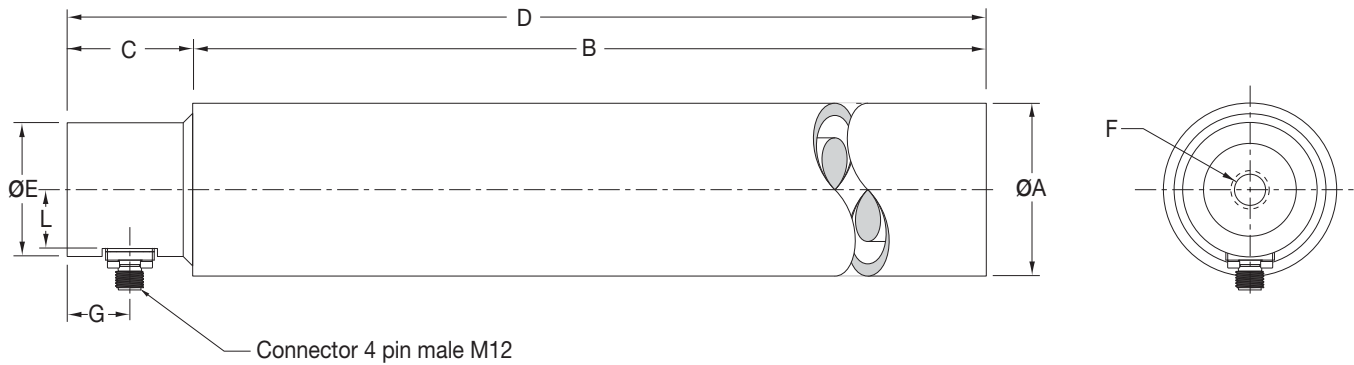
Montalvo's N-Series Cantilevered Load Cells are designed for accurate, repeatable tension measurement of paper, film, foil and other web materials. N-Series are used on single side frame machines which are equipped with cantilevered idler rollers, such as tag, label and tape machines. Every N-Series load cell incorporates four semi-conductor strain sensing gauges - two at each end of the roller. The gauges produce output signals which are proportional to the tension in the web as it passes over the roller. The sum of the signals represents the average tension across the web. The N-Series are sensitive to changes in web tension only and are not affected by the position of the web on the roller. N-Series employ radial stops which prevent damage due to overloads.

Features

- ▶ Easy to install
- ▶ Includes idler roller
- ▶ Eliminates web steering effect
- ▶ Special roll widths, diameters or roll finishes available



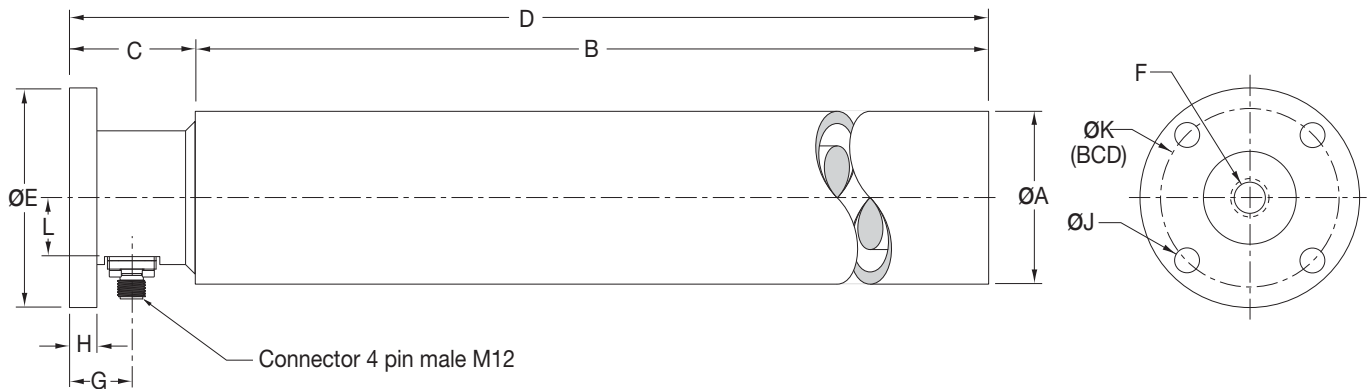
Dimensions - Standard Mount



Size	A	B	C	D	E	F	G	L
SN50	1.97 (50)	5.90 / 7.87 / 9.84 / 11.81 / 13.78* / 15.75*	1.57 (40)	B+C (B+C)	1.57 (40)	(M10 x 15 deep)	0.91 (23)	0.55 (14)
SN90	3.54 (90)	5.90 / 7.87 / 9.84 / 11.81 / 13.78 / 15.75 / 17.72** / 19.68**	1.97 (50)	B+C (B+C)	2.68 (68)	(M16 x 20 deep)	1.18 (30)	1.18 (30)
SN120	4.72 (120)	15.75 / 19.68 / 23.62 / 27.56 / 31.50 / 35.43** / 39.37**	2.36 (60)	B+C (B+C)	4.33 (110)	(M20 x 40 deep)	1.50 (38)	1.73 (44)

* Only available in 25 lb (125 N) Load Rating
 ** Not available in 200 lb (1000 N) Load Rating

Dimensions - Flange Mount





Size	A	B	C	D	E	F	G	H	J	K	L
FN50	1.97 (50)	5.90 / 7.87 / 9.84 / 11.81 / 13.78* / 15.75*	1.57 (40)	B+C (B+C)	2.91 (74)	(M10 X 15 deep)	0.91 (23)	0.31 (8)	0.28 (7)	2.28 (58)	0.55 (14)
FN90	3.54 (90)	5.90 / 7.87 / 9.84 / 11.81 / 13.78 / 15.75 / 17.72** / 19.68**	1.97 (50)	B+C (B+C)	4.72 (120)	(M16 X 20 deep)	1.18 (30)	0.55 (14)	0.47 (12)	3.82 (97)	1.18 (30)
FN120	4.72 (120)	15.75 / 19.68 / 23.62 / 27.56 / 31.50 / 35.43** / 39.37**	2.36 (60)	B+C (B+C)	6.46 (164)	(M20 X 40 deep)	1.50 (38)	0.79 (20)	0.55 (14)	5.43 (138)	1.73 (44)

* Only available in 25 lb (125 N) Load Rating
 ** Not available in 200 lb (1000 N) Load Rating

How To Specify





Mount

S or F

S (standard)  F (flange) 

Series

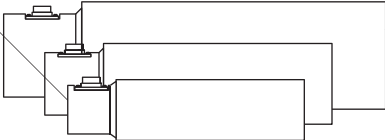
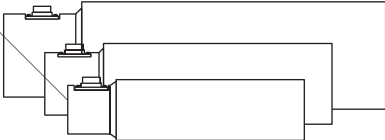
N, ES, U or F

N  ES  U  F 

Size

50, 90 or 120

Consider the following:
 Load rating, roller length & dimensions

50  120 

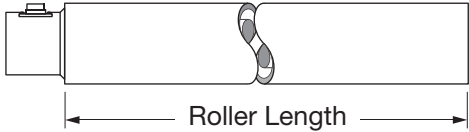
Lower Loads
 Shorter Rollers
 Smaller Dimensions

Highest Loads
 Longest Rollers
 Largest Dimensions

Roller Length (mm)

Size 50 150, 200, 250, 300, 350* or 400* mm
 Size 90 150, 200, 250, 300, 350, 450** OR 500** mm
 Size 120 400, 500, 600, 700, 800, 900** OR 1000** mm

* Only available in 125N Load Rating
 ** Not available in 1000N Load Rating

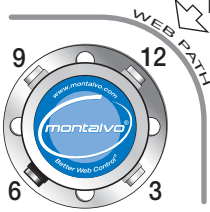


Connector Position

03, 06, 09 or 12 o'clock

Position is relative to LOAD ARROW, which is always 6 o'clock, as observed from end of load cell.

6 o'clock is *standard*
 3, 9 and 12 are *optional*



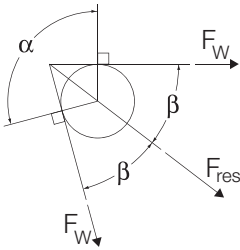
Force due to web tension

Load Arrow
 Must point in direction of force due to web tension (load arrow always points to 6 o'clock)

Load Rating (N)

Size 50 125 / 250
 Size 90 125 / 250 / 500 / 1000
 Size 120 250 / 500 / 1000

F_{res} = resultant force
 F_w = maximum web force (total web tension)
 α = wrap angle
 β = angle between resultant force and web



$\beta = 90 - 1/2 \times \alpha$

$F_{res} = 2 \times F_w \times \cos \beta$

Example

F N 90 - 200 - 06 - 500 N

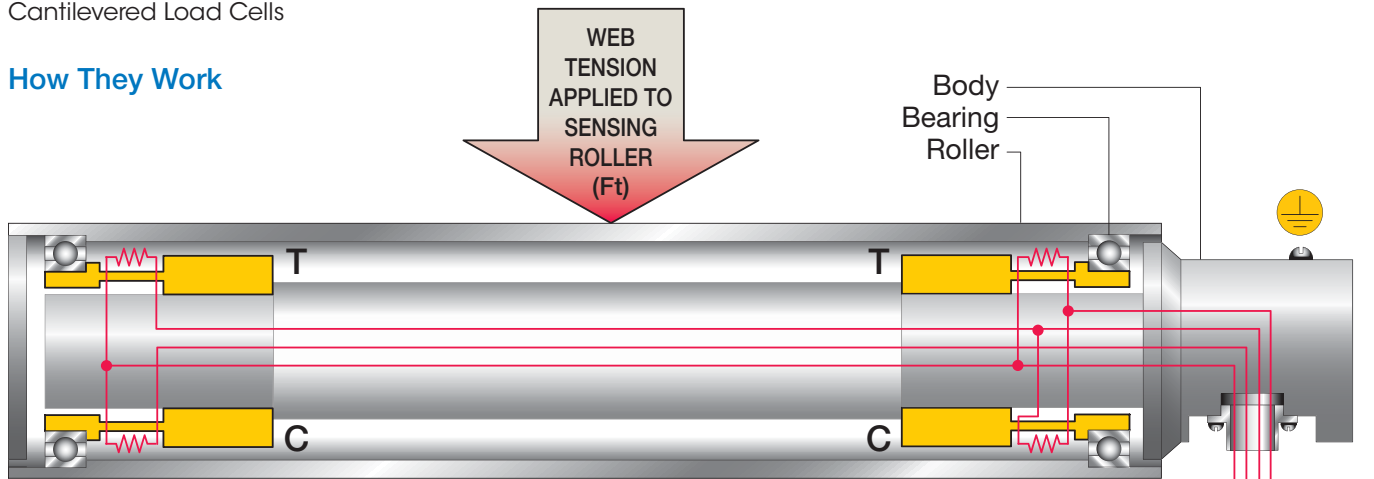
Mount - F
 Series - N
 Size - 90

Load Rating (include unit of measure N)
 Connector Position - 6
 Roller Length - 200

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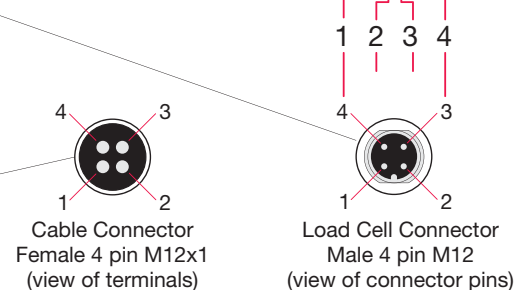
How They Work



T - Tension Gauge
C - Compression Gauge

Male 4 pin M12 connector (on load cell)
Pin 1 Excitation
Pin 2 Signal
Pin 3 Signal
Pin 4 Excitation

Female 4 pin M12 connector (on cable)
Pin 1 BROWN or RED Excitation
Pin 2 WHITE Signal
Pin 3 BLUE or GREEN Signal
Pin 4 BLACK Excitation



Specifications

Electrical

Excitatio 5 VDC
Output - nominal 50 mV/V
Gauge Resistance 80 - 130 Ω
Type full bridge semi-conductor
Non-Repeatability ±0.25% full span
Non-Linearity and hysteresis (combined) ±0.50% full span

Loading lb (N)

Rated Size 50 25 (125) / 50 (250)
Size 90 25 (125) / 50 (250) / 100 (500) / 200(1000)
Size 120 50 (250) / 100 (500) / 200 (1000)
Overload 300% max. of rated

Environmental

Classification IP54
Temperature Compensated 14 to 131°F (-10 to 55°C)
Operating -4 to 185°F (-20 to 85°C)
Effect on zero 0.015% / °C
Effect on span 0.015% / °C

Connector

Type Male 4 pin M12
Pin 1 Excitation
Pin 2 Signal
Pin 3 Signal
Pin 4 Excitation

Mechanical

Finish Mount stainless steel
Roller² 32 microinch aluminum
Weight SN50-150³ ~3.3 lb (1.5kg)
FN50-150³ ~3.7 lb (1.7kg)
SN90-150⁴ ~11.0 lb (5.0kg)
FN90-150⁴ ~12.8 lb (5.8kg)
SN120-400⁵ ~33.0 lb (15kg)
FN120-400⁵ ~35.2 lb (16kg)
Size (WxDxH) SN50-150⁶ 7.48 x 1.97 x 1.97 (190 x 50 x 50)
FN50-150⁶ 7.48 x 2.91 x 2.91 (190 x 74 x 74)
SN90-150⁶ 7.87 x 3.54 x 3.54 (200 x 90 x 90)
FN90-150⁶ 7.87 x 4.72 x 4.72 (200 x 120 x 120)
SN120-400⁷ 18.11 x 4.72 x 4.72 (460 x 120 x 120)
FN120-400⁷ 18.11 x 6.46 x 6.46 (460 x 164 x 164)

Dimensions inches (mm)

² Optional roller surface coatings available
³ Add 0.7 lb (.2 kg) for each longer roller
⁴ Add 2.2 lb (1 kg) for each longer roller
⁵ Add 5.5 lb (2.5 kg) for each longer roller
⁶ Add 1.97" (50 mm) to W for each longer roller
⁷ Add 3.94" (100 mm) to W for each longer roller

Related Montalvo Products

The **NEW** S4 Digital Tension Controller
The **NEW** A4 Digital Load Cell Amplifier
The **NEW** i4HD Tension Indicator
and... Cables

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