

N-Series

Cantilevered Load Cells



IP54

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.

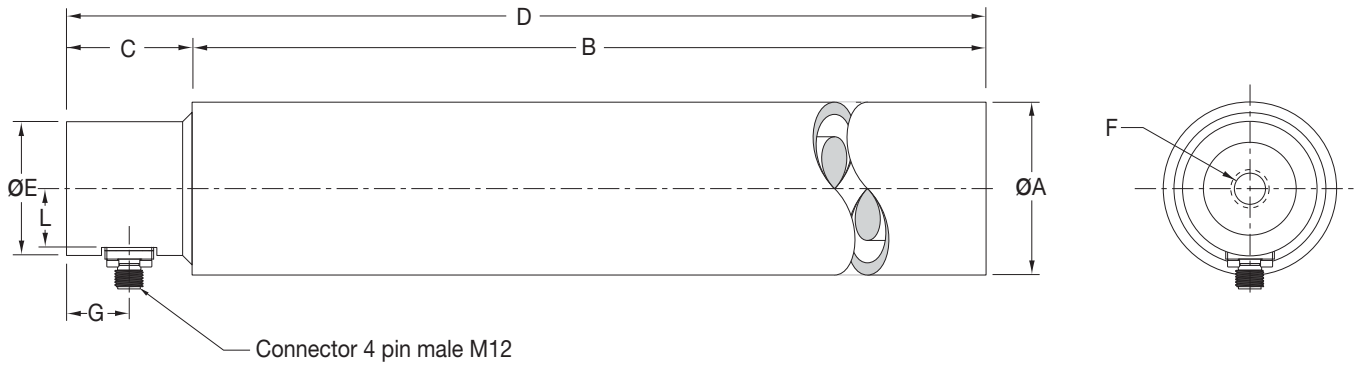
Features

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



Dimensions

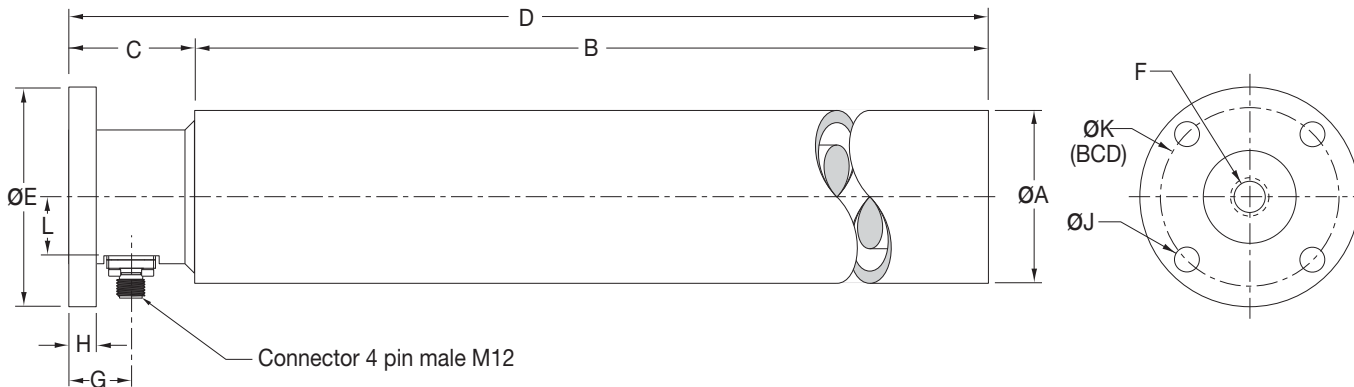
Standard Mount (S)



Size	A	B	C	D	E	F	G	L
SN50	50	150 / 200 / 250 / 300 / 350* / 400*	40	B+C	40	M10 x 15 deep	23	14
SN90	90	150 / 200 / 250 / 300 / 350 / 400 / 450** / 500**	50	B+C	68	M16 x 20 deep	30	30
SN120	120	400 / 500 / 600 / 700 / 800 / 900** / 1000**	60	B+C	110	M20 x 40 deep	38	44

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

Flange Mount (F)



Size	A	B	C	D	E	F	G	H	J	K	L
FN50	50	150 / 200 / 250 / 300 / 350* / 400*	40	B+C	74	M10 X 15 deep	23	8	7	58	14
FN90	90	150 / 200 / 250 / 300 / 350 / 400 / 450** / 500**	50	B+C	120	M16 X 20 deep	30	14	12	97	30
FN120	120	400 / 500 / 600 / 700 / 800 / 900** / 1000**	60	B+C	164	M20 X 40 deep	38	20	14	138	44

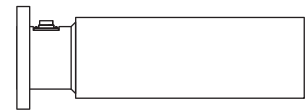
* Only available in 125 N Load Rating
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Mount

S or F

S (standard)

F (flange)



Series

N, ES, U or F

N

ES

U

F

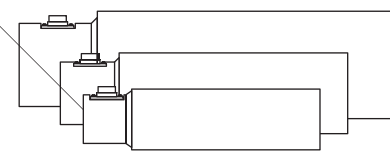


Size

50, 90 or 120

Consider the following:
 Load rating, roller length
 & dimensions

50
 Lower Loads
 Shorter Rollers
 Smaller Dimensions



120
 Highest Loads
 Longest Rollers
 Largest Dimensions

Roller Length (mm)

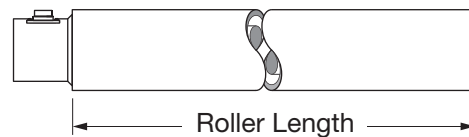
Size 50 150 / 200 / 250 / 300 / 350* / 400*

Size 90 150 / 200 / 250 / 300 / 350 / 450** / 500**

Size 120 400 / 500 / 600 / 700 / 800 / 900** / 1000**

* Only available in 125N Load Rating

** Not available in 1000N Load Rating



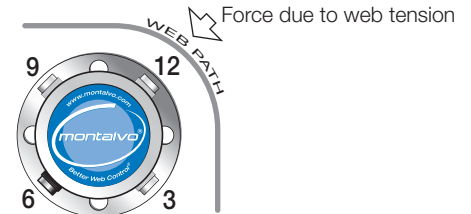
Connector Position

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*

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

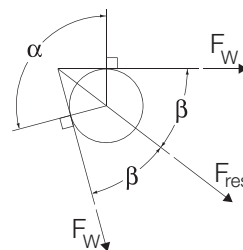
Size 120 250 / 500 / 1000

F_{res} = resultant force

F_w = maximum web force (total web tension)

α = wrap angle

β = angle between resultant force and web



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

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

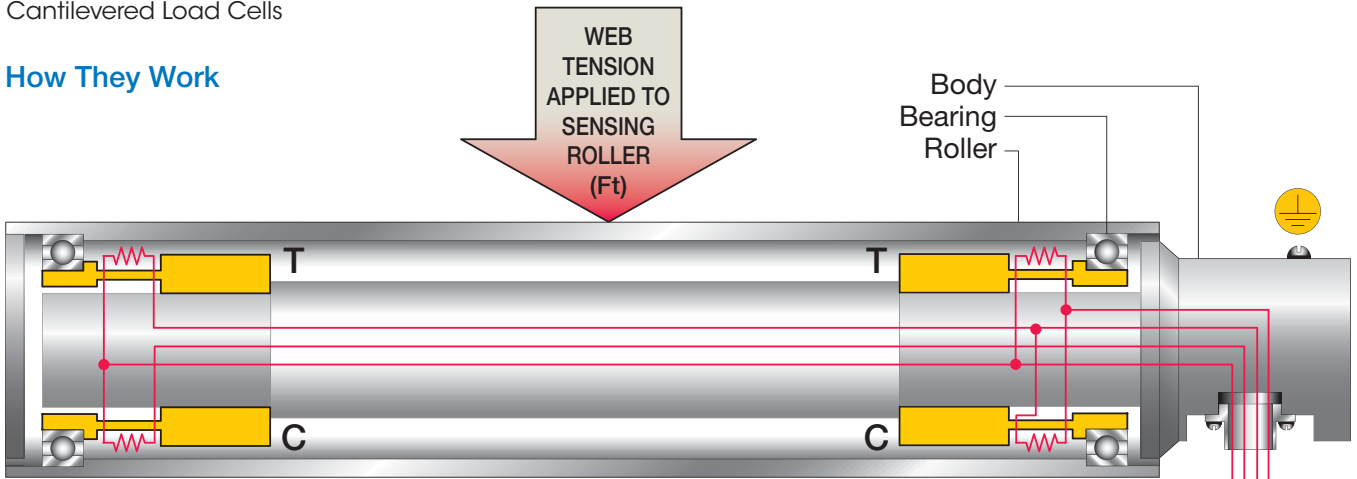
Example

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

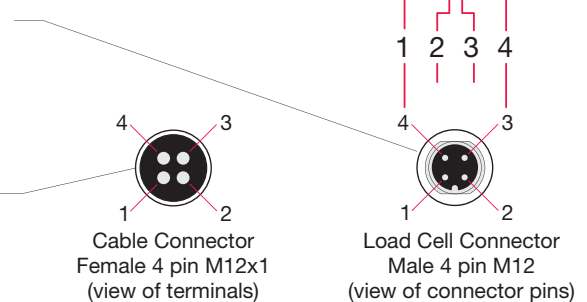
How They Work



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 (N)

Rated Size 50	125 / 250
Size 90	125 / 250 / 500 / 1000
Size 120	250 / 500 / 1000
Overload	300% max. of rated

Environmental

Classification	IP54
Temperature Compensated	-10 to +55°C
Operating	-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

Deflection	< 0.25mm at full load
Finish Mount	stainless steel
Roller ²	32 microinch aluminum
Weight (kg) SN50-150 ³	1.5
FN50-150 ³	1.7
SN90-150 ⁴	5.0
FN90-150 ⁴	5.8
SN120-400 ⁵	15
FN120-400 ⁵	16
Size (WxDxH) mm SN50-150 ⁶	190 x 50 x 50
FN50-150 ⁶	190 x 74 x 74
SN90-150 ⁶	200 x 90 x 90
FN90-150 ⁶	200 x 120 x 120
SN120-400 ⁷	460 x 120 x 120
FN120-400 ⁷	460 x 164 x 164

² Optional roller surface coatings available
³ Add 0.2 kg for each longer roller
⁴ Add 1 kg for each longer roller
⁵ Add 2.5 kg for each longer roller
⁶ Add 50 mm to W for each longer roller
⁷ Add 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