DATA SHEET

THE TENSION CONTROL SPECIALISTS

# MODEL **TW-50W**
# FILAMENT TRI-WHEEL™ TENSION LOAD CELL

The Tri-Wheel™ Tension Load Cell (Model TW-50W) is a modular, configurable load cell fixture designed to measure the tension of wire, cable and composite filament processes.

The Tri-Wheel™ unit consists of an aluminum mounting plate (easily stacked on extruded aluminum profiles), a cartidge-type load cell and three ceramic-insert pulleys. The 50mm pulleys can be installed at 10, 35, 100, 125 or 180 degree wrap angles to suit a wide variety of applications.

Tension is measured by a dual-cantilevered, high output, semiconductor strain gauge sensing beam, connected in a full wheatstone bridge configuration.

This advanced strain gauge technology operates with less mechanical deflection, while delivering up to 33 times greater signal output than foil gauge designs. Reduced deflection enables robust overload protection, helping to maximize service life and reduce maintenance intervals.

INDUSTRY LEADING FIVE YEAR WARRANTY

## FEATURES & BENEFITS

- Modular design for easy integration
- Flexible wheel configurations, enabling multiple wrap angles and tension ranges
- Long-life ceramic-insert pulleys
- Compatible with steel, copper, aluminum, glass, carbon fiber and other composite filaments
- Highly accurate and reliable semiconductor strain gauge technology
- Improves the product quality and efficiency of most filament manufacturing processes
- Stainless steel, aluminum and ceramic construction for excellent durability and corrosion resistance
- Reduce or eliminate mishaps and material waste
- Higher production with less downtime and machine maintenance
- 5 year tension-free warranty

## PRODUCT CODE

You may order by description or by specifying the code by matching each labeled place with one of the choices below. ***Example: TW-50W-25L-180DEG-12C***

**TW - xW - xL - xDEG - xC**

| WHEEL (mm) | LOAD RATING (lbs) | WRAP ANGLE (degrees) | CONNECTOR POSITION |
|---|---|---|---|
| 50 | 10<br>25<br>50<br>100<br>200 | 10<br>35<br>100<br>125<br>180 | 6 (6:00)<br>12 (12:00)<br>R (Rear) |

| TENSION RANGE FOR SELECTED WRAP ANGLE AND LOAD RATING | | | | | |
|---|---|---|---|---|---|
| **WRAP** | **10 lbs** | **25 lbs** | **50 lbs** | **100 lbs** | **200 lbs** |
| **10 deg** | 0 - 32 lbs | 0 - 83 lbs | 0 - 170 lbs | 0 - 342 lbs | 0 - 687 lbs |
| **35 deg** | 0 - 9.2 lbs | 0 - 24 lbs | 0 - 49 lbs | 0 - 99 lbs | 0 - 199 lbs |
| **100 deg** | 0 - 3.6 lbs | 0 - 10 lbs | 0 - 19 lbs | 0 - 39 lbs | 0 - 78 lbs |
| **125 deg** | 0 - 3.1 lbs | 0 - 8.2 lbs | 0 - 17 lbs | 0 - 34 lbs | 0 - 67 lbs |
| **180 deg** | 0 - 2.8 lbs | 0 - 7.3 lbs | 0 - 15 lbs | 0 - 30 lbs | 0 - 60 lbs |

## SPECIFICATIONS

**ELECTRICAL**

**Excitation:** 5 VDC max

**Output:** 100 mV/V, nominal

**Strain Gages:** Semiconductor, 100 ohms, nominal

**Circuit Configuration:** Full Wheatstone Bridge

**Non-Repeatability:** ±1/4% full span (FS)

**Combined Non-Linearity and Hystersis:** ±1/2% (FS)

**Temperature Range:** -10°F to 200°F (-23°C to 93°C)

**Temperature Coefficient:** 0.02% FS per °F, typical (0.036% FS per °C)

**Mating Electrical Connector:** 6 Socket Mil-Spec

**Connector Pin Assignment:**

A = Signal Output (-)
B = Excitation (+)
C = Excitation (-)
D = Signal Output (+)
E = Excitation (-)
F = Excitation (+)

**MECHANICAL**

**Overload Capacity:** 1,200 lbs (5,338 N)

**Deflection of Sensor Beam:** 0.005 in. max. (0.127 mm)

**Materials:** Aluminum; Stainless Steel; Nylon; Carbon Steel; $Al_2O_3$ Ceramic

**Connector Positions:** 6:00, 12:00, Rear

**Load Ratings:** 10, 25, 50, 100, 200 lbs (44, 111, 222, 445, 890 N)

**Wrap Angles:** 10°, 35°, 100°, 125°, 180°

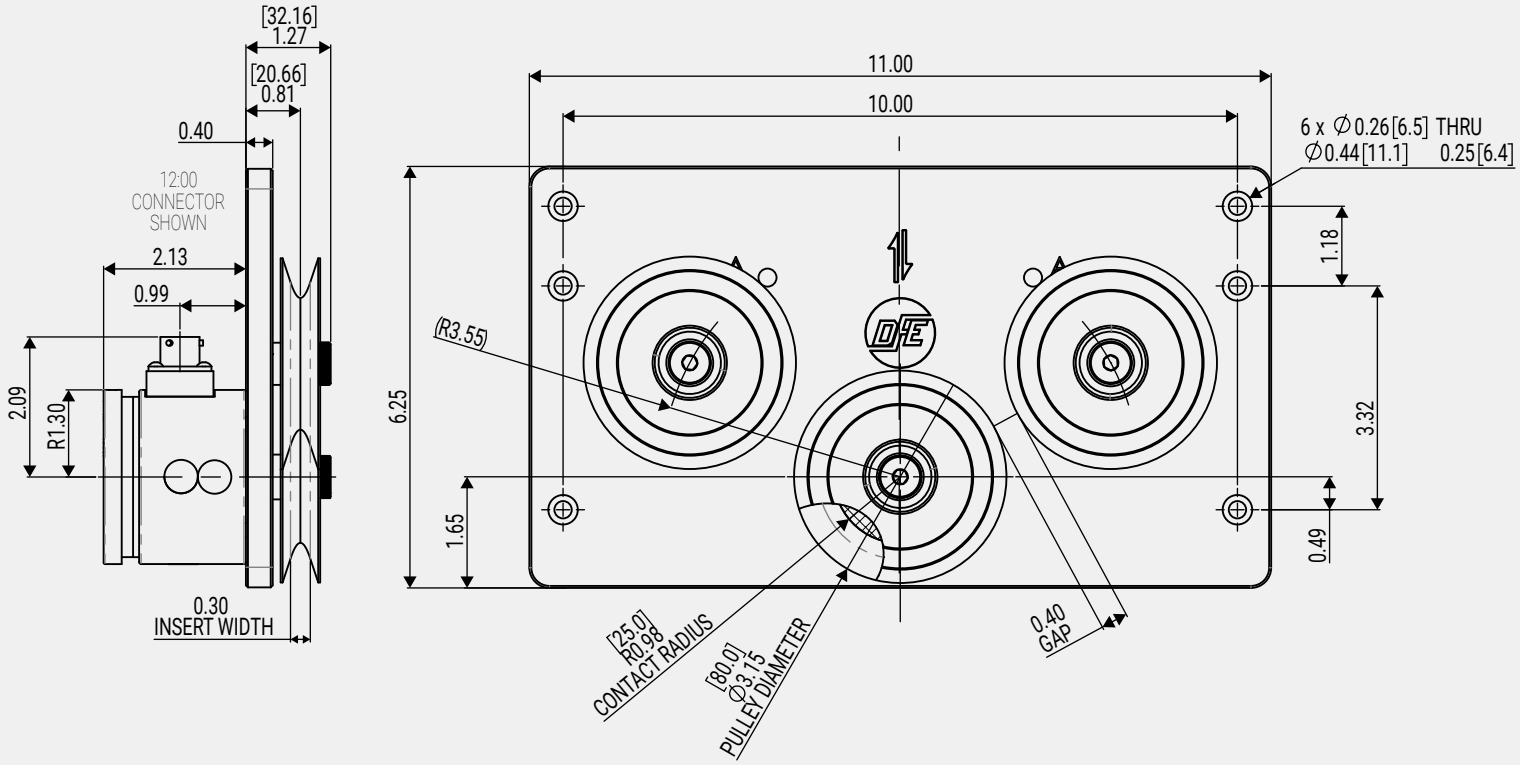
**Break-Away Torque:** 0.8 N-mm (0.11 ozf-in)

**Basic Dynamic Load Rating of Bearings:** 5.1 kN

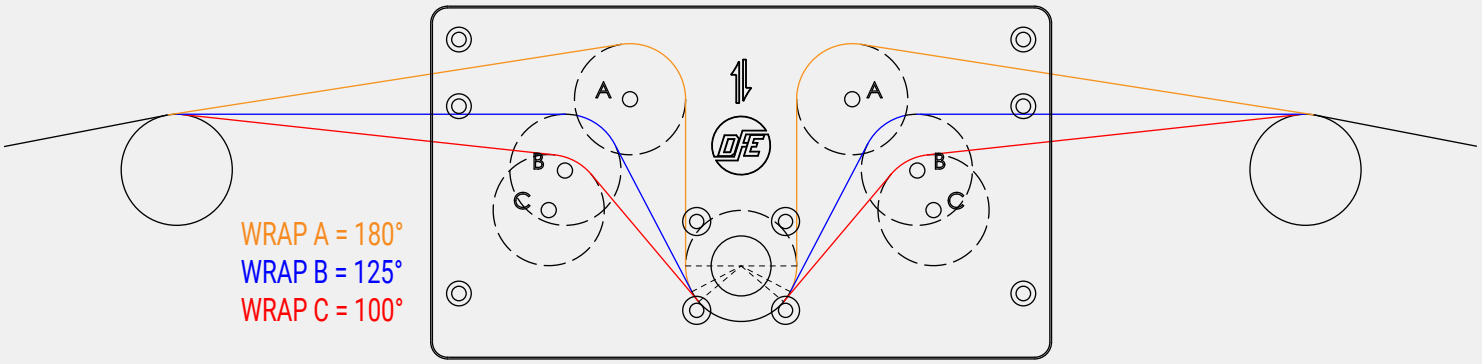
**Pulley & Shaft Weight:** 0.45 lbs (204 g)

## DIMENSIONS

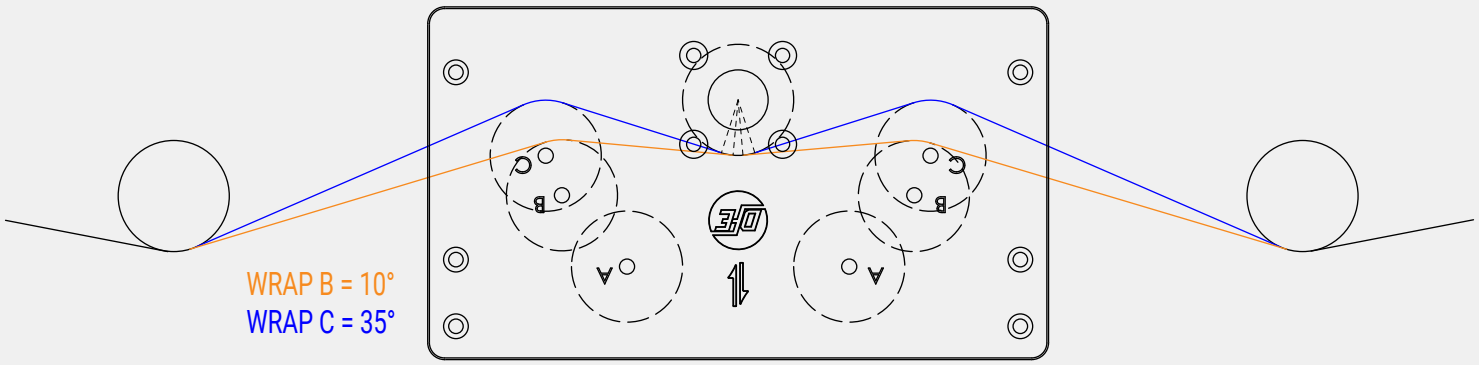
inches [mm]



## MOUNTING ORIENTATIONS & WRAP ANGLES




WRAP A = 180°
WRAP B = 125°
WRAP C = 100°




WRAP B = 10°
WRAP C = 35°

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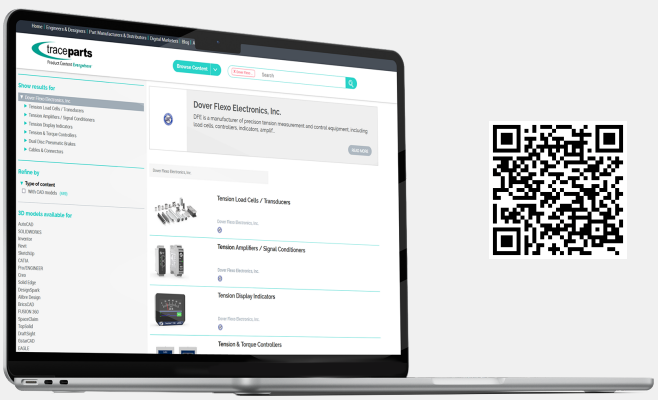






307 Pickering Rd
Rochester
NH 03867 USA

Email: info@dfe.com
Website: www.dfe.com
Phone: (603) 332-6150
FAX: (603) 332-3758