Series 661 High Capacity Force Transducers

MTS 661 Series High Capacity Force Transducers are specifically designed for cyclic operation in through zero tension/compression and monotonic testing applications. Models are available to measure tension and compression forces of 55,000 to 1,100,000 lb (250 to 5000 kN).

The 661.2X and 661.3X Series Force Transducers are designed as single-piece structures machined from alloy steel forgings or bar stock and precision heat treated to provide excellent repeatability and linearity and low hysteresis. In addition, there are no welds or mechanical joints to fatigue or wear.

These high capacity force transducers feature a multi-column design which resists extraneous forces and moments for greater accuracy and provides for high lateral and overturning moment stiffness.

All of the Series 661.2X and 661.3X High Capacity Force Transducers are available with single or dual bridges. If both bridges will be used for output, a second dc controller or dc conditioner and second mating connector or cable is required.

FEATURES

Single Piece Construction
- Units are machined from alloy steel forgings or bar stock and precision heat treated to provide good repeatability and linearity and low hysteresis.

High-Output Strain Gages
- Provide good sensitivity while still offering high axial stiffness, good overload capacity and long term stability and fatigue life.

Multi-Column Design
- Resists extraneous forces and moments for greater accuracy and provides for high lateral and overturning moment stiffness.

Massive, Low-Stressed Ends
- Ensure low hysteresis and minimal end attachment effect.
Series 661 High Capacity Force Transducers

Specifications

Static Overload Capacity
- 150% of rated force capacity

Temperature Coefficient Of Zero
- 0.0025% of full scale/°F
- 0.0045% of full scale/°C

Temperature Coefficient Of Output
- 0.003% of reading/°F
- 0.0055% of reading/°C

Compensated Temperature Range
- +50°F (+10°C) to +150°F (+66°C)

Useable Temperature Range
- –50°F (–46°C) to +200°F (+93°C)

Nominal Output Sensitivity
- At Full Scale Load: 2 mV/V

Bridge Resistance
- 661.22C/D-01, 661.23E/F-01, 661.31E/F-01, 661.34E/F-01: 700 ohms
- 661.36C/D-03, 661.38A/B-01: 350 ohms

Hysteresis (% of full scale)
- 661.22C/D-01, 661.23E/F-01: 0.15
- 661.31E/F-01, 661.34E/F-01, 661.36C/D-03, 661.38A/B-01: 0.20

Non-linearity (% of full scale)
- 661.22C/D-01, 661.23E/F-01, 661.31E/F-01, 661.34E/F-01: 0.15
- 661.36C/D-03, 661.38A/B-01: 0.20

Maximum Excitation
- 661.22C/D-01, 661.23E/F-01, 661.31E/F-01, 661.34E/F-01: 20 volts
- 661.36C/D-03, 661.38A/B-01: 15 volts

Calibration
- Each force transducer ordered may be calibrated by MTS using our automated calibration system at our factory or on-site by MTS Field Service. In addition, the force transducer and associated conditioning electronics may be returned to MTS for repair and recalibration.

Bolt Circle (B)
- 661.22 and 661.23 Models: none
- 661.31E-01: 1-14 UNS x 1.75 in. deep, 8 holes on a 6 in. diameter bolt circle
- 661.34E-01: 1 1/4-12 UNF x 2.50 in. deep, 8 holes on a 7.00 in. diameter bolt circle.
- 661.36C-01: 1 1/2-12 UNF x 3 in. deep, 8 holes on an 8 in. diameter bolt circle
- 661.38B-01: M36 x 2 mm x 76.2 mm deep, 16 holes on a 355.6 mm diameter bolt circle

Diameter

Length

Model Force Capacity (lb)/ Deflection at Rated Force Capacity (in) Spring Rate (10^6 lb/in) Diameter (in) Length (in) Center Thread* (A)

661.22C-01 55,000/0.0025 22 5 8 1 1/2-12 UNF x 2.35 in
661.23E-01 110,000/0.003 36 6 8 2-12 UN x 2.00 in
661.31E-01 220,000/0.004 55 8.75 12 3-12 UNF x 3.00 in
661.34E-01 330,000/0.005 64 10.25 14 3 1/2-8 UN x 3.5 in
661.36C-03 550,000/0.006 92 13.75 17.25 4 1/2-8 UN x 6.00 in
661.38A-01 1,100,000/0.008 138 18.25 22 5-8 UN x 7.50 in

Model Force Capacity (kN)/ Deflection at Rated Force Capacity (mm) Spring Rate (10^6 N/mm) Diameter (mm) Length (mm) Center Thread* (A)

661.22D-01 250/0.064 3.9 127 203 M36 x 2 mm x 60 mm
661.23F-01 500/0.08 6.2 152 203 M52 x 2 mm x 51 mm
661.31F-01 1,000/0.10 10 222 305 M76 x 2 mm x 76 mm
661.34F-01 1,500/0.13 11.2 260 356 M90 x 2 mm x 89 mm
661.36D-03 2,500/0.15 17 349 438 M125 x 4 mm x 152 mm
661.38B-01 5,000/0.20 25 464 559 M125 x 4 mm x 190 mm

*Center thread information is for both ends of the unit.