

MCL6

Lathe Dynamometer

DESCRIPTION

AMTI's MCL6 Lathe Dynamometer is a precision multi-axis force and moment sensor designed for the measurement of forces in lathe operations. The MCL6 features high stiffness, high sensitivity, low crosstalk, excellent repeatability and long term stability. This sensor exhibit the inherent ruggedness of bonded strain gauge transducers and it incorporates special seals to prevent oil and water ingress

The MCL6 is available with one to six outputs corresponding to the applied loads F_x , F_y , F_z , M_x , M_y & M_z . The M_x and M_z signals can be used to determine F_z and F_x respectively with greater sensitivity. Standard capacities are 1000, 2000 and 4000lb. Custom models for special applications are available

Along with the tool holder the instrument's top mounting surface equipped with mounting holes and threaded inserts for the easy attachment of other devices. The MCL6' top plate is manufactured from high strength 7075-T6 aluminium with a durable anodized finish to withstand the harshest operating environments. Elastomeric O-ring seal protect internal strain gauges and wiring from oil or dirt ingress



Applications

The MCL6 force and torque sensor is designed for use in the research, development and testing of forces in lathe operations. It is equipped with a one inch square tool holder, set screws to clamp lathe tools or insert holder in position and a plated steel high stiffness base.

Common application include R&D in machining including lubrication, materials machine-ability or tool wear studies

AMPLIFICATION

The MCL6 Force and Torque incorporates strain gauges mounted on four precision strain elements in a patented design to measure forces and moments. As with most conventional strain gauge transducers, bridge excitation and signal amplification is required.

AMTI's product line includes two strain gauge amplifiers, the analogue MSA-6 and Gen 5. Both these amplifiers are high gain devices which provide excitation and amplification for multiple channels in one convenient package

Calibration

Each platform is inspected and tested in AMTI's calibration facility. The calibration procedure provides a detailed sensitivity matrix and a complete test of all systems components, including the amplifier and connecting cable.

Custom

AMTI also offers special multi-axis transducers to meet your specific requirements. Units are available that are water proof, pressure compensated, non-magnetic, non-conductive and transparent. Capacities from 1lb (4.5N) to 3 million lbs (13.3Mn) can be made.

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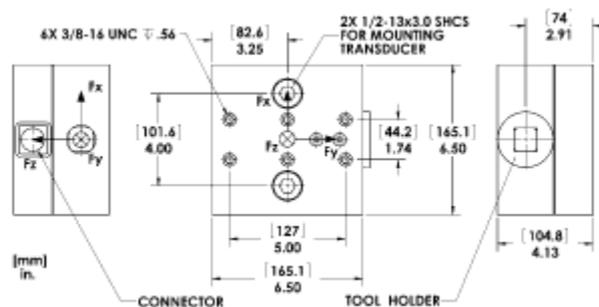
Specifications

MCL6 Series SPECIFICATIONS	1000	2000	4000
Fx, Fy Capacity, lb, (N)	500 (2224)	1000 (4448)	2000 (8896)
Fz Capacity, lb, (N)	1000 (4448)	2000 (8896)	4000 (17793)
Mz Capacity, in*lb, (Nm)	1500 (169)	3000 (340)	6000 (678)
Mx & My Capacity, in*lb, (Nm)	3000 (339)	6000 (678)	12000 (1355)
Fx, Fy Resonant Frequency, Hz	550	800	1000
Fz Resonant Frequency, Hz	620	875	1200
Fx, Fy Typical Sensitivity $\mu\text{V/V-lb}$	3.00	1.50	0.75
Fz Typical Sensitivity $\mu\text{V/V-lb}$	0.76	0.38	0.19
Mx, My Typical Sensitivity $\mu\text{V/V-lb}$	0.85	0.425	0.212
Mz Typical Sensitivity $\mu\text{V/V-lb}$	1.50	0.75	0.375
Non- Linearity, $\pm\%$ FSO	0.20	0.20	0.20
Hysteresis % FSO	0.20	0.2	0.20

GENERAL SPECIFICATIONS

Excitation: 10V maximum: Crosstalk: Less than 2% on all channels: Temperature Range: 0 to 125°F, (-17 to 52°C)
Crosstalk <2% on all channels

Dimensions 6.5" (16.51cm) x 6.5" (16.51cm) x 4.13" (10.49cm); Weight 40lb (18.18kgs)



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