Historically, the lack of effective multi-axis hardware and control software has limited the availability and capability of multi-axis test systems. By applying lessons learned in other vibration test environments and using time proven technologies in innovative ways, Team Corporation has created a suite of multi-axis test systems that accommodate a range of test articles with different physical and test environment needs for use in a variety of product market testing. Replication of real world environments demands the use of systems that realistically reproduce actual field conditions. Multi-axis vibration environments require multi-axis systems to replicate them.
CUBE™ Features:
- Standard force rating of 14,000 lbf. in each axis
- Six patented Integrated servo-hydraulic shakers provide precise, simultaneous or sequential control of all 6 Degrees of Freedom to beyond 500 Hz*
- Excellent replication of measured data to higher frequencies than ever before*
- Fluid film bearings assure long life and low maintenance
- Small footprint minimizes required lab space
- Available head expanders increase the mounting surface according to your test article requirements
- Five active mounting surfaces allow simultaneous unit testing

Applications:
- Replication of recorded motions
- Squeak and rattle testing of seats, instrument panels, and other interior components
- Durability and suspension testing
- Simulation of engine block motion for engine mounted components and exhaust systems
- Tire or spindle coupled four post road simulation with simultaneous vertical, lateral and longitudinal loading as well as application of braking and steering torques
- Multi-axis screening of electronic components and modules
- Military under-wing component testing
- Transportation canister testing

Tensor 18kN™ Features:
- 12 Custom designed electrodynamic shakers
- Simultaneous or sequential excitation of X, Y, and/or Z axis
- Peak Sine force rating of 4,800 lb-f (21.4 kN) per axis.
- Peak Random force rating of 3,600 lb-f (16kN) per axis.
- Complete control of rotations around all axis
- Velocity of 50 ips (1.3 m/sec)
- Displacement +/- 0.5 in (12.7 mm) dynamic
- Bandwidth from 10 Hz through 2 kHz
- 30 in (762 mm) x 30 in (762 mm) working surface

Applications:
- Accurate replication of true, real-world vibration environments in all 6DoF
- Accelerated Durability, Life Cycle and Fatigue cycling
- Precise Product Development investigation
- Rapid screening of electrical components and modules
- Addresses new multi-axis testing protocol in MIL STD 810(G)

MANTIS™ Features:
- Frequency 0-200Hz
- Six servo-hydraulic actuators
- Force Ratings up to 34,000 (150 kN)
- Single axis to 6 Axis Vibration
- Displacements up to 6 in. (150mm)
- Table Size 60 in. x 82 in. (1.5m x 2.1m)
- Friction free hydrostatic bearings
- Hydrostatic bearings for bell cranks
- HydraBall connections on all actuators

Applications:
- Automotive BSR (Buzz Squeak & Rattle) testing
- Seat testing
- Automotive component testing
- Recreation equipment rack testing

Tensor 900™ Features:
- 12 Custom designed electrodynamic shakers
- Simultaneous or sequential excitation of X, Y, and/or Z axis
- Force Rating of 200 lb-f (900 N) Sine and 135 lb-f (600 N) in Random
- Complete control of rotations around all axes
- Bandwidth from 10 Hz through 5 kHz
- 10 grms acceleration on nominal payload
- Fully contained system (electrical power only requirement)
- Sine acceleration 22-g peak

Applications:
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Applications:
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- Precise Product Development investigation
- Rapid screening of electrical components and modules
- Addresses new multi-axis testing protocol in MIL STD 810(G)
### English Specifications

<table>
<thead>
<tr>
<th>SYSTEM</th>
<th>CUBE™ 2</th>
<th>CUBE™ 3</th>
<th>CUBE™ 4</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2-DV</td>
<td>2-DV-LS</td>
<td>3S</td>
</tr>
<tr>
<td>Top Surface</td>
<td>59 in x 81 in</td>
<td>30 in x 30 in</td>
<td>32 in x 32 in</td>
</tr>
<tr>
<td>Side Surface</td>
<td>n/a</td>
<td>n/a</td>
<td>n/a</td>
</tr>
<tr>
<td>Bare Table Moving Mass</td>
<td>1642 lbs</td>
<td>430 lbs</td>
<td>1200 lbs</td>
</tr>
<tr>
<td>Max recommended Payload</td>
<td>1433 lbs</td>
<td>300 lbs</td>
<td>1000 lbs</td>
</tr>
<tr>
<td>Table First Mode Frequency</td>
<td>25 Hz</td>
<td>300 Hz</td>
<td>300 Hz</td>
</tr>
</tbody>
</table>

#### Operational Frequency Range:
- Test Frequency Bandwidth: 0-200 Hz, 0-200 Hz, 0-250 Hz, 0-250 Hz, 0-250 Hz
- Translation Performance Vertical:
  - Displacement - P-P Dynamic: 1.8 in, 3.8 in, 1.8 in, 1.8 in, 1.8 in
  - Velocity - Peak: 30 ips, 30 ips, 30 ips, 30 ips, 30 ips
  - Acceleration**: 10.4 g, 8.2 g, 6.0 g, 6.0 g, 6.0 g
  - Force/Axis (RMS): 14,000 lbf, 14,000 lbf, 14,000 lbf, 14,000 lbf, 14,000 lbf

#### Translation Performance Lateral:
- Displacement - P-P Dynamic: 1.8 in, 3.8 in, 1.8 in, 1.8 in, 1.8 in
- Velocity - Peak: 30 ips, 30 ips, 30 ips, 30 ips, 30 ips
- Acceleration**: 7.6 g, 7.0 g, 3.2 g, 3.2 g, 3.2 g
- Force/Axis (RMS): 14,000 lbf, 14,000 lbf, 14,000 lbf, 14,000 lbf, 14,000 lbf

#### Longitudinal Displacement:
- Displacement - P-P Dynamic: 1.8 in, 3.8 in, 1.8 in, 1.8 in, 1.8 in
- Velocity - Peak: 30 ips, 30 ips, 30 ips, 30 ips, 30 ips
- Acceleration**: 11.4 g, 9.2 g, 9.2 g, 9.2 g, 9.2 g
- Force/Axis (RMS): 14,000 lbf, 14,000 lbf, 14,000 lbf, 14,000 lbf, 14,000 lbf

#### Rotational Performance:
- Roll Displacement: +/- 8.5 degrees, +/- 5 degrees, +/- 6 degrees, +/- 6 degrees, +/- 6 degrees
- Pitch Displacement: +/- 6.8 degrees, +/- 5 degrees, +/- 6 degrees, +/- 6 degrees, +/- 6 degrees
- Yaw Displacement: +/- 8.5 degrees, +/- 5 degrees, +/- 6 degrees, +/- 6 degrees, +/- 6 degrees

#### Thermal Protection:
- Standard: 4C to 65C, 4C to 65C, 4C to 65C, 4C to 65C, 4C to 65C
- With Thermal Barriers: -40C to 121C, -40C to 121C, -40C to 121C, -40C to 121C, -40C to 121C

#### Heat Load:
- At -40C: 0 kW, 5.9 kW, 5.9 kW, 5.9 kW, 5.9 kW
- At 121 C: 0 kW, -3.5 kW, -3.5 kW, -3.5 kW, -3.5 kW

#### Head Expanders
- CEH - 48: n/a, n/a, n/a, 48 in x 48 in, 48 in x 48 in
- CEH - 60: n/a, n/a, n/a, 60 in x 60 in, 60 in x 60 in

---

*Frequency & Acceleration dependant

**With Max Payload
### Metric Specifications

<table>
<thead>
<tr>
<th>SYSTEM</th>
<th>MANTIS™</th>
<th>TENSOR 900™</th>
<th>TENSOR 128™</th>
<th>CUBE™ 2</th>
<th>CUBE™ 3</th>
<th>CUBE™ 4</th>
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<tbody>
<tr>
<td>Top Surface</td>
<td>1.5 m x 2.1 m</td>
<td>0.2 m x 0.2 m</td>
<td>0.76 m x 0.76 m</td>
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<td>0.81 m x 0.81 m</td>
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<tr>
<td>Side Surface</td>
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<td>n/a</td>
<td>n/a</td>
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<td>745 kg</td>
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<td>195 kg</td>
<td>544 kg</td>
<td>544 kg</td>
<td>508 kg</td>
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<tr>
<td>Max recommended Payload</td>
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<tr>
<td>Translation Performance Vertical:</td>
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<td>Displacement - P-P Dynamic</td>
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<td>25 mm</td>
<td>46 mm</td>
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<td>Velocity - Peak</td>
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<td>1.5 m/sec</td>
<td>1.3 m/sec</td>
<td>0.76 m/sec</td>
<td>0.76 m/sec</td>
<td>0.96 m/sec</td>
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<tr>
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<td>5.6 g</td>
<td>10.0 g</td>
<td>5.0 grms</td>
<td>10.4 g</td>
<td>8.2 g</td>
<td>6.0 g</td>
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<tr>
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<td>Displacement - P-P Dynamic</td>
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<td>25 mm</td>
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<td>Velocity - Peak</td>
<td>0.76 m/sec</td>
<td>1.5 m/sec</td>
<td>1.3 m/sec</td>
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<td>5.0 grms</td>
<td>7.6 g</td>
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<td>Displacement - P-P Dynamic</td>
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<tr>
<td>Velocity - Peak</td>
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<td>1.5 m/sec</td>
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<tr>
<td>Acceleration**</td>
<td>3.8 g</td>
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<td>5.0 grms</td>
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<td>+/- 5 degrees</td>
<td>+/- 6 degrees</td>
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<td>+/- 6 degrees</td>
<td>+/- 4 degrees</td>
<td>+/- 4 degrees</td>
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<tr>
<td>Yaw Displacement</td>
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<td>+/- 5 degrees</td>
<td>+/- 4 degrees</td>
<td>+/- 6 degrees</td>
<td>+/- 4 degrees</td>
<td>+/- 4 degrees</td>
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<td>Standard</td>
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<td>Call Team</td>
<td>4C to 65C</td>
<td>4C to 65C</td>
<td>4C to 65C</td>
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<tr>
<td>With Thermal Barriers</td>
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<td>Call Team</td>
<td>-40C to 121C</td>
<td>-40C to 121C</td>
<td>-40C to 121C</td>
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</tr>
<tr>
<td>At -40C</td>
<td>0 kW</td>
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<td>Call Team</td>
<td>5.9 kW</td>
<td>5.9 kW</td>
<td>5.9 kW</td>
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<tr>
<td>At 121 C</td>
<td>0 kW</td>
<td>Call Team</td>
<td>Call Team</td>
<td>-3.5 kW</td>
<td>-3.5 kW</td>
<td>-3.5 kW</td>
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<tr>
<td>Head Expanders</td>
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<tr>
<td>CEH - 48</td>
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<td>n/a</td>
<td>n/a</td>
<td>1.2 m x 1.2 m</td>
<td>1.2 m x 1.2 m</td>
<td>1.2 m x 1.2 m</td>
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<td>CEH - 60</td>
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<td>n/a</td>
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<td>1.5 m x 1.5 m</td>
<td>1.5 m x 1.5 m</td>
</tr>
</tbody>
</table>

*Frequency & Acceleration dependant
**With Max Payload