

## Systems & Solutions

Engineered  
vibration testing  
solutions for  
improved  
product quality.

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# CUBE™

With a history of more than 25 CUBE™ installations over the past 10 years, Team Corporation has taken 6 Degree of Freedom testing a giant step forward. An advanced technology hydraulic test system that offers 6 Degrees of Control, the CUBE™ can accurately replicate virtually any vibration environment, including very high frequencies, with precise digital control.

The CUBE™ simulates real-world 6 Degrees of Freedom vibration with complete, simultaneous control of the amplitude and phase of all 6 Degrees of Freedom. Offering simultaneous or sequential excitation of test articles in Sine, Random and Time Wave Form Replication, the CUBE™ sets the standard for multi-axis vibration testing.



### Features:

- Available in force ratings of 3,000 to 14,000 lbf. in each axis
- Six patented Integrated Shakers provide precise, simultaneous or sequential control of all 6 Degrees of Freedom to beyond 250 Hz.
- Excellent replication of measured data to higher frequencies than ever before
- Fluid film bearings assure long life and low maintenance
- Small footprint allows more systems to be put into the lab
- Available Head Expanders increase the mounting surface according to your test article requirements
- 5 active mounting surfaces allow simultaneous unit testing

### Applications:

- Replication of measured data
- Squeak and rattle testing of seats, instrument panels, and other interior components
- Durability and suspension testing
- Simulation of an engine block 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

# CUBE™ Performance Summary<sup>1</sup>

## Standard Stroke Models

	Model 1	Model 2-SV*	Model 2-DV*	Model 3
Test Frequency Range	0-250 Hz	0-250 Hz	0-250 Hz	0-250 Hz
Max Recommended Specimen Mass	300 lbs (136 kg)	1000 lbs (450 kg)	1000 lbs (450 kg)	1000 lbs (450 kg)

## Performance<sup>2</sup>

### Translational

#### VERTICAL:

Displacement \_\_\_\_\_ **2.0 in. (50mm) peak to peak [1.8 in. (45mm) dynamic]** \_\_\_\_\_

Velocity	15 in/sec (0.4 m/s)	17 in/sec (0.43 m/s)	35 in/sec (0.89 m/s)	38 in/sec (0.97 m/s)
Acceleration - No Load	2.0 g	13.0 g	13.0 g	13.0 g
Acceleration - 100 Kg Load	1.4 g	10.4 g	10.4 g	

*Specimen CG 18" above CUBE top surface*

Force - Dynamic<sup>3</sup>      3 kip (13 kN)      14 kip (62 kN)      14 kip (62 kN)      14 kip (62 kN)

#### LATERAL:

Displacement \_\_\_\_\_ **2.0 in. (50mm) peak to peak [ 1.8 in. (45 mm) dynamic]** \_\_\_\_\_

Velocity	15 in/sec (0.4 m/s)	17 in/sec (0.43 m/s)	35 in/sec (0.89 m/s)	38 in/sec (0.97 m/s)
Acceleration - No Load	2.6 g	12.3 g	12.3 g	12.3 g
Acceleration - 100Kg Load	1.6 g	7.6 g	7.6 g	7.6 g

*Specimen CG 18" above CUBE top surface*

Force - Dynamic<sup>3</sup>      3 kip (13 kN)      14 kip (62 kN)      14 kip (62 kN)      14 kip (62 kN)

#### LONGITUDINAL:

Displacement \_\_\_\_\_ **2.0 in. (50mm) peak to peak [ 1.8 in. (45 mm) dynamic]** \_\_\_\_\_

Velocity	15 in/sec (0.4 m/s)	17 in/sec (0.43 m/s)	35 in/sec (0.89 m/s)	38 in/sec (0.97 m/s)
Acceleration - No Load	3.0 g	14.0 g	14.0 g	14.0 g
Acceleration - 100 Kg Load	2.4 g	11.4 g	11.4 g	

*Specimen CG 18" above CUBE top surface*

Force - Dynamic<sup>3</sup>      3 kip (13 kN)      14 kip (62 kN)      14 kip (62 kN)      14 kip (62 kN)

### Rotational Displacement

Pitch	_____	±6.0 deg	_____
Roll	_____	±6.0 deg	_____
Yaw	_____	±6.0 deg	_____

<sup>1</sup> Specifications are subject to change without notice. Contact Team Corporation for verification of any critical specifications.

<sup>2</sup> Performance assumes only single degree of motion with no Head Expander installed and nominal specimen mass. Performance will be lower with larger table size and will decrease as more degrees of motion are active. Higher CG locations will reduce the horizontal performance.

<sup>3</sup> Dynamic force ratings are based on a hydraulic supply pressure of 3,000 psi (205 bar).

\* Maximum Frequency of Peak Force: 130 Hz.

## Long Stroke (LS) Models

	<b>Model 1- LS</b>	<b>Model 2-SV-LS*</b>	<b>Model 2-DV-LS*</b>	<b>Model 3-LS</b>
<b>Test Frequency Range</b>	0-250 Hz	0-250 H	0-250 Hz	0-250 Hz
<b>Max Recommended Specimen Mass</b>	300 lbs (136 kg)	1000 lbs (450 kg)	1000 lbs (450 kg)	1000 lbs (450 kg)

### Performance<sup>2</sup>

#### Translational

##### VERTICAL:

**Displacement** \_\_\_\_\_ **4.0 in. (101mm) peak to peak [3.8 in. (96mm) dynamic]** \_\_\_\_\_

<b>Velocity</b>	15 in/sec (0.4 m/s)	17 in/sec (0.43 m/s)	35 in/sec (0.89 m/s)	38 in/sec (0.97 m/s)
<b>Acceleration - No Load</b>	1.3 g	9.7 g	9.7 g	9.7 g
<b>Acceleration - 100 Kg Load</b>	0.8 g	8.2 g	8.2 g	8.2 g

*Specimen CG 18" above CUBE top surface*

**Force - Dynamic**<sup>3</sup>      3 kip (13 kN)      14 kip (62 kN)      14 kip (62 kN)      14 kip (62 kN)

##### LATERAL:

**Displacement** \_\_\_\_\_ **2.0 in. (50mm) peak to peak [1.8 in. (45mm) dynamic]** \_\_\_\_\_

<b>Velocity</b>	15 in/sec (0.4 m/s)	17 in/sec (0.43 m/s)	35 in/sec (0.89 m/s)	38 in/sec (0.97 m/s)
<b>Acceleration - No Load</b>	2.0 g	9.6 g	9.6 g	9.6 g
<b>Acceleration - 100 Kg Load</b>	1.4 g	7.0 g	7.0 g	7.0 g

*Specimen CG 18" above CUBE top surface*

**Force - Dynamic**<sup>3</sup>      3 kip (13 kN)      14 kip (62 kN)      14 kip (62 kN)      14 kip (62 kN)

##### LONGITUDINAL:

**Displacement** \_\_\_\_\_ **2.0 in. (50mm) peak to peak [1.8 in. (45mm) dynamic]** \_\_\_\_\_

<b>Velocity</b>	15 in/sec (0.4 m/s)	17 in/sec (0.43 m/s)	35 in/sec (0.89 m/s)	38 in/sec (0.97 m/s)
<b>Acceleration - No Load</b>	2.31 g	10.7 g	10.7 g	10.7 g
<b>Acceleration - 100 Kg Load</b>	1.8 g	9.2 g	9.2 g	9.2 g

*Specimen CG 18" above CUBE top surface*

**Force - Dynamic**<sup>3</sup>      3 kip (13 kN)      14 kip (62 kN)      14 kip (62 kN)      14 kip (62 kN)

#### Rotational Displacement

<b>Pitch</b>	_____	±4.0 deg	_____
<b>Roll</b>	_____	±4.0 deg	_____
<b>Yaw</b>	_____	±6.0 deg	_____

# Physical Properties - All Models

Overall Dimensions	Standard Stroke	Long Stroke
(L x W x H)	48 x 48 x 45 in. (1219 x 1219 x 1143 mm)	48 x 48 x 55 in. (1219 x 1219 x 1397 mm)
Shipping Weight	6000 lbs (2720 kg)	6500 lbs (2950 kg)

Table Dimensions	Standard Stroke	Long Stroke
Top Surface (l x w)	32 x 32 in. (813 x 813 mm)	32 x 32 in. (813 x 813 mm)
Side Surfaces (w x h)	32 x 20 in.	32 x 24 in.
Table Mass	1000 lbs (450 kg)	1300 lbs (590 kg)
Table Resonant Frequency	350 Hz	350 Hz

## Operating Temperature Range *(all models)*

Standard	40°F to 150°F (4°C to 65°C)
With Thermal Protection Option	-40°F to 250°F (-40°C to 121°C)

## Heat Load *(with thermal Protection Option)*

At -40°F (-40°C):	20,000 BTU/hr (5.9 kW)
At 250°F (121°C):	12,100 BTU/hr (-3.5 kW)

OPTIONAL EQUIPMENT	PART#	DESCRIPTION
Head Expanders <i>(Custom sizes also available)</i>	CEH-60	60 in. x 60 in. (1524mm x 1524mm) Moving Mass 475 lbs (216 kg)
Air Isolated Reaction Mass <i>(Custom sizes also available)</i>	CUBE-RM	Approximate Wt. 50,000 lbs (22,679 Kg) 78 in. x 78 in. x 30 in. (1981mm x 1981mm x 762mm)
Extended Thermal Protection	ETP	40°F to 250°F (-40°C to 121°C)



CUBE with CEH-60 Head Expander

