

Mechanical Shaker

The VST Mechanical Shaker with vertical motion is a two shaft machine with eccentric weights usually calibrated in degrees. A scale with 10 degree increments is provided with these models. Mechanical Shakers are provided with self-aligning spherical roller bearings, Pneumatic Isolators. Vertical shakers have been supplied in sizes from 18 inches square to 120 inches square and may accommodate payloads up to 15,000 pounds.

Mechanical Shaker: Elliptical

The least expensive shaker in VST product line, the elliptical shaker is a single shaft machine which generates motion in the vertical and horizontal directions to provide a simultaneous two axes vibration. For applications which may require more than single direction vibration, this shaker is an inexpensive alternative for production line environmental stress screening (ESS). This shaker features a heavy steel gauge welded base, variable speed drive adjustable between 15-60 Hz and a pneumatic spring isolation system. As with all VST shakers, a special foundation is not required so that any solid floor is suitable for machine operation.

Reliability and Fatigue Mechanical Shaker: Vertical/Horizontal

This family of Mechanical Shaker offers both vertical and horizontal capability. These shakers are provided in a three and four shaft configuration. The adjustment from vertical to horizontal motion is easily performed by changing the eccentric mass to mass vectorial relationship. Special tools are not required and change of axis may be completed in less than 10 minutes. All vertical/horizontal shakers are equipped with PHASE-LOCK to eliminate the crosstalk which may be encountered due to the height of a product's center of gravity. VST vertical/horizontal shakers can be supplied in sizes from 24 inches square to 16 feet square and may accommodate payloads up to 35,000 pounds.

New and redesigned, the VST mechanical shaker offers the following improvements:

- **Reaction Moment adjustment** is made outside the main body structure. Simply remove the safety cover from the base frame to expose the dial angle adjustment assembly mounted on the end of each shaft. Loosen the locking bolt and rotate dial to desired angle.
- **Phase Lock adjustment** is made the same as the reaction moment but on the opposite side of the machine.
- **Shaker setup aid** is a software tool that is used to calculate the machine settings base on unit under test weight and center of gravity information.

All Shaker designs can be fitted with components required to allow use with a environmental chamber.

- Insulated table top
- Diaphragm support brackets
- V grove casters
- V top rails with stop (to be attached to the floor to align the shaker properly to the chamber).

Electrical plugs and interlock circuits can be provided in accordance with the customer's requirements. The DAS4U control system has chamber interface capability.



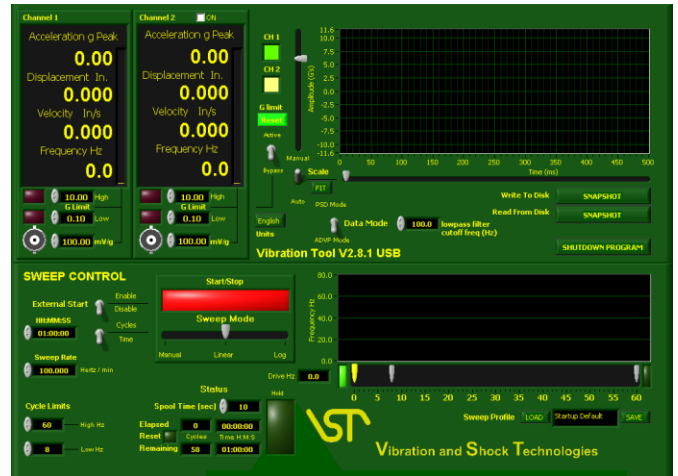
All Shaker systems can be provided with:

VST Model VT DAS4U, TWO CHANNEL Digital Monitor, Sweep Controller & Computer (Windows 7[®] OS)



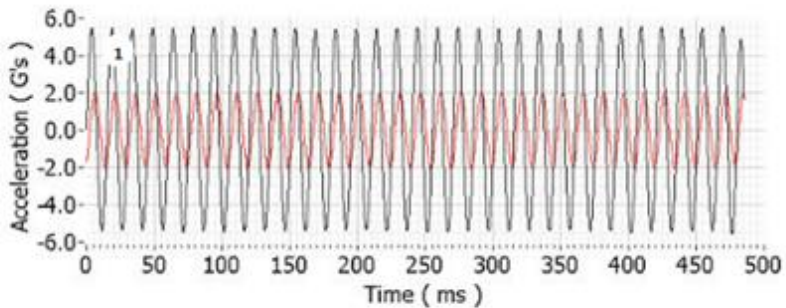
- DAS4U USB Input / Output Box
- QTY 1; Accelerometer with 10 ft cable
- Cables and Manuals
- VT Software;

- Scope View or PSD Analysis (specify bandwidths between 0 – 20KHz)
- Acceleration, displacement, frequency and velocity display; real time
- Over and under g test protection; user defined
- User defined accelerometer sensitivities
- Ability to save and produce a snap shot hard copy of data
- Linear and logarithmic sweep ability
- Timer
- Frequency Adjustment
- USB Computer Interface
- Chamber Interface.



VST, LLC Vibration Tool
Snapshot Report

Startup Default
7/18/2004 3:32:12 PM



CH 1 2 CH 2 2

Notes: use this area to type notes in
9

g Peak	5.44	2.00
Displacement	0.024	0.009
Velocity In/s	5.02	1.83
Frequency Hz	66.6	66.6
Low Pass Filter Hz		100

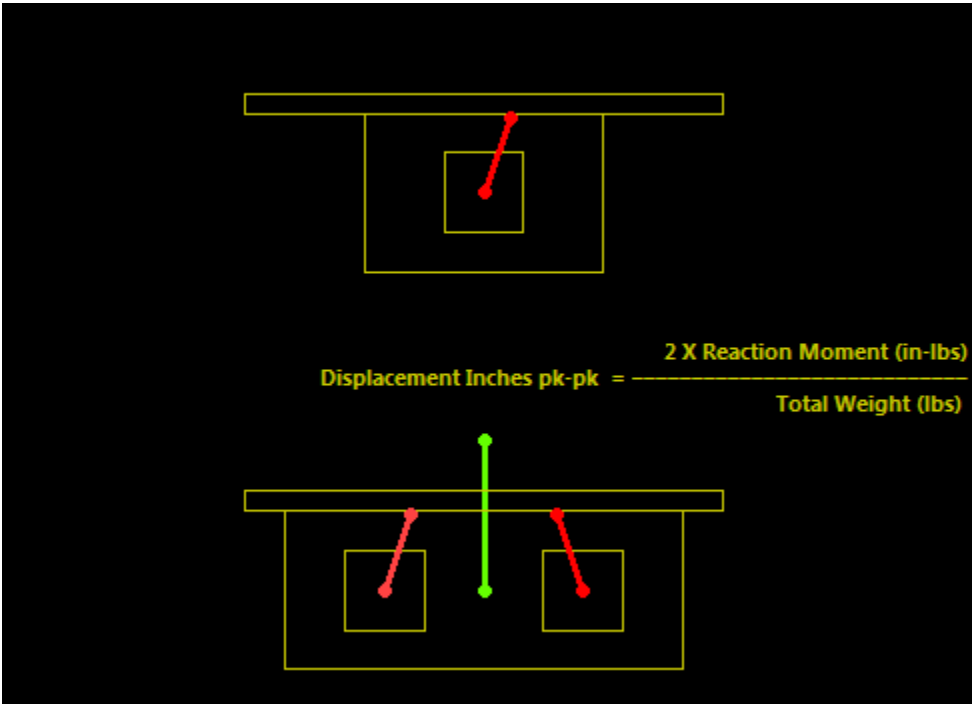




SE 1S 250 18 2424 VT

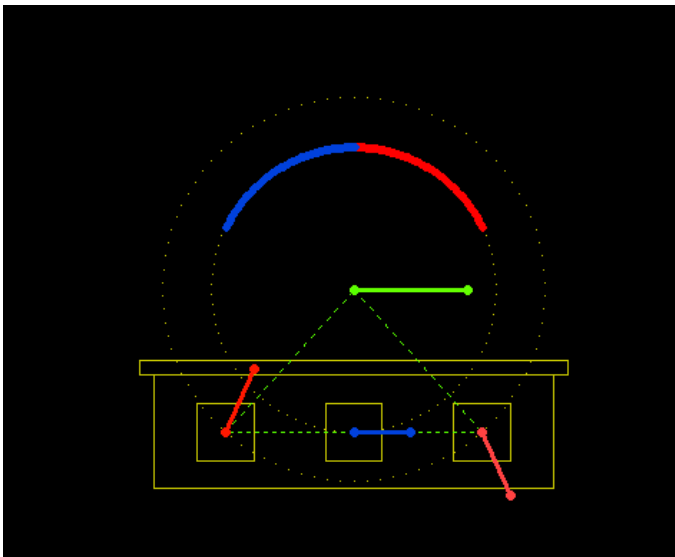


SE V 2S 500 75 3030 VT

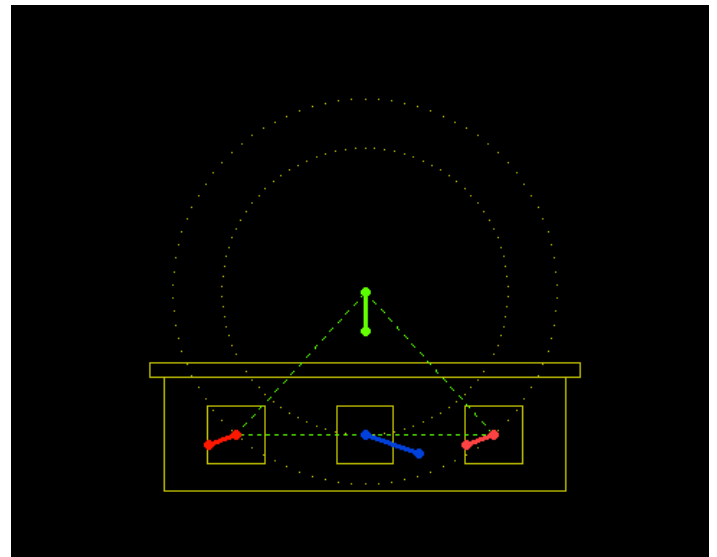




S VH 3S 500 150 3030 VT



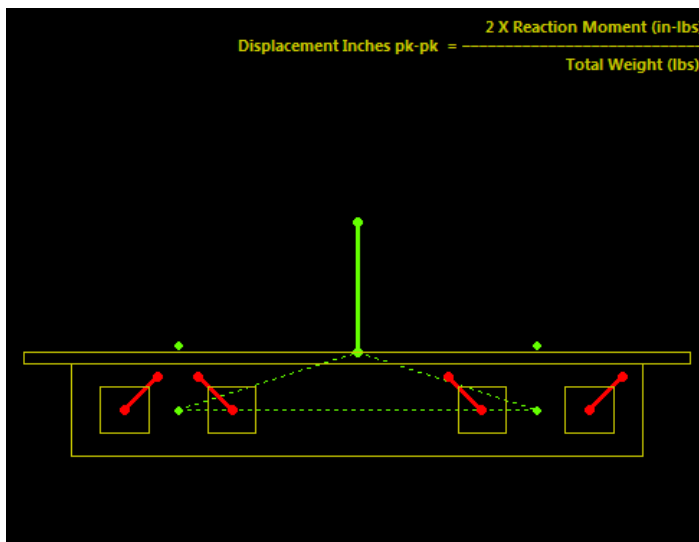
Horizontal configuration



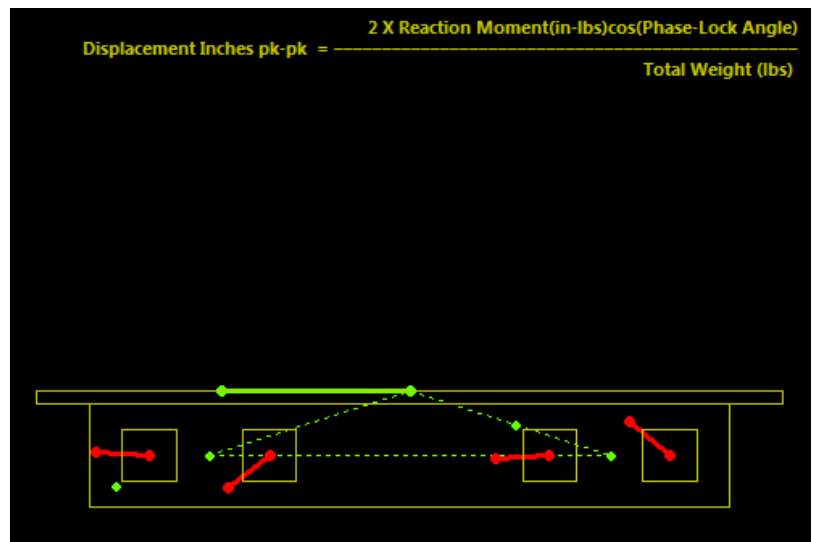
Vertical configuration



S EVH 3S 2000 150 3060 VT



Vertical configuration



Horizontal configuration



Calculator used to assist with machine settings provided with all machines and can be installed on any computer.

Direction of Vibration

Horizontal

Enter

Target Displacement
Inches pk/pk DA

0.030

Machine Weight (lbs)

700

Payload (lbs)

600

MAX Reaction
Moment (in-lbs)

75.0

Motor HP

5

Required Vertical Mode
Reaction Moment (in-lbs)
NON-PHASE-LOCK

19.5

Total Moving Mass (lbs)

1300

G Limit

10

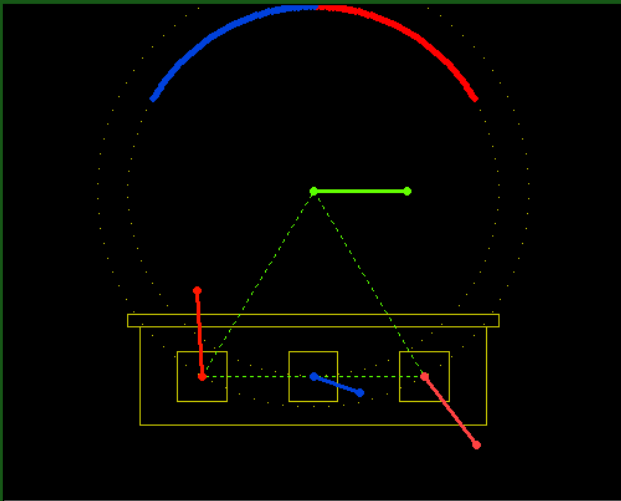


DONE

Sine Vibration
ES & VS (1 & 2 Shaft)
VH3S (3 Shaft)
VH4S (4 Shaft)
Weight
Force

Blue Arc - Torque Moment Created by Center Weight about CG
Red Arc - Torque Moment Created by Outer Weights about CG

Solid Green Line - Resultant Force acting on CG



Enter Vertical CG Distance From
Horiz. Line of Action (Inches)

VH3S Vertical CG 15.00" X 2

(tan⁻¹ -1) = 73°

VH3S Phase-Lock Angle (degrees)

Horizontal Distance From CG is 9 inches

Left Phase-Lock Angle

123°

Left Weight Angle

130°

Center Weight Angle

30°

Right Weight Angle

130°

Right Phase-Lock Angle

24°

Standard Shaker Specifications
60 Hertz Maximum Frequency

	Options	Capacity	X	Y	Z	Reaction Moment Inch Pounds	MAX Displacement Max Payload in inches	Max G	Power requirements
S E 1S 250 18 2424 VT	E, C, T, VT, B	250 lbs	24	24	No restriction	18	0.07	10	220V 1 Phase 20 Amp Circuit
SE 1S 500 37 3636 VT	E, C, T, VT, B	500 lbs	36	36	No restriction	37.5	0.094	10	220V 1 Phase 20 Amp Circuit
SE V 2S 500 75 3030 VT	V, E, C, T, VT, B	500 lbs	40	40	No restriction	75	0.166	10	220V 1 Phase 20 Amp Circuit
S EV 2S 500 75 4242 VT	V, E, C, T, VT, B	500 lbs	48 *	48 *	No restriction	75	0.153	10	220V 1 Phase 20 Amp Circuit
S VH 3S 500 150 3030 VT	V, E, H, C, T, VT, B	500 lbs	60 *	60 *	No restriction	150	0.105	10	208/480 3 Phase
S VH 3S 500 150 4242 VT	V, E, H, C, T, VT, B	500 lbs	60 *	60 *	No restriction	150	0.105	10	208/480 3 Phase
S EVH 3S 2000 150 3060 VT	V, E, H, C, T, VT, B	2000 lbs	30 *	60 *	No restriction	150	0.105	10	480 3 Phase
S EVH 4S 2000 150 6060 VT	V, E, H, C, T, VT, B	2000 lbs	60 *	60 *	No restriction	150	0.101	10	480 3 Phase
S EVH 4S 2000 300* 7272 V	V, E, H, C, T, VT, B	6000 lbs *	72 *	72 *	No restriction	300	0.1	10	480 3 Phase
*	*	*	*	*	*	*	*	*	*

S	Mechanicle Shaker
V	Vertical Machine
E	Elliptical Motion
H	Horizontal Motion
VT	Computer Control with Vibration Analysis & control Tool (Chamber Ready)
C	Casters
T	V Groove Casters with Track (Chamber Applications)
B	Thermal Barrier
*	Customer Parameters Available
1S	One Shaft Machine
2S	Two Shaft Machine
3S	Three Shaft Machine
4S	Four Shaft Machine

