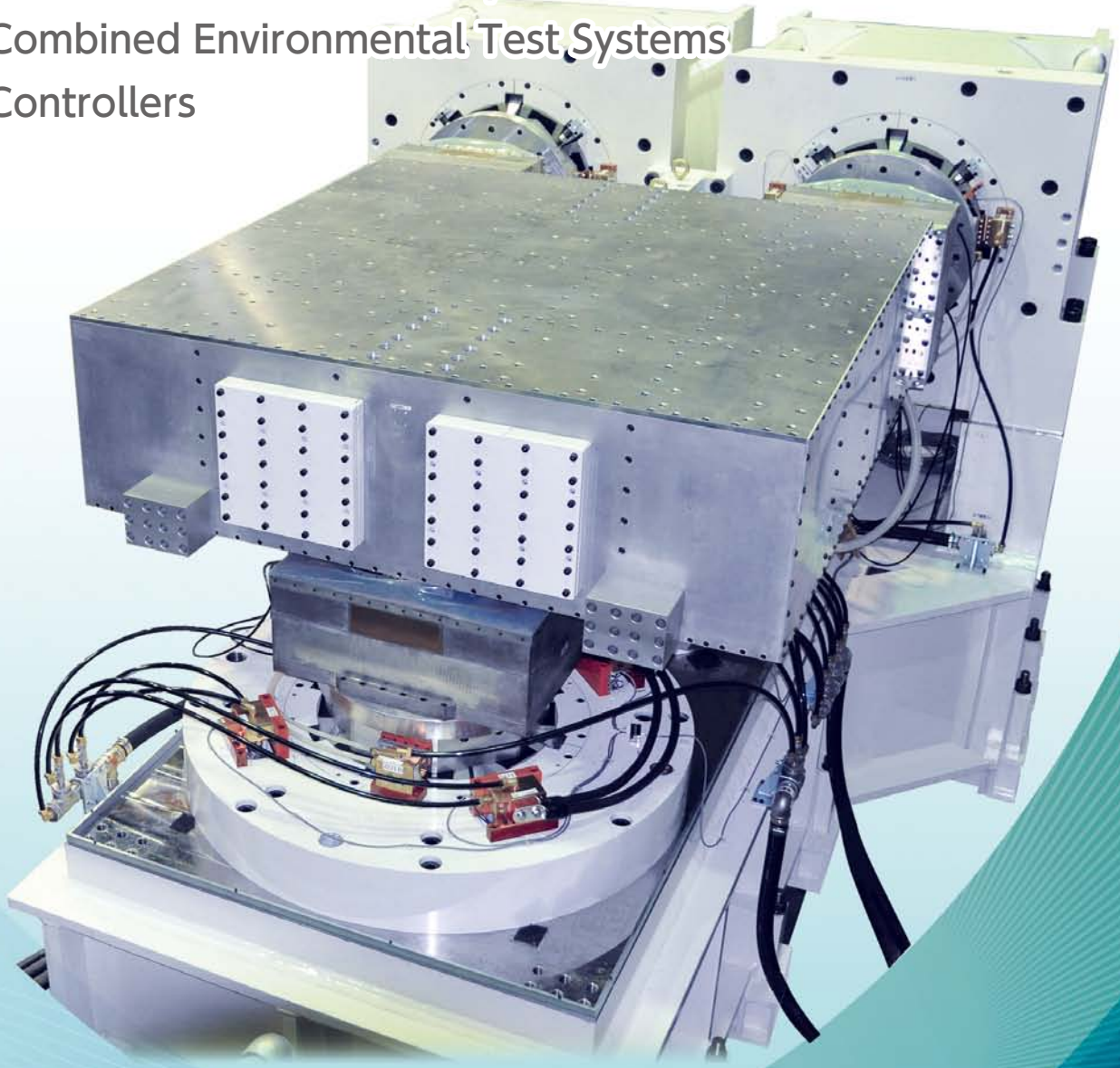
Vibration Test Systems

- Single-axis Vibration Test Systems
- Multi-axis Vibration Test Systems
- Combined Environmental Test Systems
- Controllers

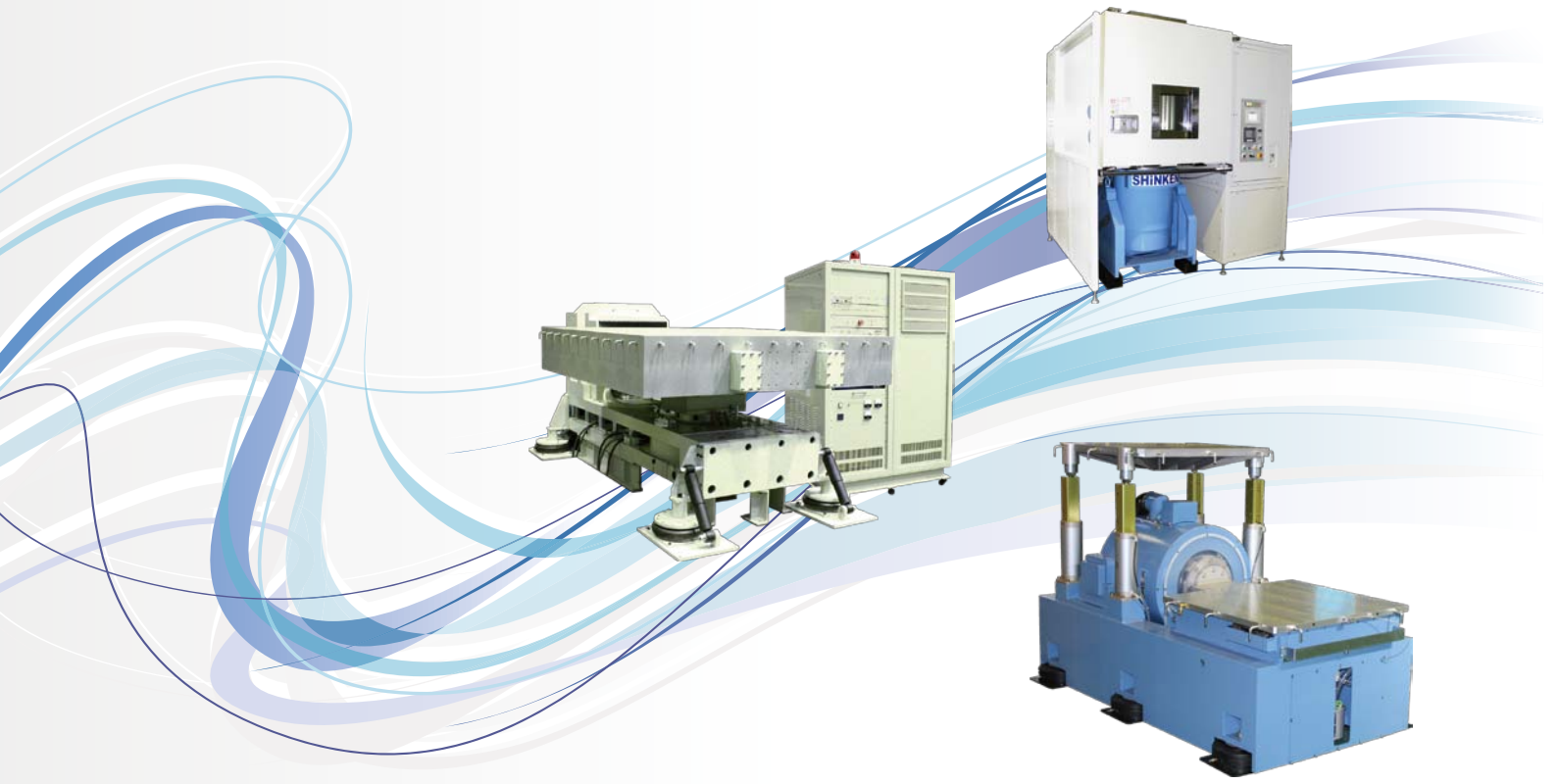


SHINKEN

Challenging to Any Applications Related to Vibration...

Since the establishment of SHINKEN in 1975, **SHINKEN** has taken the initiative in developing new products such as Multi-axis Vibration Generators and Air-bearing-guided Long-stroke Vibration Generators ahead of the other Vibration Test System manufacturers in the world. With the new technologies and unique design philosophy attaching importance to high reliability, **SHINKEN** has been enjoying high reputation among its many customers.

SHINKEN will keep challenging to any applications related to vibration to cope with more severe and diversified demand for Vibration Tests.

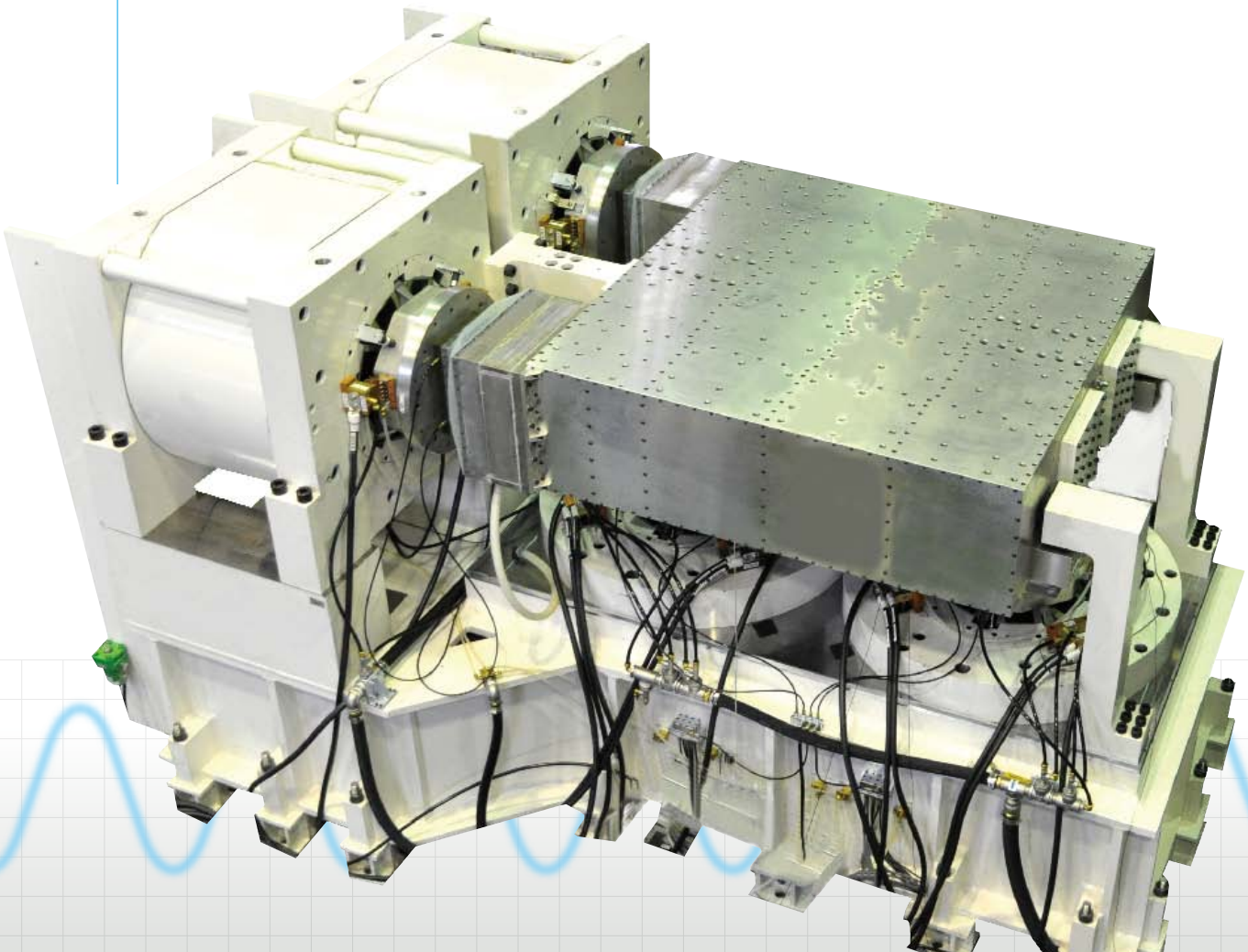


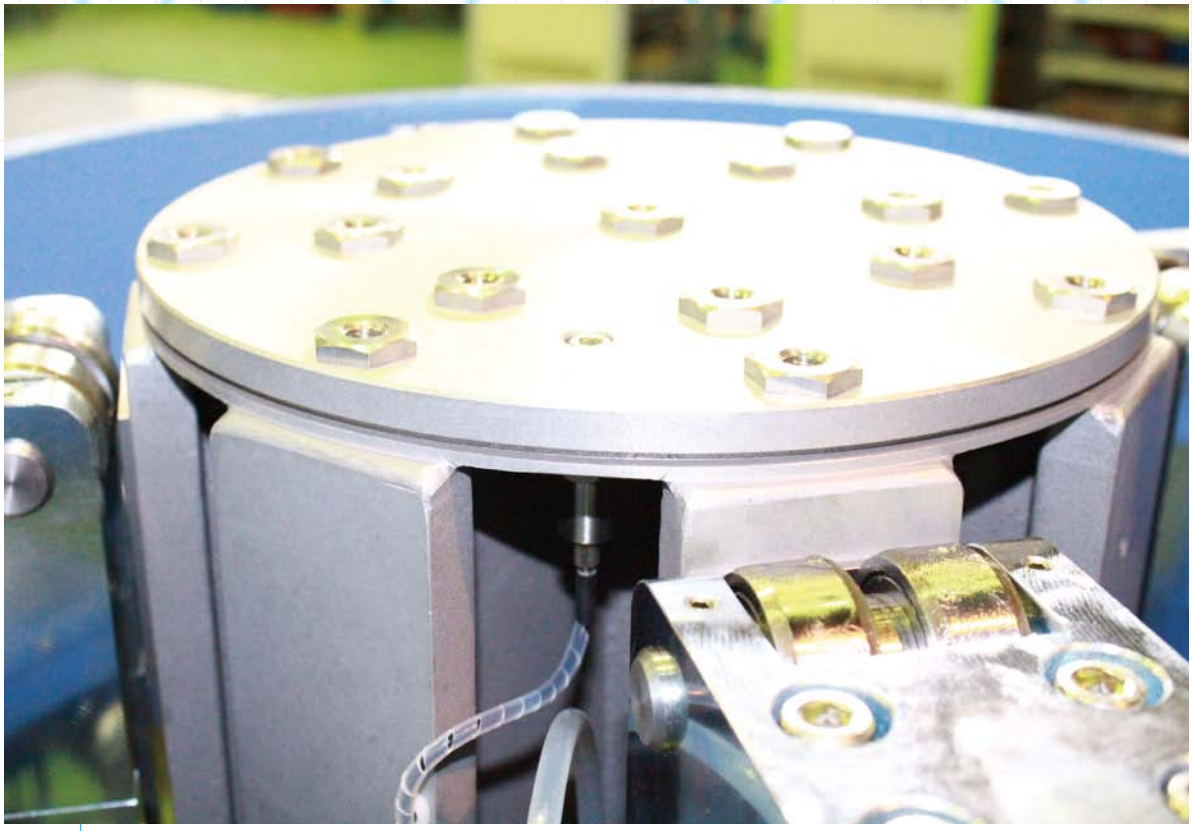
CONTENTS

Towards More Realistic Test Environment

The recent technological advances in a variety of industries; verticalization or vertical expansion of buildings, speeding up of transportation means, down-sizing & lightening of mobile devices and so on are all based upon ensuring 'high quality and safety' thus requirements for environmental tests having grown more severe and realistic.

SHINKEN Multi-axis Vibration Test Systems (VTSs), capable of making a 'More Realistic Vibration Environment' than conventional single-axis VTSs, can meet these requirements.





Longer Lifespan with High Durability

The shapes of products and parts recently diversify more than ever with some of them having bad weight balance. To test such products and parts, very heavy stress is given to Vibration Generators in use. To cope with this, a very strong, rigid guide system is required for the Vibration Generators – one solution is a **'Hydro-static Bearing Guide System'** . While mechanical guide systems such as mechanical bearings support only at the points, the **'Hydro-static Bearing Guide System'** supports the moving mass along 'all over the entire surface' on a few tens of micron high-pressured oil film with no mechanical friction involved, thus featured by **High Waveform Fidelity, High Eccentric Moment** and **Longer Lifespan.**

[To Calculate Force Output]

For right System Model selection, the Force Output needed to carry out the required tests is to be calculated.The following formula is used for Force Output calculation:

$$F = (m_0 + M_1 + M_2)\,A$$

F	:	Force Output	(N)
A	:	Acceleration	(m/s^2)
m_0	:	Weight of Bare Table	(kg)
M_1	:	Weight of Aux. Table and/or Fixture if any	(kg)
M_2	:	Weight of Specimen	(kg)

When the test acceleration is unknown, the following formula is used. (Only for Sine tests)

$$A = 2\pi fV$$
$$A = (2\pi f)^2 D$$

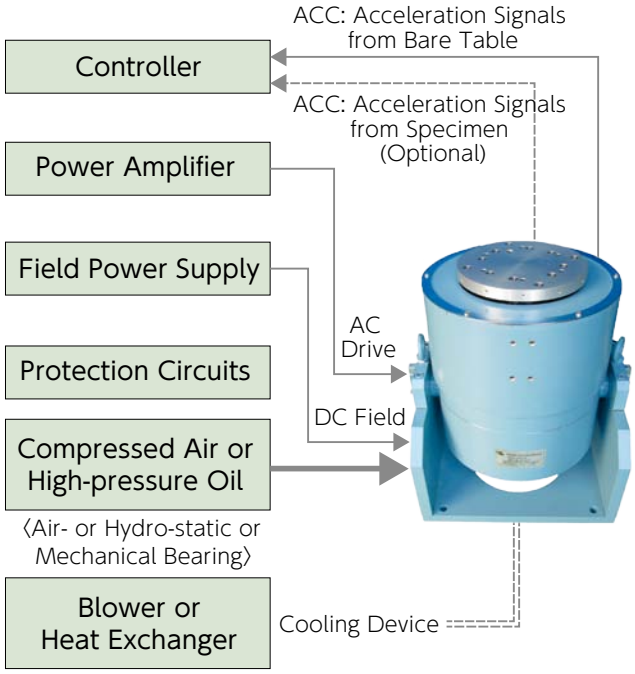
f	:	Frequency	(Hz)
V	:	Velocity	(m/s)
D	:	Displacement	($m_{0\text{-}p}$)
A	:	Acceleration	(m/s^2)

[About SI Units]

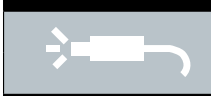
The SI Units, recognized internationally at present, are used in this Catalog.
The following table is a conversion table from the conventional units to the SI Units :

Quantity	Conventional unit	SI unit	conversion rate
Force	kgf	N	1 kgf=9.8 N
Acceleration	G	m/s^2	1 G=9.8 m/s^2
Velocity	cm/s	m/s	1 cm/s=0.01 m/s
Frequency	Hz	Hz	—
Moment	kgf·m	N·m	1 kgf·m=9.8 N·m
Pressure	kgf/cm^2	Pa	1 kgf/cm^2 =98 kPa
Outflow volume	L/min	m^3/s	L/min= (10-3/ 60) m3/sec
Heat volume	kcal	J	1 kcal=4.186 kJ
Radiate heat volume	kcal/h	W	1 kcal/h=1.162 W
Angle	° (degree)	rad	1° = π · rad/180

[System Configurations]



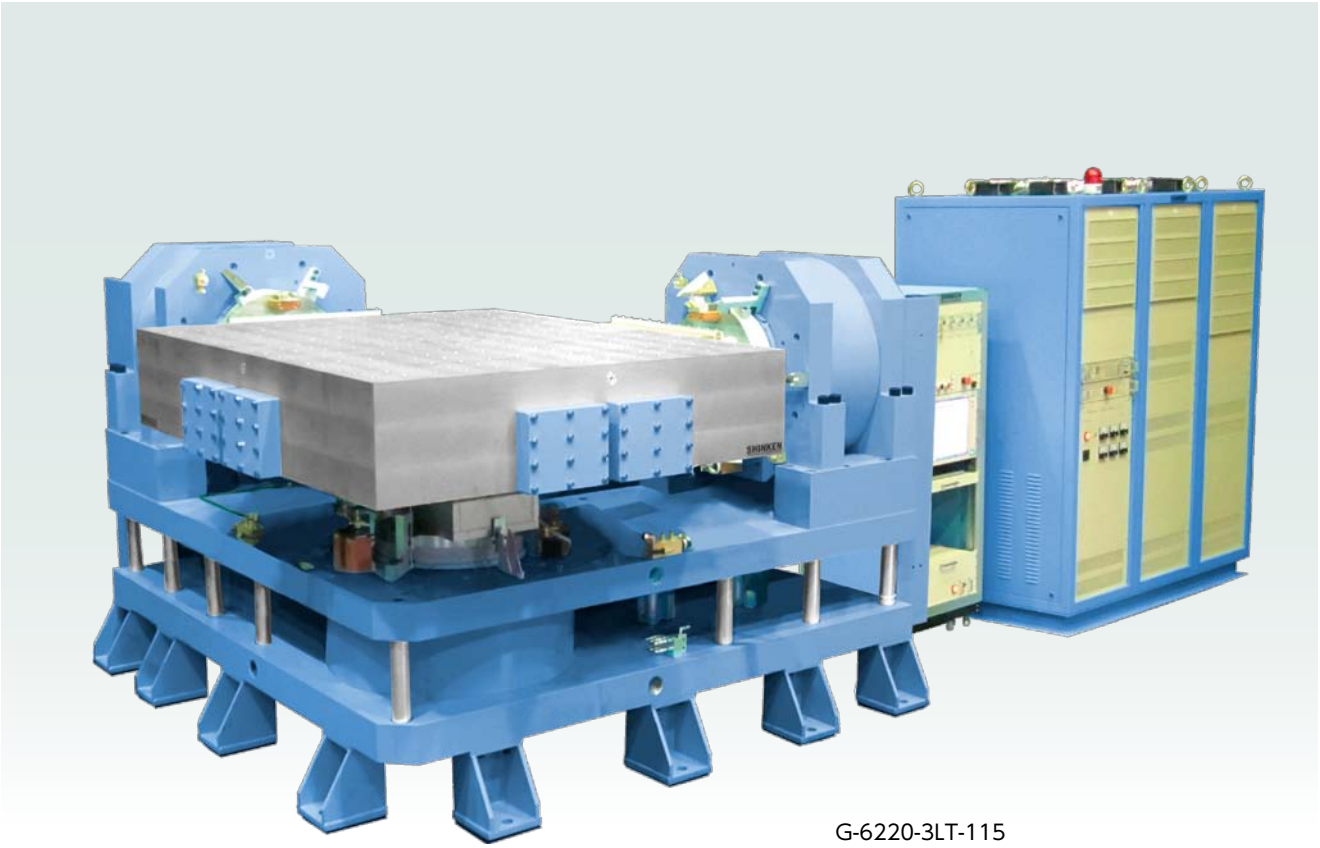
Right System Model Selection for Each Application

System For	Details on Application	Multi-axis		Single-axis			
		G-6	G-8	G-0	G-9	G-5	G-2
Seismic	Seismic Simulation for Land Liquefaction	◎	◎				
	Anti-seismic Simulation for Structure Models	◎	◎		○	◎	
	Seismic Simulation for Furniture Fall Prevention	◎	◎		○	◎	
	Anti-seismic Simulation for Industrial Equipment	◎	◎		○	◎	
	Operation Check for Seismic-related Sensors						
	Calibration for Seismic-related Sensors		○			○	
Transportation Packaged Goods	Packaged Goods	◎	○		◎		
	Packing Materials & Containers	◎	○		◎		
	Transportation Actual Travelling Simulation	◎	◎		◎		
	Shock Simulation during Transportation		○		◎		
Electronic & Electronic Apparatus	Small Electric & Electronic Parts and PC Boards			◎			○
	Home Appliances (White Goods)	◎	◎		◎		
	Sensors			○		○	◎
	Personal Computer and Computer Terminals	○	○	◎	○		
	Mobile Phones, Cameras and Tablet-type Devices			◎	○	○	
	Rechargeable Lithium Ion Batteries	○	◎	◎	○	○	
	Precision Equipment			◎	○		
	Large Electric Apparatus such as Generators	○	◎		◎		
Vehicles	Bodies, Chassis	◎	○		◎		
	Tires, Suspensions	◎	○		◎		
	Seats	◎	○		◎		
	Radiators		◎		○		
	Engines, Intake & Exhaust Systems		○	◎			
	Battery Modules & Packs		◎	◎	◎		
	Engine Control Units, Electrical Equipment			◎			○
	Instruments	◎		◎	○		
	Audio Systems, Car Navigation Systems	◎	○	◎			
	Sensors			○		○	◎
	Trouble Solutions	◎		○			
Railway Vehicles	Instruments, Electrical Equipment	○	◎	○	◎		
	Motors, Invertors	○	◎	○	◎		
	Compressors	○	◎		◎		
Aerospace	Sensors, Communications Systems			◎			
	Instruments, Electrical Equipment			◎	○		
	Engine Parts, Propulsion Systems			◎	○		
Other	Calibration for Sensors and Instruments					○	◎
	Educational Purposes, Model Tests	○					◎
	Power Filling, Fluid facilitation			○	◎		
In the Catalogue, shown on Page:		P7	P9	P11	P13	P15	P17

∗ meeting the International Standards such as ISO, IEC, MIL and JIS

3-axis Vibration Test Systems
G-6 Series

Seismic | Transportation | Electric & Electronic Apparatus | Vehicles | Railway Vehicles | Others



G-6220-3LT-115

Towards 'More Realistic Vibration'

The G-6 Series Vibration Test Systems (VTSs) can create 'More Realistic' vibration than any conventional Single-axis VTSs by exciting specimens in three directions; left & right(X), back & forth(Y) and up & down(Z), thus most suited to seismic simulation, transportation PSD simulation, actual vehicle running simulation etc.

Restraint on 'Cross-talks (unnecessary vibration)'

Long-experienced technology for the unique Hydro-static Bearing systems allows for restraint on 'Cross-talks' among the three axes, thus making it easy to control in accordance with the set 3-axis vibration test conditions.

3-axis Simultaneous VTSs & 3-axis Sequential VTSs Available

In addition to 3-axis Simultaneous VTSs, 3-axis Sequential VTSs, only capable of testing axis by axis with one-touch switch-over or optionally available automatic series tests (in order of Z→X→Y) are also available.

G-6130-*HB-020

3 : 3-axis Simultaneous
1 : 3-axis Sequential

- Air-cooled Water-cooled
- Hydro-static Bearing
- Axis Changeover Switch
- Automatic Changeover (with Series Test Unit)
- Combined Environmental Test Systems also Available

System Model	Max. Force Output		Max. Accele-ration	Max. Velocity	Max. Displace-ment	Upper Frequency*		Table Size	Movable Mass	Max. Payload	Model Number		Power Required	Cooling System
	Sine kN (kgf)	Random rms kNrms (kgfrms)	m/s² (G)	m / s	mm p-p	Sine Hz	Random Hz	mm	kg	kg	Vibration Generator	3ch Power Amplifier	kVA	[m^3/min] [ℓ /min]
G-6130-3HB-032	2.9(300)	1.8 (180)	72 (7.3)	1	26	1500	2000	320×320	41	50	G73-150-032	G14-003-3	23	Air (24)
G-6150-3HB-032	4.9 (500)	3.5 (360)	117 (12)	1	26	1500	2000	320×320	41	50	G73-150-032	G14-005-3	33	Air (24)
G-6150-3HT-040			49 (5)		51	1000	1500	400×400	91	100	G71-150-040			
G-6150-3HT-060		3 (310)	35 (3.6)			800	1000	600×600	140	100	G71-150-060			
G-6150-3HT-080		2.5 (260)	24 (2.4)			500	700	800×800	210	200	G74-150-080			
G-6150-3LT-110			19.6 (2)			350	500	1000×1000	260	200	G75-150-110			
G-6210-3HB-032	9.8 (1000)	6.8 (700)	239 (24)	1.2	26	1350	2000	320×320	41	100	G73-210-032	G14-010-3	50	Air (24)
G-6210-3HT-040			108 (11)		51	1000	1500	400×400	91	100	G71-210-040			
G-6210-3HT-060		5.8 (600)	70 (7.1)			800	1200	600×600	140	100	G71-210-060			
G-6210-3HT-080			47 (4.8)			700	1000	800×800	210	200	G71-210-080			
G-6210-3LT-110		4.9 (500)	37 (3.8)			350	500	1000×1000	260	200	G75-210-110			
G-6210-3LT-112			30 (3.1)			300	500	1200×1200	320	300	G75-210-112			
G-6220-3HB-032	19 (2000)	13.7 (1400)	280 (28)	1	26	1200	2000	320×320	100	200	G73-220-032	G14-021-3	106	Air (66)
G-6220-3HT-050		11.4 (1160)	127 (13)		51	800	1200	500×500	150	200	G71-220-050			
G-6220-3HT-080		9.5 (970)	83 (8.5)			500	1000	800×800	235	300	G71-220-080			
G-6220-3LT-110			54 (5.5)			350	500	1000×1000	365	500	G75-220-110			
G-6220-3LT-112			40 (4.1)	0.9		300	350	1200×1200	485	500	G75-220-112			
G-6220-3LT-115			32 (3.3)			250	350	1500×1500	615	500	G75-220-115			
G-6230-3HB-032	29 (3000)	20.3 (2070)	420 (42)	1.1	26	1200	2000	320×320	70	200	G73-230-032	G14-030-3	144	Air (75)
G-6230-3HT-050		17.4 (1780)	196 (20)		51	800	1200	500×500	150	200	G71-230-050			
G-6230-3HT-080		14.5 (1480)	127 (13)			500	1000	800×800	235	300	G71-230-080			
G-6230-3LT-110			80 (8.2)			350	500	1000×1000	365	500	G75-230-110			
G-6230-3LT-112			61 (6.2)	0.9		300	350	1200×1200	485	500	G75-230-112			
G-6230-3LT-115			48 (4.9)			250	350	1500×1500	615	500	G75-230-115			
G-6250-3HT-050	49 (5000)	29.4 (3000)	337 (34)	1.3	51	800	1000	500×500	145	300	G71-250-050	G14-050-3	230	Water (695)
G-6250-3HT-080		24.5 (2500)	245 (25)			700	900	800×800	200	300	G71-250-080			
G-6250-3LT-110			171 (17)	0.9		350	500	1000×1000	285	500	G75-250-110			
G-6250-3LT-115			75 (7.7)			250	350	1500×1500	650	700	G75-250-150			
G-6250-3LT-118			70 (7.1)			200	350	1800×1800	850	1000	G75-250-180			
G-6265-3HT-050	63.7 (6500)	37.8 (3860)	386 (39)	1.4	51	800	1000	500×500	165	300	G71-265-050	G14-065-3	280	Water (830)
G-6265-3HT-080			289 (29)			700	800	800×800	220	300	G71-265-080			
G-6265-3LT-110		31.5 (3220)	223 (22)	1		350	500	1000×1000	285	500	G75-265-110			
G-6265-3LT-115			100(9.8)			250	350	1500×1500	660	700	G75-265-115			
G-6265-3LT-118			71 (7.2)			200	350	1800×1800	900	1000	G75-265-118			

1. The upper frequency for sine is a frequency up to which the max. force output can be achieved, while that for random is a frequency up to which a PSD random pattern having a -6dB/oct or steeper roll-off over the upper frequency for sine(or lower) can be controlled. The lower frequencies for control and for excitation are 2Hz and 0.5Hz, respectively unless especially requested.
2. All the Power Amplifiers are of an air cooling type.
3. The HT and LT type systems having a max. force output of 2.94kN(300kgf), 6.86kN(700kgf) or 19.6kN(2,000kgf) are also available.
4. With the employment of the 1-ch Power Amplifiers instead of the 3-ch Power Amplifier, the 3-axis (Automatic) Sequential Vibration Test Systems are also available, which can be upgraded into the Triaxial Simultaneous Vibration Test Systems in the future by adding 2-ch Power Amplifiers and necessary controllers.
5. Vibration Generators with other table sizes than shown above are also available upon request.
6. Power required is 3-phase 200/220/380/415V, 50/60Hz.
7. For better acceleration distribution on the table, the movable weight will be heavier by 10 to 30kg for addition of proper balance weights.
8. For the G-6230 (29.4kN), air-cooled systems are available upon request.
9. For the air-cooled systems, it is recommended that the hot air from the cooling blower be sent to outside.
10. A System having a bigger force output and/or larger displacement than shown above is also available upon request.

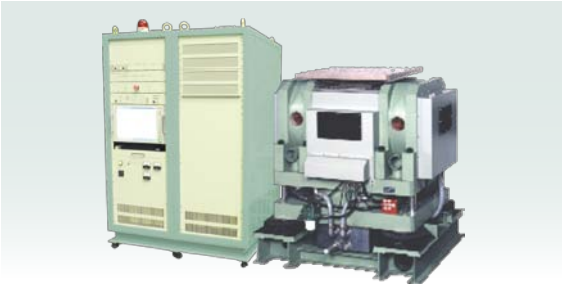
2-axis Vibration Test Systems
G-8 Series

Seismic | Transpor-tation | Electric & Electronic Apparatus | Vehicles | Railway Vehicles | Others

G-8225-1LT

Easier Change of Vibration Directions with One-touch Switch Operation

SHINKEN 2-axis Vibration Test Systems can eliminate troublesome and time-consuming work for the specimen handling and changing vibration directions with one-touch switch operation, thus most suited to tests for large, heavy specimens.



G-8220-1LB-080

Space-saving

SHINKEN 2-axis Vibration Generators(VGs) have a common table for both horizontal and vertical excitation, thus making the space needed for the VGs smaller than the conventional single-axis VGs which require two tables; especially VGs with large tables.

Cost-saving

As it is said that vertical and the so-called 'Major Horizontal' excitation can precipitate over 90% of the hidden flaws, 2-axis simultaneous excitation can be a cheaper solution.

2-axis Simultaneous VTSs & 2-axis Sequential VTSs Available

In addition to 2-axis Simultaneous VTSs, 2-axis Sequential VTSs, only capable of testing axis by axis with one-touch switch-over or optionally available automatic series tests (in order of Z→X) are also available.

G-8130-＊HB-020

2 : 2-axis Simultaneous
1 : 2-axis Sequential

LB-type

Also available are LB-type 2-axis Vibration Test Systems with the table size* changeable later, different from the HT- and LT-type. *But the size being limited with the VG's size.

■Air-cooled ■Water-cooled ■Hydro-static Bearing
■Axis Changeover Switch
■Automatic Changeover (with Series Test Unit)
■Combined Environmental Test Systems also Available

System Model	Max. Force Output		Max. Acceleration	Max. Velocity	Max. Displacement	Upper Frequency*		Table Size	Movable Mass	Max. Payload	Model Number		Power Required	Cooling System
	Sine kN (kgf)	Random rms kNrms (kgfrms)	m/s² (G)	m/s	mmp-p	Sine Hz	Random Hz	mm	kg	kg	Vibration Generator	2ch Power Amplifier	kVA	[m^3/min] [ℓ /min]
G-8130-2HB-020	2.9 (300)	1.8 (180)	84 (8.6)	1	26	1500	2000	200×200	35	50	G72-150-020	G14-003-2	17	Air (16)
G-8150-2HB-020	4.9 (500)	3.4 (350)	137 (14)	1	26	1500	2000	200×200	35	50	G72-150-020	G14-005-2	24	Air (16)
G-8150-2HT-040			62 (6.3)		51	1000	1500	400×400	80	100	G70-150-040			
G-8150-2HT-060			41 (4.2)			800	1000	600×600	120	100	G70-150-060			
G-8150-2HT-080		3 (300)	27 (2.8)			500	700	800×800	180	200	G74-150-080			
G-8150-2LT-110		2.5 (250)	21 (2.1)			350	500	1000×1000	240	200	G74-150-110			
G-8150-1LB-050		3.4 (350)	61 (6.2)		30	100	700	500×500	80	100	G76-150-050	G14-005-1	18	
G-8150-1LB-060			49 (5)			100	500	600×600	68	100	G76-150-060			
G-8150-1LB-080			32 (3.3)			100	400	800×800	125	200	G76-150-080			
G-8150-1LB-110			27 (2.7)			100	300	1000×1000	160	200	G76-150-110			
G-8210-2HB-026	9.8 (1000)	6.8 (700)	284 (29)	1.2	26	1350	2000	260×260	35	100	G72-210-026	G14-010-2	36	Air (16)
G-8210-2HT-040			127 (13)		51	1000	1500	400×400	80	100	G70-210-040			
G-8210-2HT-060			81 (8.3)			800	1200	600×600	120	100	G70-210-060			
G-8210-2HT-080			55 (5.6)			700	1000	800×800	180	200	G70-210-080			
G-8210-2LT-110		5 (500)	41 (4.2)			350	500	1000×1000	240	200	G74-210-110			
G-8210-2LT-112			32 (3.3)			300	500	1200×1200	300	300	G74-210-112			
G-8210-1LB-060		6.8 (700)	81 (8.3)	1.2	51	100	500	600×600	120	200	G76-210-060	G14-010-1	25	
G-8210-1LB-080			57 (5.8)			100	400	800×800	170	200	G76-210-080			
G-8210-1LB-110			49 (5)			100	300	1000×1000	200	300	G76-210-110			
G-8210-1LB-112			36 (3.7)			100	200	1200×1200	270	300	G76-210-112			
G-8220-2HB-032	19 (2000)	13.7(1400)	326 (33)	1	26	1200	2000	320×320	60	200	G72-220-032	G14-021-2	73	Air (44)
G-8220-2HT-050			147 (15)		51	800	1200	500×500	135	200	G70-220-050			
G-8220-2HT-080			98 (10)			500	1000	800×800	195	300	G70-220-080			
G-8220-2LT-110		9.8 (1000)	68 (6.9)			350	500	1000×1000	290	500	G74-220-110			
G-8220-2LT-112			52 (5.3)	0.9		300	350	1200×1200	375	500	G74-220-112			
G-8220-2LT-115			34 (3.5)			250	350	1500×1500	565	500	G74-220-115			
G-8220-1LB-080		13.7(1400)	103 (10)	0.9	51	100	400	800×800	190	300	G76-220-080	G14-21-2	40	
G-8220-1LB-110			89 (9)			100	300	1000×1000	220	300	G76-220-110			
G-8220-1LB-112			65 (6.6)			100	300	1200×1200	300	500	G76-220-112			
G-8220-1LB-115			29 (2.9)			100	100	1500×1500	670	500	G76-220-115			
G-8230-2HB-032	29 (3000)	20.5 (2100)	490 (50)	1.1	26	1200	2000	320×320	60	200	G72-230-032	G14-030-2	98	Air (50)
G-8230-2HT-050			215 (22)		51	800	1200	500×500	135	200	G70-230-050			
G-8230-2HT-080			147 (15)			500	1000	800×800	195	300	G70-230-080			
G-8230-2LT-110		15 (1500)	98 (10)			350	500	1000×1000	290	500	G74-230-110			
G-8230-2LT-112			78 (8)	0.9		300	350	1200×1200	375	500	G74-230-112			
G-8230-2LT-115			52 (5.3)			250	350	1500×1500	565	500	G75-230-115			
G-8250-2HT-050	49 (5000)	34 (3500)	392 (40)	1.3	51	800	1200	500×500	125	300	G70-250-050	G14-050-2	156	Water (470)
G-8250-2HT-080			245 (25)			700	1000	800×800	200	300	G70-250-080			
G-8250-2LT-110		25 (2500)	186 (19)			350	500	1000×1000	270	500	G74-250-110			
G-8250-2LT-115			79 (8.1)	0.9		250	350	1500×1500	620	700	G74-250-115			
G-8250-2LT-118			70 (7.1)			200	350	1800×1800	700	1000	G74-250-118			
G-8265-2HT-050	63 (6500)	44 (4550)	510 (52)	1.4	51	800	1200	500×500	125	300	G70-265-050	G14-065-2	186	Water (560)
G-8265-2HT-080			294 (30)			700	1000	800×800	200	300	G70-265-080			
G-8265-2LT-110		32 (3250)	235 (24)	1		350	500	1000×1000	270	500	G74-265-110			
G-8265-2LT-115			98 (10)			250	350	1500×1500	630	700	G74-265-115			
G-8265-2LT-118			73 (7.4)			200	350	1800×1800	870	1000	G74-265-118			

1. The upper frequency for sine is a frequency up to which the max. force output can be achieved, while that for random is a frequency up to which a PSD random pattern having a -6dB/oct or steeper roll-off over the upper frequency for sine(or lower) can be controlled. The lower frequencies for control and for excitation are 2Hz and 0.5Hz, respectively unless especially requested.
2. All the Power Amplifiers are of an air cooling type.
3. The HT and LT type systems having a max. force output of 2.94kN(300kgf), 6.86kN(700kgf) or 19.6kN(2,000kgf) are also available.
4. With the employment of the 1-ch Power Amplifiers instead of the 2-ch Power Amplifier, the 2-axis (Automatic) Sequential Vibration Test Systems are also available, which can be upgraded into the Triaxial Simultaneous Vibration Test Systems in the future by adding 1-ch Power Amplifiers and necessary controllers.
5. Vibration Generators with other table sizes than shown above are also available upon request.
6. Power required is 3-phase 200/220/380/415V, 50/60Hz.
7. For better acceleration distribution on the table, the movable weight will be heavier by 10 to 30kg for addition of proper balance weights.
8. For the G-8230 (29.4kN), air-cooled systems are available upon request.
9. For the air-cooled systems, it is recommended that the hot air from the cooling blower be sent to outside.
10. A System having a bigger force output and/or larger displacement than shown above is also available upon request.

Vibration Test Systems for General Purposes
G-0 Series

Electric & Electronic Apparatus | Vehicles | Railway Vehicles | Aerospace | Others | Transportation

G-0220NS

A Variety of Choices

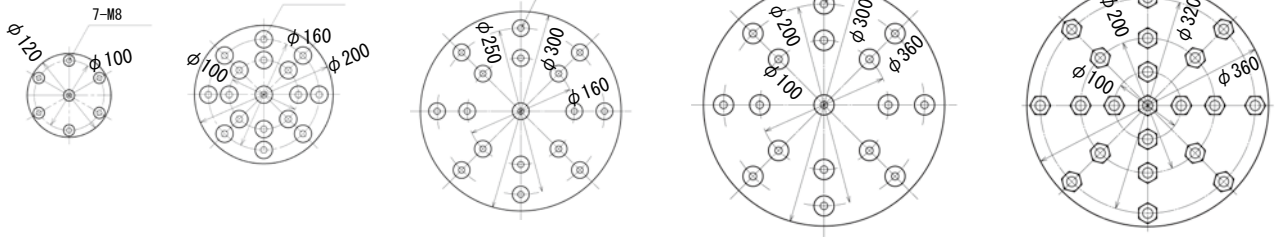
The G-0 Series Vibration Test Systems (VTSs), core systems of SHINKEN, have a variety of choices according to customer's requirements with force output ranging from 1kN to 200kN and a choice of the guide systems from mechanical bearing, air-bearing and hydro-static bearing systems.

Usable for a Wide Range of General Purpose Vibration Tests

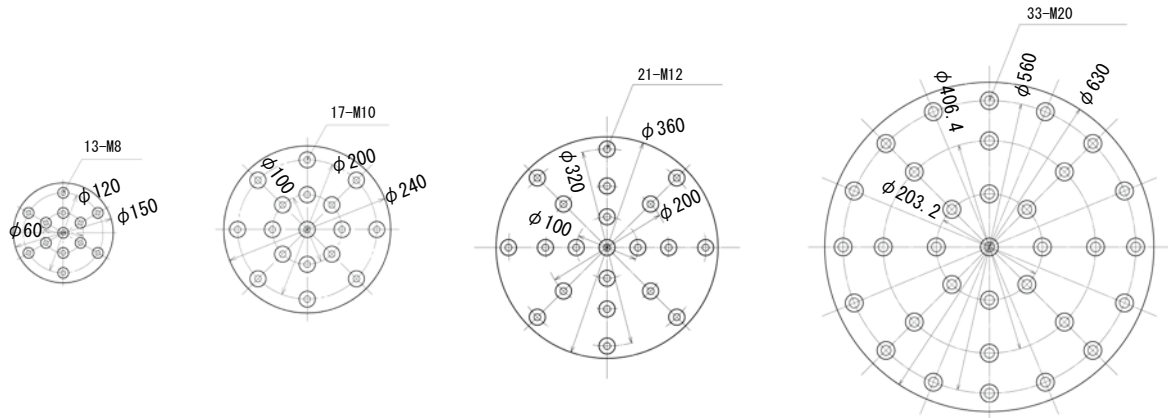
With the main features of high frequencies and high acceleration, The G-0 Series VTSs are most suited to vibration tests for vehicle and electric & electronic parts, also usable for a variety of vibration tests for general purposes by adding necessary accessories such as vertical tables and horizontal tables.

■Air-cooled ■Water-cooled ■Mechanical Bearing
■Air Bearing ■Hydro-static Bearing ■Combined Environmental Test Systems also Available

Bare Table Hole Patterns



G23-130 **G23-210** **G23-220S** **G22-220** **G22-235** **G22-230S** **G22-265**



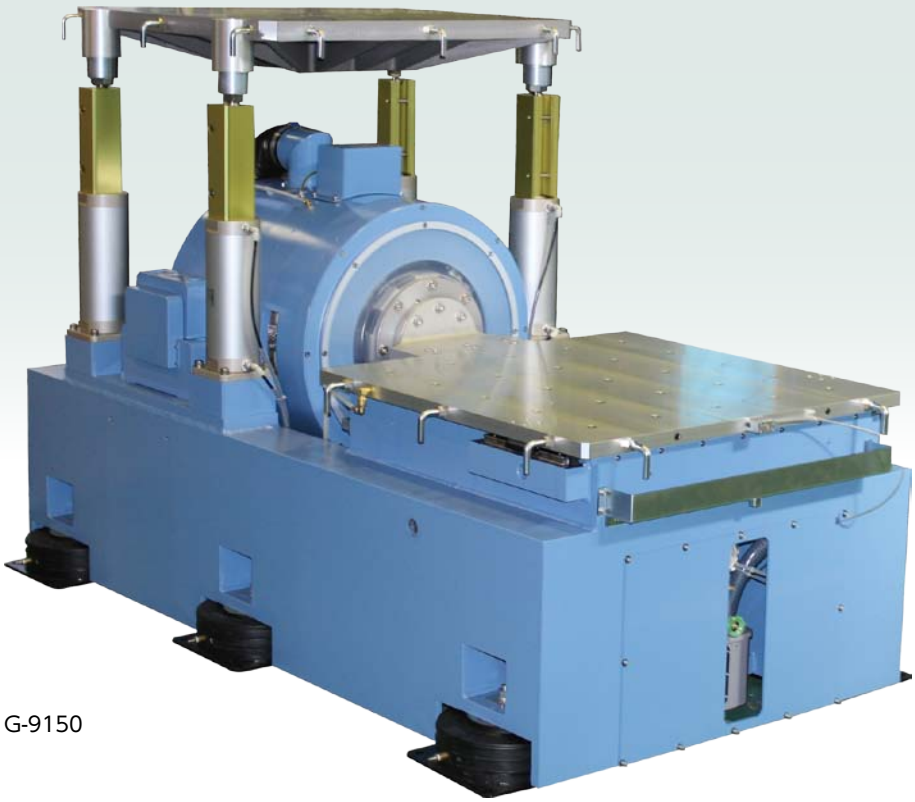
G23-160 **G23-210S** **G21-215** **G22-215S** **G22-250** **G22-250S** **G22-310** **G22-316**

System Model	Max. Force Output	Max. Accele-ration	Max. Velo-city	Max. Displace-ment	Fre-quency Range	Table Size	Mov-able Mass	Max. Pay-load	Vibration Generator		Power Amplifier		Power Re-quired	Cooling System
	Sine kN (kgf)	Sine m/s² (G)	m/s	mm p-p	Hz	mm	kg	kg	Model	Dimensions (W×D×H mm)	Model	Dimensions (W×D×H mm)	kVA standard 200[V]	[m^3/min] [ℓ /min]
G-0110N	1 (102)	303 (30)	0.6	51	3~3000	φ120	3.3	60	G23-130	470×380×430	G14-905	Unit 490×430×90	1.5	Air (0.2)
G-0130N	3 (306)	909 (92)	1.2	51	3~3000	φ120	3.3	60	G23-130	670×504×745	G14-002	570×710×1585	6	Air (12)
G-0160N	6 (612)	909 (92)	2	51	3~2500	φ150	6.6	100	G23-160	766×574×820	G14-006	570×710×1585	10	Air (12)
G-0210N	10 (1020)	909 (92)	2	51	3~2000	φ200	11	150	G23-210	800×713×890	G14-010	585×1000×1580	13	Air (10)
G-0210NS	10 (1020)	666 (67)	2	100	3~2000	φ240	15	150	G23-210S	720×714×1106	G14-010	585×1000×1835	13	Air (10)
G-0215	15 (1530)	1000 (102)	1.5	51	3~3000	φ240	15	300	G21-215	955×776×1000	G14-014	585×1000×1835	23	Air (15)
G-0215NS	15 (1530)	833 (85)	1.5	100	3~2000	φ240	18	200	G23-215S	820×792×1150	G14-014	585×1000×1835	23	Air (15)
G-0220L	20 (2040)	980 (100)	2	51	3~2000	φ300	20.4	300	G22-220	898×867×1071	G14-021	585×1000×1835	32	Air (20)
G-0220NS	20 (2040)	769 (78.5)	2	100	3~2000	φ300	26	200	G23-220S	995×840×1203	G14-021	585×1000×1835	32	Air (20)
G-0230L	30 (3060)	909 (92)	1.7	51	3~2000	φ360	33	300	G22-235	1080×970×1205	G14-028	585×1000×2113	40	Air (22)
G-0230LS	30 (3060)	789 (80)	1.7	80	3~2000	φ360	38	300	G22-230S	1215×970×1205	G14-028	1170×1000×1835	40	Air (22)
G-0235L	34.3 (3500)	1000 (102)	2	51	3~2000	φ360	33	300	G22-235	1215×970×1205	G14-035	1170×1000×1835	53	Air (22)
G-0250L	49 (5000)	890 (90)	2	51	3~2000	φ360	55	500	G22-250	1500×1000×1574	G14-049	1170×1000×1835	78	Air (60)
G-0250LS	49 (5000)	846 (86)	2	80	3~2000	φ360	65	1000	G22-250S	1341×1100×1544	G14-049	1170×1000×1835	78	Air (60)
G-0265L	63.7 (6500)	1000 (102)	1.7	56	3~2000	φ360	50	1000	G22-265	1170×1000×1323	G14-063	1170×1000×1835	110	water (300)
G-0285L	83.3 (8500)	833 (85)	1.7	56	3~2000	φ500	100	1000	G22-310	1572×1332×1587	G14-084	1755×1000×1835	142	water (450)
G-0310L	98 (10000)	980 (100)	1.7	56	3~2000	φ500	100	1000	G22-310	1900×1240×1665	G14-110	1755×1000×1835	175	water (525)
G-0313L	127 (13000)	970 (96)	1.7	56	3~2000	φ500	135	2000	G22-316	1900×1420×1665	G14-113	2340×1000×2054	205	water (561)
G-0316L	156 (16000)	1000 (102)	1.5	56	3~2000	φ500	135	2000	G22-316	1900×1420×1665	G14-116	2925×1000×2054	235	water (648)
G-0320L	196 (20000)	980 (100)	1.5	56	3~2000	φ630	200	2000	G22-320	1950×1450×1760	G14-120	4095×1000×2054	320	water (768)

1. For the air-cooled systems with a force output of over 20kN, it is recommended that the hot air from the cooling blower be sent to outside.
2. The last letter stands for:
   N: Air Bearing Type
   L: Hydro Static Bearing Type
   No Letter: Mechanical Bearing Type

Vibration Test Systems for Transportation Tests
G-9 Series

Transpor-tation | Electric & Electronic Apparatus | Vehicles | Railway Vehicles | Others | Aerospace



G-9150

Suitable for Vibration Tests for Large products

The main features of the large bare tables and high eccentric moment makes the G-9 Series Vibration Test Systems (VTSs) suitable mainly for transportation vibration tests for relatively large specimens, while G-9 VTSs can be used for many other purposes with various options and modifications available.

Usable Up to 2kHz (Option)

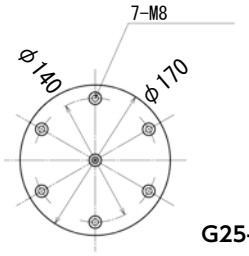
Optionally available is 2kHz instead of standard 500 to 1,000Hz, making G-9 VTSs also usable for tests for vehicle parts and electric & electronic parts.

Relatively Easy Changeover of Vibration Directions Possible

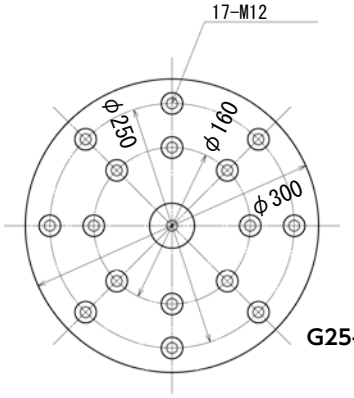
Featured by high eccentric moment, the Vibration Generators (VGs) of the G-9 Series (except of Air-bearing type) can be used for horizontal excitation with the Horizontal Table being directly connected to the Bare Table (but with table size and loadable weight limitation). Also the Vertical Table UP-DOWN Device and VG Geared-motor Rotating Mechanism optionally available make a changeover of vibration direction relatively easy, thus shortening time and enhancing safety for changing vibration directions.

■Air-cooled ■Mechanical Bearing ■Air Bearing ■Hydro-static Bearing
■Combined Environmental Test Systems also Available

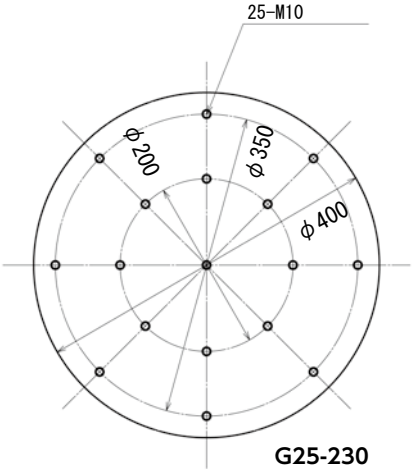
Bare Table Hole Patterns



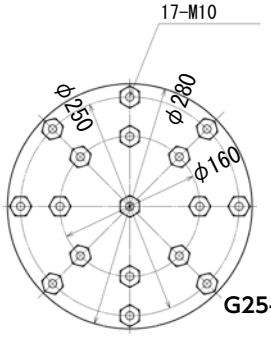
G25-117



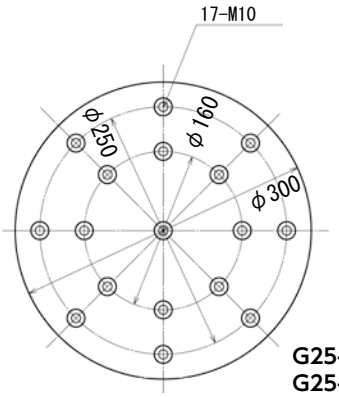
G25-210



G25-230
G25-230L
G25-230N



G25-150



G25-210L
G25-210N

System Model	Max. Force Output	Max. Acceleration	Max. Velocity	Max. Displacement	Frequency Range	Table Size	Movable Mass	Max. Payload	Eccentric Moment	Vibration Generator		Power Amplifier		Power Required	Cooling System
	Sine kN (kgf)	Random rms m/s² (G)	m/s	mm p-p	Hz	mm	kg	kg	N·m	Model	Dimensions (W×D×H mm)	Model	Dimensions (W×D×H mm)	kVA	[m^3/min]
G-9117	1.66 (170)	237 (24)	0.8	50	2～1000	φ170	7	100	500	G25-117	528×544×520	G14-001	570×710×1335	3	Air (5)
G-9130	2.94 (300)	147 (15)	1.2	50	2～800	φ280	20	300	1000	G25-150	800×837×700	G14-002	570×710×1585	9	Air (6)
G-9150	4.9 (500)	245 (25)	1.5	50	2～800	φ280	20	300	1000	G25-150	800×837×700	G14-005	570×710×1585	10	Air (6)
G-9170	6.86 (700)	225 (23)	1.2	60	2～700	φ300	30	300	1200	G25-210	715×845×770	G14-007	570×710×1835	14	Air (8)
G-9170L	6.86 (700)	171 (17.5)	1.5	100	2～700	φ300	40	300	1500	G25-210L	882×882×800	G14-007	570×710×1835	14	Air (8)
G-9170N	6.86 (700)	214 (21.8)	1.5	100	2～700	φ300	32	300	350	G25-210N	685×777×778	G14-007	570×710×1835	14	Air (8)
G-9210	9.8 (1000)	323 (33)	1.5	60	2～700	φ300	30	300	1200	G25-210	715×845×770	G14-010	570×710×1835	19	Air (10)
G-9210L	9.8 (1000)	245 (25)	1.5	100	2～700	φ300	40	300	1500	G25-210L	882×882×800	G14-010	570×710×1835	19	Air (10)
G-9210N	9.8 (1000)	306 (31.2)	1.5	100	2～700	φ300	32	300	350	G25-210N	685×777×778	G14-010	570×710×1835	19	Air (10)
G-9220	19.6(2000)	392 (40)	1.5	60	2～500	φ400	50	500	1500	G25-230	1030×1030×1025	G14-021	585×1000×1835	34	Air (22)
G-9220L	19.6(2000)	280 (28.5)	1.5	100	2～500	φ400	70	500	2250	G25-230L	1010×1010×900	G14-021	585×1000×1835	41	Air (22)
G-9220N	19.6(2000)	356 (36.3)	1.5	100	2～500	φ400	55	500	500	G25-230N	1030×1030×1025	G14-021	585×1000×1835	41	Air (22)
G-9230	29.4(3000)	490 (50)	1.2	60	2～500	φ400	60	500	1500	G25-230	1030×1030×1025	G14-035	585×1000×1835	45	Air (25)
G-9230L	29.4(3000)	420 (42.8)	1.5	100	2～500	φ400	70	500	2250	G25-230L	1010×1010×900	G14-035	585×1000×1835	51	Air (25)
G-9230N	29.4(3000)	534 (54.5)	1.5	100	2～500	φ400	55	500	500	G25-230N	1030×1030×1025	G14-035	585×1000×1835	51	Air (25)

1. For the air-cooled systems with a force output of over 20kN, it is recommended that the hot air from the cooling blower be sent to outside.
2. The last letter stands for:
   N: Air Bearing Type
   L: Hydro Static Bearing Type
   No Letter: Mechanical Bearing Type

Shock & Vibration Test Systems
G-5 Series

Seismic | Transpor-tation | Electric & Electronic Apparatus | Vehicles | Others

G-5125N

Up To 4,900m/s² (500G) Shock Tests Possible

A unique structure of light movable mass and large displacement permits for shock tests with quite high acceleration and long duration, featured by high fidelity of controlled shock waveforms.

Bump Tests Easily Achieved

Easy setting of the number of times of shock waveforms and interval time makes Bump Tests easily achieved, thus beating conventional Shock Test Machines in a way.

Up to 260mmp-p Displacement Available

The other feature of G-5 Series, large displacement up to 260mmp-p also allows for seismic simulation.

■Air-cooled ■Air Bearing

System Model		Max. Force Output [kN (kgf)] [kNrms (kgfrms)]	Max. Acceleration [m/s²(G)]	Max. Velocity m/s	Pulse Width msec	Max. Displacement mm p-p	Frequency Range* Hz	Table Size mm	Movable Mass kg	Max. Payload kg	Vibration Generator		Power Amplifier		Power Required kVA	Cooling System [m^3/min]
											Model	Dimensions (W×D×H mm)	Model	Dimensions (W×D×H mm)		
G-5125N	Sine	1.8 (179) *1.1kg load	706 (71)	2	1～70	150	3～2000	65×65	1.4	20	G22-125N	570×475×758	G14-007	570×710×1835	10	Air (8)
	Shock	7.5 (765)	4900 (500)	3												
G-5150N	Sine	4.2 (428) *0.5kg load	706 (71)	2	1～100	200	3～2000	150×150	5.5	50	G22-160N	548×676×877	G14-014	585×1000×1835	18	Air (10)
	Shock	15 (1530)	2726 (278)	3												
G-5212N	Sine	8.4 (857) *1kg load	706 (71)	2	1～70	150	3～2000	150×150	11	150	G22-212N	660×742×811	G14-021	585×1000×1835	28	Air (15)
	Shock	24 (2450)	2182 (222)	3												
G-5220N	Sine	14 (1428)	1078 (110)	2	1～50	100	3～1400	200×200	13	150	G22-220N	852×1015×1063	G14-028	585×1000×1835	30	Air (20)
	Shock	35 (3570)	2691 (274)	3												
G-5230N	Sine	21 (2143)	657 (67)	2	1～100	200	3～1400	200×200	32	370	G22-230N	940×994×1027	G14-042	1170×1000×1835	50	Air (22)
	Shock	61.2 (6250)	1914 (195)	3												
G-5230NS	Sine	21 (2143)	598 (61)	2	1～100	260	0.4～1400	φ300	35	370	G22-230NS	930×1002×1212	G14-042	1170×1000×1835	50	Air (22)
	Shock	61.2 (6250)	1856 (189)	3												
G-5250N	Sine	34 (3500)	647 (66)	2	1～100	260	0.4～1000	φ360	52	370	G22-250NS	1225×1218×1555	G14-063	1000×1755×1835	80	Air (60)
	Shock	85.7 (8750)	1649 (168)	3												

1. *For low-frequency tests such as seismic simulation, a relevant accelerometer or servo sensor and a low-frequency use charge amplifier are needed (also for seismic tests, relevant foundation is recommended).
2. For the air-cooled systems with a force output of over 20kN, it is recommended that the hot air from the cooling blower be sent to outside.

Combined Environmental Test Systems
CS Series

For environmental test requirements, Combined Environmental Test Systems are combination of Vibration Test Systems and Environmental Chambers. With DIO and protection devices, linkage operation of the Vibration Test System and the Environmental Chamber can be achieved. Also available now are HV (Horizontal & Vertical) Combined Environmental Test Systems.
The Multi-axis Vibration Generators can also be combined with Environmental Chambers.

G-0215NS
with Environmental Chamber

System Model	CS-418P-1C	CS-418P-2C	CS-418P-3C	CS-418P-4C
Internal Dimensins	600×600×600	800×800×800	1000×1000×1000	1200×1200×1200
Temperature Range	-40℃～ +180℃			
Humidity Range	20% ～ 98%R.H （with Temperature Conditions）			
Temp. & Humidity Fluctuation	Within ±0.5℃ ／ ±4.0%RH （excluding Heat-up & Cool-down Periods）			
Temperature Distribution	±3.0℃			
Temperature Ramp Time	20℃→-40℃ :Within 60 min ／ 20℃→-40℃ :Within 60 min ※with Total Mass of about 40 kg （Specimen & Fixture）			
Body Material	Exterior : Bonderized Steel ／ Interior : SUS304 2B			
Heat Insulation Material	Glass Wool etc.			
Temp. & Humidity Controller	TFT Display, Touch Panel Operation			
Fittings Accessories	Lid Cover for Independent Use, Cable Port 50 φ×1, Hour Meter×1, Waterdrop-proof Sheet, Height Adjustors			
Chamber-VTS linkage	Start and Stop with Time Signals from Controller, Linked Interlocks			
Moving Method	Chamber Moving on Rails			
Docking with Shaker	Piggy-back Docking			
Protective Devices	Breaker, Fridge Overload Relay, Over Heat Prevention, External Alarm Terminal Fridge High-pressure Switch, Boil Dry Protector, Door Switches, Emergency Stop Switch, Water Lack, etc.			

Miniature Vibration Test Systems
G-2 Series

Electric & Electronic Apparatus | Vehicles | Others : Calibration & Education

G-2005D

Usable Anywhere

Featured by compact and handy, the G-2 Series Vibration Test Systems (VTSs) can be put and used anywhere; even on a school desk (but smaller than the G-2005D) with no noisy cooling blower needed. (except the G-2050).

Small But For A Variety of Applications

The G-2 Series VTSs, small but consisting of a sweep oscillator, sine controller, power amplifier and vibration generator, can be used for a variety of applications; calibration of sensors, standard vibration tests for small part, school teaching materials and modal analysis.

Expandable to...

A vertical table and/or a horizontal table can be added though the size is limited. Also instead of the standard simple sine controller, the Digital Vibration Controller D-59 Series can be used as option.

System Model	Max. Force Output	Max. Acceleration	Max. Displace-ment	Frequency Range	Table Size	Movable Mass	Max. Payload	Vibration Generator		Power Amplifier	Power Level
	Sine N (kgf)	Sine m/s² (G)	mm p-p	Hz	mm	kg	kg	Model	Dimensions (W×D×H mm)	Model	(100V) A
G-2002	19.6 (2)	157 (16)	2	10 ~ 10000	φ30	0.125	0.3	G21-002	φ85×100	G14-805	1.2
G-2005D	49 (5)	62 (6.3)	2	10 ~ 8000	φ80	0.8	2	G21-005D	φ132×161	G14-902	3
G-2010	98 (10)	196 (20)	3	5 ~ 5000	φ63	0.5	2	G21-010	φ175×195	G14-905	4
G-2020L	196 (20)	245 (25)	10	5 ~ 5000	φ63	0.8	10	G21-020L	φ245×271	G14-905	5
G-2030	294 (30)	245 (25)	25	5 ~ 5000	φ100	1.2	10	G21-050	530×640×745	G14-905	6
G-2050	490 (50)	408 (41.6)	25	5 ~ 5000	φ100	1.2	10	G21-050 +Blower	530×640×746	G14-905	12

1. Power is to be single-phase 100V 50/60Hz. In the case of the voltage other than 100V, a proper transformer is to be supplied locally.

Digital Vibration Meter Model: V-1107

The V-1107, compact & light, is a wide band vibration meter employing a charge amplifier system with the digital voltmeter for display with a variety of functions; peak value holding in shock measurement and true RMS value measurement for distorted & random waves as well as ordinary measurements of acceleration, displacement and velocity.

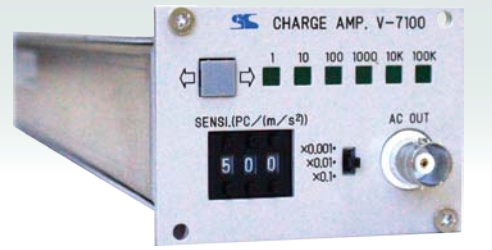
Input Sensitivity (pc/m/s²)	0.10 ~ 0.99	1.00 ~ 9.99	10.0 ~ 99.9
Acceleration (m/s²)	30,100,300,1k, 3k,10k	3,10,30,100, 300,1k,3k,10k	3,10,30,100, 300,1k
Velocity (m/s)	3,10,30,100, 300,1000	0.3,1,3,10,30, 100,300,1000	0.3,1,3,10, 30,100
Displacement (mmp-p)			

- Size&Weight
  W150×D240×H105mm About 3Kg
- Measuring Range (Full Scale)
  Power Required Single-phase 100V±10%、50/60Hz、20VA

Charge Amplifier Model V-7100

The V-7100 is a small-size, low-cost and plug-in charge amplifier to amplify charge signal from an input accelerometer, designed for multi-channel simultaneous measurements of vibration with 6 units accommodable in a case for the 19 inch rack.

Frequency Range 1Hz ~ 35,000Hz (within ±5%)
Input Sensitivity 0.1 ~ 99.9pc/m/s² (3 ranges)
Signal Output AC/DC



Accelerometers

	V11-100	V11-101S	V11-101T	V11-102S	V11-104		V11-105S	V11-107	V11-108S	V11-301	V12-101S
Type	Ultra light & High frequency	General Purpose		Ultra light & High frequency	Light & High frequency		Low Frequency	General Purpose	Miniature & Low frequency	Miniature & 3-Axis	ICP
Charge Sensitivity (pc/m/s²)	0.035	5		0.3	1		35	3	1.84	1	10mV/m/s² (Voltage)
Resonant Frequency (kHz)	60	30	40	60	60		14	26	5	25	40
Max. Acceleration (m/s²)	100000	16000		50000	50000		29400	2500	5000	10000	220
Temperature Range (℃)	-50 ~ +160	-20 ~ +140	-40 ~ +150	-20 ~ +150	-20 ~ +140		-20 ~ +120	-40 ~ +150	-20 ~ +120	-20 ~ +80	-50 ~ +110
Mass (g)	0.2	29	25	2	10	13	100	28	1.3	31	10
Material	Titanium	Stainless		Titanium	Stainless		Stainless	Stainless	Titanium	Titanium	Titanium
Diameter (mm)	φ3.5	14Hex		7Hex	12Hex		24Hex	14Hex	13×4	22.5×22.5	14Hex
Height (mm)	2.5	30		10.5	25.5	20	30	26	4	12.5	18.5
Means of mounting	Adhesive	Female M6		Female M3	Male M6	Famale M4	Famele M6	Famale M6	Adhesive	Famale 10-32UNF	Female M6
Connector		Side	Top	Side	Top		Side	Side			Side
Structure	Shear	Compression		Shear	Compression		Shear	Shear	Bending	Shear	ICP


V12-101S


V11-101S


V11-101T


V11-102


V11-104

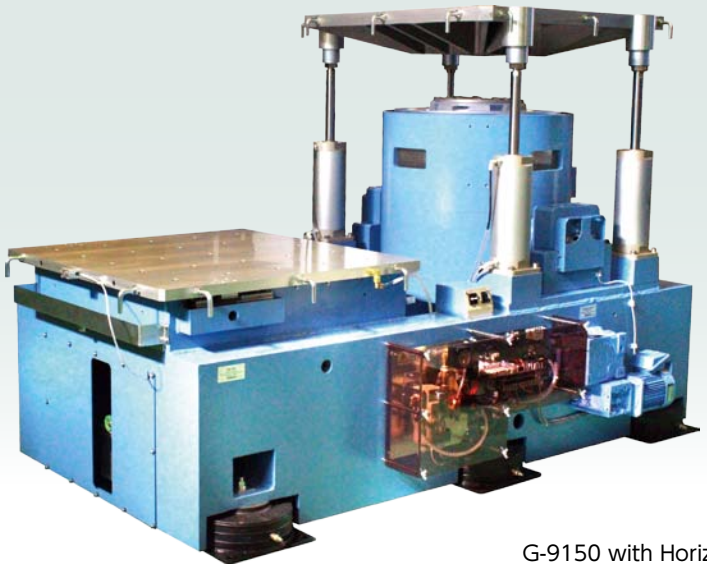

V11-104M


V11-105S


V11-107

V11-108S

Horizontal Tables
G-61 Series



G-9150 with Horizontal Table

For horizontal excitation, the Horizontal Table on which specimens can be mounted and set properly is needed. Four kinds of Horizontal Tables are available for a variety of applications.

1. Hydro-static Bearing Type

For high-frequency and high eccentric moment requirements, the Hydro-static Bearing type Horizontal Table is recommended. <High Cost>

2. Slip Table Type

For ordinary horizontal tests, the Slip Table type, the Horizontal Table being supported with oil film on the grinded granite, is generally used. <General-purpose>

3. Linear-guide Bearing Type

Under the circumstances where oil can't be used or the like, the Linear-guide Bearing type is recommended though periodical replacement of linear-guide bearings is needed. <General-purpose>

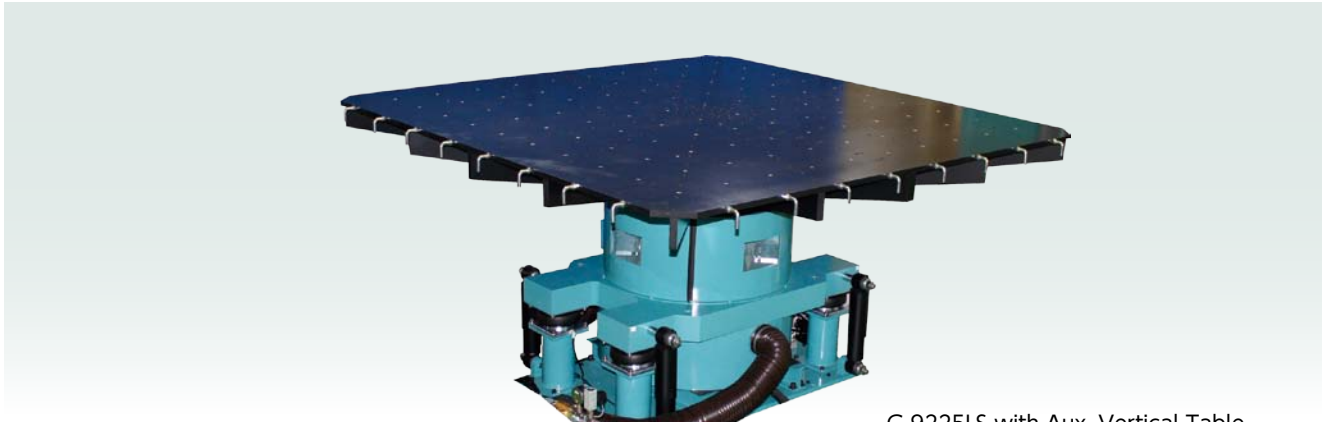
4. Direct-coupling Type

Without any horizontal base, the Horizontal Table can be connected directly to the Bare Table though the table size and loadable weight and applicable models <G-9 Series> are limited. <Low Cost>

Model	Dimensions (W×D×H)	Mass	Max Payload	Max. Amplitude	Natural Frequency	Vibration Isolator	Hole Pitch
	mm	kg	kg	mmp-p	Hz		mm
G61-050	500×500	30	200	60	1600	Pneumatic Isolator	100
G61-060	600×600	36	300	60	1500		100
G61-070	700×700	50	300	60	1200		100
G61-080	800×800	60	400	60	1100		200
G61-110	1000×1000	95	500	60	1100		200
G61-112	1200×1200	150	600	60	1000		200

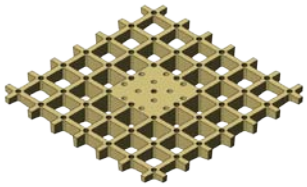
＊including the weight of the Coupling Jig

Aux. Vertical Tables
G-62 Series / G62-H Series (for high-frequency)



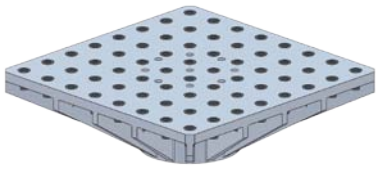
G-9225LS with Aux. Vertical Table
(2.2m square-optionally available)

G62 Series



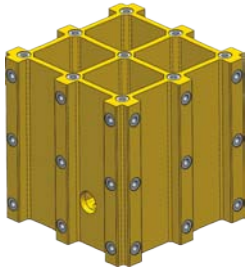
Model	Dimensions W×D×t	Mass (kg)		Natural Frequency	Hole Pitch
	mm	Aluminium (A)	Magnesium (M)	Hz	mm
G62-030	300×300×30	5.8	4	1500	63, 125
G62-040	400×400×40	13	8.6	1250	80
G62-050	500×500×60	15	10	700	100
G62-060	600×600×70	21	14	600	100
G62-070	700×700×70	27	18	470	100
G62-080	800×800×120	54	36	550	150
G62-110	1000×1000×160	95	65	450	200
G62-112	1200×1200×150	120	83	300	200

G62-H series (for high-frequency)



Model	Dimensions W×D×t	Mass (kg)		Natural Frequency	Hole Pitch
	mm	Aluminium (A)	Magnesium (M)	Hz	mm
G62-040H	400×400×75	22	15	1900	80
G62-050H	500×500×150	40	27	1600	100
G62-060H	600×600×180	50	35	1400	100
G62-070H	700×700×200	90	60	1200	100
G62-080H	800×800×200	110	73	1000	125

Cubic Fixture
G63 Series



Model	Dimensions W×D×t	Mass (kg)		Natural Frequency
	mm	Aluminium (A)	Magnesium (M)	Hz
G63-013	130×130×130	2.3	1.5	Over 3000Hz
G63-015	150×150×150	4.2	2.8	Over 3000Hz
G63-020	200×200×200	12.5	8	Over 2000Hz
G63-025	250×250×250	21	16	Over 2000Hz
G63-030	300×300×300	30	20	Over 2000Hz

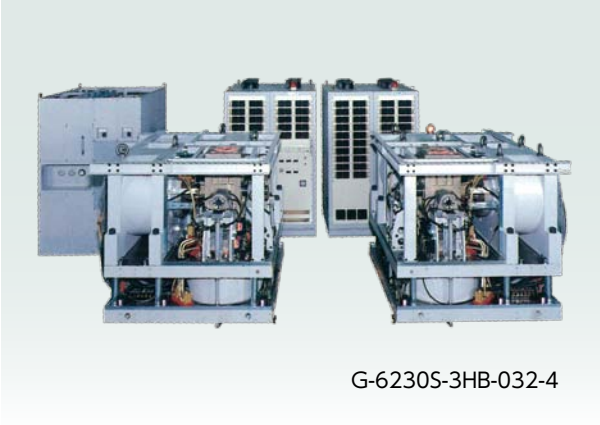
Special Systems

G-6210-1LB-110

Car Seat Test System

The Car Seat Test System is used mainly for:

- Vibration Endurance Test
- Seat Vibration Characteristics Test
- Seat Damping Test

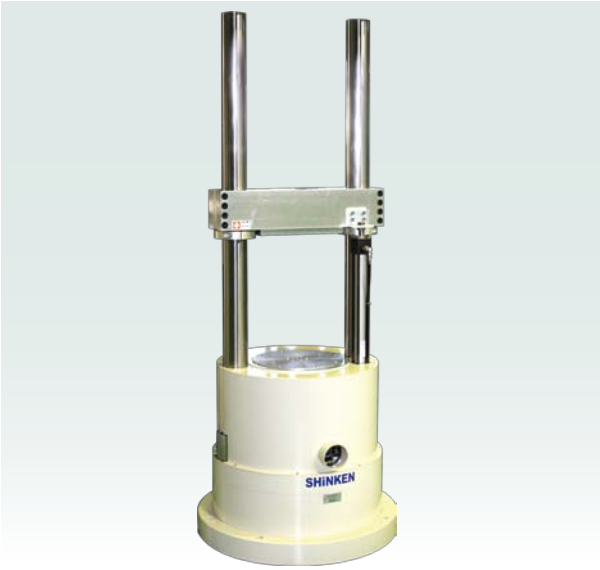


G-6230S-3HB-032-4

Automobile Road-surface Excitation Simulator [4-wheel·3-axis Vibration Test System]

Featured by electro-dynamic Shaker's high waveform fidelity and a wide frequency range, which can't be achieved by hydraulic shakers, this system, comprising 4 sets of 3-axis Vibration Generator systems, is aimed at simulating road-surface excitation conditions experienced by vehicles used mainly for:

- Ride-comfort Test
- Car Body Test
- Road Noise Test



G-9210S

Vibration Test System with Gatepost Pre-load Mechanism [Shock Absorber Test System]

With pre-load given to the specimen from the top, this system with the Gatepost Pre-load Mechanism is capable of carrying out tests for shock absorbers and various car parts used mainly for:

- Vibration Characteristics Test
- Vibration Fatigue Test
- Vibration Endurance Test
- Vibration Response Measurement

G-6245-3LT-130

Multi-axis Vibration Test Systems for Seismic Tests

3-Axis Simultaneous Seismic Simulator

With the 3m square table, the largest for the Electro-dynamic 3-axis Vibration Systems, and max. 300 mmp-p displacement, this system is mainly used for:

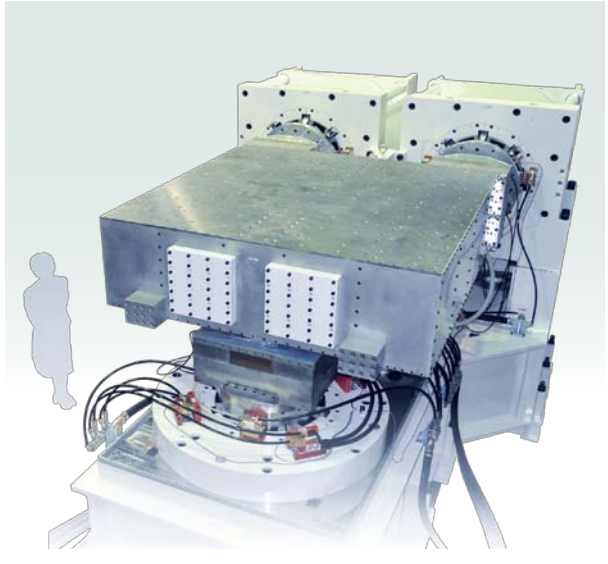
- Seismic Simulation
- Seismic Fragility Test for Structural Models

G-6230L-3LT-115

Long-stroke 3-axis simultaneous Seismometer Calibrator

With large displacement of 400mmp-p for horizontal and 200 mmp-p for vertical, this system has been used for calibration of all the seismometers installed all over Japan for quick information upon earthquake occurrence with the other possible usage as follow:

- Seismic Simulation
- Seismic Fragility Test for Structural Models



G-8340-1LT-120

World-largest Electro-dynamic Multi-Axis Vibration Test System

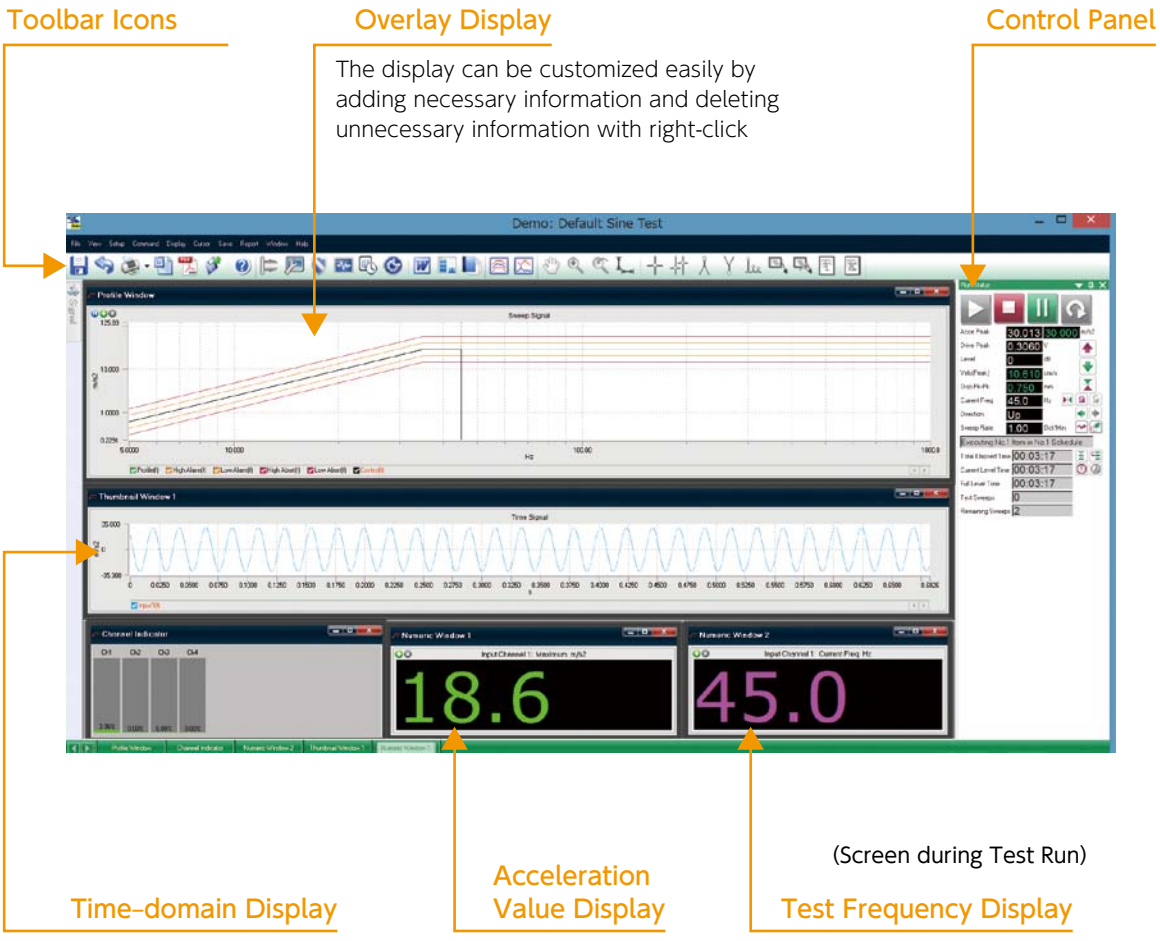
With 2 pieces of Vibration Generators for both vertical and horizontal, this system can generate 400kN for Sine and 1,000kN for Shock, largest in the world as the Electro-dynamic Multi-axis Vibration Test Systems.

Max. Force Output Sine : 400kN
Shock : 1,000kN
Max. Acceleration Sine : 117m/s² (with 1.5 ton load)
Shock : 300m/s² (−ditto−)
Max. Displacement : 60mmp-p
Frequency Range : 2~150Hz
(-6dB or more roll-off over 100Hz)
Table Size : 2m×2m (expandable to 4m×4m)
Max. Payload : 2,000kg (on 4m×4m table)

Digital Vibration Controllers

Easy Operation

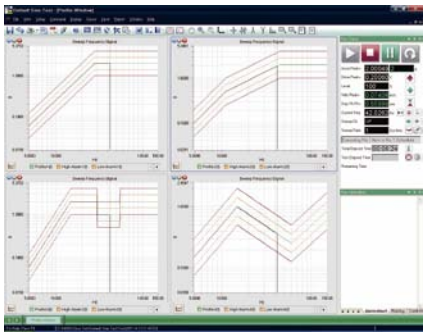
'The easier use, the better!' – required for any Controllers : Featured by 'easy to recall the test patterns used often' and also 'easy to change test conditions or make new test patterns' , anyone can use our Controllers easily!



(Screen during Test Run)

(Control Function Selection Menu)

Main Two Controllers Available



(D-0960 Display during Test Run)

【D-59 Series】

- Single-axis Control
- Multi-axis Sequential Control

【D-0960 Series】

- Single-axis Control
- Multi-axis Sequential & Simultaneous Control

High Expandability

In future, by purchasing relevant license keys the controllers can be expanded to the other control functions, increase in input channels (in a unit of 2 channels – for the D-0960 additional hardware also needed) etc.

【D-59 Series】

- Input 4-channel as standard, expandable to 8-ch inputs
- Output 1 channel for Control, COLA Output (option)

【D-0960 Series】

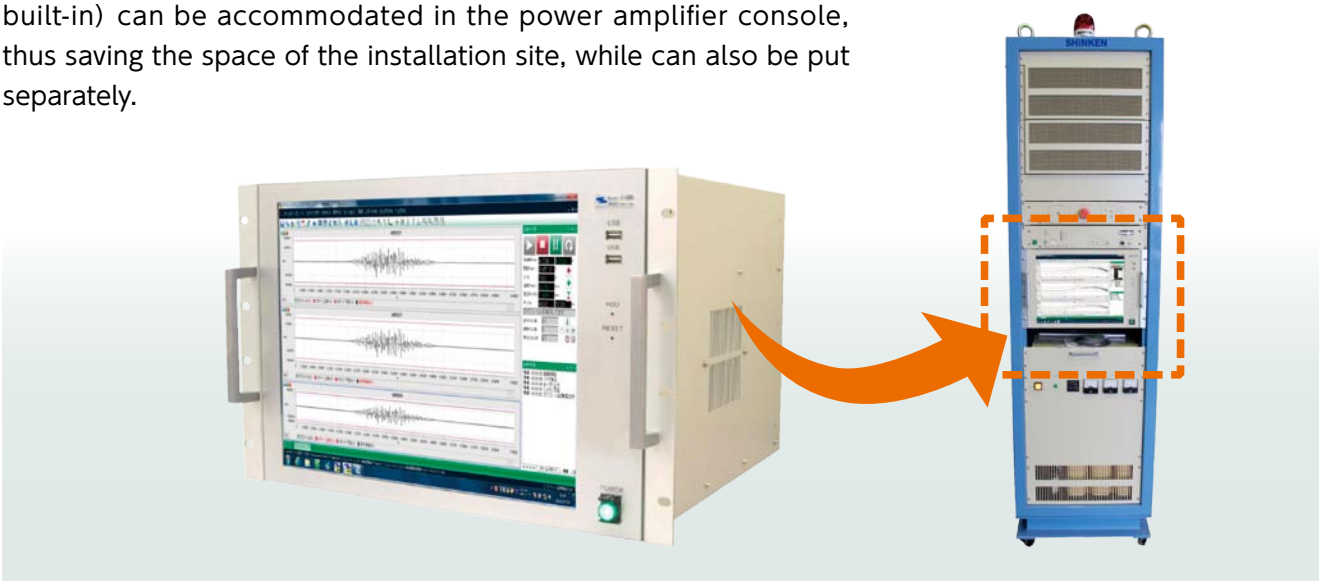
- Input 6-channel (3-axis) & 4-channel (2-axis) as standard, expandable to 24-ch inputs
- Output 3-channel (3-axis) & 2-channel (2-axis) for Control, expandable to 26 channels. (but the total of input channels and output channels to be fewer than 28 channels)

Quick Report

The test results can be made into the report only by clicking the Quick Report icon with PDF or WORD file selectable.

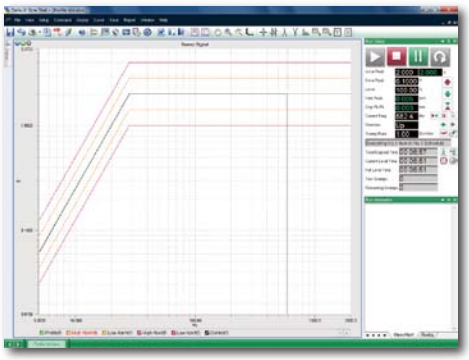
Compactly Accommodable

The Controllers (stand-alone B-type with the PC and 17-inch TFT built-in) can be accommodated in the power amplifier console, thus saving the space of the installation site, while can also be put separately.



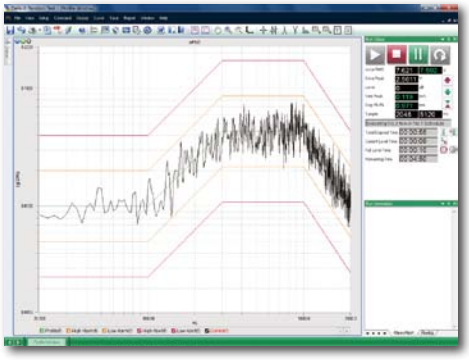
Digital Vibration Controllers

Sine Control



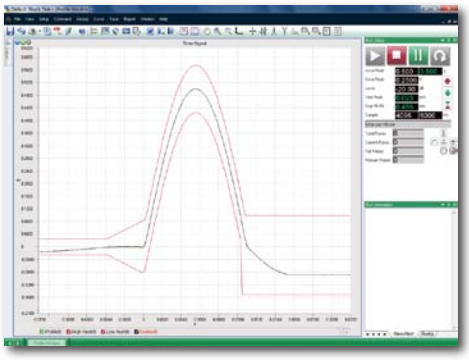
	D-59 Series	D-0960 Series
Control Output Axes	1 axis	1-12 axis choice
Frequency Range	Standard : 1 to 4000Hz Low frequency option : from 0.1Hz High frequency option : up to 10,000Hz	Standard : 1 to 4000Hz Low frequency option : from 0.5Hz High frequency option : up to 10,000Hz
Dynamic Range	up to 95dB	up to 90dB
Control Accuracy	±1dB (Q=50,1oct/min)	
Test Mode	Sweep, Dwell, Oscilator	
Control Mode	1 channel or multi channel control Selectable among average, maximum, and minimum.	

Random Control



	D-59 Series	D-0960 Series
Control Output Axes	1 axis	1-12 axis choice
Control Frequency	up to 4,680Hz (option : 18,750Hz)	
Control Lines	100, 200, 400, 800, 1600 and 3200 lines (option : 6400 lines)	
Control Dynamic Range	up to 90dB	
Control Accuracy	±1dB (200DOF, Reliability : 99%)	
Control Mode	1 channel or multi channel control Selectable among average, maximum, and minimum.	

Shock Control



	D-59 Series	D-0960 Series
Control Output Axes	1 axis	1-12 axis choice
Data Point	up to 16,386	
Pulse Types	Half-sine, Initial and terminal peak saw-tooth, Triangle, Trapezoid and Haver-sine	
Pulse Duration	Selectable in second unit	
Test Level	Setting of test level and pulse numbers	

A Variety of Add-on Software also Available

- **Resonance Search, Track & Dwell (RSTD)**
  RSTD performs a resonant frequency tracking and dwell in real time, suited to fatigue tests.
- **Sine on Random Control (SoR)**
  SoR , combining fixed or swept sine tones with broad-band random vibration, is used for simulation of rotating devices of vehicles (automotive power trains, helicopters etc.)
- **Random on Random Control (RoR)**
  RoR is such control as combining narrow bands of random vibration with broad-band random vibration.
- **Shock Response Spectrum (SRS)**
  SRS, Integrated with classical shock and transient shock, is also available.

Transportation Vibration Simulation (PSD Simulation)

<An Example of Transportation Vibration Simulation>

Measurement of Vibration Data with Field Data Recorder

① Set the Field Data Recorder on a proper place of the truck and measure vibration data during transportation. (data measurement being both at time intervals and when high-level vibration signals detected settable)

Measured Vibration Data Converted into CSV Format and Taken into Vibration Controller

② The measured data are to be converted into CSV format after editing with the Field Data Recorder software.
③ The CSV data are to be imported into the Controller with the right format allowed by the Controller and the imported PSD pattern is to be edited if needed. (level change etc.)

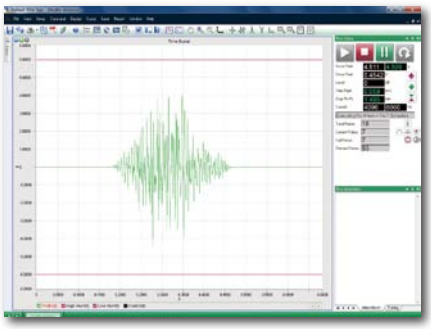
Simulation in Test Room

④ Vibration simulation during transportation can be carried out in the test room.

Transient Time History Control (TTH)

Up to 32k points waveform time-domain data can be imported into the Controller and be simulated, most suited to:

- Transient Phenomenon Simulation Against Trouble Events
- Seismic Simulation
- Collision Simulation



Road Simulation
(LTH-Long Time History Control)

For longer waveform simulation (longer than 32k points) ,
LTH Road Simulation software Is also available.

SHINKEN Test Center

There are a variety of Vibration Test Systems, some with Environmental Chambers, available at **SHINKEN** Test Center and vibration test requests from oversea are also welcome. For inquiry, please send email to : test@shinken-ltd.co.jp

Approach for Energy Saving

SHINKEN started the first approach for energy saving over 15 years ago and obtained the patent for energy saving for the Vibration Test Systems for the first time in Japan.

SHINKEN

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※The specifications subject to change without notice

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