

H - SERIES

6,000 - 8,000 lbs (26.7- 35.6 kN) Force



H-Series Systems are 100% air cooled and provide force output in the 6,000-8,000 lbs range utilizing the H560B Shaker, SAI Series Class D IGBT Power Amplifier with Internal DC Field Supply and Remote Cooling Blower.

- **Three Armature Sizes:**
13.3" / 17.5" / 25.5" (338 / 445 / 647 mm)
- **Heavy Duty Armature Suspension**
- **100% Air Cooled**
- **2 inch (51 mm) Stroke**
- **High Frequency Option (5KHz)**
- **Automatic Load Support**
- **Combined Environment Support**
- **Three Base Configurations**
Low Profile / Pedestal / Slip Table



Vibration Test Equipment

Standard System Specifications

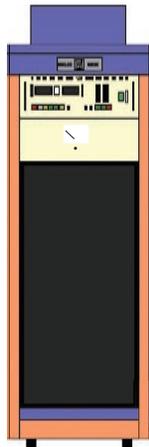
SYSTEM MODEL	SAL30F-H560B-12	SAI30F-H560B-12	SAI60F-H560B-12	SAI60F-H560BAC/2-12
Sine Force (pk)	7,500 lbf (33.4 kN)	7,500 lbf (33.4 kN)	8,000 lbf (35.6 kN)	6,500 lbf (28.9 kN)
Random Force (rms)	6,000 lbf (26.7 kN)	8,000 lbf (35.6 kN)	8,000 lbf (35.6 kN)	6,500 lbf (28.9 kN)
Shock 4 ms, half sine vs Load lb (kg) 11 ms, half sine	50 g: 170 lbs (77.3 kg) 100 g: 55 lbs (25 kg)	50 g: 250 lbs (113 kg) 100 g: 100 lbs (45 kg)	50 g: 340 lbs (155 kg) 100 g: 160 lbs (72 kg)	50 g: 280 lbs (127 kg) 100 g: 110 lbs (50 kg)
	30 g: 310 lbs (141 kg) 50 g: 85 lbs (38.6 kg)	30 g: 450 lbs (204 kg) 50 g: 200 lbs (91 kg)	30 g: 600 lbs (273 kg) 50 g: 335 lbs (152 kg) 100 g: 100 lbs (45 kg)	30 g: 500 lbs (227 kg) 50 g: 250 lbs (114 kg)
Usable Frequency Range	DC to 3,000 Hz			DC to 5,000 Hz
Maximum Acceleration Sine (pk) Random (rms) ISO 5344	140 g (1,373 m/s ²) 75 g (735 m/s ²)	140 g (1,373 m/s ²) 100 g (980 m/s ²)	160 g (1,570 m/s ²) 130 g (1,275 m/s ²)	123 g (1,205 m/s ²) 110 g (1,079 m/s ²) (20-5000 Hz PSD)
Maximum Velocity (pk) Sine Sweep Shock	55 in/s (1.4 m/s) 70 in/s (1.8 m/s)	55 in/s (1.4 m/s) 80 in/s (2.0 m/s)	75 in/s (1.9 m/s) 140 in/s (3.5 m/s)	75 in/s (1.9 m/s) 130 in/s (3.3 m/s)
Displacement (pk-pk)	2.0 in (51 mm)			
Armature Weight	50 lbs (22.7 kg)			53 lbs (24 kg)
Armature Diameter	13.3 inch(338 mm) with 12 inch (305 mm) diameter outer bolt circle			
Armature Axial Resonance (Typical) ±5%	2,300 Hz			2,700 Hz
Amplifier Model (output)	SAL30 (30 KVA)	SAI30 (30 KVA)	SAI60 (60 KVA)	SAI60 (60 KVA)
SA Series Power Amplifier EMI Shielding	EMI Shielded Console designed with minimal penetrations including metal gaskets on all external joints, Corrosion protection, EMI shielded air cooling screens and 3-phase line filtering standard.			
Shaker Internal Load Support	800 lbs (363 kg) automatic load support standard			
Stray Gauss Level	Levels measured 6 inches (152 mm) above shaker table at normal operating temperatures Standard: <10 gauss (1.0 mT) / Optional: < 5 gauss (0.5 mT)			
Shaker Body Isolation Standard	< 3 Hz (Vertical) < 2 Hz (Horizontal with ST)			
Total Electrical Requirements	60 KVA	60 KVA	70 KVA	76 KVA
Total Heat Dissipation Shaker : Amplifier : Blower :	2.0 KW 4 KW 25 KW	2.0 KW 4 KW 25 KW	2.0 KW 6.0 KW 30 KW	2.0 KW 6.0 KW 30 KW
Amplifier Acoustic Noise (@ 2 m)	< 75 dBA			

SYSTEM DESIGN FEATURES

H-Series Systems consist of the H560B-xx Shaker (“xx” designates armature outer bolt circle diameter) plus an SAI-Series Class D Power Amplifier with IGBT technology, a DC Field Supply and remote cooling blower. These systems include many features (offered only as options by most competitors) such as EMI shielded amplifier console with 3-phase line filtering, switch selectable internal DC Field, interface cabling with Mil-style connectors, integrated safety interlocks and a full featured Control Panel. All systems are direct-coupled and provide full performance without transformer reconnections or switching of components by the operator.

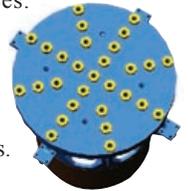
H-Series Systems are 100% air cooled, a key ingredient in reducing the cost of initial system installation and long term maintenance items. The DC Field Supply, internal within the amplifier console, includes a switch-selectable mode for "Max Force" or "Energy Save" which minimizes electrical power consumption when operating at reduced force output.

An optional “Quiet Mode” allows operation at reduced force output with no cooling blower, for applications such as Buzz, Squeak & Rattle automotive tests and ultra-low g-level tests for disk drives.



H560B Series Shaker armatures incorporate a multi-ribbed upper table, cast from either a high strength magnesium or aluminum alloy to provide maximum stiffness and minimum weight. Three armature sizes are offered to accommodate a wide range of test fixtures: H560B-12 at 13.3” dia (338 mm), H560B-16 at 17.5” dia (445 mm) and H560B-24 at 25.5” dia (647 mm). A variety of Head Expanders are available to provide even larger payload mounting interfaces.

All H560B Series Shakers are rated at 2 inch (51 mm) pk-pk stroke and include internal automatic load support, key features for performing low frequency random vibration transportation tests and long duration shock pulse tests.

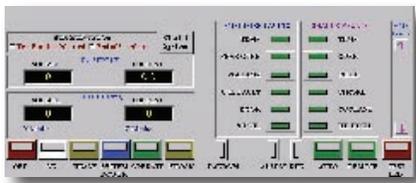


For high frequency vibration testing to 5 KHz, the Model H560BAC/2 Shaker is available, utilizing a special high frequency armature configuration. The BAC/2 armature is available in 13.3” diameter (338 mm) or 17.5” diameter (445 mm) versions.

Standard System Specifications

SAI30F-H560B-16	SAI60F-H560B-16	SAI30F-H560B-24	SAI60F-H560B-24
7,500 lbf (33.4 kN)	8,000 lbf (35.6 kN)	7,500 lbf (33.4 kN)	8,000 lbf (35.6 kN)
8,000 lbf (35.6 kN)	8,000 lbf (35.6 kN)	8,000 lbf (35.6 kN)	8,000 lbf (35.6 kN)
50 g: 220 lbs (100 kg) 100 g: 90 lbs (41 kg)	50 g: 335 lbs (152 kg) 100 g: 150 lbs (68 kg)	50 g: 200 lbs (91 kg) 100 g: 50 lbs (27 kg) 150 g: 10 lbs (4.5 kg)	50 g: 300 lbs (136 kg) 100 g: 110 lbs (50 kg) 200 g: 10 lbs (4.5 kg)
30 g: 400 lbs (182 kg) 50 g: 150 lbs (68 kg)	30 g: 590 lbs (268 kg) 50 g: 335 lbs (152 kg) 100 g: 100 lbs (45 kg)	30 g: 400 lbs (182 kg) 50 g: 140 lbs (64 kg)	30 g: 550 lbs (250 kg) 50 g: 300 lbs (136 kg)
DC to 3,000 Hz		DC to 2,800 Hz	
115 g (1,127 m/s ²) 70 g (686 m/s ²)	123 g (1,205 m/s ²) 95 g (931 m/s ²)	83 g (814 m/s ²) 50 g (490 m/s ²)	89 g (875 m/s ²) 74 g (725 m/s ²)
55 in/s (1.4 m/s) 90 in/s (2.3 m/s)	75 in/s (1.9 m/s) 140 in/s (3.5 m/s)	55 in/s (1.4 m/s) 80 in/s (2.0 m/s)	75 in/s (1.9 m/s) 140 in/s (3.5 m/s)
2.0 in (51 mm)			
65 lbs (29.5 kg)		90 lbs (41 kg)	
17.5 inch (445 mm) with 16 inch (406 mm) diameter outer bolt circle		25.5 inch (647 mm) with 24 inch (610 mm) diameter outer bolt circle	
2,350 Hz		2,300 Hz	
SAI30 (30 KVA)	SAI60 (60 KVA)	SAI30 (30 KVA)	SAI60 (60 KVA)
EMI Shielded Console designed with minimal penetrations including metal gaskets on all external joints, Corrosion protection, EMI shielded air cooling screens and 3-phase line filtering standard.			
1,500 lbs (680 kg) automatic load support standard			
Measured 6 inches (152 mm) above shaker table at normal operating temps Standard: <10 gauss (1.0 mT) / Optional: < 5 gauss (0.5 mT)		Measured 6 inches (152 mm) above shaker table at normal operating temps Standard: <6 gauss (0.6 mT)	
< 3 Hz (Vertical) < 2 Hz (Horizontal with ST)			
60KVA	70 KVA	60KVA	70 KVA
2.0 KW 4.0 KW 25 KW	2.0 KW 6.0 KW 30 KW	2.0 KW 4.0 KW 25 KW	2.0 KW 6.0 KW 30 KW
< 75 dBA			

COMMAND LINK



SAI-Series Power Amplifiers are available with a remote communication option, which links the local Control Panel at the Power Amplifier console to Unholtz-Dickie's Vwin II Controller. This

“Command Link” incorporates an RS232-linked screen icon at the Vwin II workstation which allows Vibration System startup via convenient point & click commands by the operator from the PC, and includes a full display of system safety interlocks with functional Gain Control.

A “Power Save” mode can be enabled that automatically powers down the Amplifier, DC Field Supply and cooling blower upon completion of a Vwin II controlled test. This useful feature substantially reduces unnecessary system power consumption and eliminates the risk of leaving the Vibration System at full power (unattended) for long periods after test completion.

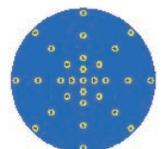
Power Amplifier output Current and Voltage limits can be selected at the Command Link screen, minimizing the chance of test specimen and system damage due to operator error.

NOTES

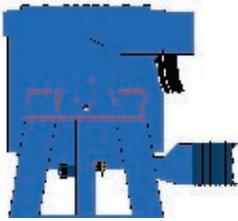
1. Random force rating based on flat spectrum from 20 to 2,000 Hz with 160 lb (73 kg) (H560B-12), or 340 lbs (154 kg) (H560B-16, -24) non-resonant load, unless otherwise specified. Ratings exceed ISO 5344.
2. Sine ratings are indicated in the system performance (Q) curves. Sine ratings based on a sine sweep from 5 to 2,000 Hz.
3. Shock ratings based upon symmetric pre & post pulses (+12, -24%).
4. Usable frequency range dependent upon test level and payload.
5. Available pk-pk displacement reduced with heavy loads.
6. Track and handle available for low profile (LP) base configuration.
7. Metric thread sizes for table inserts available.
8. Thermal barriers available for combined environment applications.
9. Remote operation amplifier panel available.
10. Remote Amp/Shaker operation computer controlled via available Command Link.
11. A Quiet mode option is available at reduced force ratings (consult factory) for Automotive Squeak and Rattle Testing.
12. System performance curves (Q-Curves) are available upon request.
13. Specifications subject to change without notice.

BOLT CIRCLE PATTERN (-24 shown)

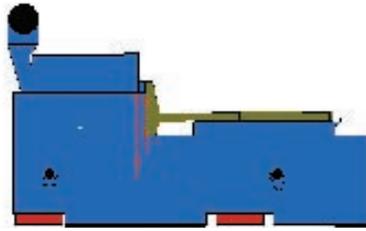
- (1) HOLE ON CENTER (all)
- (4) HOLES ON 4 INCH (102 mm) DIAMETER (all)
- (8) HOLES ON 8 INCH (203 mm) DIAMETER (all)
- (8) HOLES ON 12 INCH (305 mm) DIAMETER (-12, -16 armature only)
- (8) HOLES ON 16 INCH (406 mm) DIAMETER (-16, -24 armature only)
- (8) HOLES ON 24 INCH (610 mm) DIAMETER (-24 armature only)



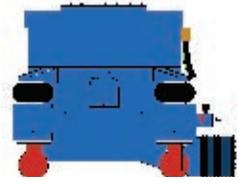
CONFIGURATIONS / DIMENSIONS / WEIGHTS



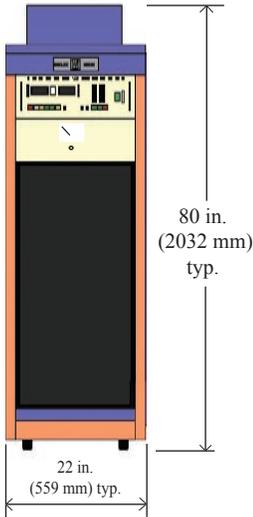
Pedestal Base



Slip Table (Shown with Air Slide)



Low Profile



Amplifier

H560B Base Configuration Dimensions / Weights (approx.)			
Base Model	Pedestal Base (PB)	Slip Table (ST)	Low Profile (LP)
Length-in. (mm)	30.5 (775)	88.25 (2,242)	40.5 (1,028)
Width-in. (mm)	52 (1,321)	47 (1,194)	37 (940)
Height-in. (mm)	41.75 (1,060)	44.8 (1,138)	32.97 (837)
Weight-lbs (kg)	5,500 (2,497)	7,700 (3,496)	5,000 (2,270)

Amplifier with Field Supply Weights lbs (kg) (approx.)	
SAL / SAI30	925 (420)
SAI60	1125 (511)

TYPICAL APPLICATIONS



H560B-16 with slip table assembly, and guided head expander, testing an automotive seat track for squeak & rattle noise measurements and key life/durability

H-Series Systems are used in a variety of applications from component level tests at high g-levels to larger payload tests at moderate to low g-levels. When configured with a Slip Table for horizontal operation or a Head Expander for vertical operation, these systems are especially popular for automotive hardware testing



H560B-16 with Slip Table Assembly and a Cube Fixture

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