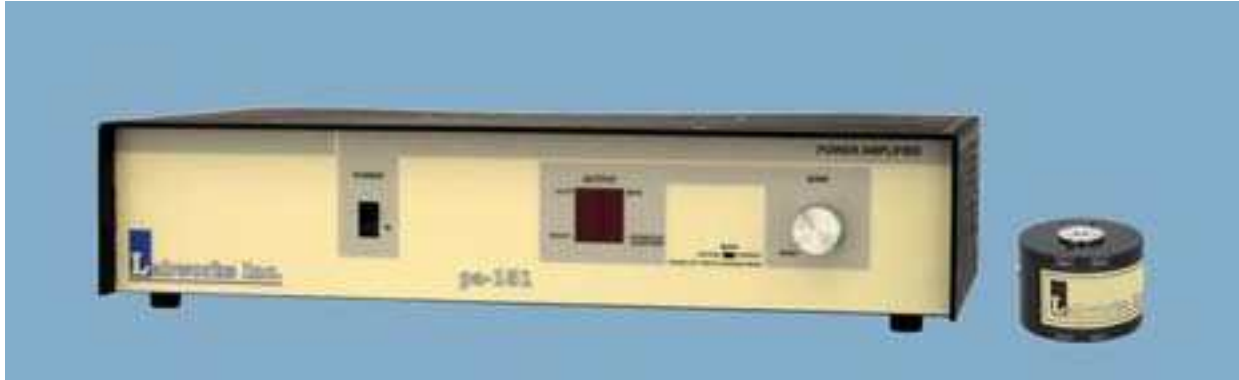


LW142.151-2 Inertial Shaker System



The LW142.151-2 system is the smallest in our expanding line of Inertial Shaker systems. The PA-151 amplifier easily supplies the power required to gain the maximum performance from the shaker. The mounting convenience of the FG-142 makes this system ideal when a light-weight, portable system is desired for general purpose testing as well as modal excitation of larger test specimens. The inertial shaker concept eliminates the need for fixturing, in most cases, because of its insensitivity to mounting position and internal reaction mass design. Since there is no external armature mounting surface, (the whole transducer vibrates) simply mount the FG-142 to the test specimen, utilizing its single through hole mounting, in any orientation desired and commence testing. Multiple shakers can be implemented on complex or compliant structures to gain a more uniform excitation than can be had from traditional shakers under these conditions. Operation up to 2 lbf is possible without cooling further simplifying the installation to that of running two small wires between the amplifier and the shaker. A small amount of filtered shop / small compressor air allows full force operation of the FG-142 up to 4 lbf.

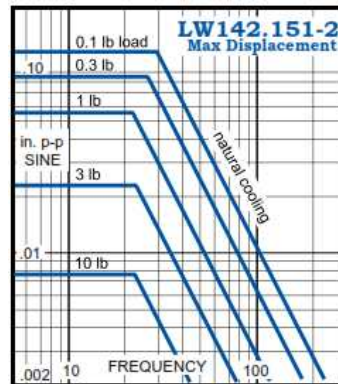
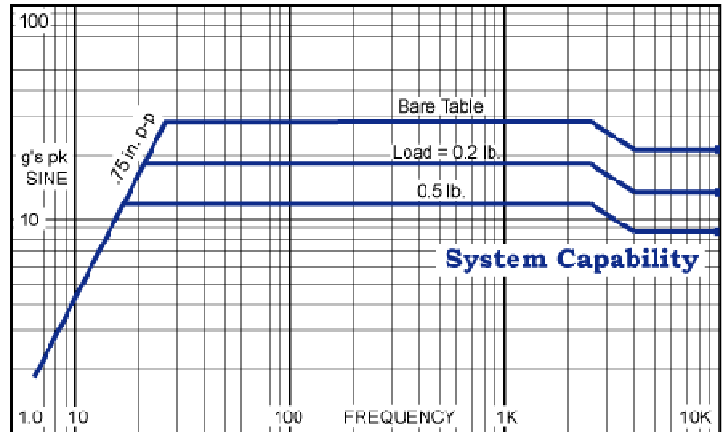
General Specifications

| | |
|----------------------------|--|
| Sine Force: | 2 lbf pk (nat. convection) 4 lbf pk (forced air cooling) |
| Random Force: | 1.4 lbf rms (nat. convection) 2.8 lbf pk (forced air cooling) |
| Frequency Range: | 10 to 3,000 Hz |
| Max. Acceleration: | (2 lbf / 4 lbf) 6.0 / 12.0 g pk, bare table 4.6 / 9.3 g pk, 0.1 lb. load 2.7 / 5.5 g pk, 0.4 lb. load |
| Max. Displacement: | 0.20 inch pk-pk, bare table 0.35 inch pk-pk, resonant load |
| Cooling: | Amplifier: natural convection Shaker: natural / forced air |
| Power Requirements: | 300 VA @95-125, 190-250, 1Ø, 50/60 Hz. |



System Components*

- FG-142 Inertial Shaker
- PA-151 Linear Power Amplifier
- Interconnect Cables



System Options*

- SC-121 Sine Servo Controller
- SG-135 Manual Sine Controller
- Amplifier rack mount brackets
- Amplifier rack cabinet

*See individual components for more detailed specifications and options.

The thru-hole on the FG-142 allows single screw or easy stinger mounting, simplifying load attachment requirements. The two wire Hook up connection on the PA-151/FG-142 is simple, making this system very portable.

FG-142

Inertial Shaker



- 4 pounds pk sine force
- 2.8 pounds pk random force¹
- Low stray magnetic field
- Frequency range 20-3,000 Hz.
- Convenient through hole mounting

The inertial shaker concept eliminates the need for fixturing, in most cases, because of its insensitivity to mounting position and internal reaction mass design. Since there is no external armature mounting surface, (the whole transducer vibrates) simply mount the FG-142 to the test specimen, utilizing its single through hole mounting, in any orientation desired and commence testing. Multiple shakers can be implemented on complex or compliant structures to gain a more uniform excitation than can be had from traditional shakers under these conditions. Operation up to 2 lbf is possible without cooling further simplifying the installation to that of running two small wires between the amplifier and the shaker. A small amount of filtered shop / small compressor air allows full force operation of the FG-142 up to 4 lbf.

General Specifications²

Performance

| | |
|--------------------|---------------------|
| Sine force | |
| Natural cooling | 2.0 lbf pk |
| Forced air cooling | 4.0 lbf pk |
| Random force | |
| Natural cooling | 1.4 lbf rms |
| Forced air cooling | 2.8 lbf rms |
| Shock force | 4.5 lbf pk, 20 msec |
| Max displacement | |
| Continuous pk-pk . | 35 in |
| Between stops . | 35 in |

Physical

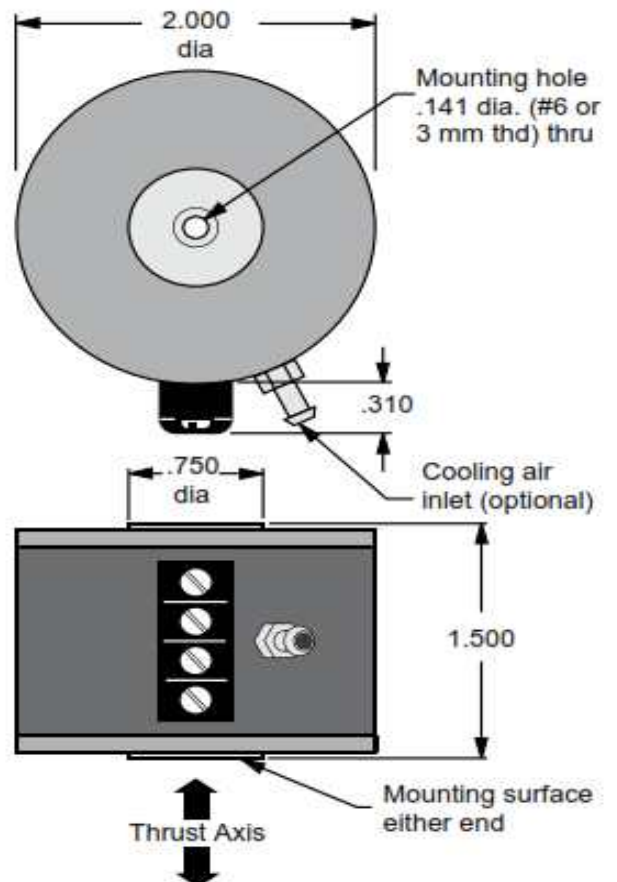
| | |
|------------------------|--------------------------|
| Dynamic element weight | 0.33 lb |
| Mounting . | 141 in dia. through hole |
| Dimensions | 2.0" D, 1.5" L |
| Generator weight . | 56 lbs |

Options

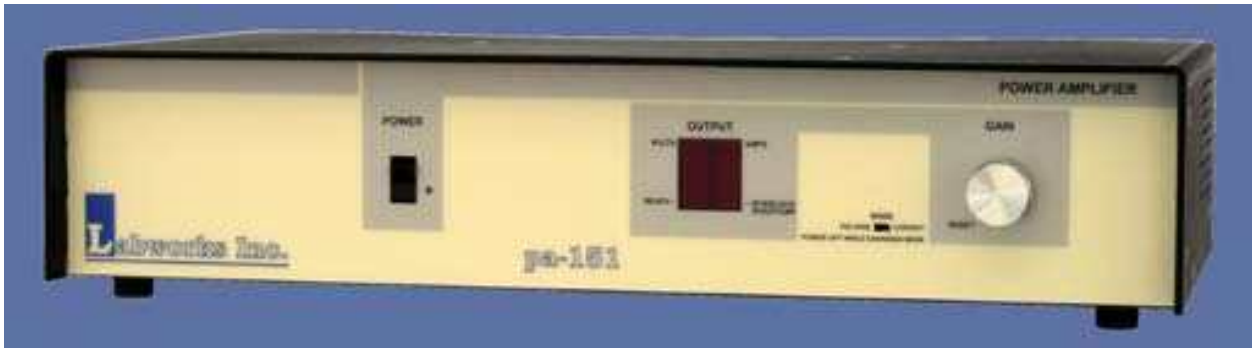
- Cooling air inlet.

¹Cooling air required for operation above 2 lbf. sine, 1.4 lbf random.
²Please see systems ratings for additional specifications.

Specifications subject to change.



PA-151 Linear Power Amplifier

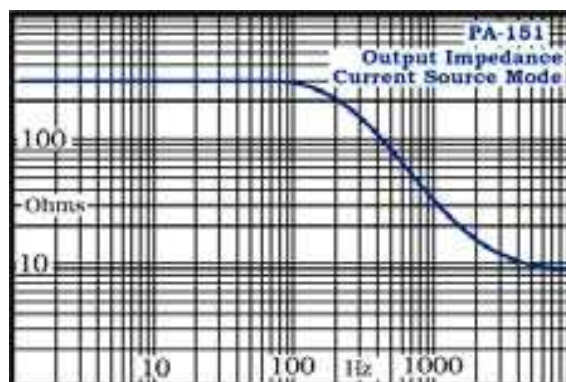
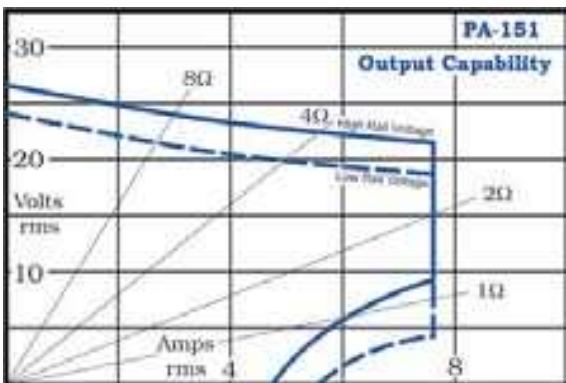


- Output: 25V or 20V, 180 VA
- Direct coupled linear output
- Output voltage and current meters
- Voltage and Current source modes
- Convection cooling, no fans
- Light weight, desktop amplifier



The Labworks PA-151 Linear Power Amplifier is a high quality, convection-cooled, direct-coupled audio amplifier primarily intended for use with small vibration systems. Although this amplifier has been designed to directly drive low impedance loads, it can be used in any application requiring continuous duty, high quality, audio power.

PA-151 Amplifiers feature protection from both over current and over temperature insuring long term reliability. The amplifier circuitry uses soft start technology for load protection and has external interlock capabilities as well as output voltage and current bar graphs. A voltageproportional-to-output-current signal output is provided for modal test and other applications requiring force monitoring. A unique dynamic output drive circuit provides high random peak output current for increased random and shock vibration system



General Specifications*

| | |
|-------------------------------|---|
| Output voltage | 25 or 20 V rms |
| Output current | 7.5 A rms |
| Max. cont. dissipation | 180 W |
| Frequency response | Voltage Source: DC to 10 KHz Current Source: DC to 2 KHz |
| Max. voltage gain | -1 dB |
| Max. current gain | -2 dB @ 4Ω |
| Cooling | 28 dB |
| Input impedance | 22 A/V |
| Meters | Natural convection |
| Volts | 10 kΩ |
| Amps | 9 segment bar graph |
| Interlock circuit | 9 segment bar graph |
| External, user | F.C. switch or TTL, F.C. |
| Input power | 300 VA max |
| Voltage | 100-120, 200-240 V, 1Ø |
| Frequency | 48 to 62 Hz |
| Dimensions | 3.5" H x 17" W x 13" D |
| Weight | 19 lbs |

1 Switch selectable internal rail voltage allows impedance matching to load requirements
2 Specifications subject to change. Call factory for latest specifications.

Amplifier Options

- Rack panel cabinet
- BNC signal cables