

# LW160.141-60 Modal Test System

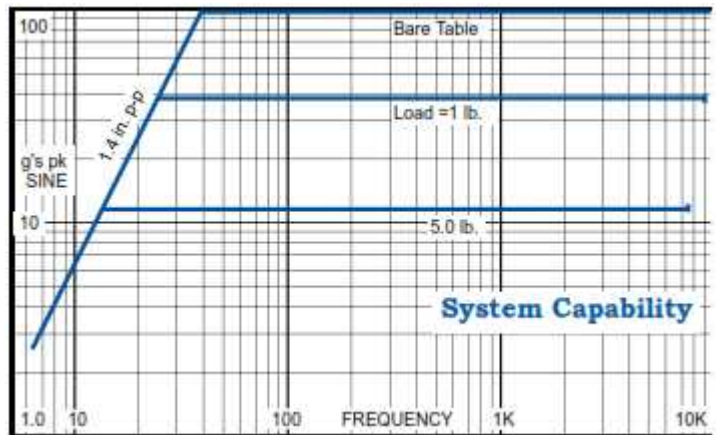


The LW160.141-60 system utilizes the Labworks MT-160 thruster and PA-141 linear power amplifier to form our highest performance modal test system. The thruster's full 1.4 inch stroke capability, low suspension spring rate and light-weight armature makes this system ideal for most modal test applications. The thruster body features a through hole, and a single collet or thread load attachment to accommodate both tension wire and stinger modal testing. The PA-141 amplifier is direct coupled to the shaker to give the maximum performance from DC through high frequencies and can be easily switched from voltage source mode to current source mode for force input testing applications. The amplifiers voltage-proportional-to-current amplifier signal output facilitates servoed force operation. Dual bar graphs display the system operating levels and internal and external interlocks help protect the system from accidental abuse.

## General Specifications

<b>Sine Force:</b>	60 lbs force pk
<b>Random Force:</b>	28 lbf rms random
<b>Shock Force:</b>	70 lbf pk shock
<b>Frequency Range:</b>	DC to 10,000 Hz
<b>Max. Acceleration:</b>	100 g pk, bare table 38 g pk, 1 lb. load 11 g pk, 5 lb. load
<b>Max. Displacement:</b>	1.4 inch pk-pk, bare table
<b>Cooling:</b>	Amplifier: forced air Shaker: cooling blower
<b>Power Requirements:</b>	3,000 VA @100-125*, 200-240V, 1Ø, 50/60 Hz.

\*Consult factory for low line voltage operation.



Standard trunnion allows shaker operation in any position from vertical to horizontal. Shaker body and trunnion through-hole allows long stinger and tension wire modal testing.

## System Components\*

- MT-160 Electrodynamic Shaker
- PA-141 Linear Power Amplifier
- CB-152-160 Cooling Vacuum
- MS-129-160 Modal Stinger Kit

## System Options\*

- VL-144 2 Ch. Sine, Random and Shock Controller
- VL-145 1 Ch. Digital Controller
- SC-121 Sine Servo Controller
- SG-135 Manual Sine Controller
- Rack Cabinet

\*See individual components for more detailed specifications and options.

# MT-160 Modal Thruster



- 60 pounds pk sine force
- 1.5 inch stroke
- .005" to .125" dia. Collet
- Stinger and Wire Through-Hole
- Low stray magnetic field
- Frequency range<sup>2</sup> DC-8,000 Hz.
- Trunnion mounting base

## General Specifications

### Performance

Sine force	
Natural cooling	30 lbf pk
With blower	60 lbf pk
Max displacement	
Continuous pk-pk	1.50 in
Between stops	1.53 in
Max velocity	120 ips pk
Max Acceleration	200 gpk (resonant load)
Frequency Range <sup>2</sup>	DC-8,000 Hz
Fundamehntal Resonance <sup>2</sup>	5,000-6,000 Hz
Stray magnetic fiels	<15 gauss @ 1.5"
Cooling @>13lbf	37 cfm /30 in H <sub>2</sub> O

### Physical

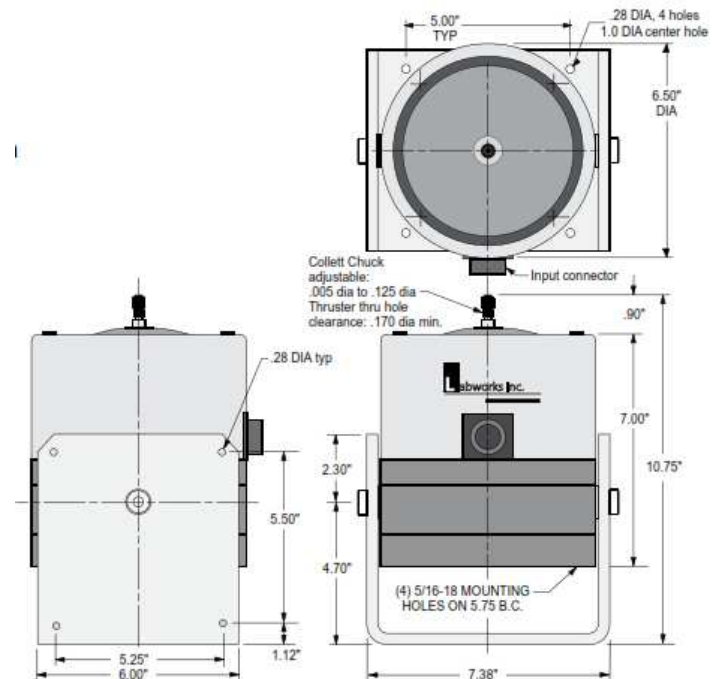
Armature weight	0.60 lb
Suspension stiffness	20 lb/in
Dimensions	10.8" H x 7.4" W x 6.5" D
Shaker weight	28 lbs

<sup>2</sup>The MT-160 thruster's compact size, long stroke and lightweight armature make it well suited for all types of modal testing. The thruster has a compression collet and features a central through-hole suitable for modal stinger and pre-tensioned wire testing applications. The standard shaker trunnion allows the shaker to be operated in any axis from vertical to horizontal as well as easily mounted in wire tensioning tripods. The trunnion base also facilitates bolting the shaker in place for rigid applications or the use of adjustable mounting feet.

### Options

- Vibration isolation mounts. Modal stingers and mounts.
- Cooling blower required for operation above 30 lbf.

Please see systems ratings for additional specifications. Load dependent. Specifications subject to change.



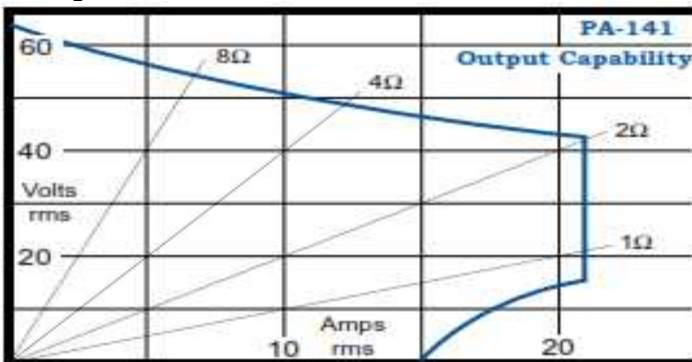
# PA-141 Linear Power Amplifier



- Output: 50V, 1000 VA
- Direct coupled linear output
- Voltage and current source mode
- External interlock circuitry
- Optional shaker field supplies



The Labworks PA-141 Linear Power Amplifier has two operational modes. The amplifier can be used as either a wide-band, highly damped voltage source, or as a high impedance current source. Optional, internal DC field power supplies can be supplied for use with Labworks ET-140 and ET-127 Shakers. These options provide the convenience of a single chassis, as well as fully integrated power-up and cooling interlocks.



## General Specifications\*

<b>Output voltage</b>	50 V rms
<b>Output current</b>	20 A rms
<b>Max. cont. dissipation</b>	900 W
<b>Frequency response</b>	
DC input: DC to 10 KHz	-6 dB
AC input: 1.0 to 10 KHz	-6 dB
<b>Max. voltage gain</b>	36 dB
<b>Cooling</b>	2-speed fan, automatic
<b>Input impedance</b>	10 kΩ
Volts, pk	19 segment ± 5 %
Amps, rms	19 segment ± 5 %
<b>Interlock circuit</b>	
External, user	F.O. switch or TTL
Shaker, internal, optional	cooling
<b>Optional field power</b>	1000 W max
<b>Input power</b>	2000 VA (3000 w/field)
Voltage	208 or 230 Vac, 1Ø
Frequency	48 to 62 Hz
<b>Dimensions</b>	7" H x 19" W x 17" D
<b>Weight</b>	48 lbs

\*Specifications subject to change. Call factory for latest specifications.

# CB-152

Delux, Long Life, Quiet,  
Cooling Vacuum



- |                       |                    |
|-----------------------|--------------------|
| <b>Std:</b> LW140-110 | <b>Opt:</b> ET-139 |
| LW139-75              | ET-126             |
| LW126-25              | ET-132             |
| LW160-60              | ET-160             |
| LW161-25              | ET-161             |

### General Specifications

<b>Blower Type:</b>	Suction (vacuum turbine)
<b>Flow @ Pressure:</b>	35 cfm @ 30" H <sub>2</sub> O
<b>Motor:</b>	250 W, Brushless
<b>Power:</b>	115/230 Vac, 50 or 60 Hz (Specify)
<b>Intake:</b>	.75" and .63" dia.
<b>Noise Level:</b>	< 71 dB @ 1 M
<b>Hose Length:</b>	7.5', flexible vacuum
<b>Blower Weight:</b>	30 lbs.
<b>Minimum Blower Life:</b>	> 25,000 Hrs
<b>Dimensions:</b>	11H x 9.5W x 11L in.

## MS-129-XXX\* Modal Stinger Kit



<b>Rod Collet Chuck:</b>	#10-32 x Collet
<b>Collets:</b>	.03, .06 and .125 in.
<b>Threaded stingers (1 ea.):</b>	
<b>3/16 in. Dia. Stainless steel</b>	3 in. and 10 in. long
<b>1/4 in. Dia. Stainless steel</b>	3 in. and 10 in. long
<b>Rod stingers (3 ea.):</b>	
<b>.062 in. Dia.</b>	11 in. long
<b>.093 in. Dia.</b>	11 in. long

\*Specify Labworks Inc. shaker model number.