



Reference Information

Model LE-LS70

Series

Shaker

General

The Data Physics Model LS70 Shaker (Figure 1) is a wide frequency band, electrodynamic transducer capable of producing a total sine vector force rating of 100 pounds (444 N). The shaker operates in the frequency range of DC to 5000 Hz from a sine wave input. It may be driven by a Data Physics Model Star 1.0 power amplifier. Refer to tables 1-1 and 1-2 for shaker and system specifications.

The LS70 shaker is a lightweight, compact unit. Its ruggedness and portability make it easy to set up and operate single-handedly. Features include:

- Lightweight armature
- High axial stiffness of the armature suspension
- High axial resonance of the armature
- Long stroke (1.00 pk-pk) capability
- Optional quick-locking trunnion base with slotted base for solid mounting
- Optional cooling blower

The magnetic structure (see Figure 3-1) which supports the armature and suspension assembly is of permanent magnet design.

Section 5 of this manual provides a list of drawings and supplementary information to aid in the operation and maintenance of the Model LS70 Shaker.

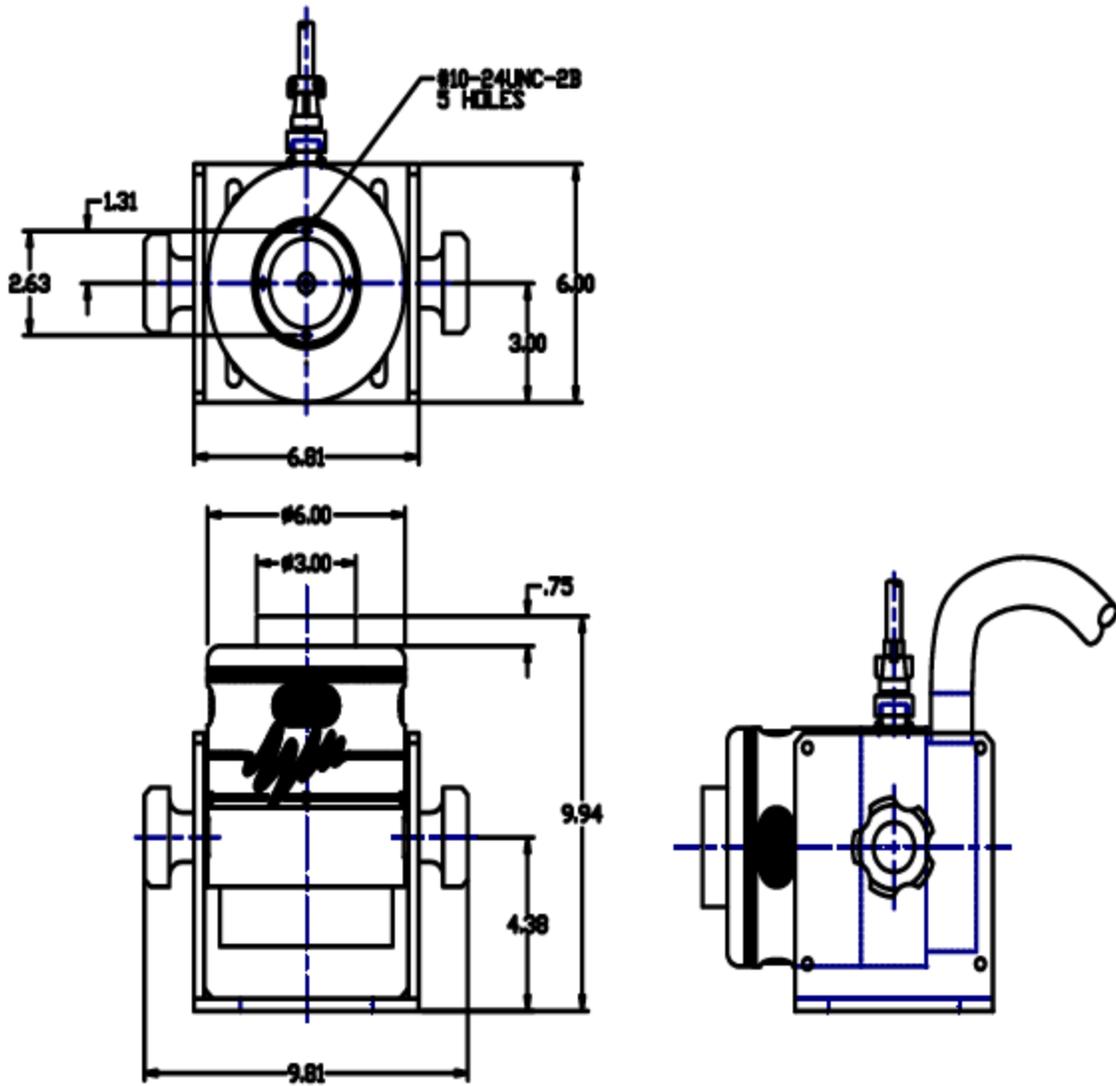


Figure 1-1. Model LS70 Shaker
with Optional Trunnion Base

Purpose

The Model LS70 Shaker is designed to provide the excitation force for studies and testing of mechanical structures.

Characteristics and Specifications

The physical, electrical, pneumatic, environmental and performance characteristics and specifications of the Model LS70 Shaker are listed in Table 1-1.

Table 1-1. Reference Data - Model LS70 Shaker

Parameter	LS70 Shaker	
<u>General</u>		
Force Rating - lb-f (N):		
Sine (swept)	100 (444)	
Random (continuous)	70 (311.4)	
Useful Frequency Range - Hz	DC to 5000	
Maximum Displacement (Peak-Peak) inches (mm):		
Rated Stroke Limit		
Shock/Bump	1.00 (25.4)	
Continuous	.75 (19.05)	
Electrical Over travel Limit	1.03 (26.16)	
Between Mechanical Stops	1.10 (27.9)	
Maximum Velocity - in/s (cm/s)	60 (152)	
Maximum Acceleration - g	70	
Fundamental Resonance Frequency (bare table) - Hz (nominal)	6100	
Rated Current - Amps rms (nominal)	14	
	LS70 Shaker	

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Parameter		
Armature dc Resistance - Ω at 20° C (nominal)	1.5	
Effective Armature Weight -lbs (kg)	1.4 (.64)	
Armature Guidance/Suspension	8 composite flat flexures	
Flexure Stiffness - lb/in (kg/cm)	35 (6.25)	
Overall Dimensions - in (mm):		
without base	6 (152.4) diameter x 8.36 (212.3) high	
with optional Trunnion Base	9.8 (249) wide x 6 (152.4) deep x 9.94 (252.5) high	
Weight - lbs (kg):		
without base	20 (9.1)	
with optional Trunnion Base	30 (13.6)	
Optional Blowers, Power Requirements:		
60 Hz	120 V	
50 Hz	220 V	

Table 1-1. Reference Data — Model LS70 Shaker (cont. from previous page)

If the Model LS70 Shaker is part of a System utilizing Data Physics 's Star 1.0 Amplifier (Star1.0/LS70 System) the system specifications are shown in Table 1-2.

Table 1-2. Reference Data - Star 1.0/LS70 System

Parameter	Star 1.0/LS70	
<u>General</u>		
Force Rating - lb-f (N):		
Sine (swept)	70 (311)	
Random (continuous)	60 (267)	
Useful Frequency Range - Hz	DC to 5000	
Maximum Displacement (Peak-Peak) inches (mm):		
Rated Stroke Limit		
Shock/Bump	1.00 (25.4)	
Continuous	.75 (19.05)	
Electrical Over travel Limit	1.03 (26.16)	
Between Mechanical Stops	1.10 (27.9)	
Maximum Velocity - in/s (cm/s)	60 (152)	
Maximum Acceleration - g	50	
Fundamental Resonance Frequency (bare table) - Hz (nominal)	5300	
Rated Current - Amps rms (nominal)	10	
Armature dc Resistance - Ω at 20° C (nominal)	1.5	
Effective Armature Weight - lbs (kg)	1.4 (.64)	
Armature Guidance/Suspension	8 composite flat flexures	
Flexure Stiffness - lb/in (kg/cm)	35 (6.25)	

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Parameter	Star 1.0/LS70	
Overall Dimensions - in (mm):		
without base	6 (152.4) diameter x 8.36 (212.3) high	
with optional Trunnion Base	9.8 (249) wide x 6 (152.4) deep x 9.94 (252.5) high	
Weight - lbs (kg):		
without base	20 (9.1)	
with optional Trunnion Base	30 (13.6)	
Optional Blowers, Power Requirements:		
60 Hz	120 V	
50 Hz	220 V	

Table 1-2. Reference Data - Star 1.0/LS70 System (cont. from previous page)