THE MODAL SHOP
AN AMPHENOL COMPANY

MODEL **9110F**

NATIONAL STOCK NUMBER: **6635-01-692-7511**

PORTABLE VIBRATION CALIBRATOR KIT

- Portable, Lightweight Design with Long Battery Life
- Pass/Fail Notification at Each Test Point
- Low Frequency Operation Down to 5 Hz
- Create Calibration Certificates for Frequency Response and Linearity

TYPICAL APPLICATIONS

- Validate Sensors for:
  - Rotor Track and Balance
  - Dynamic Propeller Balance
  - Turbine Engine Balance
- Verification of Balancing Kits and Vibration Analyzers
- Troubleshoot Charge Amplifiers
- Loop Check High Temp Differential Charge Accelerometers

FOR AVIATION APPLICATIONS

The Portable Vibration Calibrator Kit for Aviation Applications Model 9110F, similar to the Charge Amplifier Input Portable Vibration Calibrator Model C9110D, is a transducer test set with an enhanced suite of accessories specific to the wide variety of accelerometers used within aviation applications for rotor track and balance, dynamic propeller balance, and turbine engine balance. A modern version of the decades-old Dynamic Instruments DI-811A vibration calibrator, the 9110F vastly improves accuracy, displays pass/fail notification after each test point, provides linearity calibrations, offers self-test features without return to OEM, and comes complete with the accessories required for turn-key operation. Like the DI-811A, the 9110F performs auto payload calculations. Users are never prompted to input the mass of the sensor under test.

The 9110F is also a NIST-traceable vibration source for the verification of balancing kits and vibration analyzers made by ACES Systems, MTI Instruments, and others. The 9110F is supplied with a Vibration Analyzer Calibration Workbook that allows technicians to create NIST-traceable calibration certificates for both linearity and frequency response of balancing analyzers. Users can also troubleshoot charge amplifiers.

The 9110F is supplied with a calibration certificate confirming its accuracy. Calibration of the 9110F is accredited to the ISO 17025 standard by the American Association of Laboratory Accreditation (A2LA). The transfer standard utilized is calibrated on an ISO 16063-11 Laser Primary Calibration System with the lowest uncertainty budget of any system in the United States.

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SPECIFICATIONS

Performance		
Frequency Range (operating) [1]	5 Hz to 10 kHz	300 to 600k CPM
Maximum Amplitude (50 Hz, 10-gram payload)	20 g pk	196 m/s² pk
	20 in/s pk	500 mm/s pk
	150 mils pk-pk	3.8 mm pk-pk
Maximum Amplitude (50 Hz, 500-gram payload)	2.5 g pk	24.5 m/s² pk
	3.5 in/s pk	90 mm/s pk
Maximum Payload [2]	800 grams	
Test Operation	Manual (Closed Loop) or Semi-Automatic	
Pass/Fail Notification	After Each Test Point (CALROUTE Mode)	
Auto-Payload Calculation	Controlled via Reference Accelerometer, No User Entry Required	
Memory	Stores 500 Calibration Records; 30 Data Points Per Record; Model Number, Serial Number, Mounting Orientation & Notes; Semi-Automated Test Routine	
Programmability	Up to 30 Test Points per Routine with Pass/Fail Upper & Lower Bound Tolerances. Flexible Pass/Fail Based Upon Deviation from Sensitivity at Reference Frequency or Hard Values and Supports Asymmetric Tolerances.	
Accuracy of Readout [3]		
Acceleration (10 Hz to 10 kHz)	±3 % [4]	
Acceleration (5 Hz to 10 Hz)	±5 % [4]	
Velocity (10 Hz to 1000 Hz)	±3 %	
Displacement (30 Hz to 150 Hz)	±3 %	
Accuracy Verification Test	Field Drift Test Procedure Provided [5]	
Units of Readout		
Acceleration (pk and RMS)	g	m/s²
Velocity (pk and RMS)	in/s	mm/s
Displacement (pk to pk)	mils	µm
Frequency	Hz	CPM
Physical		
Dimensions (H x W x D)	8.5 x 12 x 10 in	22 x 30.5 x 28 cm
Weight	18 lb	8.2 kg
Operating Temperature	32 °F–122 °F	0 °C–50 °C
Sensor Mounting Platform	¼-28 Thread Size	
Battery Life [6] - 100 Hz, 1 g pk [1]	18 Hours	
Battery Life [6] - 100 Hz, 10 g pk [1]	1 Hour	
Sensor Under Test Sensitivity	mV/EU, mA/EU, µA/EU or pC/EU	
Sensor Under Test Input	ICP, Voltage, Modulated Current, Charge, PR	
Monitor Reference Out	10 mV/g (nominal) Quartz Reference Accelerometer, BNC Jack Output	
USB Port	Export Calibration Records to Flash Drive (FAT 32), Used for Loading Semi-Automated Test Routines (Model CALROUTE) & provides power for external power supplies	

SPECIFICATIONS (continued)

Supplied Accessories	
081B20	¼-28 to ¼-28 Adaptor
081A08	10-32 to ¼-28 Adaptor
M081A63	M8 x 1.25 M to ¼-28 M Mounting Stud
PVC-MNT01	M8 x 1.25 F Thru Hole Mounting Pad
081M165	M8 x 1 M to ¼-28 M Mounting Stud
PVC-MNT02	M8 x 1 F Thru Hole Mounting Pad
9100-CAL01	NIST Traceable Certificate of Calibration, Accredited to ISO 17025 by A2LA
9110-USB	USB Flash Memory Drive: Loaded with Calibration Report Generation Workbook
PVC-HTMNT01 & PVC-HTMNT02	Mounting pads for 3- and 4-bolt high temp differential charge mode accelerometers and magnetic coil vibration sensors. Example models include Endevco series 6222S and 6233C, CEC 4-128 and others within the product line, Dytran 5334 and 5355 [7].
Calibration Report Generation Workbook	**Certificate Generated Via 9110D Memory:** Frequency Response & Linearity for AC Voltage Output Transducers **Certificate Generated Via User-Input:** Vibration analyzer/meter linearity & frequency response accuracy, linearity for 4-20 mA vibration transmitters, proximity probe curves (gap vs. DC voltage)
Warranty	2 Years, Inclusive of Drift/Accuracy
9100-PS06	Turn-key power supply for Honeywell (formerly Chadwick Helmuth) 7310 and 8866-1 velocimeters used to measure vibration on the C-130 aircraft
9100-PS09	Turn-key power supply for Wilcoxon 991D and 991V accelerometers and velocity sensors supplied with ACES Systems balancing kits
9100-PS02	Power supply for modulated current, Constant Voltage Line Drive (CVLD) velocity sensors and accelerometers
9100-CBL01	Turn-key calibration cable for Wilcoxon 993A, Dynamic Instruments DI-103 and DI-103A, and similar triaxial sensors supplied with ACES Systems balancing kits
9100-CBL02	Triaxial ICP accelerometer mating cable, 4-socket 3/8-28 UNF-2A to three labeled BNC's for Dytran 3303A and similar
9100-CBL03	Biaxial ICP accelerometer mating cable, 3-socket 5/16-28 to two labeled BNC's for Dytran 3302A and similar
9100-CBL04	Two-conductor shielded, twisted-pair cable; 3/8-32 2-socket input to BNC male output for CEC series 4-128 and similar
9100-CBL07	Engine Accelerometer Mating Cable, 3-socket threaded MIL to BNC
9100-USB00	USB to USB communication cable
003C03	10-32 to BNC cable
9100-MNT03S	Triaxial accelerometer mounting block and support shim used with Wilcoxon 993A, Dynamic Instruments DI-103 and DI-103A, and other triaxial and off-axes sensors such as Dytran Airborne Accelerometer models 3077A, 3078A, and 3079A
9100-MNT07	Adhesive mounting target ideal for Dytran HUMS and aircraft vibration control (AVC) Airborne Accelerometers
353B03	Transfer standard reference accelerometer

[1] 100-gram payload
[2] Operating range reduced at higher payloads. Reference manual for full details.
[3] Measured with 10-gram quartz reference accelerometer
[4] Calculated by measuring the % difference between the known sensitivity of a reference accelerometer as calibrated by laser primary system per ISO 16063-11 and the measured sensitivity of same reference accelerometer when tested at the same points
[5] Test is conducted independently of product firmware with calibrated voltmeter
[6] As shipped from factory in new condition
[7] Mounting plates support sensors listed. Multi-hole mounting plates are convenient but not optimized for the best calibration results. The Modal Shop offers a full line of customized mounting pads validated in our calibration lab for precise results.

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