product manual

HM-2432.3F

HM-2432A.3F_MAN_0912

Pneumatic Consolidated Load Frame

Introduction

Compact and easy-to-use, the HM-2432A.3F pneumatic consolidation load frame is used for consolidation and stress controlled testing and is designed to apply loads instanteously and maintain any set load regardless of sample compression occurring within the loading interval. The unit applies loads instantly without impact for stress-controlled consolidation testing; and, maintains the load regardless of sample compression. Its small footprint saves valuable lab counter space while maintaining its versatility by supporting fixed ring, floating ring, or permeability cells. Available with standard mechanical dial gauge, digital indicators or with strain transducers (LSCT) coupled to one of our data loggers. Meets ASTM D2435, D4546; AASHTO T216; BS 1377 part 5.

TSF Models

Con-Matic 32 TSF (110/220V 50/60Hz)— HM-2432A.3F

kg/cm² Models

Con-Matic 32 kg/cm² (110/220V 50/60Hz)— HM-2432AM.3F

Specifications	
Sample Size	up to 4" (100mm)
Maximum Load	2200lbf (10kN)
Vertical Clearance	8.75" (222mm)
Horizontal Clearance	7.25" (184mm)
Maximum Piston Travel	0.5" (12.7mm)
Dimension (D x W x H)	11.75 x 11.5 x 23.25 inches (298 x 292x 590mm)
Weight	35 lbs. (15.9kg)

Part #	Qty	Description
Pneumatic Consolidation		
HM-2432A.3F	1	ConMatic 32 TSF, 110/220 50-60Hz
HM-1220.XX	1	Fixed Ring Consolidation Cell
H-4471CC	1	Dial Gauge, 0.5" X .0001" CC
Pneumatic Consolidation w/ Analog Transducer Data Acquisition		
HM-2432A.3F	1	ConMatic 32 TSF, 110/220 50-60Hz
HM-1220.XX	1	Fixed Ring Consolidation Cell
HM-2310.04	1	Strain Transducer 0.4" (10mm)
HM-2310BR	1	Strain Transducer Bracket
HM-2325A.3F	1	MiniLogger 4 CH Analog Data Acquisition
HM-1100SW	1	HMTS Consolidation Reporting Software
Pneumatic Consolidation w/ Digital Indicator Data Acquisition		
HM-2432A.3F	1	ConMatic 32 TSF, 110/220 50-60Hz
HM-1220.XX	1	Fixed Ring Consolidation Cell
HM-4469.10	1	Digital Indicator 1" x .0001" (25 x 0.002 mm)
HM-4469C	1	Data Cable for Indicator
HM-2330D.3F	1	MiniLogger 4 CH Digital Data Acquisition
HM-1100SW	1	HMTS Consolidation Reporting Software

Part Numbers ending in .XX require a size code to be entered referring to the sample size to be tested.

For Consolidation samples, sizes are: .20 = 2.0"; .242 = 2.42"; .25 = 2.5"; .30 = 3.0"; .40 = 4.0"; .50 = 50mm; .70 = 70mm; .75 = 75mm, and .100 = 100mm.

Connections

Dial Indicator Rod— Screws into the center rear of the load platform between the two eccentric stops

Dial Indicator Clamping Arm— Attaches to the above rod

Dial Indicator (Optional)— Attach to the clamping arm with the screw provided

Linear DIisplacementTransducer (Optional)— Attach to the clamping block on the dial indicator clamping arm

Air Filter (Optional)— Removes condensation from air lines and prevents damage to the precision regulators

Air LIne— A constant supply of air is required. The air inlet air pressure should not exceed 150 psi (1000kpa), nor should it ever be less than 20 psi (140kpa) higher than the highest pressure setting. The connection is 0.25 inch quick connect located at the rear of the cabinet.

Panel Controls

Pressure Readout— The readout is a precision instrument reading to two decimal places with a 0.25% accuracy. It is used for setting pressures on the regulator. An on/off switch is located on the right side of the readout. The span adjustment is located behind the front panel, which is removed by prying with a small screwdriver. This adjustment is only used for calibrating the readout, which has been set at the factory. The zero adjustment is located on the front panel, lower left and requires the use of a small screwdriver. The power supply for the readout requires that you install the plug into the back of the readout.

Load Regulator— A precision Fairchild regulator is used to set and maintain the air pressure to the pistons, which provides load to the sample. The regulator is sensitive to 0.125 inch (3mm) variations in water column.

High Load/Low Load Selector Valve— This valve has three positions the "low load" is used for loads to 1 tsf. The "high load" position is used for loads up to 32 tsf (kg/cm2). The "off" position is used when changing from 1 to 2 tsf (kg/cm2) loads.

Load Valve— This valve is actuated by 90-degree rotation of the handle. When open, it allows air to flow from the regulator to the pistons (HIGH OR LOW LOAD) selected.

Operation

The load platform is designed with adjustable centering pads for aligning the consolidometer and accepting any brand consolidometer that has a maximum base diameter of 7.25 inch (184 mm). The pads require setting if using another brand consolidometer. The stops have been set for a 5-inch (127mm) base diameter consolidometer.

Note: When using floating ring consolidometers, alignment of the ball and the cross arm center are required each time. When using fixed ring consolidometers, alignment is automatic when it is placed against the eccentric stops.

With the consolidometer in place, adjust the lower nuts on the cross arm supports so that there is an approximate 0.062 inch (1.5mm) gap between the cross arm and the ball on the consolidometer load pad or piston when using a back pressure consolidometer. This is done to install or remove the consolidometer without loosening the nuts on the upright rods.

The upper cross arm has a displacement indicator pin that is positioned on the consolidometer ball or piston. Adjust the dial indicator or linear displacement transducer to the top of this pin and allow for sufficient travel when the soil sample compresses.

Loading Sequence

1. Set the HIGH/LOW LOAD selector valve to LOW LOAD.
2. Set the LOAD valve to OFF.
3. Select a seating load.
4. Set the regulator to the desired pressure per the LOAD SETTING TABLE.

Note: The weight of the load pad, porous stone and steel ball has not been figured into the calibration sheets. When using a back pressure consolidometer, the weight of the piston should also be considered along with the cross secitonal area of the piston and the pressure during the test. The cross sectional area of 3/4" diameter piston is 0.4418 sq. in.

5. With the vertical dial indicator seared on the cross-arm pin, note the reading on the data sheet.

6. Next turn the LOAD valve from OFF to LOAD. At the same time, a stopwatch is started in order to record the appropriate time deformation characteristics.

7. To apply the next load, turn the LOAD valve to OFF and adjust the LOAD REGULATOR to the pressure required. Repeat Step number 6.

8. When changing from 1 to 2 tsf (kg/cm2) it is necessary to turn both valves (LOAD and HIGH LOAD/LOW LOAD) to the OFF position. Then adjust the pressure to the desired setting. Once the pressure is set, simultaneously turn the HIGH LOAD/LOW LOAD valve to HIGH LOAD and the LOAD valve to LOAD. Record the appropriate time deformation characteristics.

9. Unloading of the sample can be accomplished by turning the LOAD valve to OFF and then adjust the LOAD REGULATOR to zero psi and then turn the LOAD valve back to LOAD. This will exhaust the air through the regulator vent

Warranty

Humboldt Mfg. Co. warrants its products to be free from defects in material or workmanship. The exclusive remedy for this warranty is Humboldt Mfg. Co., factory replacement of any part or parts of such product, for the warranty of this product please refer to Humboldt Mfg. Co. catalog on Terms and Conditions of Sale. The purchaser is responsible for the transportation charges. Humboldt Mfg. Co. shall not be responsible under this warranty if the goods have been improperly maintained, installed, operated or the goods have been altered or modified so as to adversely affect the operation, use performance or durability or so as to change their intended use. The Humboldt Mfg. Co. liability under the warranty contained in this clause is limited to the repair or replacement of defective goods and making good, defective workmanship.

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