



**EQUIPO PARA ENSAYO DEL  
MÉTODO DE RICE Ref. PA-86**

Alta tecnología con calidad humana  
al servicio del mundo

Norma: ASTM D 2041

La bomba es especialmente diseñada para el plcnómetro de vacío. El plcnómetro de vacío está hecho en acrílico para muestras hasta 6000 g . Incluye conectores y manguera.

#### ESPECIFICACIONES TÉCNICAS

- Motor: ¼ HP
- Vacuómetro graduado de 0 a 30 In Hg
- Bomba de vacío con motor
- Volumen del plcnómetro 6 Lt
- Operación a 60 Hz
- Trampa de agua 110 VAC (Opcional 220 VAC)



EQUIPOS PARA LABORATORIO DE SUELOS, CONCRETOS Y ASFALTOS - LABORATORIO DE METROLOGÍA ACREDITADO

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# Operating Instructions

## Important

**This unit has been drained for shipment  
Do not attempt to operate without adding oil**

In order to make the best use of your investment, familiarize yourself with the new features and operating instructions before starting pump. With just routine care your high vacuum pump will give you years of reliable service by following proper maintenance guidelines.

**Important:** Use oil specifically refined for high vacuum pumps. For best results, use Fischer Technical Company High Vacuum Pump Oil.

Part #'s                      Quart Size: OIL-01  
                                    Gallon Size: OIL-GALLON

**Use of oil not refined for high vacuum pumps and or operating the pumps with contaminated oil will void your warranty.**

Oil Capacity: LAV-3 26.4 oz. (780cc)

Remove brass oil fill plug on pump and insert spout into fill port.

Slowly add oil until oil rises to top of OIL LEVEL line. Replace oil fill plug.

Checking oil level. Start with vacuum pump intake (top of hose barb) capped. After running, oil should be even with OIL LEVEL line.

## OPERATING YOUR HIGH VACUUM PUMP

It is important that solids and liquid contaminants are kept from entering your vacuum pump. Clearances within your pump are less than .001 inch and solids of any size could close block and jam your vacuum pump. Operate the pump on a clean system or provide an intake filter to prevent solids from entering.

Moisture and corrosive chemicals can also damage your vacuum pump. To prevent these from entering, frequently cold traps or molecular sieves are used. Most important however is to change the oil whenever your vacuum pump has been contaminated. Left sitting in the pump, contaminated oil will form sludge, rust, and erode the internal surfaces.... Shortening your pump's life.

Note: Your vacuum pump is designed to operate at high vacuum continuously. Operating the pump at or near atmospheric pressures for a prolonged period of time will result in excessive smoke to emanate from the pump exhaust (thru the handle) and can cause overheating. Further, since these type of pumps are oil sealed, prolonged use and especially frequent cycling or operation at high pressures will cause oil to coalesce around the exhaust port. This is not a sign of a defective pump. There are exhaust smoke eliminators available which can eliminate this problem. Consult your dealer.

## GAS BALLAST VALVE

The gas ballast valve, located next to the intake fitting is designed to help purge moisture (water vapor) from the pump oil by permitting a controlled amount of atmospheric air to enter the exhaust stage of the pump. Whenever you evacuate a system containing moisture it is recommended to open the valve a 1/4 turn. When a vacuum of 1000 to 2000 microns has been reached, close the valve and continue to evacuate. Note: One cannot attain the ultimate vacuum with the gas ballast valve open.

## PUMP MOTOR

Pump and oil must be above 30 F. Line voltage must be equal to motor nameplate +/- 10%. Normal operating temperature is approximately 160 F, which is hot to the touch. Line voltage ambient condition and operating pressures will affect this somewhat. The motor has automatic resetting thermal overload protection. If the motor will not restart pump after shut off, it may have opened the thermal protection. Disconnect the pump from the system, wait about 15 minutes for the motor to cool and start it again.

## WARRANTY

These vacuum pumps are warranted to be free from defects in workmanship and materials for a period of one year. Our liability is limited to repair or replacement of these products if these products are found to be defective by us. In no case shall we allow charges for labor, expense, or consequential damage.

Fischer Technical Company

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**HUMBOLDT**

**H-1756A & H-1756.5F  
Instruction Manual**

**VIBRATING TABLE FOR H-1750**

*Manufactured by:*

**Humboldt Mfg. Co.**

7300 West Agatite Avenue  
Norridge, Illinois 60706 U.S.A.

*Customer Service:*

Tel: 1.708.456.6300

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Email: [hmc@ehumboldt.com](mailto:hmc@ehumboldt.com)

USA Toll Free: 1.800.544.7220

Website: [www.humboldtmfg.com](http://www.humboldtmfg.com)

*Sold and Serviced by:*

**Humboldt and Authorized Dealers Worldwide**

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## 1. Introduction

This item is generally used with other Rice Test apparatus specifically to keep sample material loose for more reliable test results. It accepts the 2 kg capacity canister H-1750, and operates with a variable speed control up to 2400 VPMs for 230V/50Hz, 3,000 VPMs for 115V/60Hz.

## 2. General Information

### Inspection:

Your Rice Vibrating Table was thoroughly inspected before it was shipped and should be ready to operate as soon as you have completed the set-up procedure. Notify Humboldt Mfg. Co. or your local agent and file a claim with any carriers involved if you find any damage to the machine.

### Physical Specification:

Shipping weight: 12 lbs (5.4 kg)  
Overall height: 15 ½"  
Base dimension: 11" Diameter

### Power supply:

H-1756.5F      230 V/50Hz  
H-1756A        115 V/60Hz

Check that your machine has the correct voltage for your local supply.

## 3. Initial Installation

Set the machine base up at the place it is to be used in the laboratory and then decide if you plan to operate the machine resting on the three rubber feet as supplied or permanently connected through the extra mounting holes in the base. The mounting holes are 3/16" diameter on a 10 1/8" diameter bolt circle.

Put your H-1750 Pycnometer with cover into place on the H-1756.5F or H-1756A by sliding it through the top ring slot and into position under the top ring. If not already engaged press down on the ring to compress the springs and hook the screw heads from the latches into the keepers on the ring. Now try latching the ring down. If you can't get the latches down, or if they go down and are too loose to hold the ring down, you can make a final adjustment by turning the latch screw(s) and re-tightening their nuts. The proper setting is when the keepers are deflected downward slightly when latched. This pressure on the keepers should hold the pycnometer in place when there is a vacuum drawn on it.

#### 4. Operation

The vibratory action is started by operating the on-off switch located on the front of the base. Start the machine by raising the bat handle on the toggle switch to the "ON" position.

#### 5. Maintenance

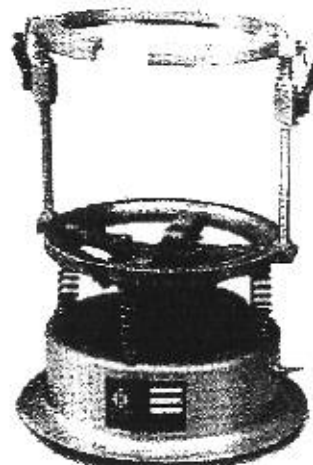
The machine can generally be maintained by keeping it clean, correcting any looseness that may occur and protecting the electrical cord.

#### 6. Warranty

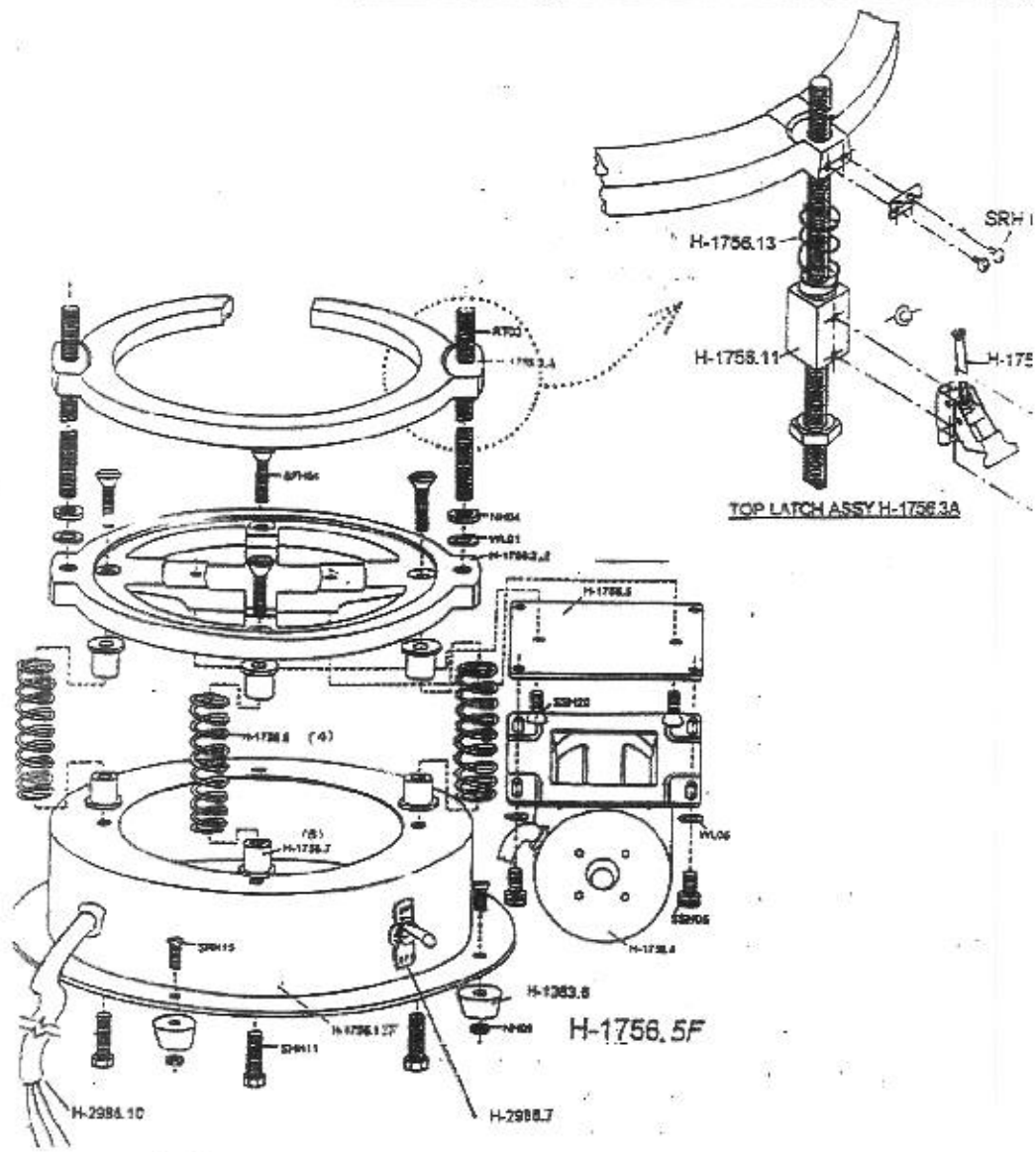
Humboldt Mfg. Co. warrants its products to be free from defects in material or workmanship. The exclusive remedy for this warranty is Humboldt Mfg. Co., factory replacement of any part or parts of such product, for the warranty of this product please refer to Humboldt Mfg. Co. catalog on Terms and Conditions 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.

**CAUTION:** Keep hands, clothing and other objects away from moving parts when the machine is in operation.

#### 7. Drawings



**H-1756A & H-1756.5F**



For 120V/60Hz  
See H-1756A with Speed Control

**H-1756.5F**

# HUMBOLDT MFG. CO.

MANUFACTURERS

SCIENTIFIC INSTRUMENTS      TESTING EQUIPMENT  
LABORATORY            APPARATUS

7300 WEST AGATITE  
NORRIDGE, IL 60656-4704

## OPERATING INSTRUCTIONS FOR H-1752 CLOSED END "U" TUBE MANOMETER

REMOVE MANOMETER FROM SHIPPING CONTAINER AND INSPECT CAREFULLY FOR SHIPMENT DAMAGE. IF YOU HAVE RECEIVED THE INSTRUMENT WITH DAMAGES, PLEASE CALL YOUR SUPPLIER FOR FURTHER INSTRUCTIONS. IF YOU SEE THAT THE MERCURY COLUMN HAS BUBBLES OR SEPARATIONS IN THE MERCURY, WHICH OFTEN DOES OCCUR DURING SHEPMENT, THIS CAN BE EASILY CORRECTED AND WILL BE COVERED FURTHER IN THE INSTRUCTIONS.

IF THE INSTRUMENT IS NOT DAMAGED, THEN REMOVE THE GLASS "U" TUBE FROM THE WOOD STAND BY UNSCREWING THE WOOD SCREWS THAT HOLD THE PLASTIC CLIPS AROUND THE GLASS TUBE TO THE MOUNTING BOARD. GENTLY SEPARATE THE "U" TUBE FROM THE BY-PASS TUBE AT THE 10/30 S JOINT. YOU WILL NOTICE THAT THERE IS A SMALL CORK IN THE END OF THE 10/30 INNER JOINT, REMOVE THIS CORK FOR IT IS ONLY USED TO PREVENT THE MERCURY FROM BEING JARRED OUT OF THE INSTRUMENT DURING SHIPMENT. IF YOU NOTICED MERCURY COLUMN BUBBLES AND SEPARATION, INVERT THE "U" TUBE AND GENTLY BUMP THE TUBE SO THAT THE BUBBLES OR SEPARATIONS FLOW UP TO THE "U" BEND IN THE TUBE THEN SLOWLY TURN THE "U" TUBE TO THE UPRIGHT POSITION BUMPING THE BUBBLE AROUND THE CURVE AND TO THE OPEN SIDE OF THE TUBE. AFTER ALL OF THE BUBBLES OR SEPARATIONS ARE REMOVED FROM THE MERCURY COLUMN, PLACE A SMALL AMOUNT OF SILICONE STOPCOCK GREASE ON THE 10/30 INNER JOINT, AND GENTLY INSERT THE 10/30 INNER JOINT BACK INTO THE 10/30 OUTER JOINT WITH A LIGHT BACK AND FORTH ROTATION AND SLIGHT DOWNWARD PRESSURE TO SEAT THE FITTING TOGETHER.

REMOVE THE STOPCOCK PLUG FROM THE STOPCOCK BARREL BY REMOVING THE RUBBER WASHER FROM THE BACK SIDE OF THE STOPCOCK AND GENTLY PULLING THE PLUG OUT TOWARD THE FRONT OF THE GAUGE. REMOVE THE STRIP OF TISSUE PAPER FROM AROUND THE STOPCOCK PLUG. PLACE A SMALL AMOUNT OF SILICONE GREASE ON THE STOPCOCK PLUG AND RE-INSERT THE PLUG BACK INTO THE STOPCOCK WITH GENTLE FORWARD PRESSURE AND BACK AND FORTH ROTATION IN ORDER TO SEAT THE PLUG INTO THE STOPCOCK. REPLACE THE WOOD SCREWS INTO THE PLASTIC CLIPS AND SCREW THE CLIPS SECURELY TO THE MOUNTING BOARD, SECURING THE "U" TUBE TO THE BOARD.

THE GAUGE IS NOW READY TO BE PUT INTO OPERATION. PLACE THE GAUGE IN YOUR SYSTEM BY USING HIGH VACUUM RUBBER TUBING TO CONNECT TO THE SERRATED HOSE CONNECTIONS ON BOTH SIDES OF THE BY-PASS TUBE. OPEN THE STOPCOCK VALVE SO THAT THE MERCURY COLUMNS ARE EXPOSED TO YOUR VACUUM SYSTEM. EVACUATE THE SYSTEM JUST ENOUGH TO PULL THE LEFT HAND MERCURY COLUMN DOWN ABOUT 10MM FROM THE TOP OF THE GLASS COLUMN. TURN THE STOPCOCK 90 DEGREES TO THE OFF POSITION, SHUTTING THE GAUGE OFF FROM THE EVACUATED SYSTEM. PULL THE SLIDE SCALE UP UNTIL THE MERCURY LEVEL IN THE RIGHT HAND COLUMN READS THE SAME LEVEL BELOW THE ZERO ON THE SCALE AS THE LEFT HAND MERCURY COLUMN READS ABOVE THE ZERO ON THE SCALE.

EXAMPLE. MOVE SCALE UP SO THAT THE RIGHT COLUMN READS -30MM AND LEFT HAND COLUMN READS +30MM. YOU HAVE NOW ZEROED THE INSTRUMENT. LEAVE THE SLIDE SCALE IN THIS POSITION. NOW TURN THE STOPCOCK 90 DEGREES TO WHERE IT IS OPEN TO YOUR EVACUATED SYSTEM. CONTINUE EVACUATING YOUR SYSTEM AND YOU WILL SEE THE LEFT HAND MERCURY COLUMN MOVE DOWN AND THE RIGHT HAND COLUMN MOVE UP. THE PRESSURE IN YOUR EVACUATED SYSTEM IS THE SUM OF THE VALUES OF THE LEFT HAND COLUMN ABOVE YOUR ZERO POINT ON THE SCALE. EXAMPLE AFTER ZEROING THE SCALE, LEAVE IT IN THAT POSITION. EVACUATE THE SYSTEM AND THE LEFT HAND COLUMN MOVES DOWN TO 30MM ABOVE THE ZERO LINE AND RIGHT HAND COLUMN MOVES UP TO 30MM BELOW THE ZERO LINE. THE SUM OF THE TWO READINGS IS 60MM, WHICH IS THE PRESSURE YOU HAVE IN YOUR SYSTEM. AFTER EACH READING, CLOSE THE STOPCOCK OFF THE SYSTEM AND ALLOW THE SYSTEM TO EVACUATE FURTHER BEFORE OPENING THE STOPCOCK AND ACQUIRING A NEW READING. IMPORTANT, ONCE YOU HAVE ZEROED THE SCALE, ALWAYS LEAVE IT IN THAT POSITION DURING OPERATION.

WITH REASONABLE CARE THIS INSTRUMENT WILL GIVE YOU YEARS OF SERVICE. IF BREAKAGE DOES OCCUR, SPARE PARTS ARE AVAILABLE. CONTACT YOUR DEALER.