



# JULIEN P. FRIEZ & SONS, INC.

(A Subsidiary of The Bendix Aviation Corporation)

BALTIMORE, MARYLAND, U. S. A.

ESTABLISHED 1876

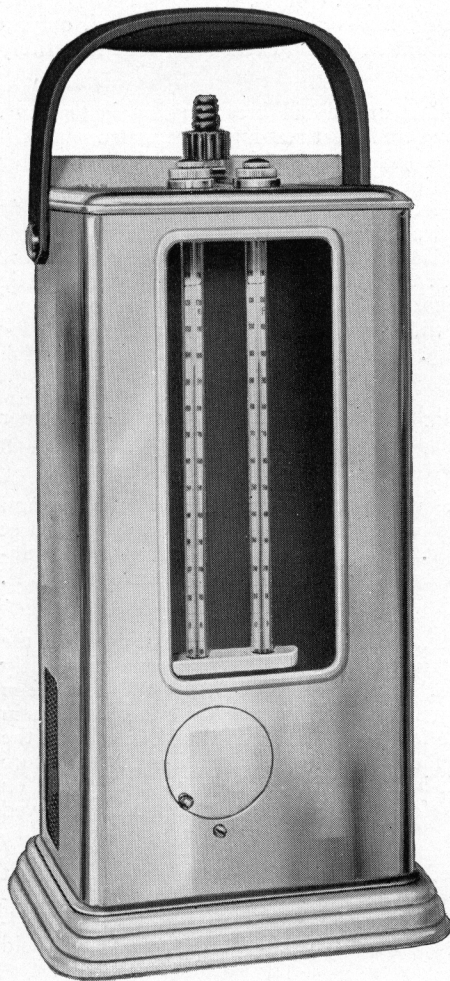
BULLETIN # P

## FRIEZ THERMO-SHIELDED ELECTRICALLY-ASPIRATED PSYCHROMETER

JAN., 1936

**T**HE Electrically-Aspirated Psychrometer affords an easily read and accurate determination of the moisture content of air and forms a first-class standard for industrial, laboratory, air conditioning and refrigeration work, or as a standard by which to check the readings of Humidity Indicating or Recording Instruments, or the settings of Humidistats. Its registrations are accurate and consistent and admit almost no occasion for error.

Julien P. Friez & Sons, Inc., who, for many years past have been "THE MAKERS OF AMERICA'S WEATHER INSTRUMENTS," now offer an improved Electrically-Aspirated Psychrometer which has the further refinement of **complete protection from radiation and errors due to heat from radiation from surrounding objects, including the operator.** The air sample is drawn through the top, away from proximity with the operator. The initial warmth effect of wet bulb reservoirs is eliminated by individual applications of water to the wet bulb for each reading. Included in the equipment and neatly housed in the top of the instrument is a glass container for distilled water, complete with proper applicator.



The entire mechanism is encased in a highly polished chromium-plated Thermo-Shield, equipped with a protecting glass window for thermometer visibility and an integral rack carrying the full set of U. S. Weather Bureau Psychrometric Tables, which are furnished without extra cost.

A round aperture with a sliding door is provided in line with the thermometers and through this the wet wick is moistened by means of distilled water and applicator referred to above.

The thermometers are 10" long, of the highest grade U. S. manufacture, carefully matched and graduated from zero to plus 130° F. in 1/2° increments. These thermometers are of the new oval bore capillary type, which while of extreme precision and accuracy, are comparatively easy to read and are considered preferable to all other types for this particular purpose.

The fan is operated by a Universal motor equally suited for use on either 110-volt A. C. (any cycle) or 110-volt D. C. (special motors for 220-volt are available where specified). The operation of the fan and motor is reasonably quiet, but still quieter operation can be obtained where the instrument is for use on 110-volt 50-60 cycle A. C. only, as in that case a split phase motor, which needs no brushes and is inherently more quiet than Universal motors, can be employed.

The case is approximately 7" square and 13" high and is provided with a carrying handle and sufficient length of electrical lead to insure portability and flexible operation. A hand switch is provided in the flexible lead at the instrument end. Further details and operating instructions are given later in this Bulletin.

**This new instrument gives a degree of consistent accuracy in humidity readings not before obtainable,** and it is thoroughly recommended to all who seek the greatest precision obtainable in the standard measurement of atmospheric moisture conditions. It embodies the Friez Company's 60-year experience in the building of fine hygrometric instruments for the U. S. Weather Bureau, Navy, and for all classes of industrial and educational research.

### TYPE

# 573—Friez Thermo-Shielded Electrically-Aspirated Psychrometer, fitted with Universal motor for 110-volt. A. C. (any cycle) and equally suitable for 110-volt D. C. Range zero to plus 130° F. in 1/2° graduations. Complete with extra wicks. Including distilled water bottle and applicator, and full set of U. S. Weather Bureau Psychrometric Tables...

# 573-a—Replacement thermometer (dry bulb or wet bulb), .....each

# 573-b—Special Egg Room thermometer, graduated to 0.1° F. for use in the above instrument, .....each

Wooden Carrying Case.....

LIST PRICE  
(F. O. B. Baltimore)  
(C)

\$75.00

\$6.00

\$8.00

\$7.00 (Net)

**Note:** If instrument is ordered in the first place with these Special Egg Room thermometers, add \$4.00 extra to list price of complete instrument. Special range thermometers can be made up on order and at extra cost. Centigrade thermometer also available. Where ordering only one replacement thermometer, the other or the complete instrument should be returned here to enable us to properly match.

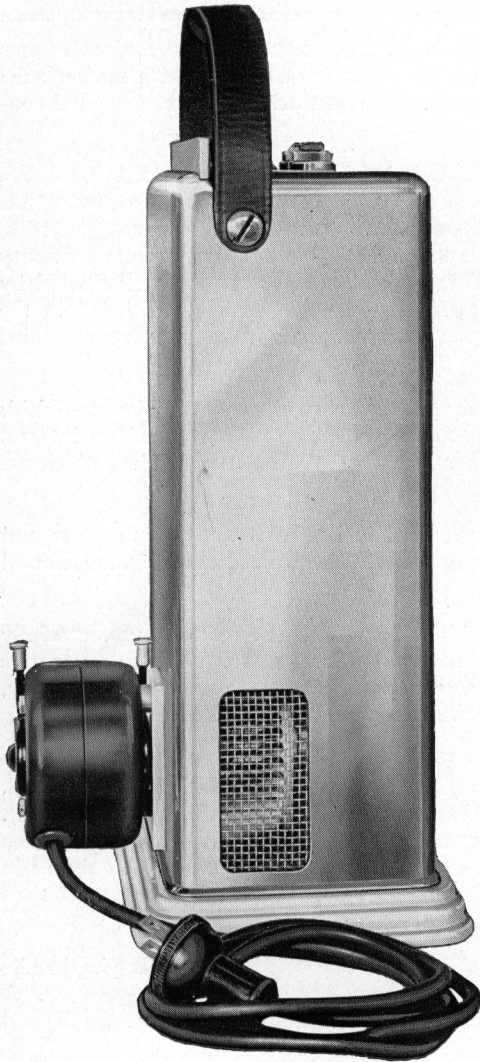
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## INSTRUCTIONS—FRIEZ THERMO-SHIELDED ELECTRICALLY-ASPIRATED PSYCHROMETER

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The broad features of the new Friez Thermo-Shielded Electrically-Aspirated Psychrometer are given in the foregoing. The general method of using the instrument will be quite clear to those likely to be employing it.

For the protection of the thermometers in shipment, these are packed separately, complete with their adjustment and holding assemblies. Screw them into position in the top of the instrument, first seeing that the **left-hand** thermometer, as one faces the instrument, is provided with its **cotton wick**. Screw down the outer larger knurled nut as tight as it will go with the fingers, and adjust the thermometer in a position so as to obtain the best light for reading by movement of the smaller center knurled nut.



The normal operation is simply to open the small circular door in the front, and by means of the supply of distilled water carried in the glass container which is fitted with a rubber-ended applicator, carefully and thoroughly wet the cotton wick of the left-hand Wet Bulb Thermometer, taking great care to soak well the wick. Avoid forming a bridge of water between the thermometer bulb and the surrounding air port (that is, either at the bottom or the top of the wick). Close the small door, plug in 110-volt A. C. (any cycle) or 110-volt D. C. where standard Universal motor is fitted. Throw on hand switch, and Psychrometer is in operation.

**Note:** The Universal motor used has been selected specially for its reasonably quiet operation. Universal motors, however, incorporate brushes in their construction and must not be expected to be as quiet as straight A. C. motors. Where silence is essential, and where the instrument is for use on 110-volt 50 or 60 cycle A. C. only, a special motor can be furnished on the instrument (at no extra cost) that is entirely quiet.

Stand clear of instrument as far as possible and avoid breathing on instrument. Observe until Wet-Bulb Thermometer shows its lowest reading. The instrument will reach its lowest reading within two minutes from starting the fan, and the operator has then approximately four more minutes in which to take his readings before the wet wick will start to dry and create false readings. Obviously in very dry conditions somewhat less time is available, and in high humidities somewhat longer time, due to the different speed of evaporation of the moisture from the wick. Take readings of wet and dry bulb and use U. S. Weather Bureau Book of Psychrometric Tables, furnished with instrument and housed at the back of the instrument casing, to draw the required deductions. Repeat with fresh wetting of wick and average for close results. Rewet wick for each reading. Use only distilled water; change wick frequently.

Avoid shining direct electric light or sunlight into instrument. If, because of poor light, exact observation of thermometers is difficult, resort to magnifying reading glass rather than shining direct light on instrument or thermometers.

Entire thermometer can be removed by slacking large knurled nut on the top and withdrawing thermometer completely. Before replacing thermometer, see that wet wick is affixed to the left-hand thermometer. Replacement thermometers are obtainable from the Friez Company. Standard thermometers furnished are scaled in  $\frac{1}{2}^{\circ}$  F. increments and easily readable to  $\frac{1}{4}^{\circ}$  F.

To open entire instrument for cleaning, etc., undo the one single small screw in the center of the top of the instrument, this screw being located between and slightly behind the two thermometer-holding knurled nuts. Removal of that screw then enables one to lift the top piece of the instrument and in turn to slide off the main Thermo-Shielded casing, which exposes the fan, etc. The interior and exterior of the instrument should at all times be kept perfectly clean, it being an important feature of the Thermo-Shielding that a clean polished reflecting surface be maintained on the exterior. The instrument should, therefore, have greasy finger marks removed before being used for accurate work.

The new Friez Thermo-Shielded Electrically-Aspirated Psychrometer, Type #573, referred to above, **is believed to be the most accurate known means of measuring the moisture content of air.** It has been the very sincere endeavor of the Friez Company, during its 60 years of fine instrument building, to produce the best that specialized experience, expert craftsmanship, and well-equipped laboratories could achieve, and to give the users of its products every service. We hope that this instrument will uphold our reputation, and that you will keep in touch with us to this end.

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Friez Sling and Hand-Aspirated Psychrometers are shown on separate Bulletin #S.

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**AIR CONDITIONING UTILITIES, INC.**

8 W. 40th STREET NEW YORK CITY

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Designed and Manufactured by

**JULIEN P. FRIEZ & SONS, Inc.**

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REG. U. S. PAT. OFFICE

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