

PRECISION ANEROID BAROMETER

TYPES FA-112 FA-139 FA-160

FA-185

This Wallace & Tiernan Barometer is a precision aneroid instrument. It gives mercurycolumn accuracy as well as durability and high sensitivity.

Because its primary element is an evacuated capsule, the W&T Barometer is more sensitive to pressure changes than a mercurial instrument: There is no large mass of mercury to resist movement. Scale length is approximately five times that of a mercury instrument of comparable range. The W&T Barometer may be supplied to cover a wide pressure range or a narrow, selected range. It is also available with different accuracies and sensitivities, different scale lengths, and in permanent-installation or portable types. It fills a wide variety of needs.

It is ideal for use in meterological stations, industrial laboratories, airplane and engine test facilities, instrument repair shops, airports, and power plants. A model is available calibrated as an altimeter setting indicator.



FA-112 Barometer

FEATURES

CUSTOM-CALIBRATED DIAL

The dial of each W&T Barometer is individually calibrated over its complete range. Calibration is against a U-tube Sonar Manometer (accurate to better than 0.001 inch Hg over a range of 0-32 inches Hg). Barometers may be calibrated in any desired pressure unit. Calibration is traceable to NIST (Formerely NBS).

TEST PERFORMANCE HAS TO EXCEED ACCURACY RATING

Custom dial calibration, precision mechanism construction, and matched dials and mechanisms give accuracies to 0.1 % and sensitivities to 0.01% of full scale. After rigorous tests, and W&T Barometer which fails to perform better that the rated accuracy is rejected.

DURABLE AND CONVENIENT IN USE

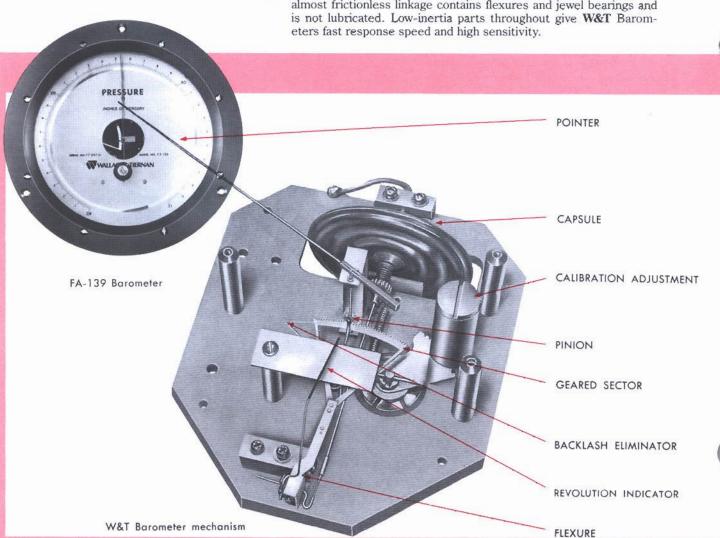
Although sensitive, W&T Barometer mechanisms are not fragile; they resist damage by on-the-job handling. The shock-mounted, portable Type FA-185 will withstand vibrations between 500 and 1,000 cycles per minute at an amplitude of 0.156 inch. Overpressuring these barometers up to 25% above full scale range will not damage the mechanism nor affect accuracy. Built-in temperature compensation makes errors due to temperature changes almost negligible.

EXCELLENT READABILITY

W&T Barometers have scales from 16 to 35 inches long. Long scales mean many graduations can be used to cover full range. In the highest range (13 to 30.5" Hg), the minimum graduation represents 0.02". And the graduations are widely spaced. With a knifeedge pointer, this allows readings to better than 0.02% of full scale. A mirror ring eliminates parallax errors.

PRECISION CONSTRUCTION

A small, sensitive capsule responds to minute pressure changes. The almost frictionless linkage contains flexures and jewel bearings and



CONSTRUCTION, DESIGN and OPERATION

DESIGN AND CONSTRUCTION

Wallace & Tiernan Barometers come in several standard ranges and calibrations. But calibration may be in other pressure units, including metric. Types FA-139 and FA-160 Barometers can have two sets of graduations on a single dial at extra cost.

The pressure element is an evacuated capsule. A mechanical linkage amplifies capsule movement and transmits it to the pointer. An anti-backlash device maintains uniform tension between the parts, virtually eliminates lost motion. The pointer is balanced to minimize position error. Hysteresis and drift over long periods of time are negligible. Capsule stops are included to protect the mechanism: Overpressuring or underpressuring these barometers up to 25% more than full scale range will not damage the mechanism nor affect accuracy.

W&T Barometer cases are anodized aluminum with tempered glass or lucite dial covers. Pressure connections are 1/8-inch NPT female. The portable barometer has its mechanism shock mounted. Its aluminum case is 71/2 inches in diameter by 33/4 inches deep and is mounted in a leather carrying case with a latched leather cover. A conversion chart can be attached to the inside of the cover. For convenience, an armored thermometer, in Fahrenheit or Celsius, threads into the case just below the cover latch.

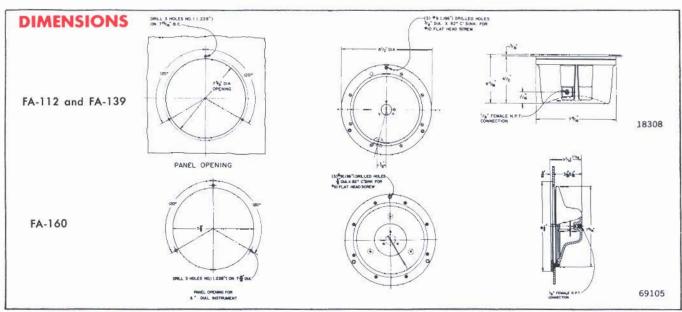
Barometer cases are easily sealed. This prevents damage to the mechanism during storage or air shipment. All W&T Barometers, except the portable FA-185, are designed for flush-panel mounting.

OPERATION

Atmospheric or absolute pressure is admitted to the W&T Barometer by leaving the case connection open to atmosphere or connecting it to a pressure source. Pressure causes the evacuated capsule to deflect. The linkage transmits this capsule movement to the pointer, which indicates the pressure directly.



TECHNICAL DATA



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	TYPE FA-112 panel-mounted	TYPE FA-139° panel-mounted	TYPE FA-160 panel-mounted	TYPE FA-185 portable
range	13 to 30.5" Hg FA-112160 22 to 31.5" Hg FA-112150 19 to 32" Hg FA-112170	28 to 31" Hg FA-139220° 28 to 31" Hg FA-139240°	660 to 800 mm Hg† FA-160180 or 26 to 31.5" Hg FA-160420	22 to 31.5" Hg FA-185260 13 to 30.5" Hg FA-185300
accuracy	0.1% of full scale	0.3% of full scale	0.33% of full scale	0.1% of full scale
sensitivity	0.01% of full scale	0.02% of full scale	0.2% of full scale	0.01% of full scale
scale length	35 inches through 2 pointer revolutions	17 inches through 1 pointer revolution	16 inches through 1 pointer revolution	30 inches through 2 pointer revolutions
dial diameter	6 inches	6 inches	6 inches	6 inches
dial calibration	Standard units are inches of Hg. No extra charge for calibration in other pressure units.	Standard units are in. Hg. Calibration in other units at no extra charge. Two sets of graduations on a single dial at extra cost.	Standard are mm Hg or inches Hg, Calibration in other units and two sets of graduations on a single dial are extracost options.	Standard units are inches of Hg. No extra charge for calibration in other units.
minimum graduation	0.02 inch	0.01 inch	0.5 mm or 0.02 inch	0.02 inch
temperature compensation	0.05% of full scale per 10 C change from 25 C	0.05% of full scale per 10 C change from 25 C	None	0.05% of full scale per 10 C change from 25 C
case volume	1890 cc	1890 cc	405 cc	1813 cc
weight	3 lb, 4 oz	3 lb, 4 oz	3 lb, 8 oz	3 lb, 7 oz
shipping weight	16 lb	16 lb	12 lb	13 lb

^{*}FA-139220 is available in any 3-inch Hg span for readout of ambient pressure at any selected elevation to 7,000 ft. FA-139240 is an Altimeter Setting Indicator available for any selected station elevation to a maximum of 7000 ft. (23" Hg).

Type FA-185 Portable Barometer is read with the dial horizontal. W&T Portable Surveying Altimeters only are described in catalog file 610.400.

WHEN ORDERING, PLEASE SPECIFY:

Type/Range/Units for dial calibration.

Mounting: Vertical mounting standard; (except FA-185 which is horizontal only) other mounting to order. Thermometer: Fahrenheit or Celsius for FA-185 Barometer.

Station elevation: Altimeter Setting Indicator or FA-139 Barometer for other than sea level reading, to nearest foot.

Progressive changes in design may be made without prior announcement.



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[†]Write for catalog file 610.050 for additional ranges of Type FA-160.