AccuBalance Package 8371

Product Overview

Each package includes a TSI AccuBalance airflow hood with compact light-weight carrying case, NIST traceable calibration certification, and a step-by-step instruction manual with procedures and checklists.

Digital readout features large, easy-to-read numbers with constant readings every second (extremely helpful for damper adjustment).

Airflow is measured by 24 individual points - 50% more than other hoods on the market. Accurate and trustworthy for residential, commercial, or industrial applications.

No dead spots or flaps. Lightweight yet rugged, this air balance hood weighs less than 8 lbs. and features a 26" x 26" x 7" durable ballistic nylon carrying case.This instrument is covered by a two-year parts warranty.

FREE BONUS!! We've also added our exclusive HVAC System Report Form for recording and presenting test results along with other royalty-free, camera-ready air balancing forms--just add your logo!

Product Features

- Direct flow rate reading
- Field calibration adjustment
- Density correction
- Printer output
- K-Factor
- Back-lit display
- Variable time constant
- NIST calibration certificate
- Weighs only 7.5 lbs
- Sampling function lets you average out multiple measuring points
- Automatic conversion between actual and standard flows when user inputs temperature and pressure.
- A variety of hood sizes to choose from
- Includes selection of NCI air balancing forms.

Model 8371 ACCUBALANCE Specifications

- Flow Range:
  - 50-3,500 m3/hr
  - 0.84-55 m3/min
  - 30-2,000 CFM
- Accuracy:
  - ±5% reading ±5 CFM
  - ±5% reading ±2.4 l/s,
  - ±5% reading ±8.5 m3/hr,
  - ±5% reading ±0.15 m3/min
- Operating Temperature: 32-140° F
- Weight: Approx. 71/2 lbs.
- Power: 4 C-size batteries
- Battery Life: 40 hours continuous use
- Carrying Case: 26” × 26” × 7”
- Hood Sizes Available: Standard: 2' ×2'

Ordering/Contact Information

National Comfort Institute, Inc.
P.O. Box 2090, Sheffield Lake, OH 44054
Telephone: 800-633-7058
Fax: (440)949-1851
Order online at **www.nationalcomfortinstitute.com**

Optional Features

- Optional Hood Sizes Available: 2' × 4'
- Optional Hood Sizes Available: 1' × 5'
- Optional Hood Sizes Available: 3' x 3'
- Optional Hood Sizes Available: 2' x 2'
- Extension Frame Kit
- Optional Model 8930 Printer
  - AC Adapter/Charger
  - 5 rolls thermal pape
  - RS232 Interface cable

How often should I have the ACCUBALANCE calibrated?

To maintain a high degree of accuracy in your measurements, TSI recommends that you return the instrument to the factory for annual calibration. Typical turn-around time is two business days when the unit is received with proper documentation.

What is the LIGHT key on the ACCUBALANCE?

The back light key will turn the back light on and off. When the back light is not needed, we recommend it be turned off, because it will shorten the life of the batteries if it is left on.

On the ACCUBALANCE why do I have to select supply or return during my measurement?

All ACCUBALANCE Models are designed to accurately measure air flow in either direction through the hood. However, they are not designed to tell which direction the air is flowing. For the highest accuracy, each ACCUBALANCE is calibrated twice with flows in each direction. So, to attain the highest accuracy, it's best to select.

On the ACCUBALANCE is it back-pressure compensated?

The ACCUBALANCE has a very low amount of back pressure and is not back-pressure compensated.

Why doesn't TSI's instrument agree with my other instruments?

There are several reasons one instrument may not agree with another.

- There are differences in how a manufacturer calibrates its own calibration facility. TSI's calibration facility is calibrated with laser velocimetry, which is the same technique used at NIST.
- While comparing instruments, it is critical to measure in exactly the same location. Sensors placed side-by-side may not read the same, due to flow differences rather than instrument errors.
- The length of time since the instruments were last cleaned and calibrated can affect their readings.
- There are different technologies used to measure air velocities: hot-wire, rotary vane, Pitot tube, etc. TSI uses hot wire technology which measures mass air flow.
- The standard conditions an instrument is calibrated to vary from one manufacturer to another. TSI's standard conditions are 70°F (21.1°C) and 14.7 P.S.I.A. (101.4 kPa).

When using the ACCUBALANCE, do you need to correct for temperature?

The ACCUBALANCE is temperature-compensated, so there is no need to correct for temperature. The ACCUBALANCE must be used within the operating temperature range of 32 to 140°F (0° to 60°C) to assure maximum accuracy.

When using the ACCUBALANCE, do you need to correct for altitude?

All current ACCUBALANCE Models 8371, 8372 and 8373 have the capability to do the conversion from standard to actual. With the 8371 model the user must enter temperature and barometric pressure.

On the ACCUBALANCE does the hot-wire sensor need to be cleaned in the field to assure accurate readings?

No. We found the sensors have remained clean on all of the ACCUBALANCEs returned for recalibration.

With the ACCUBALANCE what range of flow can it measure?

The flow range for the ACCUBALANCE 8371 Model is from 30 to 2,000 SCFM (15 to 1,000 l/s, 55 to 3,500 m3/hr).

What does the ACCUBALANCE use for power?

Four C-size alkaline batteries supply power for at least 40 hours of continuous use. When the ACCUBALANCE is first turned on, the percentage of battery life remaining is displayed. To conserve the batteries, the ACCUBALANCE will automatically shut itself off if no switches or buttons are pressed for 15 minutes.

Can the ACCUBALANCE read to zero CFM?

The ACCUBALANCE will accurately read as low as 30 CFM. Below this flowrate, a flashing 0 will be displayed.

What does your two-part accuracy specification actually mean?

The accuracy is the sum of the two components of the accuracy spec. Example: The ACCUBALANCE Model 8371 has an accuracy rating of ±5-percent of reading and ±5 CFM. If your ACCUBALANCE reads 1,000 CFM, ±5-percent of reading is ±50, plus ±5
CFM for a total tolerance of ±55 CFM. The combined accuracy is 5.5-percent at 1,000 CFM.

What is the accuracy of an ACCUBALANCE?

The accuracy is ±5-percent of reading ±5 CFM (±2.4 l/s, ±8.5 m3/hr).

The accuracy is the sum of the two components of the accuracy spec. Example: The ACCUBALANCE has an accuracy rating of ±5-percent of reading and ±5 CFM. If your ACCUBALANCE reads 1,000 CFM, ±5-percent of reading is ±50, plus ±5 CFM for a total tolerance of ±55 CFM. The combined accuracy is 5.5-percent at 1,000 CFM.

Please explain NIST traceability.

NIST is the National Institute of Standards and Technology. All test and calibration data supplied by TSI has been obtained using standards whose accuracies are traceable to NIST or has been verified with respect to instrumentation whose accuracy is traceable to NIST.

What is the repeatability of TSI instruments?

The repeatability is included in the accuracy specifications.

When using the ACCUBALANCE do Ineed to correct for humidity?

There is no need to correct for humidity because humidity has very little affect on velocity readings. Studies show there is less than a 3-percent change in the velocity reading while the humidity changes from 0 to 100-percent RH in air at room temperature.

What are density corrections?

In general, there are two ways to express air velocity: standard velocity and actual velocity. Standard velocity is velocity that is referenced to standard conditions. TSI instruments measure standard air velocities using a reference of 70°F (21.1°C) and 14.7 p.s.i.a. (101.4 kPa). We provide density correction equations in our manuals to obtain the value for actual velocity from standard velocity. Actual velocity is the speed at which a microscopic particle of dust would be traveling as the air flow carries it along. Our sensors measure mass flow (of "standard") air velocity which is a measurement of the mass of air moving past the sensor. The two measurements give the same readings, only at standard conditions. If, for example, the temperature increases, the air would expand and become thinner. Actual velocity would then be higher than standard velocity. Many people prefer mass flow standard air velocity measurement because the mass flow specifies the heat-carrying capacity or combustion oxygen-carrying capacity of the air.

To calculate actual air velocity, multiply your standard velocity reading by the following density correction factor:

- Actual Velocity = (standard velocity) ((460 + T)/(460 + 70)) (14.7/P)
- Where
  - T = Ambient temperature in degrees Fahrenheit
  - P = Ambient pressure in p.s.i.a.
- If you use metric units, the equation becomes:
  - Actual Velocity = (standard velocity)((273+Tm)/ (273+21.1))(101.4 /Pm)
- Where
  - Tm = Ambient temperature in degrees Centigrade
  - Pm = Ambient pressure in kPa
  - As a practical matter, many users do not concern themselves with standard versus actual air velocity corrections unless the density of air in their situation is more than 10-percent away from standard air density.

What does it mean if a unit is temperature compensated?

In a constant flow, the output readings remain constant across a range of temperatures as long as those temperature changes are within the temperature-compensated range.

What type of calibration facility is used at TSI to calibrate instruments?

TSI calibrates in wind tunnels that have been laser verified for accuracy. This is the same technique used by NIST for their low-velocity calibration facilities.