OWNER'S MANUAL

AXD 530
MicroManometer

ALNOR®
TSI Incorporated

Limitation of Warranty and Liability

Seller warrants that this product, under normal use and service as described in the operator's manual, shall be free from defects in workmanship and material for a period of two (2) years, or the length of time specified in operator's manual, from the date of shipment to the customer. This limited warranty is subject to the following exclusions:

a. Batteries and certain other components when indicated in specifications are warranted for a period of 90 days from the date of shipment to the customer.

b. With respect to any repair services rendered, Seller warrants that the parts repaired or replaced will be free from defects in workmanship and material, under normal use, for a period of 90 days from the date of shipment to the customer.

c. Seller does not provide any warranty on finished goods manufactured by others. Only the original manufacturer's warranty applies.

d. Unless specifically authorized in a separate writing by Seller, Seller makes no warranty with respect to, and shall have no liability in connection with, any goods which are incorporated into other products or equipment by the Buyer. All goods returned under warranty shall be at the Buyer’s risk of loss, Seller’s factory prepaid, and will be returned at Seller’s risk of loss, Buyer’s factory prepaid.

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THE EXCLUSIVE REMEDY OF THE USER OR PURCHASER, AND THE LIMIT OF THE LIABILITY OF SELLER FOR ANY AND ALL LOSSES, INJURIES, OR DAMAGES IN CONNECTION WITH THIS PRODUCT (INCLUDING CLAIMS BASED ON CONTRACT, NEGLIGENCE, STRICT LIABILITY, OTHER TORT, OR OTHERWISE) SHALL BE THE RETURN OF THE PRODUCT TO THE FACTORY OR DESIGNATED LOCATION AND THE REFUND OF THE PURCHASE PRICE, OR, AT THE OPTION OF SELLER, THE REPAIR OR REPLACEMENT OF THE PRODUCT. IN NO EVENT SHALL SELLER BE LIABLE FOR ANY SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES. SELLER SHALL NOT BE RESPONSIBLE FOR INSTALLATION, DISMANTLING, REASSEMBLY OR REINSTALLATION COSTS OR CHARGES. NO ACTION, REGARDLESS OF FORM, MAY BE BROUGHT AGAINST THE SELLER MORE THAN ONE YEAR AFTER THE CAUSE OF ACTION HAS ACCRUED.

The purchaser and all users are deemed to have accepted the terms of this LIMITATION OF WARRANTY AND LIABILITY, which contains the complete and exclusive limited warranty of Seller. This LIMITATION OF WARRANTY AND LIABILITY may not be amended or modified nor may any of its terms be waived except by a writing signed by an authorized representative of Seller

Service Policy

Knowing that inoperative or defective instruments are as detrimental to TSI as they are to our customers, our service policy is designed to give prompt attention to any problems. If any malfunction is discovered, please contact your nearest sales office or representative, or call Customer Service department at (800) 424-7427 (USA) and (1) 651-490-2811 (International).

Table of Contents

Features

The AXD530 MicroManometer is a meter that measures differential pressure. It is also capable of measuring and displaying air velocity.

Functions are selected through a three-key pad.

The AXD530 displays measurement results on a liquid-crystal display (LCD), with additional display segments for units of measure and low battery indication.

It features two built-in pressure ports for attachment to the pressure source you will measure. Optional hoses and Pitot-static probes are available.

The AXD530 uses three (3) AA size alkaline batteries for low replacement cost.

Using the AXD530 Safely

⚠ WARNING

- When using the instrument to check airflow in an elevated workplace, make certain that you can safely raise and hold the instrument while making measurements. This is especially important when you are working on a ladder.
- Avoid catching hoses or attachments in moving machinery.
- Use the instrument only for measurements using air.
- Avoid any corrosive or other dangerous or explosive gas mixtures.

NOTICE

Please dispose of used batteries in a responsible manner.

Getting Started

Installing Batteries

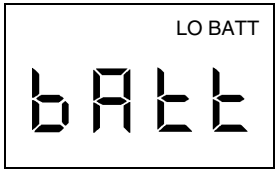
The AXD530 uses three (3) AA size non-rechargeable batteries. The unit was shipped with batteries not installed. You will find the batteries in the instrument package.

Back view of the instrument

To install the batteries:

- Loosen the battery cover screw on the back of the instrument.
- Slide the cover up and lift it out.
- Install the batteries over the pull strap, taking care to observe each battery's polarity.
- Replace the cover and tighten the screws.

Note: *When the batteries become low, the LCD will show [LO BATT] above the reading. From that point, you will have about one hour of normal use left. If [bAtt] comes on continuously and replaces the reading, the battery voltage is too low for accurate measurements and the meter will turn itself off.*



Low battery displays

Always keep a replacement set of new batteries available.

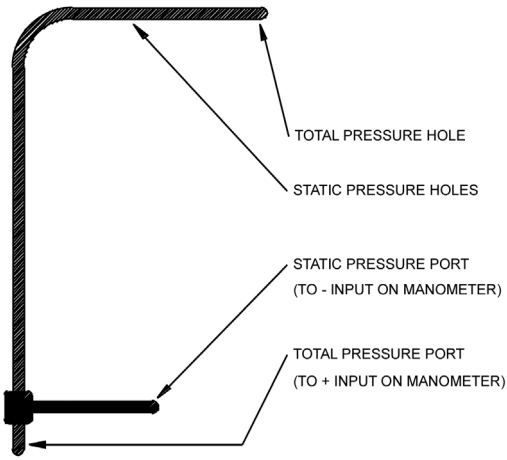
Preparing the Instrument

Attach hoses to the pressure ports at the top of the instrument. Do **not** exceed maximum pressure.

Attaching the Optional Pitot-Static Probe

To attach the probe for measuring air velocity:

- Remove the Pitot-static probe and rubber tubing from their carrying case.
- Remove the protective caps from the probe and save them for restoring the probe later.
- Attach one section of flexible tubing to the probe's static pressure port and another to the probe's total pressure port.



Pitot-static probe

- Identify the (+) and (-) pressure ports at the top of the AXD530.
- Attach the tubing from the total pressure port of the Pitot-static probe to the (+) port of the MicroManometer.
- Attach the tubing from the static pressure port of the Pitot-static probe to the (-) port of the MicroManometer.
- Check to ensure that all tubing connections are tight.

Start-Up Sequence

Each time you turn the instrument on, some basic functions are tested. The following will occur:

- All the LCD segments will turn on.
- The current software revision level will be displayed.
- The message [bUSY] will appear.
- The last unit of measurement will be displayed along with a measurement value.
- [2Ero] followed by [bUSY] will appear.
- The meter will begin to measure.

Zeroing the Instrument

Before you begin taking measurements, the AXD530 must be zeroed by following these steps:

- Most hand-held meters using differential pressure sensors require a warm-up time. Turn on your Alnor AXD530 a minimum of five (5) minutes before zeroing and taking your first measurements.
- Make sure there is no airflow past a Pitot-static probe (also verify that none of the tubing is pressurized by accidental squeezing).
- Press the ZERO key until [2Ero] appears on the display.

The instrument will automatically zero its readings. Repeat this procedure, if necessary, because at high resolutions the AXD530 will read small pressure changes.

The Display

The AXD530 uses a 4-digit, 7-segment LCD. As a result, measurements exceeding 9,999 of a given unit of measure will be displayed in a scientific notation format of XXEY. The actual reading will be rounded to the nearest thousand, XX. The Y indicates the number of zeros after XX. For example, 12,664 is displayed as [13E3].

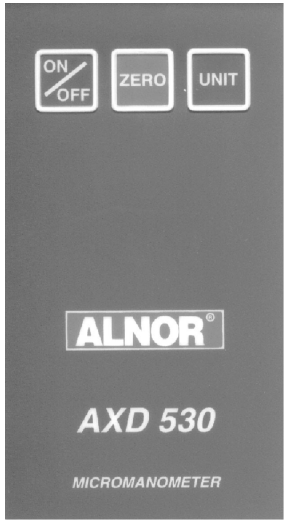
Modes

The AXD530 operates and takes measurements in the RUN mode. You may be in the RUN, ZERO, or UNIT select modes.

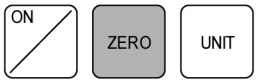
AXD530 Keypad

The AXD530 Keypad

The internal clock rate of the AXD530 software may cause the meter to react slowly to a key push. The reaction time of a key push will vary with different functions (1–3 seconds). Maintain pressure on the desired key until you see the required response on the display.



Key Functions:

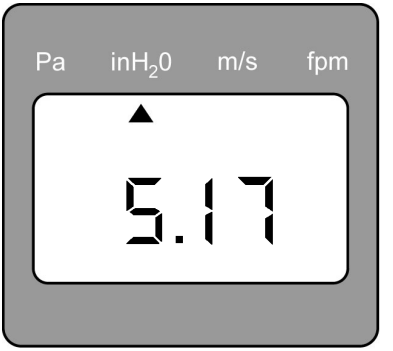
	ON/OFF	This key is used to turn the instrument on or off.
	ZERO	The AXD530 will zero the instrument any time this key is pushed. To get a proper zero, make sure no pressure difference is applied across the ports and no kinks are in the hoses. (See also "Zeroing the Instrument.")
	UNIT	This key is used to select the desired unit of measurement.

Using the AXD530

Basic Functions

To Change Units:

- Push and hold the UNIT key.
- The display annunciator ▲ will move to the left of the LCD beginning from the right.
- Release the UNIT key at the desired location.



Display with annunciator and units of measure

For example: To change the units of measurement from feet per minute (fpm) to meters per second (m/s):

- Push the UNIT key.
- The display annunciator ▲ moves to m/s, selecting meters per seconds.
- Release the key.

Measurement Modes

You can set the AXD530 for pressure or velocity measurement by pressing the UNIT key.

Pressure Selection:

The AXD530 is a pressure-measuring instrument. Its factory default setting is to measure pressure in inches of water (in.H_2O) or Pascals (Pa).

Velocity Selection:

Air velocity measurement can be accomplished using a Pitot-static probe.

The following equations are used for pressure to velocity conversions:

$$\text{Velocity (fpm)} = 4005\sqrt{\text{Pressure}}$$

where Pressure is in inches H_2O

or

$$\text{Velocity (m/s)} = 1.29\sqrt{\text{Pressure}}$$

where Pressure is in Pa

The velocity calculations assume standard conditions. Use Appendix D to determine the correct multiplier if conditions other than standard exist. Refer to Appendix B for pressure to velocity conversion.

Appendix A: Traversing a Duct to Determine Average Air Velocity or Volume

The following techniques can be used to measure airflow inside ducts using a velocity probe or Pitot-static tube. When using a Pitot-static tube, the individual velocities must be calculated for each pressure reading then averaged together.* Averaging pressure with a Pitot tube and then converting that average into velocity will give an incorrect result, especially if many readings are more than ±25% from the average pressure. Remember that for a Pitot tube, velocity is proportional to the *square root* of the pressure.

Where to Take the Measurement

In order to make air velocity measurements in a duct, it is best to measure at least 7.5 duct diameters downstream and at least 3 duct diameters from any turns or flow obstructions. It is possible to do a traverse as little as 2 duct diameters downstream or 1 duct diameter upstream from obstructions, but measurement accuracy will be impaired. When measuring rectangular ducts, use the following formula to find the equivalent diameter of the duct when calculating how far 7.5 diameters downstream or 3 diameters upstream is.

$$\text{Equivalent Diameter} = \sqrt{4HV/Pi}$$

Where: H = horizontal duct dimension
V = vertical duct dimension
Pi = 3.14

It is also possible to take a single reading to measure air velocity or air volume flow in a duct, measuring in the center of the duct and multiplying the reading by 0.9 to correct for the higher velocity at the duct's center. If conditions are very good, accuracy of ±5 or ±10 percent can be obtained this way. This method is not reliable, however, and should only be used where small duct size or other conditions do not permit a full traverse.

Traversing a Round Duct

Using the log-Tchebycheff method, the duct is divided into concentric circles, each containing equal area. An equal number of readings is taken from each circular area, thus obtaining the best average. Commonly, three concentric circles (six measuring points per

diameter) are used for ducts with diameters of 10 inches or smaller. Four or five concentric circles (eight or ten measuring points per diameter) are used for ducts with diameters of 10 inches or more.

The preferred method is to drill three holes in the duct at 60½ angles from one another as shown in Figure 1. Three traverses are taken across the duct, and the velocities obtained are averaged at each measuring point. The average velocity is multiplied by the duct area to get the flow rate. (A different method uses two holes at 90½ angles from one another, decreasing the number of traverses with the probe by one.)

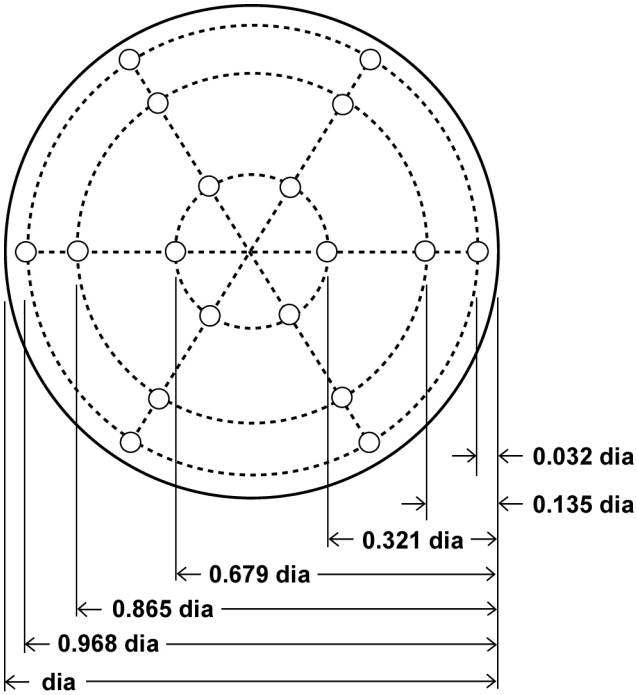


Figure 1: Location of measuring points when traversing a round duct using the log-Tchebycheff method

Number of measuring points per diameter	Position relative to inner wall
6	0.32, 0.135, 0.321, 0.679, 0.865, 0.968
8	0.021, 0.117, 0.184, 0.345, 0.655, 0.816, 0.883, 0.981
10	0.019, 0.077, 0.153, 0.217, 0.361, 0.639, 0.783, 0.847, 0.923, 0.981

Before taking the measurement, multiply the numbers in the table by the duct diameter to get the insertion depth for the probe. (Do **not** forget to use the inside dimension of the duct if it is lined with insulation.)

Traversing a Square Duct

Using the log-Tchebycheff method, the duct is divided into rectangular areas, which are further adjusted in size to account for the effect of the duct wall on airflow. A minimum of 25 points must be measured in order to get a good average. The number of data points to be taken along each side of the duct depends on how wide the duct is. For duct sides shorter than 30 inches, five traversal points must be taken. For duct sides of 30 through 36 inches, six points must be taken. For duct sides longer than 36 inches, seven points must be taken. Multiply the numbers in the table by the duct dimension to get the insertion depth for the probe.

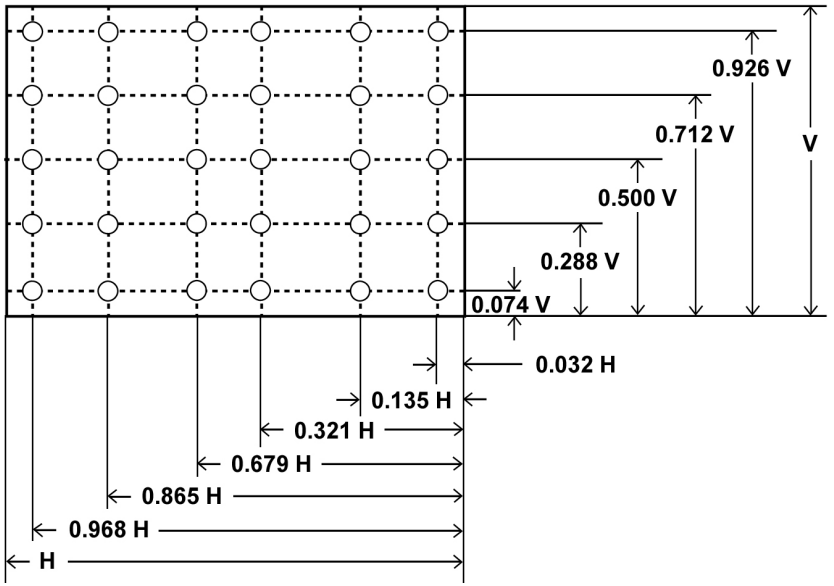


Figure 2: Location of measuring points for traversing a rectangular duct using the log-Tchebycheff method

Number of points or traverse lines per side	Position relative to inner wall
5	0.074, 0.288, 0.500, 0.712, 0.926
8	0.061, 0.235, 0.437, 0.563, 0.765, 0.939
10	0.053, 0.203, 0.366, 0.500, 0.634, 0.797, 0.947

The duct in Figure 2 has a horizontal dimension between 30 and 36 inches, requiring six points (or six traverse lines). The duct's vertical dimension is less than 30 inches, requiring five points (or five traverse lines).

Notice of Disclaimer

TSI Incorporated has made a good faith effort to provide reliable information regarding the use of the AXD530 to conduct a duct traverse. However, we cannot guarantee conformance to any particular method of specification, or that this material is free from error. Traverse methods outside of the USA will be slightly different. TSI recommends purchasing a copy of the duct traverse specification you require from an approved regulatory or professional organization.

For further information, refer to the 1993 *ASHRAE Fundamentals Handbook* Section 13, or to ASHRAE Standard 111 (1988).

Appendix B: Pressure to Velocity Conversion Charts

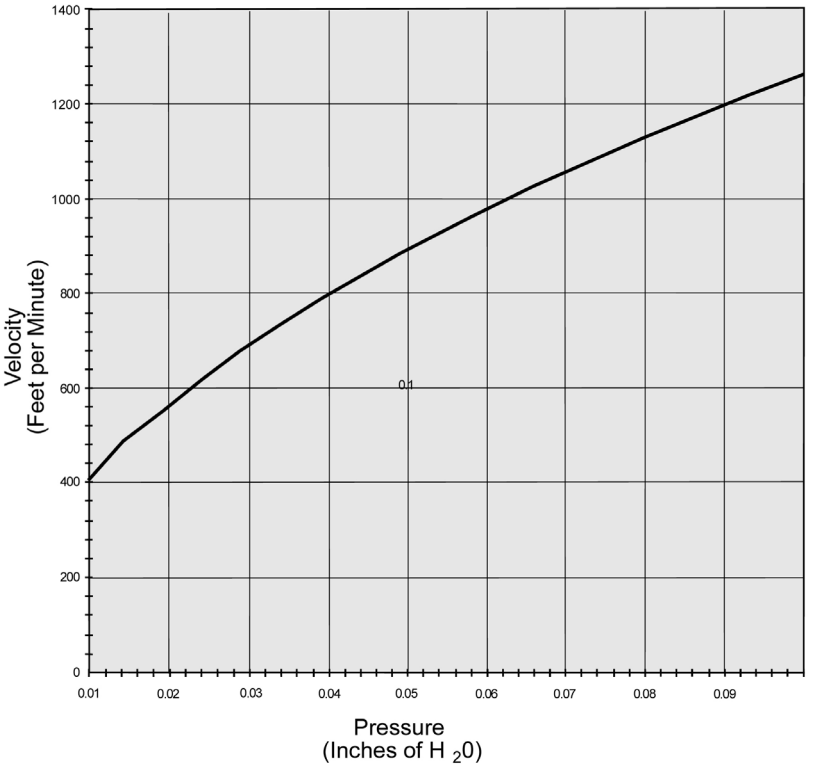
The AXD530 MicroManometer converts pressure readings to velocity using the formula for standard conditions:

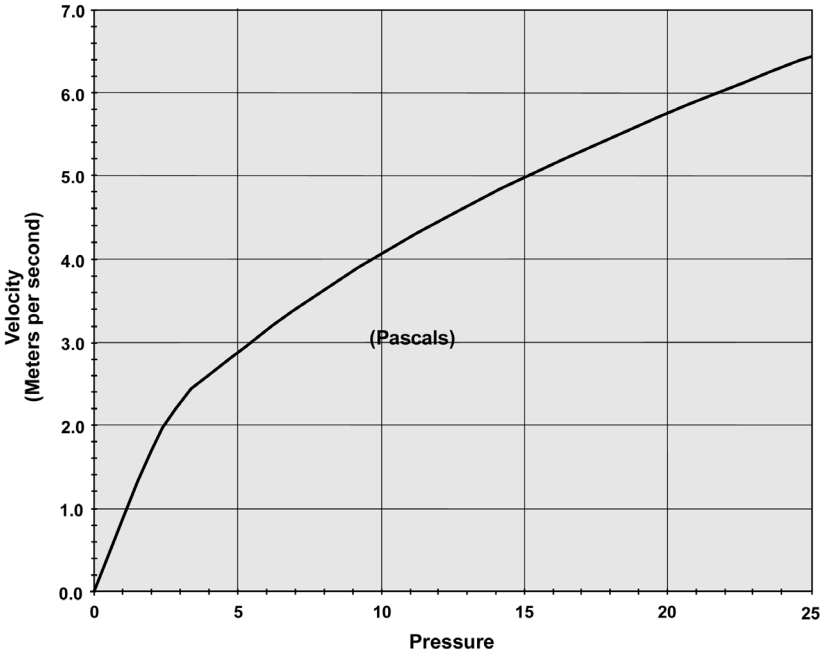
$V^{(fpm)} = 4005\sqrt{\Delta P}$ Pressure in inches H_20

$V^{(m/s)} = 1.29\sqrt{\Delta P}$ Pressure in Pa

Please note that for small pressure readings, an increment in pressure can cause large steps in velocity, but at larger readings, the steps in velocity are much less pronounced as a percentage of reading. A MicroManometer should not be used with a pitot tube at very low differential pressures to measure velocity, because resolution errors will be large.

The following graphs show approximate velocities for certain differential pressures in the range 0.01 to 0.10 inches H_2O (2.5–25 Pa).





Appendix C: Maintenance and Troubleshooting

Maintenance

Periodic maintenance should be performed on the meter.

- Batteries should be replaced when the low battery indication is on or when the unit turns itself off after power-up.
- Batteries should be removed from the meter if it will not be used for two (2) months or longer.
- Calibration checks are recommended every 12 months.
- Keep the meter clean by using a mild detergent on its case. Do **not** use abrasives or solvents. Also, do **not** allow liquids to enter the meter's case. Dry thoroughly after cleaning.
- Use an eyeglass cleaner and lens paper to clean the LCD window.

Troubleshooting

Symptom	Check
DISPLAY SHOWS [or]	The measured value is beyond the instrument's range. Be sure there is no applied pressure, then press ZERO.
DISPLAY SHOWS	The internal connection between the meter and [OPEN] the sensor is faulty. Turn the meter off, then turn it back on again.
DISPLAY DOES NOT CHANGE	Press the ON/OFF key until the unit turns off. Then turn it on and try again. Your input might simply be very stable. Test your meter by pinching the hoses.
METER TURNS OFF	The batteries are too low for your completing start-up meter start. Watch for the [bATt] cycle indication just before the meter turns off, then replace the batteries.
MEASURENENT IS ERRATIC	The input is not steady. Check to see that your Pitot-static probe is held steady.
ERRONEOUS READINGS	Make sure that your Pitot-static probe is perpendicular to the air flow you are measuring. Clean your Pitot-static probe—it may be dirty. Take measurements at a different location.

If any of these problems persist, call TSI for assistance.

Appendix D: Correction Factors for Non-Standard Conditions

The AXD530 is a differential pressure instrument. When it is connected to a Pitot-static probe, it can be used to measure velocity. When a Bernoulli's equation is applied to the Pitot-static probe, the resultant equation has the form $V(ft/min) = 4005\ [P(in\ H_2O)]^{1/2}$ when

the density of the air is 0.075 lb/ft. The velocity values displayed by the AXD530 are the actual velocities *only* if the density where the Pitot probe measurements are being taken is 0.075 lb/ft^3. Otherwise, a correction step must be performed to obtain a correct value. Listed below in *decreasing* order of accuracy are methods for determining a correction factor.

***Note**: In the United States, the barometric pressure reported by the National Weather Service is corrected to sea level and, therefore, cannot be used unless your measurements are taken at sea level. The preferred method is to use the atmospheric pressure at the location of the measurement. If you do not have access to that value, then Method 3 in this appendix can be used. This method is most accurate when the pressure reported by the national weather service is 29.92 in Hg due to the assumption of standard density.*

Method 1

If you have the absolute pressure, temperature and relative humidity, record the differential pressure from the AXD530, the absolute pressure, the temperature, and the relative humidity at the measurement location. Compute the density using the techniques used in the 1993 ASHRAE fundamentals handbook. With the density and the differential pressure, use the formula for Pitot probes also found in that handbook to compute the actual velocity.

Method 2

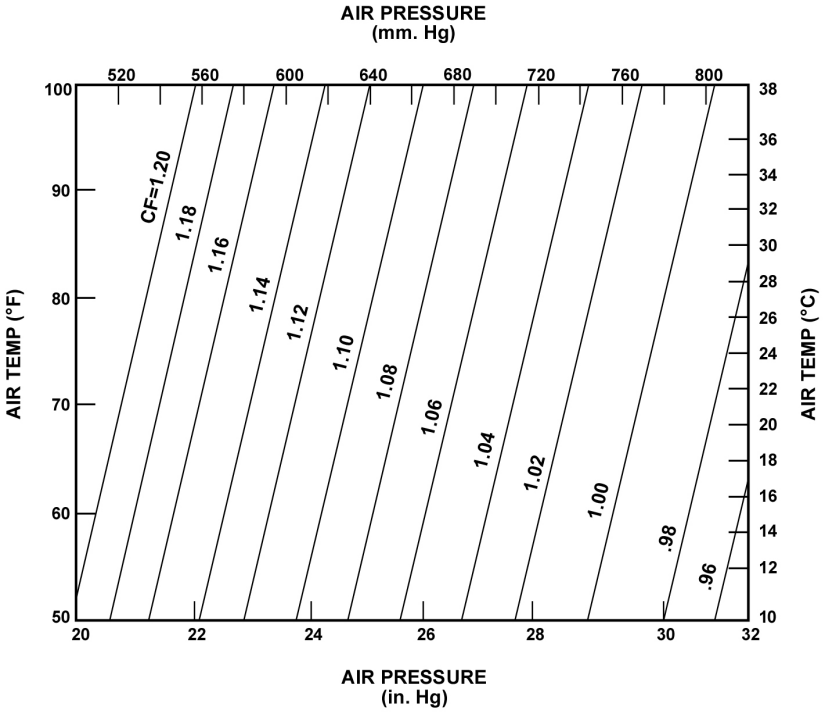
If you have the absolute pressure and the temperature, you have two options.

a) Record the displayed velocity measurement along with the absolute pressure and temperature. Convert to units of °F and in Hg if the temperature and pressure were not taken in those units. To obtain actual velocity, use Equation 1 in this appendix to calculate the correction factor and multiply the velocity reading by that factor.

b) If using the equation is not convenient, the Air Pressure vs. Air Temperature chart in this appendix can be used to determine the correction factor. However, inaccuracies can result from using the graphical technique instead of a direct calculation to obtain actual velocity.

Method 3

You can use this method if you know the altitude above sea level and the air temperature but are unable to determine the absolute pressure. Using the AXD530 Density Correction Factors chart, find the appropriate correction factor value. Multiply the displayed value by the value in this chart to get the "corrected" value.



NOTE: 1 (in. H_2O) X 7.36 (10^{-2}) = 1 in. Hg.

Equation 1: $$\text{CORRECTION FACTOR} = \sqrt{\frac{.075 \text{ X } (459.7 + \text{TEMP (°F)})}{1.325 \text{ X AIR PRESSURE (in. Hg.)}}}$$

Density Correction Factors

For Different Altitudes and Temperatures

Air Temp F°	Sea Level	Altitude (ft.) 1000	2000	3000	4000	5000	6000	7000	8000	9000	10000
-40°	0.89	0.91	0.92	0.94	0.96	0.98	1.00	1.02	1.04	1.05	1.07
0°	0.93	0.95	0.97	0.99	1.01	1.03	1.05	1.06	1.08	1.10	1.13
40°	0.97	0.99	1.01	1.03	1.04	1.07	1.08	1.10	1.13	1.15	1.17
70°	1.00	1.02	1.04	1.06	1.08	1.10	1.12	1.14	1.16	1.19	1.20
100°	1.03	1.04	1.07	1.08	1.11	1.13	1.15	1.17	1.20	1.21	1.24
150°	1.07	1.09	1.11	1.13	1.15	1.18	1.20	1.22	1.24	1.27	1.29
200°	1.12	1.14	1.16	1.19	1.20	1.23	1.25	1.27	1.29	1.32	1.35
250°	1.15	1.18	1.20	1.22	1.25	1.27	1.29	1.31	1.34	1.36	1.40
300°	1.20	1.22	1.24	1.27	1.29	1.31	1.34	1.36	1.39	1.41	1.44
350°	1.24	1.27	1.29	1.31	1.34	1.36	1.39	1.40	1.43	1.46	1.49
400°	1.27	1.29	1.32	1.35	1.37	1.40	1.43	1.44	1.47	1.51	1.54
450°	1.31	1.34	1.36	1.39	1.41	1.44	1.47	1.49	1.52	1.54	1.58
500°	1.35	1.37	1.40	1.43	1.46	1.49	1.51	1.52	1.56	1.60	1.62
550°	1.37	1.40	1.43	1.46	1.49	1.51	1.54	1.56	1.60	1.62	1.67
600°	1.41	1.44	1.47	1.49	1.52	1.56	1.58	1.60	1.64	1.69	1.71
700°	1.47	1.51	1.52	1.56	1.60	1.62	1.64	1.69	1.71	1.74	1.77
800°	1.54	1.58	1.60	1.64	1.67	1.69	1.74	1.77	1.80	1.83	1.86
900°	1.60	1.64	1.67	1.69	1.74	1.77	1.80	1.83	1.86	1.89	1.92
1000°	1.67	1.69	1.74	1.77	1.80	1.83	1.86	1.89	1.92	1.96	2.00

Standard Air Density = 0.075 lb/cu ft

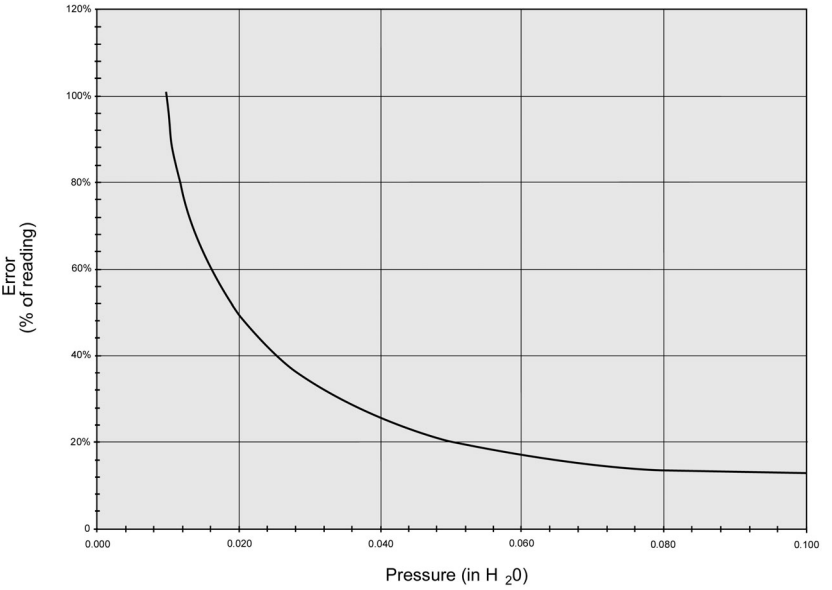
Appendix E: Effects of Resolution on Accuracy Statement

The AXD530 MicroManometer has a resolution of .01 inches H_2O (1 Pa in metric units).

The accuracy statement reads ± (1% of indicated reading + resolution). At very low differential pressures, therefore, the accuracy approximates the resolution.

e.g. differential pressure of .01 inches H_2O accuracy statement is ± (.01 x .01 + .01) or ± .0101 inches H_2O or reading error is ± 101% of reading.

As differential pressure increases, the resolution effect is decreased. The graph below shows the approximate error in % of reading you can expect as differential pressure increases. (See specifications for detailed specifications).



Error as a percentage of reading in inches of water due to meter resolution

Service Information

Contact TSI Incorporated directly, before returning your instrument. See INSTRUCTIONS FOR RETURN. Follow the procedure carefully as it will expedite processing. Failure to follow the procedure may cause return of the unit unrepaired. Send your instrument to the factory transportation prepaid. To assure fast turn-around time, photocopy and fill out this form with as much detail as possible and attach it to the instrument.

RMA No. _____

Instrument Model _____

Serial Number _____

Date of Purchase _____

Where Purchased _____

Describe Malfunction _____

Describe Environment _____

Return Instrument to:

Name _____
(Your name or company)

Address _____

Telephone _____

Address Correspondence to:

Name _____

Address _____

Telephone _____

Instructions for Return

Service and Repair

Please return your Product Registration Card immediately. This allows us send you service reminders, special offers, and important information about your product.

Before sending your instrument for calibration or repair, you should call Customer Service. The Service Department will provide you with the cost of service or calibration, Return Material Authorization (RMA) number, and shipping instructions.

Please have the following information available when you call:

Owner's Name, address, and phone number
Billing address, if different and applicable
Instrument Name or Model
Serial Number
Date of Purchase
Where Purchased

TSI recommends that you keep a 'calibration log' and keep all records of service on your instrument.

Instructions for Return

Send the instrument prepaid. Securely package your instrument in a strong container surrounded by at least two inches (5 cm) of suitable shock-absorbing material. Include the Purchase Order showing instrument model number, cost of service and/or calibration, and the RMA number. Mark the outside of the shipping container with the RMA number. This will expedite processing of your instrument when we receive it.

Please note that instruments received improperly marked or without an accompanying Purchase Order may be returned at your expense. See back cover for factory addresses.

Damaged in Transit

All orders are carefully packed for shipment. On receipt, if the shipping container appears to have been damaged during shipment, the instrument should be thoroughly inspected. The delivering carrier's papers should be signed noting the apparent damage. DO NOT DISCARD THE BOX.

If the instrument itself has been damaged, a claim should be promptly filed against the carrier by the customer. The selling agent will assist the customer by supplying all pertinent shipping information; however, the claim must be filed by the insured. If the instrument is damaged beyond use, a new order should be placed with TSI while awaiting reimbursement from the carrier for the damaged instrument.

Call TSI directly for assistance if necessary.

Ownership/Calibration Log

Equipment Log

Date of Purchase _____

Calibration Record _____

1. _____ 2. _____ 3. _____

4. _____ 5. _____ 6. _____

7. _____ 8. _____ 9. _____

10. _____ 11. _____ 12. _____

Notes: _____

AXD530 MicroManometer Specifications

Measurement Units

Pa	Pascals
in. H_2O	inches of Water Column
fpm	feet per minute
m/s	meters per second

Resolution

Pressure Measurement

0.01 in. H_2O (-1.00 to +10.00)

1 Pa

Display resolutions for Velocity units are:

0.01	(0 to 99.99)
0.1	(100 to 999.9)
1	(1000 to 9,999)
scientific notation	(10,000+)

Range

Pressure Measurement

-1.00 to +10.00 in. H_2O

-250 to 2500 Pascals

Velocity Measurement

400 to 12,664 fpm (**[**┤3Ε3**]** displayed)

1.29 to 64.5 m/s

Operating Temperature

14°F to 122°F (-10°C to 50°C)

Storage Temperature

-40°F to 176°F (-40°C to 80°C)

Overpressure Limit

20 psi or 137 kPa or
553 in. H_2O maximum

Accuracy (Factory Calibration conditions)

For pressure measurement only, after zeroing.

±(1% of indicated reading +2 x resolution)

Display

.45 inch high, 4 digit, 7 segment LCD, no backlight

Low Battery Indicator

4 Units Annunciators

Physical Dimensions

7.6 x 3.2 x 1.3 inches
193 x 81 x 33 millimeters

Weight

11.6 oz. (330g) with batteries

Power Source

3 AA-size alkaline batteries

Battery Life

15 hours with continuous use

Model		Part No.
AXD530	AXD530 meter, protective pouch, 3 AA-size batteries, operator's manual, calibration data sheet, and two-year limited warranty.	632-530-110
AXD532	Manometer kit with AXD530 meter, 18 inch pitot probe, carrying case, 3 AA-size batteries, manual, 2 static pressure taps, 100 duct plugs and two-year limited warranty.	632-613-001

Pitot Probes	
12 inch pitot probe	634-634-000
18 inch pitot probe	634-634-001
24 inch pitot probe	634-634-002
36 inch pitot probe	634-634-003

Optional Accessories	
Telescoping pitot probe	634-634-004
Static pressure probes	361-010-000
Duct plugs (100 pieces)	321-800-001
Rubber hose (8 ft.)	372-000-000
Carrying case	534-550-001
HVAC conversion calculator	118-550-001

Specifications are subject to change without notice.

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