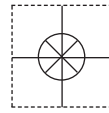


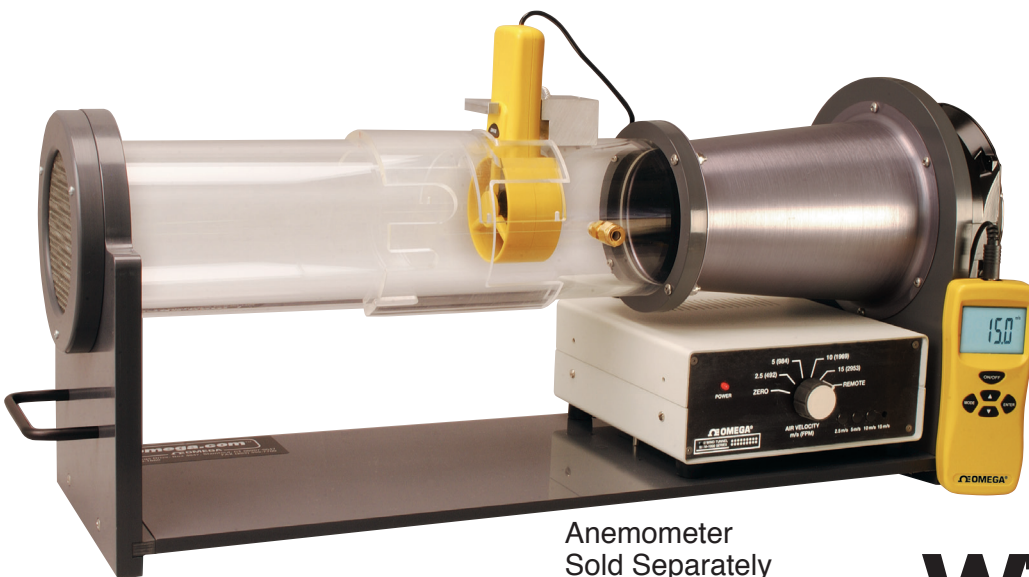
1 YEAR
WARRANTY



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Introduction

1.1 Description

The new Mini Wind Tunnel Model WTM-1000 is designed to give a highly uniform flow rate over a 10 cm (4") diameter test chamber. The Wind Tunnel has an electronic control unit where it controls the DC Fan speed and provides four selectable fixed air speeds. The fixed air speeds are:

2.5 m/s (492 FPM)

5 m/s (984 FPM)

10 m/s (1969 FPM)

15 m/s (2953 FPM)

In addition, there is a REMOTE selection on the electronic control unit selector switch. This will allow connecting an external potentiometer to control the DC fan speed and be able to vary the speed from 0 to 15 m/s. A cable to connect an external potentiometer to the control unit is included in the shipping box.

The purchase of the WTM-1000 also includes a NIST traceable calibration certificate.

Figure 1- Illustrates the important components of the wind tunnel as well as it's overall dimensions (page 3). Figure 2 - Shows the front panel of the Electronic Control Box (page 4). Figure 3 - Shows the rear panel of the Electronic Control Box (page 4).

1.2 Unpacking

1.2.1

Remove the packing list and verify that you have received all your equipment. If you have any questions about the shipment, please call our Customer Service Department at **1-800-622-2378** or **203-359-1660**. We can also be reached on the Internet at **omega.com**, e-mail: **cservice@omega.com**. When you receive the shipment, inspect the container and equipment for any signs of damage. Note any evidence of rough handling in transit. Immediately report any damage to the shipping agent.

NOTE

The carrier will not honor any claims unless all shipping material is saved for their examination. After examining and removing contents, save packing material and carton in the event reshipment is necessary.

With your order of the WTM-1000 Mini Wind Tunnel you get:

1. Wind Tunnel
2. Power Cord
3. Remote Connection Cable
5. Spare Fuse
6. Vane/Probe Clamp Sleeve
7. Chamber Door
8. Vane Window Door
9. Package of ten 1/4" Teflon Compression Ferrules
10. NIST Traceable Calibration Certificates
11. Operators manual

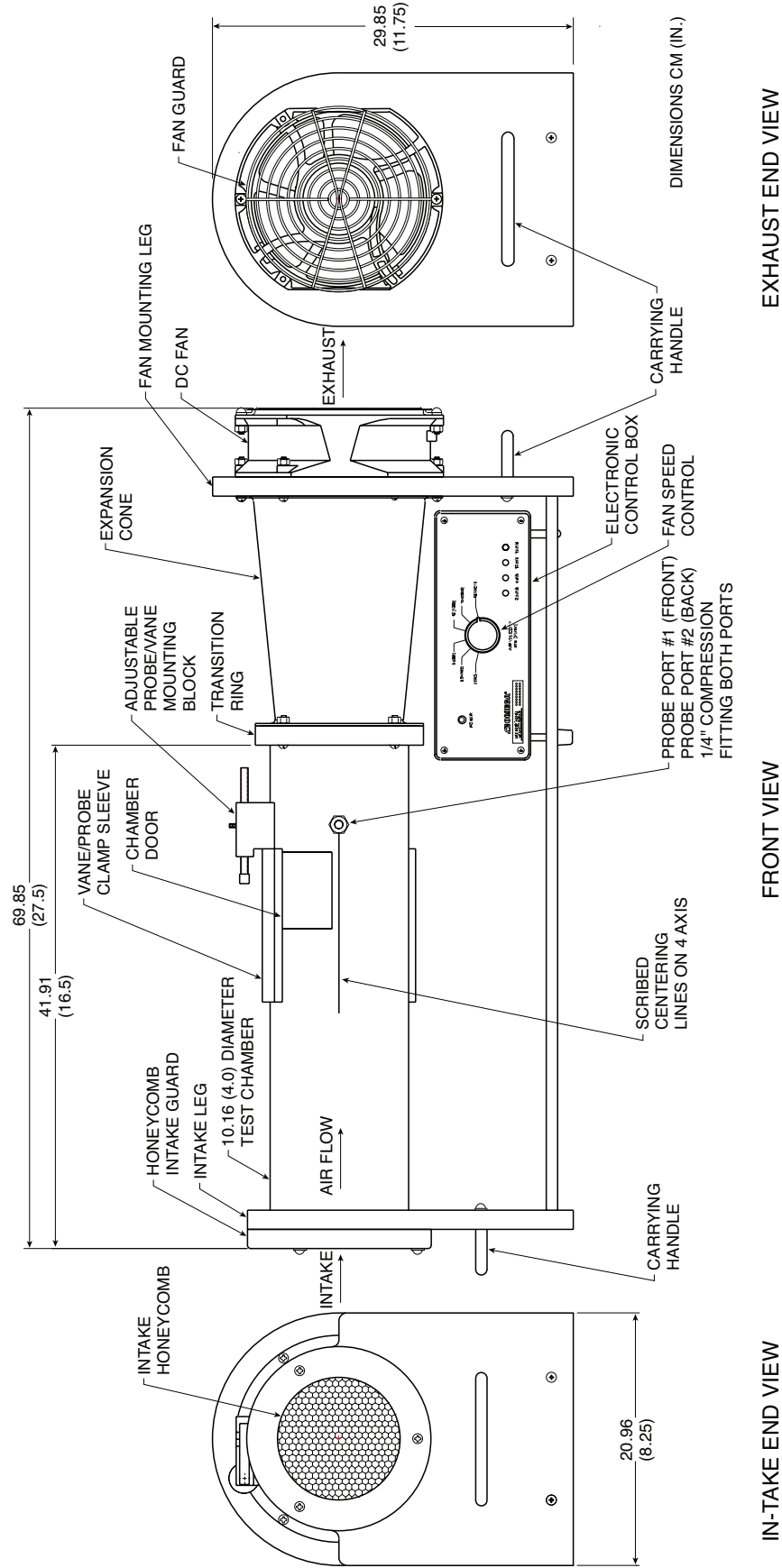


Figure 1 - Important Components of Mini Wind Tunnel and Overall Dimensions

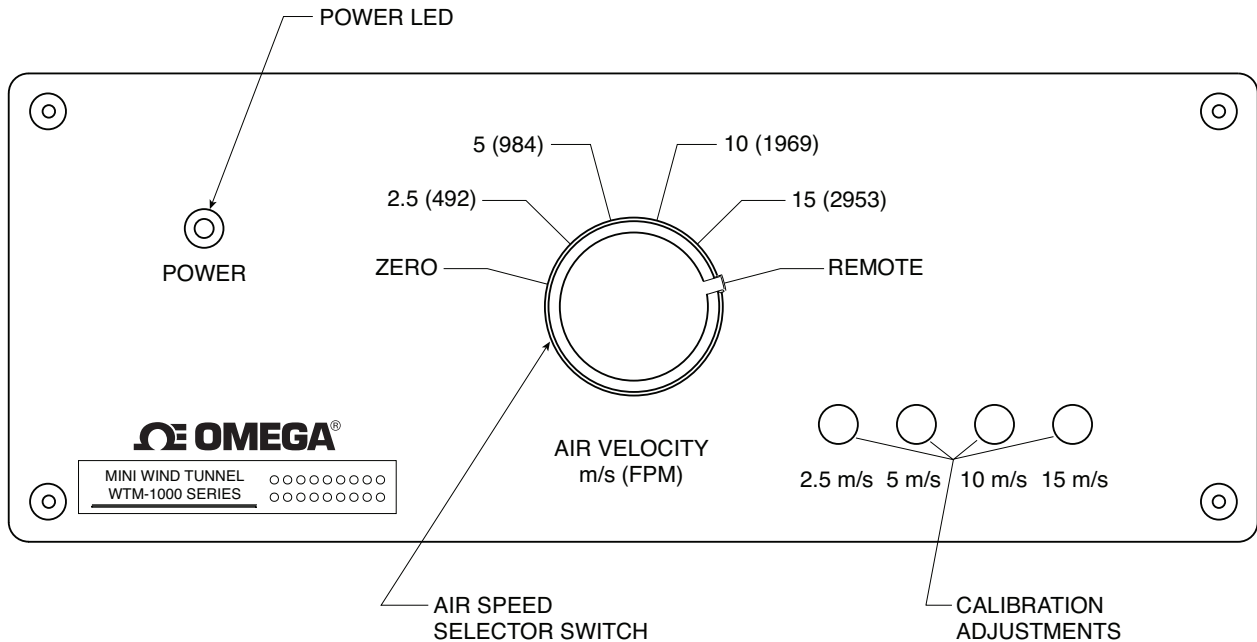


Figure 2. Front Panel, Control Unit Box

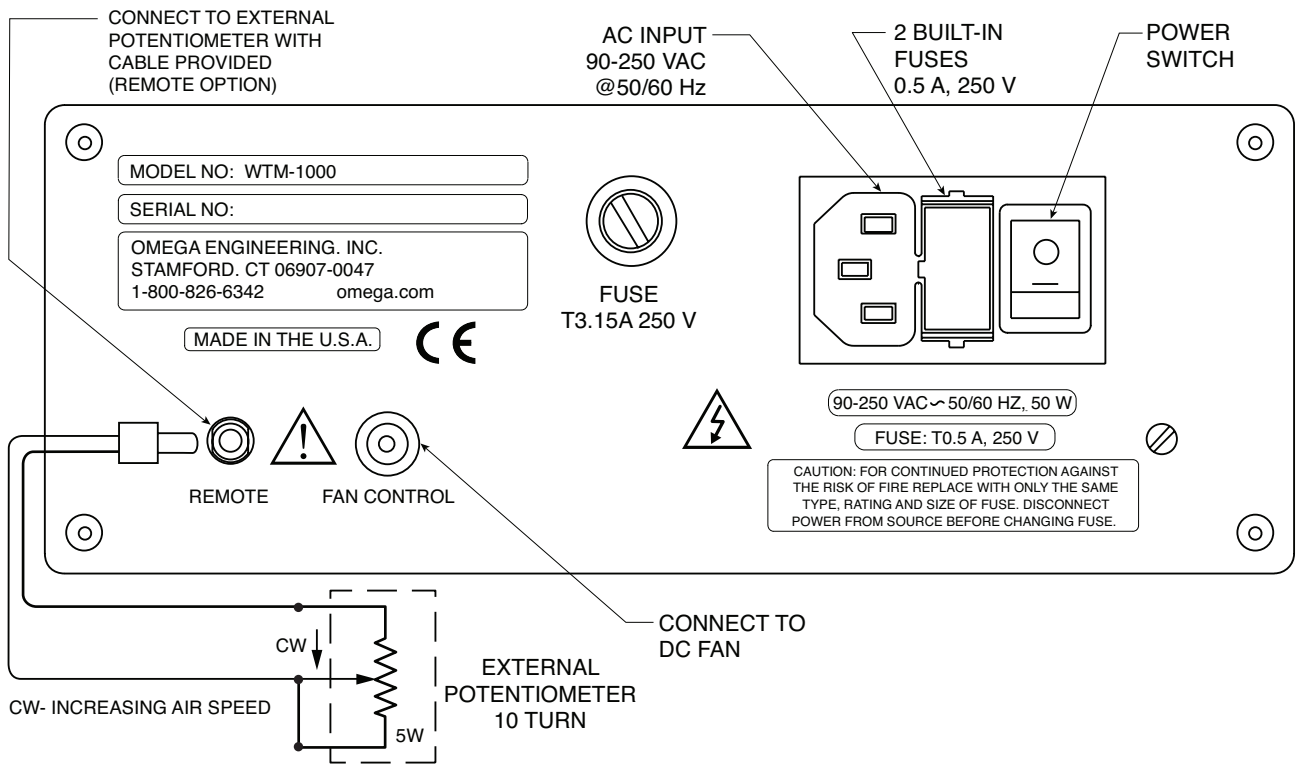


Figure 3. Back Panel, Control Unit Box

Example 1:

An FMA-904 Hot wire anemometer is being checked in the Wind Tunnel at 2.5 m/s (492 FPM) air speed. The Environmental conditions are:

Barometric Pressure = 27.88 inches of Hg

Ambient Temperature = 80 °F

The FMA-904 measures 442 FPM. Calculate the actual air speed:

Actual Air speed = Measured Value (Average value over one minute time) x K1 x K2

$$K1 = (29.92/P) \times (460 + T)/530$$

$$K1 = (29.92/27.88) \times (460 + 80)/530$$

$$K1 = 1.093$$

From Table 1, K2 for FMA-904 @ 2.5 m/s is 1.04

$$\text{Actual Air speed} = 442 \times 1.093 \times 1.04$$

$$\text{Actual Air speed} = 502 \text{ FPM}$$

Example 2:

An HHF92A Vane type anemometer is being checked in the Wind Tunnel at 15 m/s (2953 FPM). The HHF92A measures 2848 FPM. Calculate the actual air speed:

Actual Air speed = Measured Value (Average value over one minute time) x K2

From Table 1, K2 for HHF92A @ 15 m/s is 1.04










$$\text{Actual Air speed} = 2848 \times 1.04$$

$$\text{Actual Air speed} = 2962 \text{ FPM}$$

Chapter 3 - Specifications

| | |
|-------------------------------------|--|
| Accuracy: | ±1% of setting or ±0.1 m/s, whichever is larger |
| Test Chamber: | 10 cm (4") diameter |
| Flow Rates: | 2.5 m/s (492 fpm), 5.0 m/s (984 fpm), 10 m/s (1969 fpm), 15 m/s (2953 fpm) |
| Remote Option: | Use an external 5K, 10-turn potentiometer to vary air speed |
| DC Motor: | 24 Vdc @ 1.1 A (26 W) |
| Power: | 90 to 250 Vac @ 50/60 Hz |
| Operating Temperature: | 5 to 45°C (41 to 113°F) |
| Operating Relative Humidity: | 80% RH max without condensation |
| Size: | 68.5 L x 20.3 W x 29.2 cm H (27 x 8 x 11.5") |
| Weight: | 8.2 kg (18 lb) |
| Storage Temperature: | -4°C (23°F) WR 0°C (32°F) to 40°C (104°F) |

Equipment is for indoor use only.

| PROBLEM | SOLUTION |
|--|---|
| <p>? The wind tunnel is not on - no power to control box</p> | <p> Make sure the motor control box is plugged in and connected to a live outlet. Turn on power switch</p> <p>  Check the fuse in the motor control box - if blown, replace with same type and rating.</p> <p>"CAUTION: For continued protection against the risk of fire, replace with only the same type, rating and size of fuse. Disconnect power from the source before changing the fuse."</p> |
| <p>? The wind tunnel is on - fan does not turn.</p> | <p> Make sure the cable from the fan is connected to the motor control box.</p> <p> Make sure the power switch on the motor control box is "ON".</p> <p> Make sure there are no obstructions around the fan area of the wind tunnel.</p> |
| <p>? Can't get velocity desired.</p> | <p> Check your AC power.</p> <p> Check the position of the selector switch on the motor control box.</p> |
| <p>? Poor repeatability.</p> | <p> Locate the wind tunnel in room that has AT LEAST 1800 cubic feet of space.</p> |

Chapter 5 - Maintenance

The following points should be adhered to for a maintenance-free operation of the wind tunnel.

- Make sure the wind tunnel is operating in a relatively dirt-free room. Follow the precaution tips.
- There are no special instructions for cleaning the unit.
- This unit has non serviceable parts. If needed, contact Omega for necessary repairs.

Chapter 6 - Spare and Replacement Parts

| Part Number | Description |
|-------------|------------------------------|
| WTM-0014 | Honeycomb flow straightener |
| WTM-0009 | Chamber Window Cover (Solid) |
| IR-0032C | Remote Connection Cable |



Notes

WARRANTY/DISCLAIMER

OMEGA ENGINEERING, INC. warrants this unit to be free of defects in materials and workmanship for a period of **13 months** from date of purchase. OMEGA's WARRANTY adds an additional one (1) month grace period to the normal **one (1) year product warranty** to cover handling and shipping time. This ensures that OMEGA's customers receive maximum coverage on each product.

If the unit malfunctions, it must be returned to the factory for evaluation. OMEGA's Customer Service Department will issue an Authorized Return (AR) number immediately upon phone or written request. Upon examination by OMEGA, if the unit is found to be defective, it will be repaired or replaced at no charge. OMEGA's WARRANTY does not apply to defects resulting from any action of the purchaser, including but not limited to mishandling, improper interfacing, operation outside of design limits, improper repair, or unauthorized modification. This WARRANTY is VOID if the unit shows evidence of having been tampered with or shows evidence of having been damaged as a result of excessive corrosion; or current, heat, moisture or vibration; improper specification; misapplication; misuse or other operating conditions outside of OMEGA's control. Components in which wear is not warranted, include but are not limited to contact points, fuses, and triacs.

OMEGA is pleased to offer suggestions on the use of its various products. However, OMEGA neither assumes responsibility for any omissions or errors nor assumes liability for any damages that result from the use of its products in accordance with information provided by OMEGA, either verbal or written. OMEGA warrants only that the parts manufactured by the company will be as specified and free of defects. OMEGA MAKES NO OTHER WARRANTIES OR REPRESENTATIONS OF ANY KIND WHATSOEVER, EXPRESSED OR IMPLIED, EXCEPT THAT OF TITLE, AND ALL IMPLIED WARRANTIES INCLUDING ANY WARRANTY OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE HEREBY DISCLAIMED. LIMITATION OF LIABILITY: The remedies of purchaser set forth herein are exclusive, and the total liability of OMEGA with respect to this order, whether based on contract, warranty, negligence, indemnification, strict liability or otherwise, shall not exceed the purchase price of the component upon which liability is based. In no event shall OMEGA be liable for consequential, incidental or special damages.

CONDITIONS: Equipment sold by OMEGA is not intended to be used, nor shall it be used: (1) as a "Basic Component" under 10 CFR 21 (NRC), used in or with any nuclear installation or activity; or (2) in medical applications or used on humans. Should any Product(s) be used in or with any nuclear installation or activity, medical application, used on humans, or misused in any way, OMEGA assumes no responsibility as set forth in our basic WARRANTY/DISCLAIMER language, and, additionally, purchaser will indemnify OMEGA and hold OMEGA harmless from any liability or damage whatsoever arising out of the use of the Product(s) in such a manner.

RETURN REQUESTS/INQUIRIES

Direct all warranty and repair requests/inquiries to the OMEGA Customer Service Department. BEFORE RETURNING ANY PRODUCT(S) TO OMEGA, PURCHASER MUST OBTAIN AN AUTHORIZED RETURN (AR) NUMBER FROM OMEGA'S CUSTOMER SERVICE DEPARTMENT (IN ORDER TO AVOID PROCESSING DELAYS). The assigned AR number should then be marked on the outside of the return package and on any correspondence.

The purchaser is responsible for shipping charges, freight, insurance and proper packaging to prevent breakage in transit.

FOR **WARRANTY** RETURNS, please have the following information available BEFORE contacting OMEGA:

1. Purchase Order number under which the product was PURCHASED,
2. Model and serial number of the product under warranty, and
3. Repair instructions and/or specific problems relative to the product.

FOR **NON-WARRANTY** REPAIRS, consult OMEGA for current repair charges. Have the following information available BEFORE contacting OMEGA:

1. Purchase Order number to cover the COST of the repair,
2. Model and serial number of the product, and
3. Repair instructions and/or specific problems relative to the product.

OMEGA's policy is to make running changes, not model changes, whenever an improvement is possible. This affords our customers the latest in technology and engineering.

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