

May 4, 2013  
7:00AM - 5:00PM  
Manual D Training & Test  
Registration limited to the first 20 applicants

Test Site  
CCC Wilsonville Campus  
Room 214  
29353 SW Town Center Loop East,  
Wilsonville, OR 97070

Session will be held on the second floor. There is plenty of parking at the building. Applicants should have at least one to two years experience in the HVAC industry. This is a very rigorous test of the technician's knowledge of the trade.

### Training/Testing

Training will consist of eight hours of training and test preparation dealing with duct design. Following the training, each participant will take a 50 question multiple choice test, written test. Those successfully passing the test will be issued an ORACCA duct design ID card. 80% passing required.

**Each participant is required to purchase their own copies of ACCA manuals; D & T. A trane ductulator, supplied by GENSCO, will be issued at the class to each participant.** Those wishing to purchase the ACCA ductulator should include this item on the order form on the other side of this document

### What to Bring

- Photo Identification.
- Your NATE ID number if you have one.
- ACCA Manual D and Manual T text books
- A non-programmable calculator

Each applicant wishing to participate in this Manual D testing session must fill out the registration form and return it to ORACCA Headquarters. You will be notified of test specifics and a link to the study guides once you have registered.

# Manual D Training

Course outline:

Each Participant is required to purchase and bring to the training session:

- one ACCA manual D,
- one ACCA Manual T
- One Non programmable calculator

Each participant will be issued a Trane ductulator at the class. These are donated by GENSCO.

Class will consist of approximately 6 plus hours of training and review, followed by a 50 question, multiple choice written exam. 80% pass rate required for certification.

Upon successfully passing the written exam, each participant will be issued an ORACCA certification card.

Participants must register using the form on the last page of this document. The cost of the course is as follows:

	Mbr	Non-Mbr
Class	\$195.00	\$295.00
Manual D	\$ 80.00	\$ 89.00
Manual T	\$ 41.00	\$ 46.00
<b>Total</b>	<b>\$316.00</b>	<b>\$430.00</b>

Optional (Can be ordered if desired)  
**ACCA**  
 Ductulator \$ 44.95      \$ 49.95



**TRANE™**

**TRANE AIR DUCT CALCULATOR**

**INSTRUCTIONS:**  
 A Trane Air Quantity (CFM) and Friction Loss (ft. of Water per 100 ft. of Duct) Chart is shown. To determine Friction Loss, locate Air Quantity (CFM) on the top scale and Friction Loss (ft. of Water per 100 ft. of Duct) on the left scale. The intersection of these two scales indicates the Friction Loss (ft. of Water per 100 ft. of Duct) for the given Air Quantity (CFM) and Friction Loss (ft. of Water per 100 ft. of Duct). The Friction Loss (ft. of Water per 100 ft. of Duct) can be converted to Inches of Water per 100 ft. of Duct by multiplying by 2.31.

**EXAMPLE:**  
 Find the Friction Loss (ft. of Water per 100 ft. of Duct) for an Air Quantity (CFM) of 1000 and a Friction Loss (ft. of Water per 100 ft. of Duct) of 0.1. The Friction Loss (ft. of Water per 100 ft. of Duct) is 0.1.

Pub. No. 22-3126-02

Based on 1993 ASHRAE Fundamentals  
 DUCT CALCULATOR SLIDE CHARTS

**ANGLES & ELBOWS FOR TRUNK DUCTS\***

**ANGLES & ELBOWS FOR INDIVIDUAL & BRANCH DUCTS**

**BASIC AIR CONDITIONING FORMULAS**

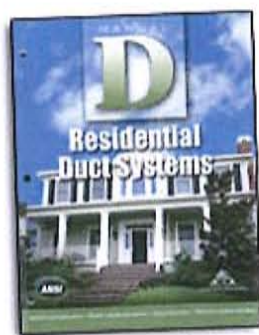
**RETURN AIR COMBINATIONS**

**RECOMMENDED AND MAXIMUM DUCT VELOCITIES**

**RECOMMENDED GAUGES FOR SHEET METAL DUCTS**

**GAUGES AND DATA FOR AVERAGE LOCAL EXHAUST SYSTEMS (FOR NON-CORROSIVE APPLICATIONS)**

# ACCA MANUAL D



Design a residential duct system in less time with the streamlined Manual D duct procedure. The newly released Manual D has been significantly revised to include:

- Updated and expanded VAV guidance, with detailed examples.
- Impacts of excess length, sag and compression in flexible ducts.
- New equivalent length values for flex duct junction boxes.

Manual D provides:

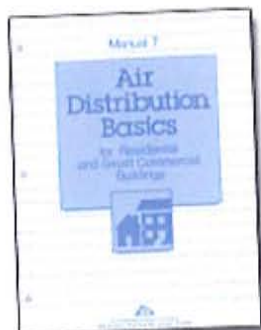
- A single set of ANSI-recognized duct sizing principles and calculations that apply to all duct materials
- System operating point (supply Cfm and external static pressure), and airway sizing for single-speed and multi-speed (ECM) blowers
- A method for determining the impact of duct friction and fitting pressure drop on

blower performance and air delivery

- The most comprehensive equivalent length data ever published.

You can apply the Manual D procedure to constant volume systems and zoned variable air volume systems, over a full range of duct construction materials. Manual D includes a number of informative appendices related to air distribution systems (e.g., equipment and air-side components, controlling excess air when VAV dampers close, duct loads, duct leakage and duct system efficiency, air quality issues, noise control, minimum air velocity for ducts; codes, standards and best practice issues; and commissioning issues). 300 pages

# ACCA MANUAL T



Manual T shows you how to prevent drafts and stagnant air problems caused by improper sizing or incorrect equipment selection. It shows you, in step-by-step detail, how to select, size, and locate the supply air diffusers, grilles and registers, and the return grilles. It gives you examples of how to use manufacturers' comprehensive performance data, calculate pressure losses, and control noise. (85 pages)

## ACCA Duct Calculation Slide Rule

(Not Required for this course. Optional Purchase)



One of our most popular catalog items! This durable two-sided plastic sizing wheel comes with a complete instruction manual for residential and commercial duct-sizing procedures. Designed by Hank Rutkowski.

Uses:

- Sizes metal ducts, lined metal ducts duct board airways, and wire helix flexible ducts.
- Converts round shapes to equivalent rectangles.
- Correlates available pressure with total effective length and friction rate (Manual D sizing calculations).
- Converts velocity into velocity pressure and vice versa.
- Corrects for altitude and temperature

# Manual D Test Registration Form



Return the completed form and make check payable to:

## ORACCA

Oregon Chapter of Air Conditioning Contractors of America  
 P.O. Box 87907, Vancouver, WA. 98687-7907  
 Voice: 1-877-413-1259 • 360-834-3805 • Fax: 503-914-1999  
 E-mail: dick@oracca.org • Website: www.oracca.org  
*Manual D Testing*

**FAX ORDERS WELCOME**  
**With Credit Card**  
**VISA, M/C, AMEX**  
 Please make copies  
 of this form to use for  
 future orders

### COMPANY CONTACT INFORMATION

Company \_\_\_\_\_ Name \_\_\_\_\_  
 Phone \_\_\_\_\_ Fax \_\_\_\_\_ Email \_\_\_\_\_ ORACCA Member   
 Address \_\_\_\_\_ City \_\_\_\_\_ State \_\_\_\_\_ Zip \_\_\_\_\_

### REGISTRANTS INFORMATION

*TEST RESULTS ARE MAILED TO THE HOME ADDRESS UNLESS OTHERWISE INDICATED, USE ADDITIONAL PAPER FOR MORE REGISTRATIONS*

1) \_\_\_\_\_ Phone \_\_\_\_\_ Email \_\_\_\_\_  
 Address \_\_\_\_\_ City \_\_\_\_\_ State \_\_\_\_\_ Zip \_\_\_\_\_  
 2) \_\_\_\_\_ Phone \_\_\_\_\_ Email \_\_\_\_\_  
 Address \_\_\_\_\_ City \_\_\_\_\_ State \_\_\_\_\_ Zip \_\_\_\_\_

### ORDERING INFORMATION

Catalog	Description	Qty	Mbr Price	Non Mbr Price
MDHPTO	Manual D Testing		\$195.00	\$295.00
696	Manual D Text		\$ 80.00	\$ 89.00
93	Manual T Text		\$ 41.00	\$ 46.00
94	* ACCA Ductulator (Optional)		\$ 44.95	\$ 49.95
Total				

Program consists of 8 Hours Training/Testing with special emphasis on Duct Design. Testing consists of 50 question multiple choice written exam. **Students are required to purchase both manuals D&T for this class. A Trane Ductulator, donated by GENSCO, is included in the class price. The purchase of an ACCA ductulator is optional**

*Due to the limited class size, a \$35.00 "No show Fee" will be applied to participants who do not notify ORACCA office before canceling.*

Visa     M/C     Amex

Credit Card # \_\_\_\_\_

Check # \_\_\_\_\_

Exp Date \_\_\_\_\_ Security Code \_\_\_\_\_

Sent to

Card Holder Name \_\_\_\_\_

**ORACCA Headquarters**  
 PO Box 87907  
 Vancouver, WA 98687

Zip Code \_\_\_\_\_

### FOR OFFICE USE ONLY

Received by \_\_\_\_\_ Date \_\_\_\_\_