

# Mechanical Engineering Systems

Educational Training Equipment for the 21st Century

Bulletin 674-1

## H-6741 Ventilation Trainer

### Purpose

The Hampden **Model H-6741** Ventilation Trainer was developed to permit the operational study of residential, commercial, and industrial air ventilation systems. The student will be able to investigate the fundamental principles of air flow measurement and air distribution systems.

### Description

The Hampden **Model H-6741** consists of a steel enclosure incorporating the centrifugal fan, filter, fan speed controller, voltmeter, ammeter and system circuit breaker. Also included are duct components, stands and air flow measurement package.

### Experimental Capabilities

- To measure the pressure drop inside the air duct, radius elbow, branch and bend duct, reducers, expansions, diffuser throughout the duct line at different air speeds in the air duct system
- To measure k. factor, by using this value to find out the reducing pressure at the entrance and the exit of the air duct
- To measure the fan's horse power (cfm), velocity pressure, static pressure and the total pressure
- To measure the pressure drop, and the changing speed of the air while passing through the filter
- To find out the relationship between the pressure speed and the flow rate of air such as that of variable fan speed
- To measure their velocity and the air flow rate under the different conditions
- To adjust the flow rate inside air velocity (straight duct and branch) as required
- To demonstrate the curve of the operating fan by plotting a graph

- To measure dynamic loss due to the changes of the air duct sizes
- To measure the pressure drop at the air distributed point
- To find out the appropriate size of the air-distributed head to match the requirement
- To find out the proper air speed for air conditioning so that the results can be utilized for designing an air conditioning system.

### Specifications

#### Fan Support Stand

Square mechanical steel tubing finished in instrument tan texture.

#### Fan Control Panel

11-gauge furniture stock steel finished in instrument white enamel.

#### Fan Control Enclosure

14-gauge furniture stock steel finished in instrument tan texture.

#### Control Panel Components

- 1 - Main Circuit Breaker
- 1 - Variable Speed Fan Control
- 1 - Analog Wattmeter

#### Filter Assembly

Replaceable filter with quick-latch fasteners

#### Centrifugal Fan

Forward curved variable speed 500 to 3000 RPM, 1/2HP motor  
Voltage: 220VAC 50/60 Hz

#### Transition Fitting

Square to 8" round

#### Duct and Fittings

Straight:	8" Round 5' long	Qty: 8
	4" Round 5' long	Qty: 8
Reducing Tee:	8" Round to 4"	Qty: 3
Expansion Tee:	4" Round to 8"	Qty: 3
Tee:	4" Round	Qty: 3
Tee:	8" Round	Qty: 2
Y-Branch:	8" Round to 4"	Qty: 2
Conical Tee:	4" Round to 8"	Qty: 3
Slip Joints:	4" Round	Qty: 8
Slip Joints:	8" Round	Qty: 8
Reducer Coupler:	8" Round to 4"	Qty: 5
90° Reducing Cross:	8" Round to 4"	Qty: 5
Blast Gate (damper):	8"	Qty: 2
Blast Gate (damper):	4"	Qty: 2
90° Elbow with vane:	8"	Qty: 1
90° Elbow with vane:	4"	Qty: 2
90° Elbow:	8"	Qty: 1
90° Elbow:	4"	Qty: 2
45° Elbow:	8"	Qty: 1
45° Elbow:	4"	Qty: 2
Sq. Diffuser:	6" x 6"	Qty: 2
Sq. Diffuser:	8" x 8"	Qty: 2
Sq. Diffuser:	10" x 10"	Qty: 2
Sq. Diffuser:	12" x 12"	Qty: 2
Rectangular Diffuser:	4" x 10"	Qty: 2
Rectangular Diffuser:	4" x 12"	Qty: 2
Rectangular Diffuser:	4" x 14"	Qty: 2
Rectangular Diffuser:	6" x 10"	Qty: 2
Duct Adjustable Support Stands:		Qty: 9

#### Air Flow Measurement Package

Sound Level Meter	Qty: 1
Digital Thermal Anemometer	Qty: 1
Incline Manometer with Accessories:	Qty: 1
- Calibrated Pitot Tube	
- Tubing Coils with Metal	
- Terminal Tubes (2)	
- Carrying Case	
- Air Velocity Calculator	
- Bottle of red gear oil	

All Hampden units are available for operation at any voltage or frequency

**Hampden**  
ENGINEERING CORPORATION

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