

PH SERIES INSTALLATION

SINGLE DUCT VAV TERMINALS

RECEIVING INSPECTION

Prior to removing the shipping material, visually inspect the packing materials. There should be a black plastic strip wrapped in the clear plastic shrink wrap. If this black plastic strip is missing, the shipment may have been repacked by the shipper and you should make note of this on the shipping documents and inform the delivering carrier.

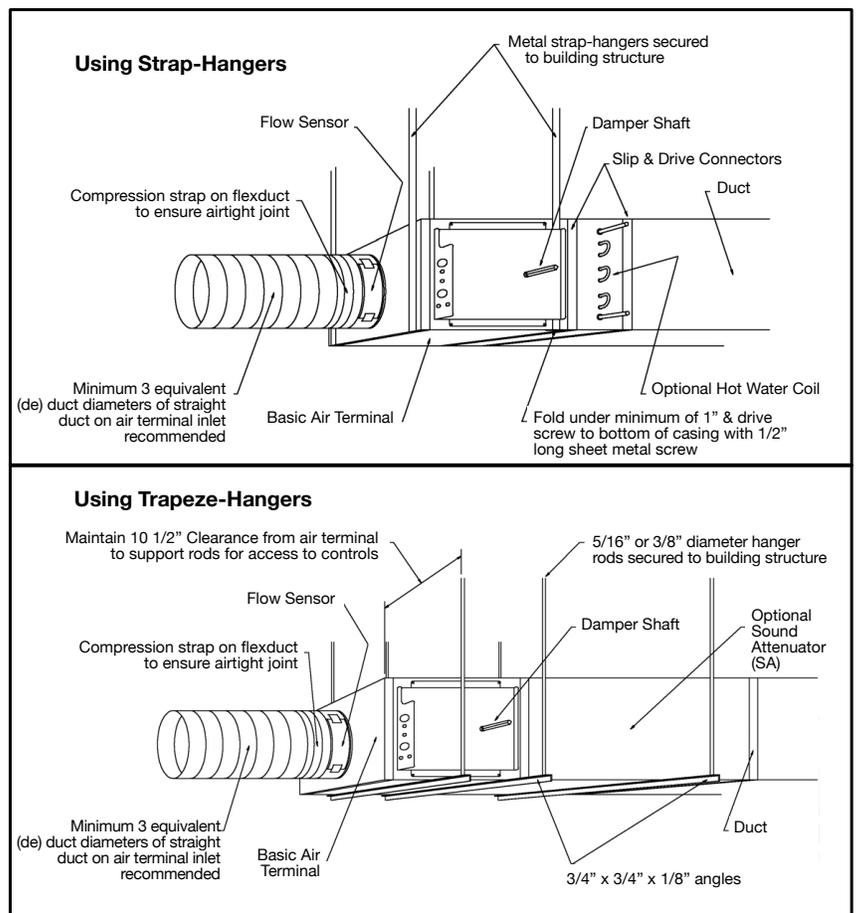
After unpacking the terminal, check it for shipping damage. If any shipping damage is found, report it immediately to the delivering carrier. Store units in a clean, dry location prior to installation.

Units with controls are not recommended for use in ambient temperatures greater than 95°F. For protection of controls, do not store in ambient temperatures greater than 135°F.

Caution: Do not use the flow sensor, connecting tubing, or damper shaft as a lift point. Damage to the flow sensor or controls may result.

HANGING/INSTALLATION REQUIREMENTS

Unless local building codes require hangers, the smaller size basic single duct terminals may be light enough to be supported by the ductwork itself. However, when accessory modules, such as DDC controls, hot water



coils, or sound attenuators are included, the single duct terminal should be supported directly. Straps screwed directly into the side of the terminal, trapeze hangers, or the method prescribed for the rectangular duct on the job specifications may be used (See Figure 1, page 1). The PH Series Single Duct Terminal is not suitable for outdoor use.

Important: If equipped with pneumatic controls, the orientation of the terminal is critical. The pneumatic controls must be mounted right side up. The single duct unit must be level within + or – 10 degrees of horizontal, both parallel to the air flow and at the right angle of air flow. The control side of the terminal is labeled with an arrow indicating UP. Unless otherwise noted, most analog and digital controls may be installed in any orientation. Check with the local Performance Aire representative for verification.

MINIMUM CLEARANCE FOR ACCESS

Single Duct Air Terminals require sufficient space to allow servicing of the actuator, controls and single electric power hook-up (if applicable). Horizontal clearance requirements is dependent upon access panel dimensions which are indicated on the appropriate submittals (for control panel enclosure access a minimum of 18" is recommended. See the appropriate submittal for control panel location).

NOTE: These clearance recommendations are not meant to preclude

NEC requirements or local building codes

CONNECTING DUCTWORK

Slip each inlet duct over the inlet collar of the terminal. Fasten and seal the connection

by the method prescribed by the job specification.

The diameter of the inlet duct "D" in inches must be equal to the listed size of the terminal; e.g. a duct that actually measures 8 inches must be fitted to a size 8 terminal. The inlet collar of the terminal is made 1/8 inch smaller than listed size in order to fit inside the duct.

Note: Do not insert duct work inside the inlet collar of the assembly. Inlet duct should be installed in accordance with SMACNA guidelines. If a single point electronic velocity sensor is installed, it is recommended that the installer provide three to five diameters of straight duct at the terminal inlet.

The outlet end of the terminal is designed for use with slip and drive duct connections (flanged outlets optional). A rectangular duct the size of the terminal outlet should be attached.

FIELD ELECTRICAL WIRING

- All field wiring must comply with the local codes and with the National Electrical Code (ANSI/NFPA 70-2002).
- When applicable, electrical, control and piping diagrams are shown on labels attached to the exterior of the single duct unit.
- Use copper conductors only!
- All terminal units must be properly grounded per NEC 424-14 and 250.
- Always check product label for voltage and current data to determine the proper wire size and current protection.

- The control cabinet contains live electrical parts! Contacting these parts with the power applied may cause serious injury or death. The control cover must be closed prior to applying electric power to the unit.
- These recommendations are not meant to preclude NEC requirements or local building codes that may be applicable, which are the responsibility of the installing contractor.

PH Series Single Duct Terminal Units With Hot Water Coils

- Always inspect the hot water coils for damage prior to installing the single duct unit.
- CAUTION: The copper tubing should not be used as lift points.
- The hot water coil casing is field insulated.
- The hot water coils do not have a drip pan and are not suitable for use as cooling coils.

LABELING

PH Series Single Duct Air Terminals are shipped from the factory with up to seven different information labels (not all labels pertain to all single duct units depending upon the type of insulation and the final ship to state).

- 1) Calibration Label - affixed to the single duct terminal casing. Shows air flow calibration data and control settings (if applicable).
- 2) I.D. Label – affixed to the single duct terminal casing.

Shows tagging information, customer order number, ETL Logo, Performance Aire Logo, etc.

3) ARI Certification Label on Single Duct Terminal Unit – identifies applicable industry test standard and certifies unit is in compliance.

4) ARI Certification Label on Hot Water Coils – identifies applicable industry test standard and certifies hot water coil compliance (if hot water coil is ordered as an accessory).

5) Orientation label – identifies the proper air flow direction and the top of the unit.

PH SERIES FLOW SENSOR

PH Series Single Duct Air Terminals are shipped with a factory installed pressure differential flow sensor installed in primary inlet. See Figure 2, page 4 for the calibration curve.

TROUBLESHOOTING

INVESTIGATING NOISE COMPLAINTS

Noise from a terminal can be due to a variety of conditions, and can be difficult to eliminate. The first step is to isolate the type, source and direction. Generally, noise heard at the air outlet is considered a discharge type. Noise heard through the ceiling is considered a radiated noise. For detailed information concerning noise transmission in buildings see ARI Standard 885-98, PROCEDURE FOR ESTIMATING OCCUPIED SPACE SOUND LEVELS IN THE APPLICATION OF AIR TERMINALS AND AIR OUTLETS.

DISCHARGE NOISE

Usually caused by high static or little to no internal duct lining downstream of the terminal. Can sometimes be caused by the air outlet itself. Air outlet generated sounds can be reduced by reducing flow or increasing air outlet size. Reducing static pressure, or flow, or adding additional attenuation materials will reduce discharge sounds from the terminal unit. Sometimes, moving the flex duct between the terminal and air outlet so the air must make an additional turn will help with the discharge sound.

The control cabinet contains live electrical parts! Contacting these parts with the power applied may cause serious injury or death.

!!!CAUTION!!! – THIS UNIT SHOULD BE SERVICED BY A LICENSED ELECTRICIAN OR A SIMILARLY QUALIFIED ELECTRICAL SERVICE TECHNICIAN

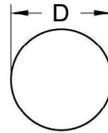
FLOW SENSOR QUADRANT AVERAGING

MODELS: FS

Model	Inlet Size	Flow Coefficient	Magnification Factor
PH, PT	04 & 05 Rnd	300	6.65
	06 Rnd	540	2.12
	08 Rnd	990	1.99
	10 Rnd	1640	1.77
	12 Rnd	2350	1.79
	14 Rnd	3250	1.74
	16 Rnd	4100	1.86
PH20	20x16 Rect	6430	1.92
PH24	24x16 Rect	7270	2.16

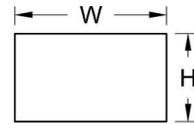
Magnification factor is equal to the following:
 $[(4005 / (\text{Velocity at 1 in. wg. delta Ps}))^2]$

Rnd



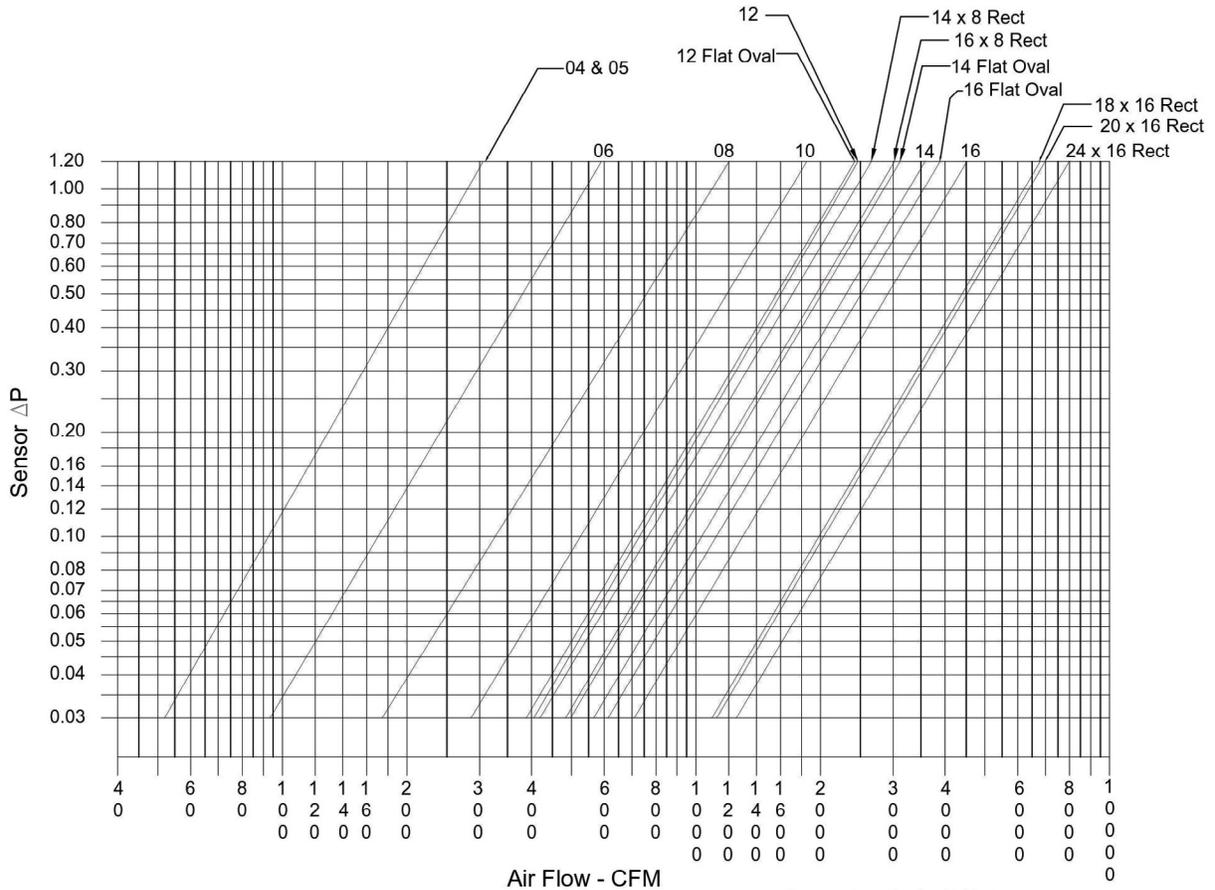
Size	D (in.)
04 Rnd	4
05 Rnd	5
06 Rnd	6
08 Rnd	8
10 Rnd	10
12 Rnd	12
14 Rnd	14
16 Rnd	16

Rect



Size	W (in.)	H (in.)
20x16 Rect	20	16
24x16 Rect	24	16

$$Cfm = \sqrt{\Delta p} \times \text{Flow Coefficient}$$



Data per Test Number T-1103
 Sensors tested down to 0.005 ΔP.