

READ AND SAVE THESE INSTRUCTIONS

CARNES[®]

INSTALLATION and OPERATION MANUAL
PRESSURE VALVE
Model AVRA

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Model AVRA

INSPECT UNIT

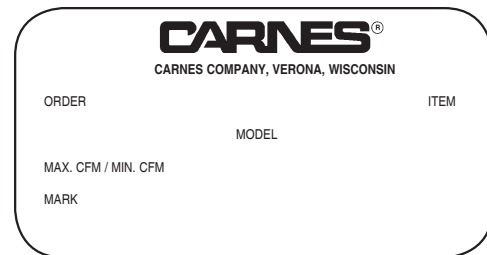
UNPACKING AND INSPECTION

1. Open shipping carton and check for concealed shipping damage. Report damage immediately to the carrier that delivered the shipment.
2. Inspect the unit for loose or missing components.
3. Optional accessories may be packed within the unit or in the same shipping carton

INSTALLATION

GENERAL

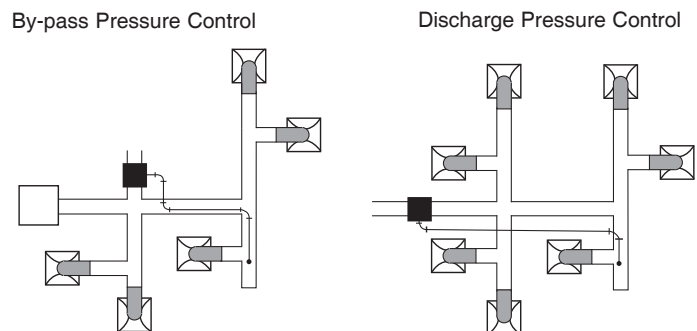
1. Each VAV unit and accessory is shipped with an identification label showing the Carnes order number, unit item number from the order, unit model number, maximum and minimum CFM Setting on terminal units with pressure independent control options, and unit tagging (or mark).



PRESSURE VALVE PLACEMENT

1. Determine if the unit will be used as By-pass Pressure Control or Discharge Pressure Control. **By-pass Pressure Control** will open the valve to relieve excess pressure to a return or plenum. **Discharge Pressure Control** will close the valve decreasing pressure being delivered to downstream air devices.
2. If **By-pass Pressure Control** is used, mount the unit **off to the side of the main duct** as far downstream from the central fan as possible but still upstream of any air devices. If **Discharge Pressure Control** is used, mount the unit **inline** with the main duct as far downstream from the central fan as possible but still upstream of any air devices. See *Figure 1* for a sample layout.

Figure 1



MOUNTING THE AVRA TERMINAL UNIT

1. The diameter of the inlet duct in inches must be equal to the listed size of the AVRA Terminal Unit, e.g., a duct diameter that measures six (6) inches must be fitted to a unit Size 06.
2. It is preferred that the installer attempt to obtain a minimum of three (3) inlet diameters of straight duct ahead of the terminal unit inlet. (*Figure 2*)

NOTE: Close coupling the terminal unit inlet to the side of the main duct is not recommended. (*Figure 3*)

Figure 2

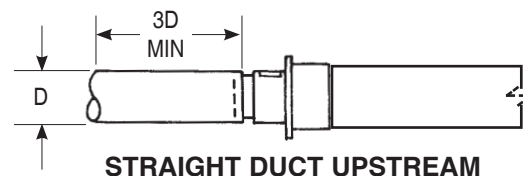
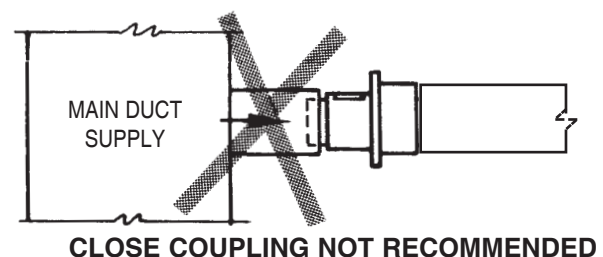


Figure 3



- If applicable, remove the section of duct equal to the length of the AVRA terminal unit as specified in the Dimensional Data *plus* 1/4" for working room. (Figure 4)
- Facing the AVRA Terminal Unit inlet, mount the terminal unit in a horizontal level position.
- Insert the inlet of the AVRA Terminal Unit into the upstream duct and secure the outlet end to the downstream duct with a collar (field supplied) or, in the case of flex duct, with tie bands and duct tape provided by others, or as prescribed by the job specifications. (Figure 5).

PITOT TUBE PLACEMENT

- If **By-pass Pressure Control** is used, mount the pitot tube roughly 2/3 down the main duct but on the **upstream side of the pressure valve**. If **Discharge Pressure Control** is used, mount the pitot tube roughly 2/3 down the main duct but on the **downstream side of the pressure valve**. For best results, the pitot tube should be at least 7 duct diameters away from the pressure valve. Again, refer to Figure 1 for a sample layout.
- Ten feet of tubing is included with the unit. If **additional tubing is required, it shall be field supplied**.
- Run tubing back to the Pressure Valve and connect tubing to the **High Side** of the controller.

CHECKOUT & CALIBRATION OF FACTORY SUPPLIED ANALOG CONTROLS (ET option)

Checkout

- The following applies to factory supplied and mounted controls (ET control option).
- Regardless of the application, the actuator shall be mounted **Clockwise to CLOSE**. Press the clutch release button on the side of the actuator and rotate the damper fully Clockwise. If this is not correct, loosen up allen screws on the actuator and mount the actuator in a way that the damper shaft is totally closed when the actuator is fully CW.
- Confirm the location of the rotational pins inside the controller (two pins). For **By-pass Pressure Control** units, the two pins shall be on the **CCW** setting. For **Discharge Pressure Control** units, the two pins shall be on the **CW** setting. See Figure 6 for proper configuration and Figure 7 for a chart of configurations.
- If a transformer is supplied with factory controls, confirm wiring to the controller.

Calibration (make sure to follow the above steps before attempting to calibrate the unit).

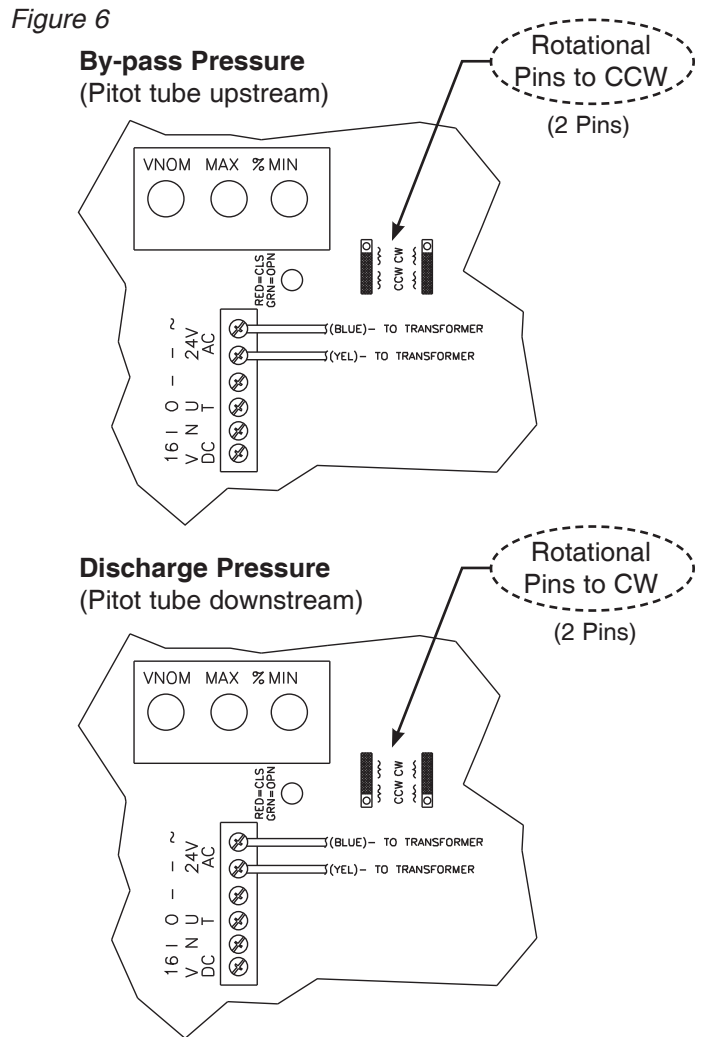
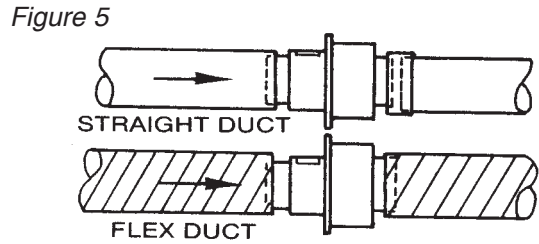
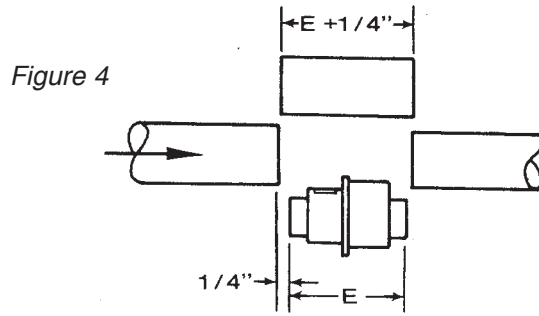


Figure 7

APPLICATION	DAMPER SHAFT MOUNTING	ROTATIONAL PINS (2 Pins)
By-Pass	CW to CLOSE	CCW
Discharge	CW to CLOSE	CW

CALIBRATION PROCEDURE FOR **BY-PASS PRESSURE CONTROL**

1. Remove the cover from the actuator/controller.
2. Confirm the MAX dial is set to 100. This dial will remain at 100 and never change.
3. The MIN dial should start out at **0 (full CCW)**.
4. Ensure that the damper begins in a full OPEN position.
5. "T" into the pressure tubing between the pitot tube and the controller with a pressure meter (manometer).
6. Turn the MIN dial slowly CW towards 90. At some point, the damper should start to close and pressure start to increase. Continue to turn the MIN dial CW until you reach the desired pressure. See *Figure 8* for LED indication.

CALIBRATION PROCEDURE FOR **DISCHARGE CONTROL**

1. Remove the cover from the actuator/controller.
2. Confirm the MAX dial is set to 100. This dial will remain at 100 and never change.
3. The MIN dial should start out at **90 (full CW)**.
4. Ensure that the damper begins in a full OPEN position.
5. "T" into the pressure tubing between the pitot tube and the controller with a pressure meter (manometer).
6. Turn the MIN dial slowly CCW towards 0. At some point, the damper should start to close and pressure start to decrease. Continue to turn the MIN dial CCW until you reach the desired pressure. See *Figure 8* for LED indication.

Figure 8

APPLICATION	RED LIGHT	GREEN LIGHT
By-Pass	Damper Opening	Damper Closing
Discharge	Damper Closing	Damper Opening