



**ENVIRO-TEC<sup>®</sup>**  
BY JOHNSON CONTROLS

## DUAL DUCT VAV TERMINALS

INSTALLATION, OPERATION & MAINTENANCE

New Release

Form ET130.13-NOM2 (708)

### MODEL DDR



## SAFETY SYMBOLS

The following symbols are used in this document to alert the reader to areas of potential hazard:



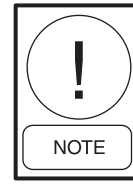
**DANGER** indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.



**CAUTION** identifies a hazard which could lead to damage to the machine, damage to other equipment and/or environmental pollution. Usually an instruction will be given, together with a brief explanation.



**WARNING** indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.



**NOTE** is used to highlight additional information which may be helpful to you.

### SAFETY CONSIDERATIONS

The equipment covered in this manual is designed for safe and reliable operation when installed and operated within its' design specification limits. To avoid personal injury or damage to equipment or property while installing or operating this equipment, it is essential that qualified, experience personnel familiar with local codes and regulations, perform these functions using good judgment and safe practices. *See the following cautionary statements.*



**ELECTRICAL SHOCK HAZARDS**  
All power must be disconnected prior to installation and servicing this equipment. More than one source of power may be present. Disconnect all power sources to avoid electrocution or shock hazards.



All assemblies must be adequately secured during lifting and rigging by temporary supports and restraints until equipment is permanently fastened and set in its' final location.



All unit temporary and permanent supports must be capable of safely supporting the equipment's weight and any additional live or dead loads that may be encountered. All supports must be designed to meet applicable local codes and ordinances.



All fastening devices must be designed to mechanically lock the assembly in place without the capability of loosening or breaking away due to system operation and vibration.



**HOT PARTS HAZARD**  
Electric resistance heating elements must be disconnected prior to servicing. Electric heaters may start automatically; disconnect all power and control circuits prior to servicing to avoid burns.



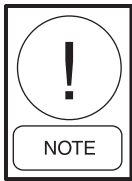
Secure all dampers when servicing damper, actuators or linkage. Dampers may activate automatically, disconnect the control circuits or pneumatic control systems to avoid injury.



Check that the unit assembly and component weights can be safely supported by rigging and lifting equipment.



Protect adjacent flammable material when brazing. Use flame and heat protection barriers where needed. Have fire extinguisher ready for immediate use.



***In conjunction with the use of this manual, obtain and refer to the construction and control wiring drawings submitted for the specific project.***

## PRE START-UP



***Improper installation, adjustment, alterations, service or maintenance can cause injury and property damage, as well as possible voiding of factory warranty. For assistance or additional information, consult a qualified contractor or an ENVIRO-TEC® representative.***

## RECEIVING AND INSPECTING

- Thoroughly examine the exterior and interior of all units for transportation damage to the cabinet, coil, electric heat and electrical components. Interior damage may occur without visible exterior damage. If damage is found, immediately file a claim with the carrier. Note the damage on the bill of lading before signing for the shipment.
- Check the bill of lading to verify receipt of indicated items (including loose items). Notify the local ENVIRO-TEC® representative of any shortages or items shipped in error.
- Store units in a clean, dry location, stacking no more than four high, unless utilizing original packing.

## INSTALLATION

### UNIT PLACEMENT AND INSTALLATION

- Do not handle the unit using coil stubouts, controls, FlowStar™ probe, or damper shaft, as damage may occur.
- The installation must conform with local building codes and the National Electric Code.
- Locate unit in accordance with project plans.

- Avoid unit contact with rigid objects such as conduit, sprinkler piping, and support rods.
- Unit location should follow SMACNA guidelines with respect to proximity to downstream transitions, take-offs, elbows, and tees.
- Suspend unit from building structure in a horizontal plane adhering to unit orientation labels. Use the support method shown on project plans. When utilizing sheet metal straps, up to 1" long screws may be utilized to penetrate the main casing. Do not secure hanging straps to unit appurtenances such as (but not limited to) electric heater cabinets, hot water coils, and control enclosures. Unit may be equipped with optional hanging brackets. Rods up to 3/8" diameter may be utilized. Four brackets are typically provided near the unit corners. Hanger rod locations are approximately 1 1/2" to 3" from the corner of the unit for most terminal configurations. Contact the local ENVIRO-TEC® representative if precise bracket locations are required.
- Do not obstruct the access panels with support channels or straps.

## CLEARANCE REQUIREMENTS

- Unit, including electric heat option, is ETL listed for 0" clearance to combustibles.
- Unit requires sufficient clearance to access all electrical and control enclosures, as indicated on the submittal drawing. Bottom casing access panel requires sufficient clearance to access fasteners, and to lower and slide panel horizontally until clear of bottom of unit.
- Unit should not make contact with the structure above.
- Line voltage and low voltage electrical enclosures must have adequate service and working clearances to meet requirements of NFPA 70 (NEC) or approval by the authority having jurisdiction.
- Additional clearance requirements may be required by local codes and are the responsibility of the installing contractor.

## DUCT CONNECTIONS

Connecting duct should be configured and installed in accordance with SMACNA guidelines and local code requirements.

### Outlet

- Flexible connectors at the unit outlet are not required. The sagging membrane of these fittings can cause turbulence and higher air velocities that generate noise. The lightweight material allows noise to breakout, which can increase sound levels in the space below.
- Fasten and seal downstream duct in accordance with project plans. Outlet construction varies with type of heat as shown on the submittal drawing.

### Inlet

- Inlet duct should be the same nominal size as unit inlet. Straight duct will yield the best airflow and acoustical performance. Flexible duct should not be utilized if critically sensitive acoustical performance is required in the space directly below the unit.
- Slide duct over inlet collar and fasten and seal in accordance with the project plans.

## ELECTRICAL CONNECTIONS

Observe unit label electrical requirements before connecting power to the terminal. Electrical wiring must comply with the current revision of the National Electric Code and local codes. All disconnect switches must be in the OFF position while making electrical power connections. More than one disconnect may be provided; use tag-out/lock-out procedures. Unless otherwise specified, unit is suitable for a single point electrical connection utilizing copper conductors only. Disconnect switches are optional factory components. *Refer to the wiring diagram(s) located within the electrical enclosure(s) for additional information.*

Field installed electrical components must be mounted and wired per factory supplied wiring diagram. Factory wiring must not be altered without written approval; violation of this will void the warranty. Power source must be within 10% of nameplate voltage for safe, reliable operation. If incoming voltage is 10% above or below nameplate voltage, contact power company to correct before operating terminal.

Tighten all electrical connections prior to start-up.

## HYDRONIC CONNECTIONS (Optional)

Hot water or steam heating coils require male sweat connection. Refer to unit construction submittal drawing for specific connection size. Use appropriate brazing alloy for connection; BCuP-6 or equivalent is acceptable. Do not use soft solder. System water operating pressure must not exceed 300 PSIG.

## OPERATION

### START-UP

Verify all electrical wire terminations are secure prior to energizing terminal.

Units with electric heat require a minimum of 0.1" w.g. downstream static pressure.

Prior to start-up, the project specific control sequence / wiring diagram should be obtained and understood. If factory supplied analog or DDC controls are utilized, refer to the applicable Operational Manual for start-up and balancing instructions. If consignment DDC controls are supplied, contact the project control contractor for specific start-up and balancing information.

## MAINTENANCE

- HWC (Optional): Inspect hot water coil periodically and clean fins if necessary
- Electrical components are not serviceable. Faulty components should be replaced with ENVIRO-TEC® authorized parts to avoid conflict with ETL listing.

