

PART 1 GENERAL

1.1 Section Includes Evaporative Media Humidification Systems

1.2 RELATED SECTIONS

- A. Section 08310 - Access Doors and Panels.
- B. Section 15052 - Common Work Results for HVAC.
- C. Section 15700 - Heating, Ventilating, and Air Conditioning Equipment.
- D. Division 16 – Electrical.

1.3 REFERENCES

- A. ANSI/NFPA 70 - National Electrical Code.
- B. ARI 640 - Commercial and Industrial Humidifiers.
- C. UL 900 - Test Performance of Air Filter Units.
- D. DIN 53438-1 - Testing of combustible materials.

1.4 SUBMITTALS

- A. Submit under provisions of Section 01300.
- B. Product Data: Including but not limited to product descriptions, models, dimensions, component sizes, rough-in requirements, service sizes, and finishes. Include rated capacities, operating weights, furnished specialties, and accessories.
 - 1. Manufacturer's installation instructions.
 - 2. Operation and maintenance data.
 - 3. Minimum water quality requirements and water pressure requirements.
- C. Shop Drawings: For each type of humidification system specified.
 - 1. Details of fabrication, installation of humidifiers.
 - 2. Piping details, plans, elevations, sections, details of components, and dispersion tubes.
 - 3. Detail of humidifiers and adjacent equipment showing support locations, type of support, weight on each support, and required clearances.
 - 4. Wiring diagrams including power, signal, and control wiring. Differentiate between manufacturer-installed and field-installed wiring.
- D. Test Results.

1.5 QUALITY ASSURANCE

- A. Manufacturer:
 - 1. Products manufactured in an ISO 9001 certified facility.
 - 2. For each product specified, provide components by single manufacturer throughout.

- B. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authority having jurisdiction, and marked for intended use.
- C. Humidifiers: In compliance with ARI 640 - Standard for Commercial and Industrial Humidifiers and applicable "New Approach" CE Directives.

1.6 COMMISSIONING

- A. Commissioning of system or systems specified herein is required. Provide personnel and equipment to facilitate commissioning process.
- B. Documentation and testing of these systems, as well as training of the Owner's operation and maintenance personnel, is required in cooperation with the Commissioning Authority.
- C. Project Closeout is dependent on successful completion of all commissioning procedures, documentation, and issue closure.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Deliver all materials in their original sealed containers bearing manufacturer's name and identification of product.
- B. Do not store products in location with conditions outside manufacturer's absolute limits.
- C. Materials delivered to the site shall be examined for concealed damage or defects in shipping. Defects shall be noted and reported to the Owner's Representative in writing.

1.8 PROJECT CONDITIONS

- A. Coordinate location and installation of humidifiers in ducts and air-handling units in the space it serves with the electrical, mechanical, and plumbing contractors. Revise locations and elevations to suit field conditions and to ensure proper humidifier operation.

1.9 WARRANTY

- A. Manufacturer's Standard Warranty: Two year warranty covers defects in materials and workmanship, commences on date of shipment.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Acceptable Manufacturer: NORTEC; 826 Proctor Ave. P. O. Box 698; Ogdensburg, NY 13669. Toll Free: 866-NORTEC-1. Email: nortec@humidity.com. Web: www.humidity.com.
- B. Acceptable Manufacturer: Condair plc; Artex Avenue, Rustington, LITTLEHAMPTON West Sussex. BN16 3LN. UK Tel. 01903850200 Email: sales@condair.com Web: www.condair.co.uk
- C. Substitutions: Not permitted.

2.2 EVAPORATIVE MEDIA HUMIDIFICATION SYSTEMS

- A. Series: MH Series humidifiers as manufactured by NORTEC / Condair.
- B. General:
 - 1. Packaged evaporative media humidifier providing humidification and air-cooling using the principle of surface evaporation over a wetted media. Designed for installation in air-handling systems or ductwork. Air downstream of humidifier is free of aerosols, cooler, and more humid.
 - 2. Humidifier accepts potable, softened, reverse osmosis and de-ionized water ($>5\mu\text{S}$).
 - 3. Humidifier designed around V-Profile humidification boxes, which use impregnated polyester as humidifying medium. Fire protection shall be in accordance with UL 900 / DIN 53438-1.
 - 4. Standard ME Direct feed to include evaporative module and hydraulic manifold without valves.
 - 5. Optional electronic controller to support on/off or stage control.
 - 6. Optional valves kits for staging and flushing.
 - 7. Humidifier powered by 100-120 volts single phase power supply with power consumption less than 0.125kW.
 - 8. Flow through design to direct un-evaporated water to drain.
 - 9. Duct shall contain only metalwork and media boxes. Staging valves, controls, and other mechanical components shall be provided in separate modules for installation external to duct.
- C. Evaporative Media:
 - 1. Media: Made of durable V-shaped polyester material, absolutely free of fiberglass, packaged in stainless steel casing.
 - 2. Compliance: The material shall have a flame retardant coating and fire protection in compliance with UL 900 / DIN 53438-1.
 - 3. Replacement: Lift out stainless steel media casings are hooked into the humidifier frame. No tools required for media removal.
 - 4. Rate of Evaporation: Dependent on the air volume, air temperature, cross sectional area of the humidifier and the media depth.
 - 5. Depth: Dictates the maximum efficiency of up to 85 percent (8 inch, 203 mm media) or 95 percent (12 inch, 305 mm media).

- D. Mist Eliminator:
1. Patented integral mist eliminator prevents water droplets in cases where the face velocity across the media exceeds 689ft/s (3.5 m/s).
 2. Allows face velocities operation up to 886 fpm (4.5 m/s).
 3. Material Compliance: Meets UL 900 / DIN 53438-1.
- E. Management System:
1. Optional Control units to include:
 - a. On/Off control unit for simple control of Nortec ME Direct Feed systems which includes timed purge function to enhance system hygiene.
 - b. Stage control unit for simple analogue control of Nortec ME Direct Feed systems which includes timed purge function to enhance system hygiene.
 2. Electronic controller to support time based flushing of the water supply line (if fitted with optional purge valve). Every 20 hours the water supply line is flushed via the purge valve to prevent water stagnation in the water supply.
- F. Optional control unit to have the following functionality:
1. LED power on.
 2. LED Status: Humidifying/Cooling
 3. Electronic controller to support time based flushing of the water supply line (if fitted with optional purge valve). Every 20 hours the water supply line is flushed via the purge valve to prevent water stagnation in the water supply.
 4. Terminal block installed for easy field connection of low voltage 24VAC control cable with 16.4 feet (5 m) of cabling included.
- G. Humidity Control Methods:
1. Humidistat/thermostat or BMS control.
 2. Accepts 0-10 or 2-10VDC modulating control signals.
 3. On/Off 24 VAC safety loop for On/Off control, air proving, and/or high limit.
- H. Hydraulic Assembly:
1. Optional valve kits to include:
 - a. Stage Valves - Valve kit which facilitates stage control of direct feed systems using customer controls or the Nortec ME Direct Feed stage control unit. Available in 2, 3, 4 and 5 stage versions.
 - b. Inlet, Drain and Purge Valve - Valve kit which facilitates basic on/off direct feed control system.
- I. Aerosol Breakdown and Hygiene Control:
1. Humidifier Operation: Aerosol-free operation guaranteed by hygroscopic properties of humidifier media.

2. Electronic controller to support time based flushing of the water supply line (if fitted with optional purge valve). Every 20 hours the water supply line is flushed via the purge valve to prevent water stagnation in the water supply.

J. Optional Features/Accessories:

1. Control unit (on/off or stage control).
2. Stage valve kit.
3. Inlet, drain, and purge valve kit.
4. Leak detection sensor.
4. In-line water filter with 5 micron filter.
5. In-line UV assembly.
6. PureFlo Ag+ In-Line Silver Filter.
5. On/Off digital duct high limit humidistat.
6. Air proving switch.
7. 10V Digital Duct Humidistat package.
8. 0 - 10V Digital Wall Humidistat
9. 2-10V Dig Wall Humidity Sensor.
9. 2-10V Duct Humidity Sensor.

K. Model: NORTEC / CONDAIR ME Direct Feed Humidifiers/Coolers.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Examine ducts, air-handling units, and conditions for compliance with requirements for installation tolerances and other conditions affecting performance.
- B. Examine roughing-in for piping systems to verify actual locations of piping connections before humidifier installation
- C. If preparation is the responsibility of another installer, notify Architect of deviations from manufacturer's recommended installation tolerances and conditions.
- D. Do not proceed with installation until substrates have been properly prepared and deviations are corrected.
- E. Commencement of installation constitutes acceptance of conditions.

3.2 INSTALLATION

- A. Install components plumb and level, in accordance with approved shop drawings, product installation details and manufacturer's recommendations.
 1. Install humidifiers and steam dispersion panels per manufacturers' instructions.
 2. Seal humidifier dispersion-tube duct penetrations with flange.
 3. Install with required clearance for service and maintenance.

3.3 TESTING AND ADJUSTING

- A. Manufacturer's Field Service: Engage a factory-authorized service representative to inspect field-assembled components and equipment installation, including piping and electrical connections.
- B. Test Results: Reported in writing to Architect.
 - 1. Leak Test: After installation, charge system and test for leaks. Repair leaks and retest until no leaks exist.
 - 2. Operational Test: After electrical circuitry has been energized, start units to confirm proper unit operation. Remove malfunctioning units, replace with new units, and retest.
 - 3. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.

3.4 TRAINING

- A. Engage a factory-authorized service representative to train Owner's maintenance personnel to adjust, operate, and maintain humidifiers.
 - 1. Train Owner's maintenance personnel on procedures and schedules for starting and stopping, troubleshooting, servicing, and maintaining equipment and schedules.
 - 2. Review data in maintenance manuals.
 - 3. Schedule training with Owner, through Architect, with at least seven days advance notice.

3.5 PROTECTION AND CLEANING

- A. Protect humidification system components from damage until date of substantial completion.
- B. Repair or replace damaged components that cannot be repaired.
- C. Remove temporary protective coverings, excess materials.

END OF SECTION