



Dectron

DRY-O-TRON®

Design, Installation, Start-Up, and Operation Manual

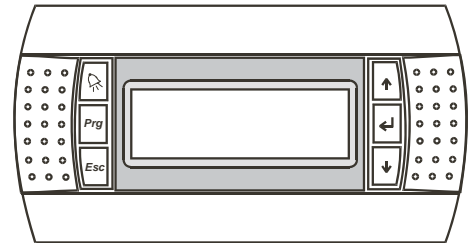
Arranged by Trades and Tasks

(Attach pages as addenda to contracts & work-orders.)

FOR MODELS

DA3	RA3
007	007
016	016
024	024
035	035
045	045

Supervisaire® CONTROLLER
with PGD REMOTE TERMINAL



Contents:

Product Description

Installation

Startup

Operation, Maintenance, and Diagnostics

For future reference,

write your model number* here _____

write your serial number* here _____

write your ref number* here _____

*See Product Description - Unit Nameplate.

Data subject to change without notice.

NOTE:

For your convenience this manual is organized into tasks arranged in a workable order. Most material relevant to a single task is on one page or a group of sequential pages.

Please attach copies of the appropriate pages to the task contract or work-order. License is hereby granted to copy and distribute as appropriate any pages contained herein for the sole purpose of assisting in the proper application, installation, operation, maintenance, and/or service of Dectron products only. All other rights are retained by Dectron.

USER AGREEMENT:

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To the Owner:

This manual contains important instructions on designing for, installing, starting, operating, and maintaining your DRY-O-TRON® and system. Please read the entire manual carefully and if you have any questions contact your local Dectron representative.

Your warranty is valid only if conditions explained in this manual are met.

To the Installer:

This manual contains vital instructions for installing and starting up the DRY-O-TRON® and system. Please read the entire manual carefully and if you have any questions contact your local Dectron representative. Your customer's satisfaction is at stake and the DRY-O-TRON® warranty may be void if conditions explained in this manual are not met.

Heating, Cooling, or Dehumidifying Construction Sites

The DRY-O-TRON® unit is not a convenience air conditioner. Its capacity is carefully matched to the expected load. Errors of installation, damage to the unit, and other performance reductions will be obvious once the building begins normal use.

Never use the unit to heat, cool, or dehumidify a construction site. The air coils must be protected against construction dusts until all construction dusts have been removed from the space. Construction dusts bind to the cooling coil permanently and cannot be removed. Once bound, the dusts reduce heat transfer and airflow rate. **Filters will not prevent this.**

The resulting performance reduction and possible component damage are **not** covered by the Dectron warranty.

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Product Description

DESCRIPTION

DRY-O-TRON® DA3 Series Energy-Recycling Dehumidifiers

DRY-O-TRON® is the original energy recycling dehumidifier. Tens of thousands of units have been installed throughout the world, and DRY-O-TRON® has become synonymous with quality, reliability and energy savings.

Dectron Inc., the inventor of DRY-O-TRON®, is a company committed to being the absolute best at what they do - providing leading expertise and quality products to customers who need to control high humidity efficiently.

Today's DRY-O-TRON® represents years of intensive research and development by a team of highly qualified experts. Dectron has the only large-scale dehumidifier testing and environmental simulation laboratory in the industry. Every DRY-O-TRON® model line has been developed in this laboratory, and every customer's unit is factory tested before shipment.

The DRY-O-TRON® is available in a broad range of standard products for industrial and commercial applications. We also have a team of highly skilled engineering and manufacturing professionals who are dedicated to custom design projects.

Product Description

Humidity Control Solutions

Your DRY-O-TRON® DA3 Series energy recycling dehumidifier is a precision engineered product, finely tuned to the conditions in your application to achieve maximum performance and energy savings.

The installation of this state-of-the-art equipment must be performed by an experienced heating, ventilating and air-conditioning technician, preferably trained by Dectron.

The DA3 Series remove moisture from the air thereby reducing the relative humidity level and the room-air dew-point temperature. Proper building design is also important to help control problems associated with high relative humidity and condensation.

The DA3 unit has been designed for medium- and high-temperature industrial and commercial applications (64 -100°F) (18 - 38°C).

The DA3 Series:

- Δ helps eliminate condensation,
- Δ improves product/process quality,
- Δ helps reduce building repair and production maintenance costs,
- Δ provides a comfortably dry working environment,
- Δ contributes to space heating, and
- Δ contributes to space cooling.

The DA3 Series Features:

- Δ ease of installation
- Δ low maintenance
- Δ simplicity of operation
- Δ remote operator panel
- Δ energy efficiency
- Δ optional air conditioning

Sources of Humidity

Sources of humidity in commercial and industrial facilities include:

- Δ intentional ventilation air
- Δ air infiltration through openings
- Δ permeation through surfaces
- Δ moisture produced by occupants
- Δ moisture produced by products or processes.

Moisture migrates from areas of higher concentration to areas of lower concentration. In summer, with warm and humid outdoor air, moisture will find a path to the interior of a structure. Such path may be via opening like doors, windows, gaps, and cracks, or may be via permeation where vapor retarders are inadequate or even missing.

In many instances, the primary source of humidity is from outdoor air purposely brought in to maintain air-quality standards.

Occupants can contribute to the moisture load depending on the number of people and their activity. A worker involved in heavy lifting can generate seven times as much moisture as someone seated and at rest. In agricultural and veterinary buildings, animals also produce a moisture load.

Some processes give off moisture, e.g.

- Δ open tanks
- Δ the handling or storing of wood, fruits, or vegetables
- Δ cooking.

The moisture inside a building will condense onto any surface which has a temperature below the dew point temperature of the room air. This can lead to quality and productivity problems and even to damage of to the building or equipment. Rust and other corrosion can affect metal surfaces and electrical components. These can lead to higher costs and even to potentially hazardous conditions.

How the DRY-O-TRON works

In the DRY-O-TRON®, warm humid air passes through the dehumidifying coil and is cooled below its dew point, causing moisture to be released. The heat captured by this process is combined with compressor heat. The recovered heat is available for recycling back to the supply air, contributing to space heating as needed.

The DA3 unit is also capable of rejecting this heat to an air-cooled (standard) or water-cooled (optional) condenser, resulting in space cooling.

DRYO-TRON® DA3 Series units feature standard microprocessor control. For the owner this means precise automatic control, high reliability, and ease of use. For the installer and service person, this means simpler installation and startup with built-in diagnostics and troubleshooting should service be required.

When properly installed according to Dectron's instructions, the DRY-O-TRON® will give years of trouble-free operation.

Product Description

Unit Nameplate

DESCRIPTION

CSA and ETL Label

Model Nomenclature:

ixxx-sss-v

D = indoor cabinet
R = outdoor cabinet

Configuration

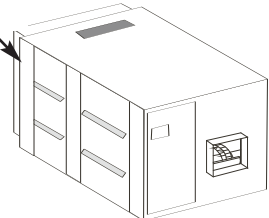
A3 = medium-high temperature commercial and industrial dehumidifier.

nominal moisture removal capacity in lbs./hr.

nominal voltage

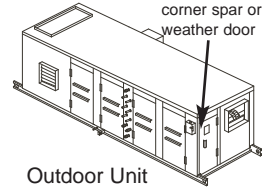
- 2 = 208V, 1Φ, 60 Hz
- 3 = 230V, 1Φ, 60 Hz
- 4 = 208-230V, 1Φ, 60 Hz
- 5 = 208-230V, 3Φ, 60 Hz
- 6 = 230V, 3Φ, 60 Hz
- 7 = 460V, 3Φ, 60 Hz
- 8 = 575V, 3Φ, 60 Hz
- 9 = 208V, 3Φ, 60 Hz

Name plate on corner



Horizontal Indoor Unit

Name plate on corner spar or inside weather door



Outdoor Unit

Dectron DRY-O-TRON®

MODEL #: _____
SERIAL #: _____

I.D. **D**

ELECTRICAL RATING: **460 V ac, 3 ph, 60 Hz**

COMPRESSOR	LRA	RLA
COMPRESSOR	LRA	RLA
COMPRESSOR	LRA	RLA
COMPRESSOR	LRA	RLA
BLOWER MOTOR	HP	FLA
BLOWER MOTOR	HP	FLA
BLOWER MOTOR	HP	FLA
COND. FAN MOTOR	HP	FLA
COND. FAN MOTOR	HP	FLA
PUMP MOTOR	HP	FLA
ENTHALPY MOTOR	HP	FLA
ELECTRIC HEATER	KW	A
	Max. L.A.T. (°F)	

SERVICE POWER _____
SPACE HEATING COIL _____
PSIG Max. _____

MCA A MAX. FUSE/CKT. BKR.* 15 A
(*NACR type per NEC)

FACTORY CHARGE _____ lbs

AIR VOLUME _____ CFM
BELT SIZE _____

WIRING DIAGRAM _____

REFRIGERANT DESIGN PRESSURES: HIGH/LOW 300/150 PSIG

ETL 50379 COMFORMS TO ANSI/UL STD 1995 CSA LR 45671
CERTIFIED TO STD CAN/CSA-C22.2 NO. 236 FABRIQUÉ AU CANADA / MADE IN CANADA

If assistance is needed, have model, serial number, and Ref. number (below) before calling.

Component specifications.

Important branch circuit information

Adjust supply-airflow to this value ±10%.

Replace with belt of same type and size when necessary.

For units with air-cooled air conditioning, subtract the amount of refrigerant given by "Factory Charge" from the amount given by "Total System Charge". The difference must be added to the DRY-O-TRON® at installation. See **Installation - Piping - Refrigerant**.

This amount of refrigerant is supplied by others.

At installation, add type and amount of refrigeration oil as shown.

For units with air-cooled air-conditioning, the tubes connecting the DRY-O-TRON® to the remote condenser must be exactly as shown here. Consult Dectron before exceeding the maximum length of tube or changing the tube diameters.

Operating conditions: Make sure unit is operating within these conditions. Unit has been selected and sized accordingly.

Nameplate specifications supersede any other specifications or statements found in this manual.

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**LIFTING AND
LOCATING**

Lifting and Locating

Select Air Handler Location

! WARNING



Risk of falling. Can cause injury or death.

Depending on the size and location of this product, some installation, service, and maintenance procedures could expose personnel to the risk of injury or death by falling. Designs should include adequate service and maintenance access. Use fall-protection equipment as appropriate.

Select a suitable location for the unit, where the unit will not be subject to damage.

1. Indoor units may not work correctly if the equipment-room temperature goes below 70°F (21°C).
2. The location must not contain corrosive-chemical storage, or connect to any space that contains corrosive-chemical storage.
3. The location must not be in a natatorium or spa room, or any space where the exterior of the unit would be exposed to chloramines outgassing from a pool.
4. There are other requirements for suitability - see other pages in this section.

Allow working clearances as shown below. Inadequate working spaces may compromise workplace safety. Inadequate working spaces may preclude proper maintenance, such as filter and belt replacement. Inadequate working space may prevent component replacement should that become necessary.

Spacing requirements are also subject to applicable electrical and mechanical codes. This is particularly true where optional built-in electrical disconnects are provided. Check with your local code-enforcement authorities.

Where access doors are hinged, all doors must be able to open at least 90°.

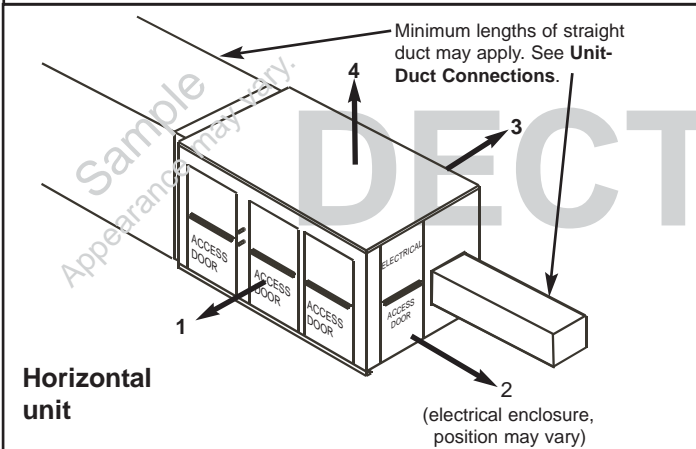
For units with hooded air intakes allow at least 3 feet (1 meter) of clear space around the hood for smooth intake airflow. Intake air hoods should be suitably separated from such sources of contamination as drain vents and burner flues. See appropriate codes and standards.

Some horizontal units may have condensate-drain connections on the bottom of the unit. Clearances and pipe connections should be completed before the unit is actually placed.

Working Clearances

HORIZONTAL UNITS				
Minimum Service Access ^a ft (m)	1	2 ^b	3	4
010 through 030	2 (0.6)	3 (1)	2 (0.6)	3 (1)
040 through 062	3 (1)	3 (1)	3 (1)	3 (1)
080 through 808	5 (1.5)	3 (1)	4 (1.2)	3 (1)

a - Access doors must be able to open to at least 90°.
b - (Canada) 1 meter
 (USA) 3 ft for 230V, 3.5 ft for 460V units or per NEC Table 110.26(A)(1), whichever is greater.



LIFTING AND LOCATING

Data subject to change without notice.

Unit Support & Vibration Isolation

Lifting and Locating

! WARNING

Risk of structural collapse. Can cause property damage, injury, and death.
All supporting structures should be designed and built by qualified persons only.

All units must be supported to maintain the straightness of the frames and to prevent binding of access doors or panels.

Install anti-vibration springs or pads such as machinery cork, rubber pads, or other approved isolation materials to isolate the unit from the supporting structure (see drawing at right).

IMPORTANT!

Do not mount the unit on a plywood floor or on any other material that will resonate.

IMPORTANT!

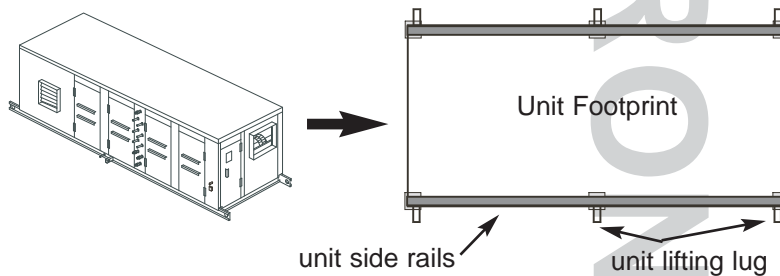
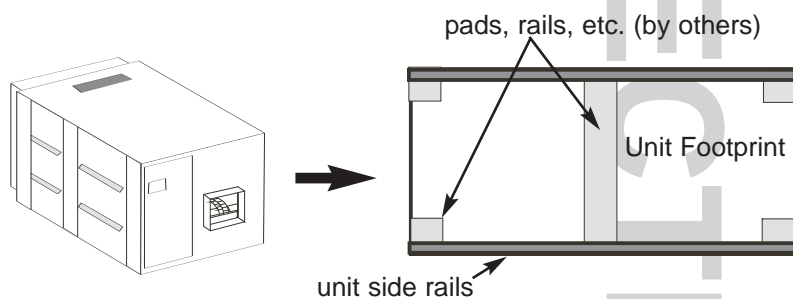
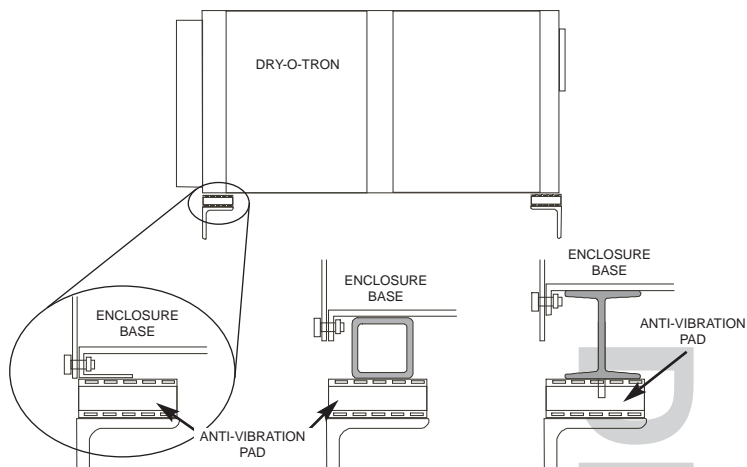
Where seismic mounts are used, care must be taken to prevent strains on conduits, refrigeration tubes, water tubes, or condensate tubes.

All horizontal units should be uniformly supported along the side rails. Where this is not possible, the following minima apply:

Horizontal units size 050 and smaller should at least be supported at the corners and middle as shown at right. More supports may be required to maintain straightness.

Where units must be supported from overhead, any supports must not interfere with service access as described on a previous page.

Horizontal units size 060 and larger with lifting lugs should at least be supported under the frames near each lifting lug. More supports may be required to maintain straightness.



All units should be supported on a steady surface. Where mounted above grade, the unit should be firmly attached to an adequate supporting structure. Outdoor units must be firmly fastened to prevent movement even in high winds.

Where large units must be installed overhead, provide suitable under-base support with a service mezzanine. The support must include horizontal stabilization. See section **Lifting & Locating - Overhead Air Handler**.

LIFTING AND LOCATING

Lifting and Locating

Air Handler

Underside Piping

NOTICE

Risk of leaking water. Can cause property damage.

This product requires a free-flowing drain. Freezing or other abnormal conditions could cause leakage or overflow. Do not locate this product above any equipment that could be damaged by water.

Bottom Condensate Drain Connection(s)

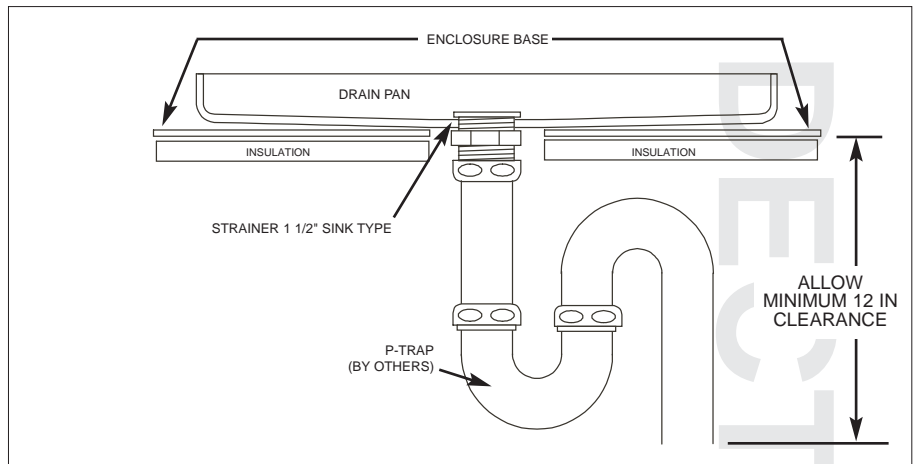
Note: Units with the SmartSaver® heat-recovery option may have more than one condensate drain.

Allow a minimum 12-inch clearance for the bottom drain connection. On horizontal units, a P-trap must be installed and filled with water to prevent air from entering the unit (which is under negative pressure) and to assure proper drainage of the condensate. Failure to do so will cause the drain pan to overflow.

Use schedule 40 PVC or standard ABS plastic drainage pipe and slope the condensate drain line in the direction of flow at least 1/4 inch per foot (0.2cm/m). The drain line must discharge through an air gap to a vented non-freezing point.

LIFTING AND LOCATING

If a condensate pump is used, it must have sufficient pump head to overcome vertical lift, check valve cracking pressure, and water pressure if pumped into a pressurized pipeline. When connecting to a pressurized pipeline, a check valve and normally-closed solenoid valve should be installed in the condensate pump discharge line, with the valve only opening during pump operation. Do not connect the condensate drain to a pipe with negative pressure.



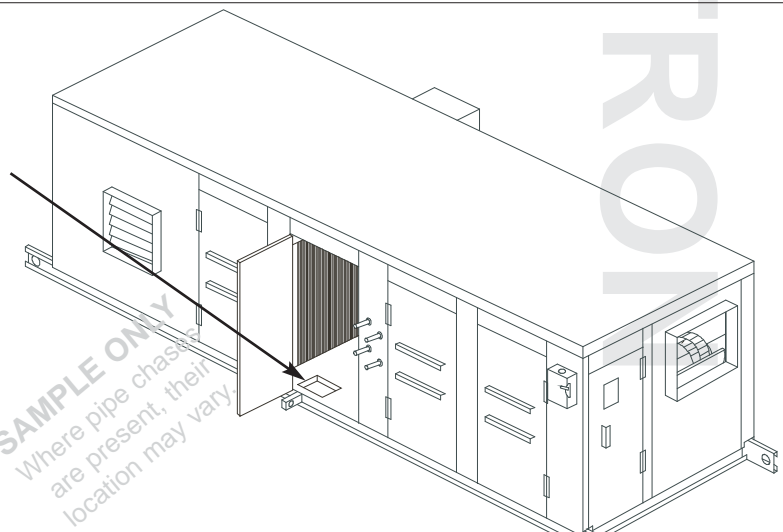
Underside Pipe Chases

Some units may have pipe chases in the base of the unit. These chases may be intended to enclose conduits, heating-water pipes, steam pipes, etc.

In this case, locate the chase and arrange any required connections before setting the unit.

IMPORTANT: Use the included chase cap to assist in sealing any pipe chases. Air must not be allowed to move through a chase.

IMPORTANT: In some cases, pipes chases may be subject to fire-stopping requirements. Consult applicable codes.



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INSTALLATION

NOTICE

Risk of injury.

Risk of property damage.

Risk of uncontrolled condensation. Can cause property damage.

The information presented in this section represents Dectron's best effort as of the time of issue. Compliance with the requirements and recommendations in this section should produce a successful installation.

Where any steps are not clear, Dectron offers technical assistance at 1-800-667-6338 or 1-800-676-2566.

Dectron does not warrant that this information is complete for any particular application. In some cases job-specific requirements may cause factory modifications which may not appear in this section. Such modifications will be documented in addenda.

Follow all applicable safety rules and regulations, and all applicable codes. Where any recommendation in this manual conflicts with legal requirements, the legal requirements take precedence.

Dectron, Inc. does not engage in installation contracting. All costs, risks, and responsibilities of safety, handling, moving, damage prevention, and unit installation are borne by others.

! WARNING



Risk of electric shock. Can cause injury or death.

Some installation and service procedures could expose personnel to the risk of electric shock. Electric shock can cause injury or death.

The unit controller does not disconnect electrical energy from the unit, even in the OFF condition. Use only approved devices (e.g. locking safety switch), to disconnect, lockout, and tagout all sources of electrical energy before working inside the unit cabinet. Follow all applicable safety regulations.

! WARNING

Risk of explosive pressure release. Can cause injury or death.

This product contains refrigerant liquid and vapor under high pressure. Some installation and service procedures could expose personnel to the risk of explosive discharge. Some installation and service procedures could expose personnel to the risk of frostbite from release of refrigerant.

Reclaim refrigerant to reduce the pressure to atmospheric before working on pipes, valves, heat exchangers, compressors, pressure switches, etc.

Once opened, do not close any manual refrigerant valves that might isolate refrigerant from the relief valve. If necessary, install relief valves (by others).

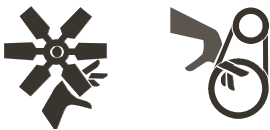
! WARNING



Risk of top-heavy units tipping over. Can cause property damage, injury, or death.

Some units and some ancillary equipment may be shipped in crates that are top heavy. Follow the instructions in the **Lifting and Locating** section, along with all appropriate codes and procedures.

! WARNING



Risk of contact with moving parts. Can cause injury or death.

This product contains rotating parts and V-belt drives. Some installation, service, and maintenance procedures could expose personnel to the risk of injury or death from contact with these parts.

Using only approved devices (e.g. locking safety switch), disconnect, lockout, and tagout all sources of electrical energy before working inside the unit cabinet. Allow adequate time for rotating parts to stop. Follow all applicable safety regulations.

Do not operate the unit until ductwork or a screen is installed at each blower outlet.

! WARNING



Risk of falling. Can cause injury or death.

Depending on the size and location of this product, some installation, service, and maintenance procedures could expose personnel to the risk of injury or death by falling.

Designs should include adequate service and maintenance access. Use fall-protection equipment as appropriate.

INSTALLATION

Warnings

Installation

 **WARNING**

Risk of frostbite. Risk of eye damage.

Improper handling of refrigerants and refrigerant hoses can allow release of liquid refrigerant. Exposure to liquid refrigerant can cause frostbite and severe eye damage. Wear gloves, eye protection, and any other appropriate protective equipment. Follow all safety procedures.

 **WARNING**

Risk of suffocation.

Improper handling of refrigerants and refrigerant hoses can allow release of refrigerant gases. In a confined space, these heavier-than-air gases may accumulate and displace oxygen, leading to suffocation. Confirm adequate ventilation before proceeding.

 **WARNING**

Risk of contamination of breathing air. Can cause injury or death.

Application of this product may involve the intake of outdoor air. The point of intake must be carefully chosen to prevent intake of contaminants. Application of this product may involve air-handling equipment, e.g. ducts, cabinets, plenums, etc., which operate below atmospheric pressure. Such equipment must be carefully located and installed to prevent the intake of contaminants. Follow the instructions in this manual and all applicable codes.

 **CAUTION**

Risk of contact with hot surfaces. Can cause injury.

This product contains surfaces which can cause burn injury. The compressor, refrigerant-discharge tubes, and heat exchangers can become extremely hot during operation. Compressor crankcase heaters can be extremely hot at any time electrical power is applied. Turn off the unit and allow time for these parts to cool before working inside the unit cabinet. Wear protective clothing (gloves, sleeves, etc.) while working on these parts.

 **CAUTION**

Risk of contact with hot surfaces. Can cause injury.

Brazing of tubes produces temperatures that can cause blistering and burns. Wear protective clothing (safety glasses, gloves, sleeves, etc.) while working on these parts.

NOTICE

Risk of leaking water. Can cause property damage.

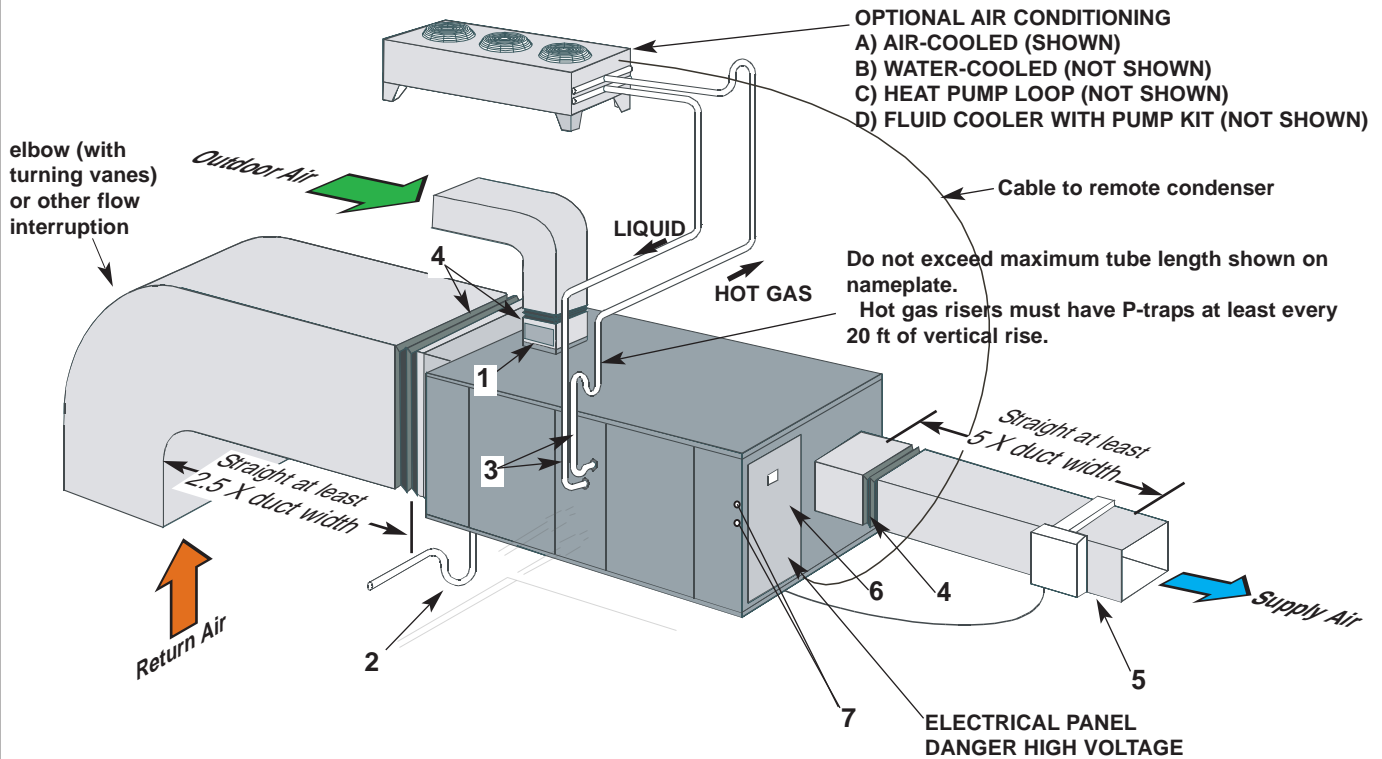
This product may use circulating water under pressure. This product requires a free-flowing drain. Freezing or other abnormal conditions could cause leakage or overflow. Uncontrolled water can cause expensive damage to buildings and other equipment. Do not locate this product above any equipment that could be damaged by water.

NOTICE

Risk of uncontrolled condensation. Can cause property damage.

This product is intended to control relative humidity and temperatures. Improper design, installation, and/or operation can lead to uncontrolled condensation of water, with associated property damage. Read and follow the instructions in this manual. Optional material will be noted as being optional. All other material should be considered as important to the proper function of the product.

INSTALLATION



1. Outdoor air filter & manual damper

- Optional motorized damper actuator
- Seven-day time clock

2. P-Trap and Condensate Drain (by others)

- Must be installed and filled with water
- Failure to install the P-trap will cause the drip pan to overflow and flood the area beneath the DRY-O-TRON®.
- Optional side connection available

3. Air Conditioning (OPTIONAL)

- Pipe must be same size as the connection on the DRY-O-TRON®.
- Optional water-cooled or dry-cooler heat rejection.

4. Flexible Duct Connection (by others)

- For vibration isolation
- For attenuation of sound due to vibration
- Required on any return, supply, outdoor air, and exhaust connections to the DRY-O-TRON®

5. Duct Heater (by others)

- Size to cover the building heat losses and the outdoor air load
- Optional unit-mounted hot water, steam or electric coils
- Controlled by the DRY-O-TRON®'s microprocessor

6. Operator Panel

- Mounted on the electrical panel door
- Optional remote mounting

7. Refrigerant Access Valves

- Service gauge connection
- Refrigerant charging access
- Upper access valve is head pressure
- Lower access valve is suction pressure
- Compressor oil-pressure port may also be present.

Preparation

Installation

Note: Before proceeding, tape a paper or plastic sheet over all components in the electrical enclosures. This is essential to protect the components from metal chips produced during installation. Remove the sheet before applying power.

List of recommended equipment and tools:

NOTE: This list may not be comprehensive for any particular job. Use your judgement.

Safety glasses
 Lockout/tagout equipment, as appropriate
 Dectron owners manual
 Test and Balance Report (or air-flow measuring instruments) to compare air flows to nameplate values
 Copy of Start-up Report form (to fill out and send in for warranty)
 Pen (for filling out forms)
 Paper (for making notes)
 Plastic trash bag, kraft paper, etc. (to cover controls while conduit is being installed)
 Duct tape (to tape plastic over controls)
 Knife (to cut duct tape, trim bushes and grass around remote condenser, if any)
 Tape measure
 Flashlight
 Spirit level
 Flat screwdrivers
 Phillips screwdrivers
 Needle-nose pliers
 Open-end or combination wrenches, socket wrenches
 Allen wrenches, including 1/4" and 5/16"
 Metric Allen wrenches
 Volt - Ohm meter
 Clip-on ampmeter
 Pack of 10kohm 1/4W resistors, (e.g. Radio Shack 271-1335)
 Refrigerant gauges, manifold, hoses
 Vacuum pump
 Electronic micron-level vacuum gauge (Compound bourdon-tube gauges on manifolds are not even close to adequate.)
 At least two schraeder-valve core-removal vacuum adapters
 Refrigerant scale
 Adequate refrigerant as specified on unit nameplate and in submittal
 Remote-reading electronic thermometer with probe and minimum 6-foot cable
 Brazing torch, fuel, etc., flux, filler rod, sandpaper, tube brush
 Nitrogen (or other inert gas) tank, regulator, delivery hose
 Tube cutter
 Tube and fittings adequate to install air-cooled condenser, if any
 Pipe and fittings adequate to install condensate drain
 Pipe-joint compound
 Bucket (to pour water into condensate pan)
 Wire and cable as needed
 Belt tension gauge
 (optional, recommended) Refrigerant recovery machine and tanks
 (optional, recommended) Alligator-clip jumper wires
 (optional) Drill and bits, including masonry bits for wall anchors, if needed
 (optional) Wall anchors and screws, as needed
 (optional) Hoists, lifts, etc., as needed
 (optional) Extension cords
 (optional) Stepladder and other ladders, etc., as needed
 (optional) Dectron submittal or other sales documents
 (optional) Torque wrench, with sockets and other wrenches, as needed
 (optional) Torque screwdriver (for electrical connections)

Installation

Air Distribution

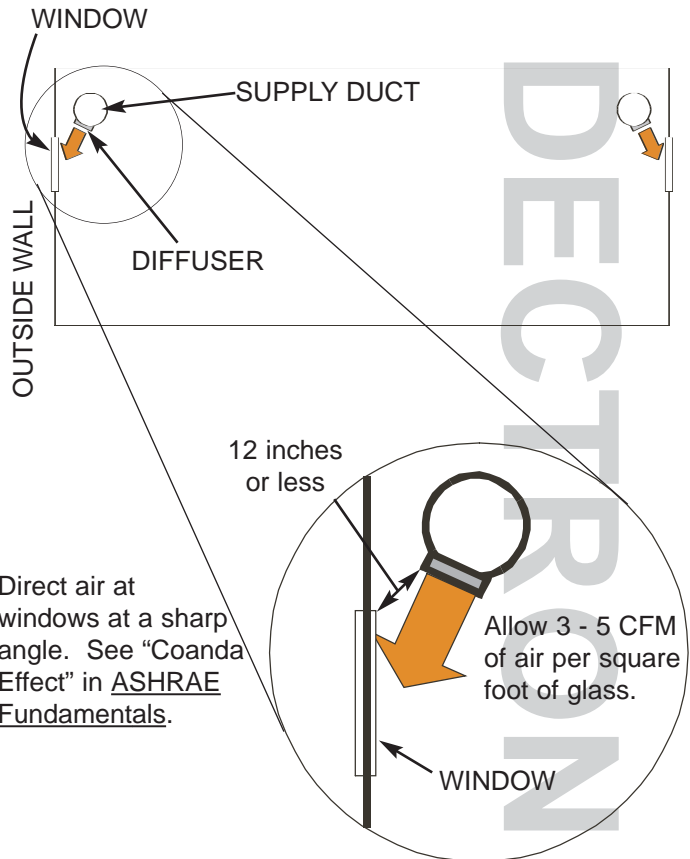
NOTICE Risk of uncontrolled condensation. Can cause property damage. Improper design, installation, and/or operation can lead to uncontrolled condensation of water, with associated property damage.

Δ Prevent Condensation

The quantity of supply air and the air velocity from the air distribution system must be sufficient to blanket areas of low R-values, especially exterior glass components, with warm, dry air.

The design goal is to keep all surfaces at least 5°F above the room dew-point temperature. (See table below.) In order to prevent condensation, supply air must be blown directly onto the entire surface of the glass using linear diffusers.

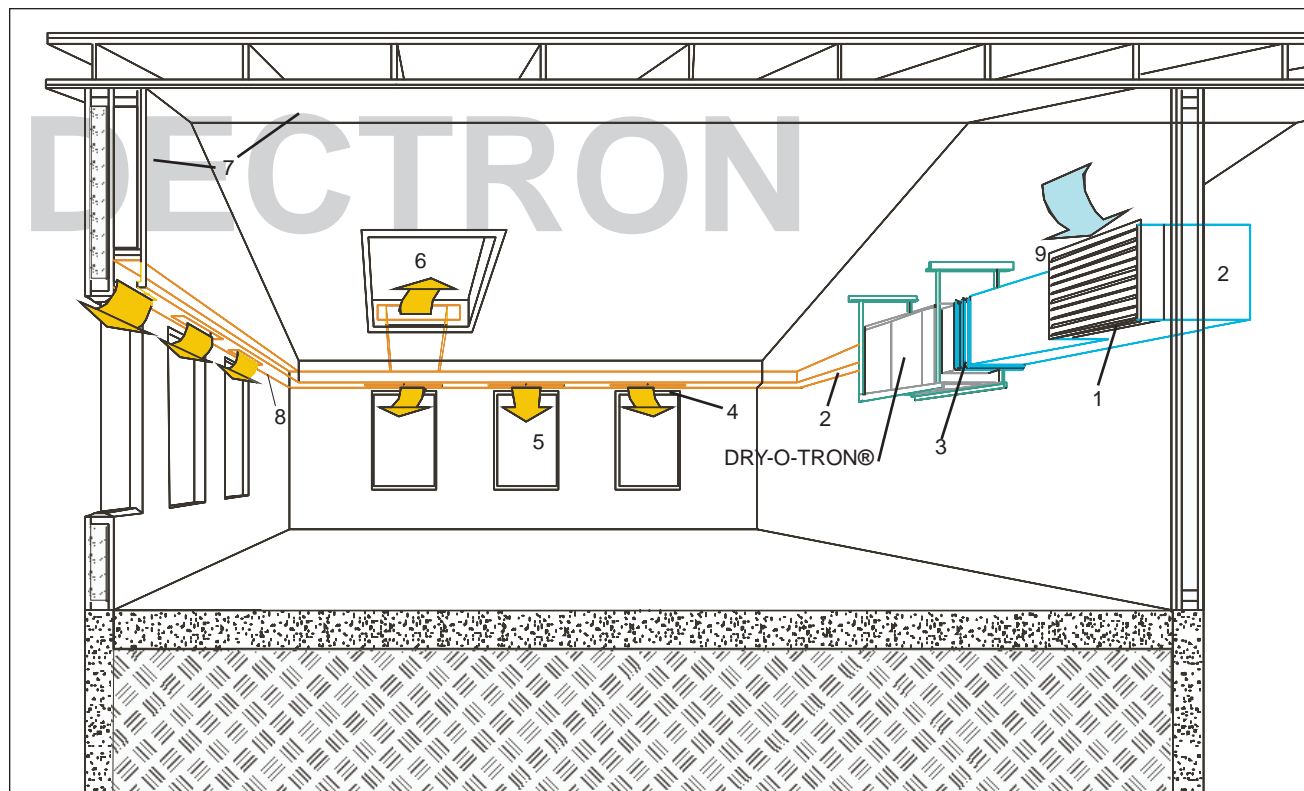
For windows mounted high on walls, supply air must be directed at the glass surface from close range (register throws less than twelve inches to the closest portion of the glass). Air quantity and velocity must be large enough to blanket the entire glass surface with warm dry supply air.



Direct air at windows at a sharp angle. See "Coanda Effect" in ASHRAE Fundamentals.

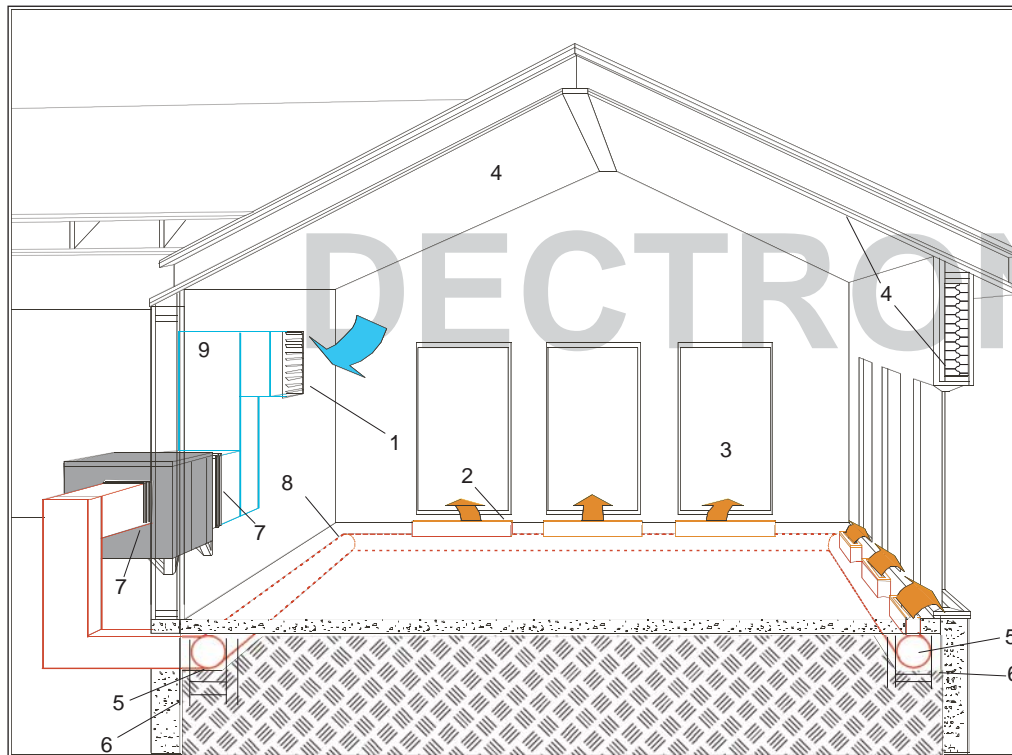
Recommended Minimum Temperatures for Interior Surfaces

Relative Humidity %	Room Dry Bulb Temperature °F				
	72	76	80	84	88
	Recommended Interior Surface Temperature to Prevent Condensation (°F)				
40	51	55	59	62	65
50	57	61	65	68	72
60	62	66	70	73	77



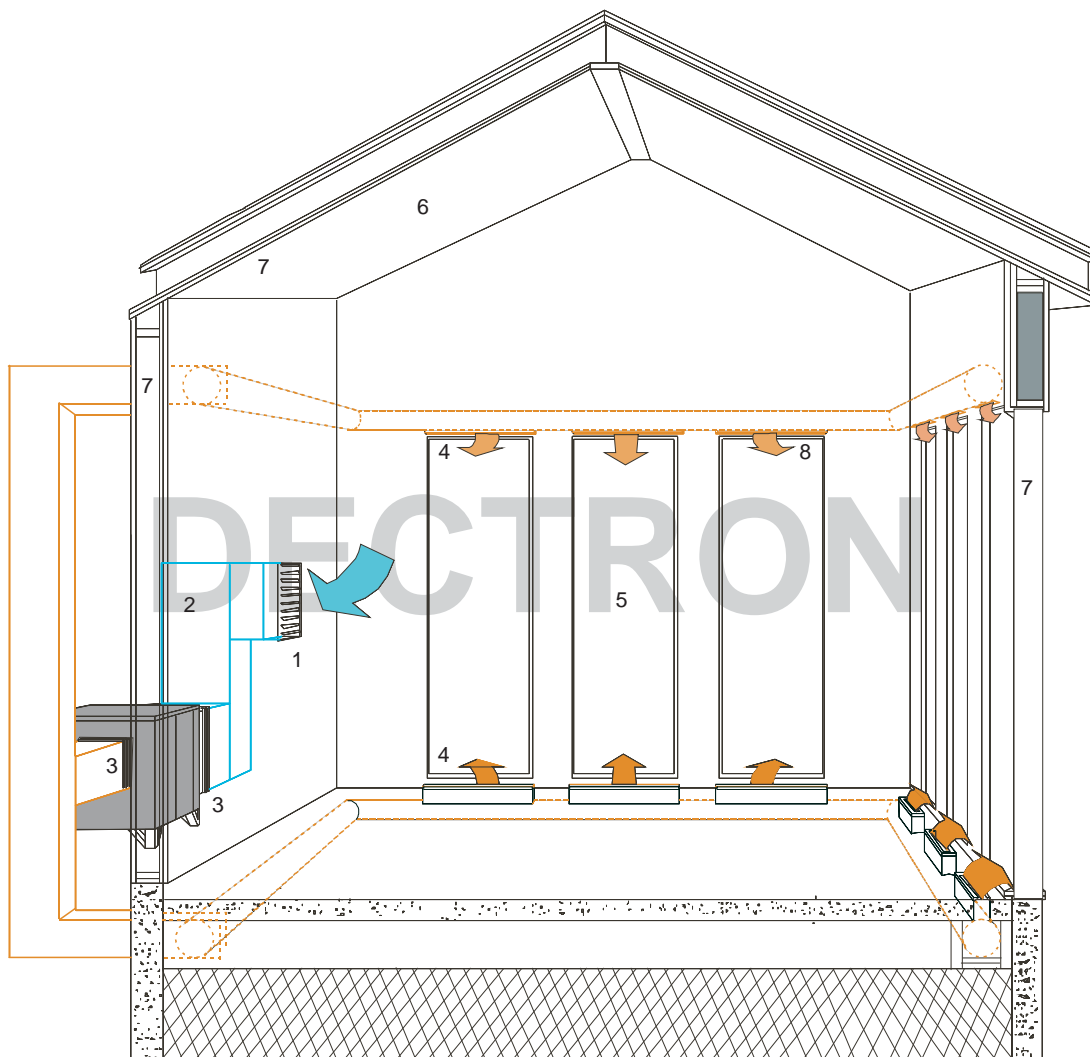
1. Locate the return air inlet 8 to 15 ft. (2.5 to 4.5 m) above the floor. Arrange for suitable air distribution. Arrange to prevent accidental blockage.
2. Where an elbow is required, use acoustic insulation up to the elbow to eliminate air movement noise. (Also see the guidelines in **Standard Practice for Ducts.**)
3. Always install flexible duct connections at the unit.
4. Linear diffusers must cover entire width of window.
5. Blanket entire window with supply air.
6. Skylights are not recommended since condensation on skylights is difficult to control.
7. A vapor barrier in all walls and ceilings is necessary. **Dehumidification will not prevent the condensation of liquid water inside cold walls.**
8. Direct air at glass surfaces from close range for glass mounted high on walls.
9. Temporarily cover return grille(s) with paper or plastic to prevent entry of construction dusts.
10. See other requirements elsewhere in this section.

Installations with sliding glass doors and/or windows set low in the wall should use under-floor perimeter supply air distribution with the supply air directed vertically upward along the glass surfaces. This configuration allows high air velocity and large air volumes.



1. Locate the return air inlet 8 to 15 ft. (2.5 to 4.5 m) up an interior wall. Allow for proper air circulation and arrange to prevent blocking of the inlet. Where an elbow is required, use acoustic insulation up to the elbow to eliminate air movement noise. (See also **Installation - Duct Design** guidelines.)
2. Diffusers must be linear and must cover the entire width of each window.
3. Blanket each entire window with supply air.
4. A vapor barrier in all walls and ceilings is necessary. **Dehumidification will not prevent the condensation of liquid water inside cold walls.**
5. Where duct is installed below the floor, use PVC-coated round metal duct.
6. Duct installed beneath the floor should be insulated with styrofoam insulation.
7. Always install flexible duct connections at the unit.
8. Under-floor perimeter air distribution for low windows
9. Install 90° elbow and use acoustic insulation up to elbow only to eliminate air movement noise (see also Duct Design guidelines)
11. Temporarily cover return grille(s) with paper or plastic to prevent entry of construction dusts.
12. See other requirements elsewhere in this section.

Tall windows may require supply air to be directed toward them from both top and bottom.



1. Locate the return air inlet 8 to 15 ft. (2.5 to 4.5 m) up an interior wall for proper air circulation and to prevent blocking of the inlet. Where an elbow is required, use acoustic insulation up to the elbow to eliminate air movement noise. (See also **Installation - Duct Design** guidelines.)
2. Where an elbow is required, use acoustic insulation up to the elbow to eliminate air movement noise. (Also see the guidelines in **Unit-Duct Connections** and **Standard Practice for Ducts**.)
3. Always install flexible duct connections at the unit.
4. Linear diffusers must cover entire width of window.
5. Blanket entire window with supply air. Tall windows may require diffusers at top and bottom.
6. Skylights are not recommended since condensation on skylights is difficult to control.
7. A vapor barrier in all walls and ceilings is necessary. **Dehumidification will not prevent the condensation of liquid water inside cold walls.**
8. Direct air at glass surfaces from close range for glass mounted high on walls.
9. Temporarily cover return grille(s) with paper or plastic to prevent entry of construction dusts.
10. See other requirements elsewhere in this section.

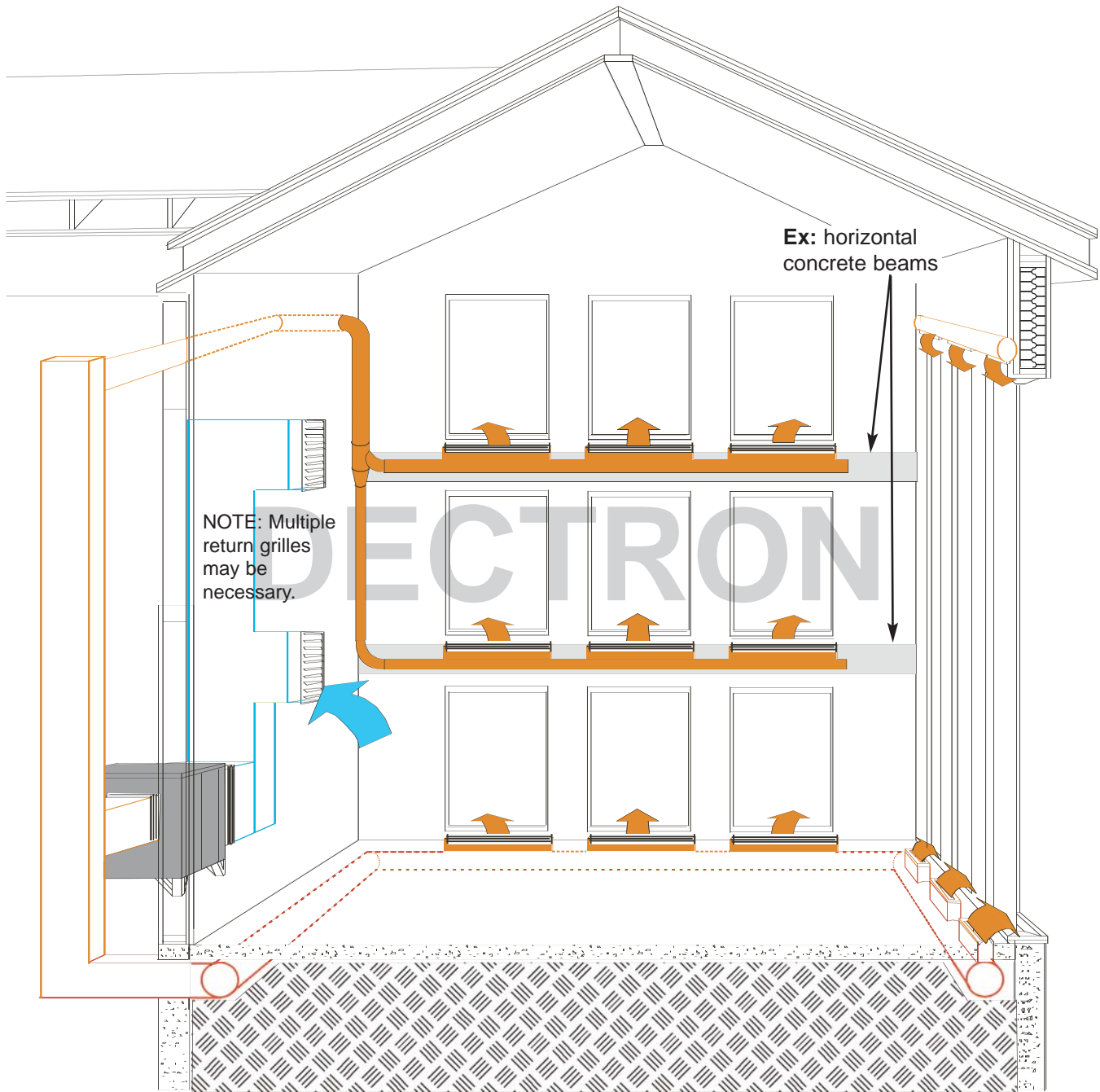
INSTALLATION

Multiple Distribution for Very Tall Windows or Windows with Cross-Members

Installations with a) very tall windows, or b) windows separated by beams, or c) windows with wide interior frames may require multiple ducts and diffusers to assure air distribution that covers all window surfaces. Multiple return grilles may also be required.

Also see other requirements elsewhere in this section.

INSTALLATION



Supply Diffusers

Air Distribution

Installation

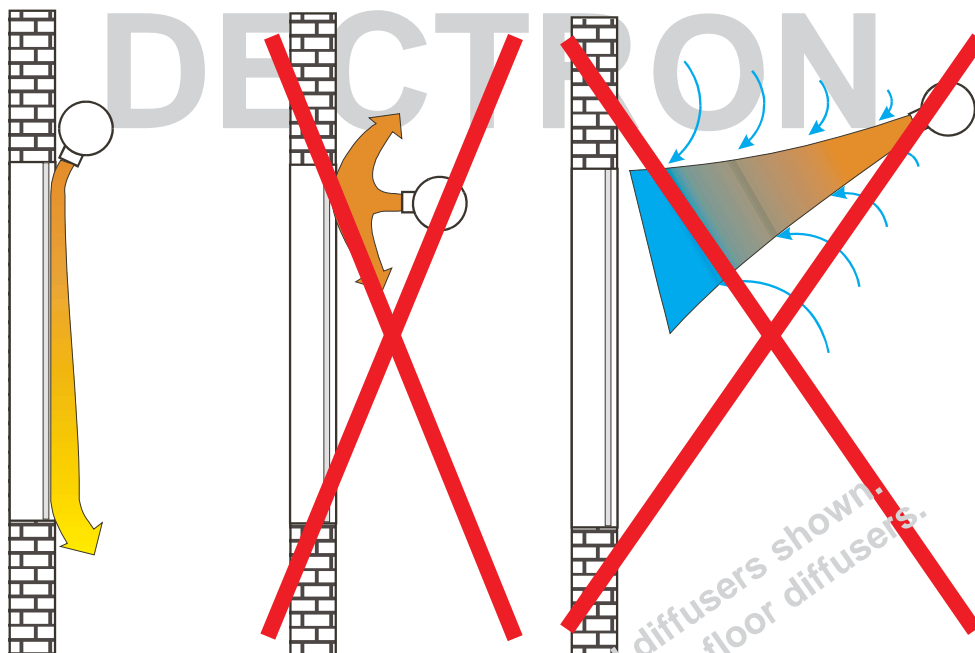
Direct 3 - 5 CFM of supply air per square foot (15 - 26 l/s per square meter) of glass to all exterior windows and doors, or other surfaces that might reach dew point.

Do place diffusers as close to the cold surface as possible, preferably within 12 inches (25 mm).

Do direct the air at the sharpest angle possible so the air will follow the surface. See "Coanda Effect" in ASHRAE Fundamentals.

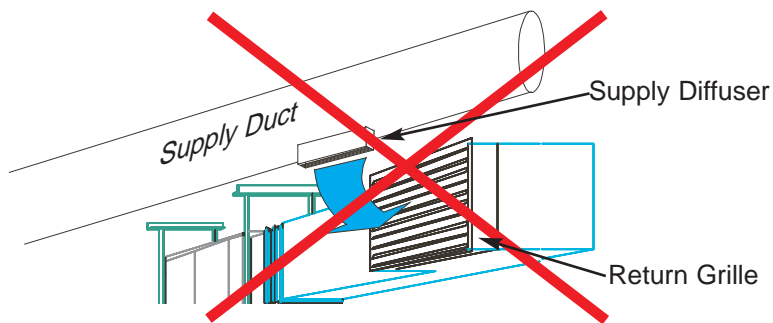
Do not direct supply air at a wide angle to the surface. Larger surfaces (like windows) will not be completely covered.

Do not use long throws. The resulting supply air mixed with room air will not prevent the windows from sweating.



NOTE: Overhead diffusers shown. Also applies to floor diffusers.

Never position a supply diffuser such that supply air will be drawn into the return grille. Doing so may result in erroneous sensor readings and mode oscillation.

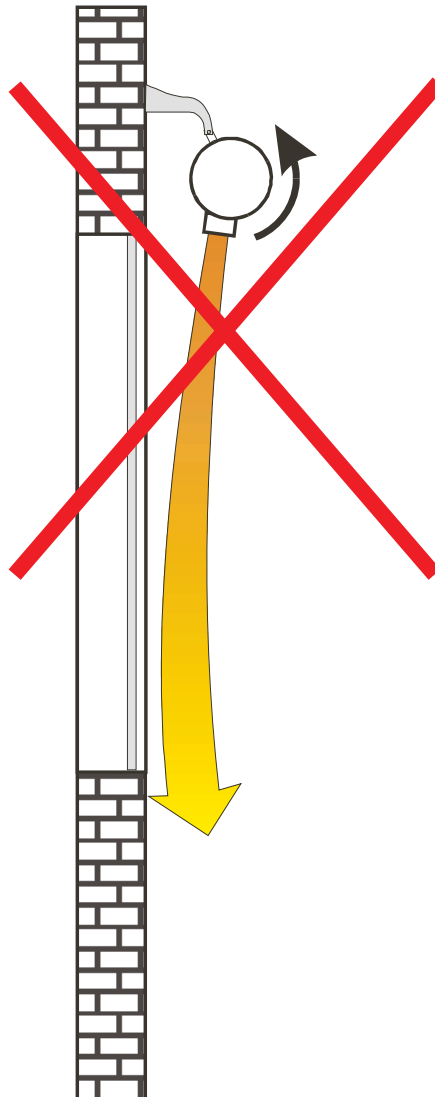
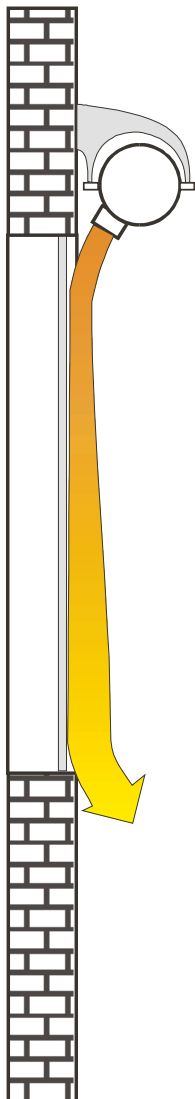


INSTALLATION

DECTRON

Where fabric duct is used, it should have a two-row support system, or have other means of preventing rotation.

Because of the necessary one-sided slots, fabric duct with a loose single-row support system tends to rotate away from the window when supply air is flowing. This allows the supply air to miss the upper part of the window.



INSTALLATION

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INSTALLATION

Installation

Ducts

Standard Practice for Ducts

RETURN DUCT

WRONG

The air will not be evenly distributed over the evaporator.

2.5 W or more

Turning Vanes

RIGHT

Always install vibration isolator. Vanes and straight length allow air to flow evenly.

RETURN DUCT

WRONG

The air will not be evenly distributed over the evaporator.

Always install vibration isolator.

Turning Vanes

RIGHT

Vanes and straight length allow air to flow evenly.

30° or more

WRONG

Air cannot follow this steep angle.

20° or less

RIGHT

Air can follow this transition.

SUPPLY DUCT

WRONG

Reduction of airflow will result from the elbow being too close.

Always install flexible duct connection.

5W or more

RIGHT

Sufficient straight length allows proper airflow. Flexible duct connection absorbs vibration.

Window set to outside

WRONG

Air cannot reach the lower part of the window.

Window set to inside

Δ Linear grills with volume control.

Δ Register with double deflection and volume control.

RIGHT

Dry air reaches all the window.

INSTALLATION

IMPORTANT!

This unit is not a convenience air conditioner - it is a process dehumidifier, which has been carefully sized to balance the required dehumidification load.

To be sure that the load will be balanced, it is essential to deliver the correct amount of air evenly distributed over the heat exchangers. Ductwork can have a marked effect on performance.

- Failure to set the airflow rates to within 10% of the specified values will result in performance reduction.
- Duct design must conform to the ASHRAE low-pressure, low-velocity duct standards. If there is a question concerning duct design, sizing, choice of materials, air velocities, or static pressures, contact your Dectron representative for assistance.
- Air velocities should be kept low to allow good air movement and low noise. Higher static pressures result in higher power requirements and increased noise. The maximum external static pressure is specified for each unit. Static pressures higher than specified may reduce airflow below the minimum acceptable value.
- Select grilles, registers, and diffusers for low static pressure loss, required throw, and specified airflow. If the unit is to be used in a natatorium, choose hardware resistant to deterioration due to chemicals in the pool enclosure.

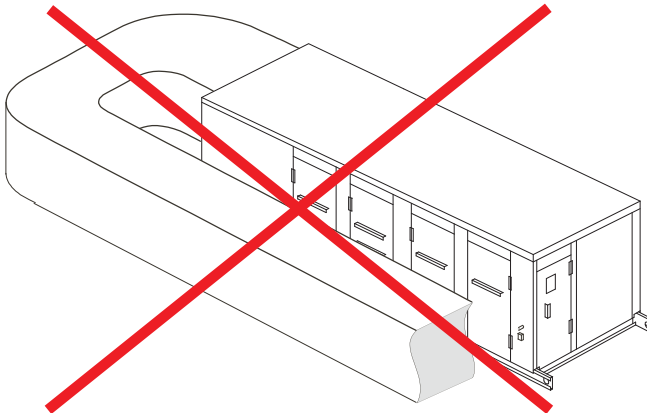
Δ Duct material

- The unit is suitable for use with any duct material, subject to the requirements of this section and standard practice. Standard galvanized steel duct is recommended. Use external duct insulation where necessary. If insulation must be used inside the ducts, use only **moisture-resistant** types.
- All elbows near the unit must be equipped with aerofoil turning vanes and acoustic insulation.
- Where located in areas below room temperature, ductwork must be insulated on the outside with 2- inch fiber glass wrap with FSK facing. All ducts must be designed to be dry. All seams must be sealed. If a below-grade duct system is used, transite or PVC-coated, round metal ductwork should be used.

Δ Flexible duct connectors

- Use flexible duct connectors to attach the ducts to the DRY-O-TRON®.
- Install the flexible duct in such a way as to prevent mechanical loads from being applied to the unit, and to prevent unit vibration from being transmitted to the ductwork.

Arrange all ducts so as to leave adequate working clearance and access to the unit. See **Lifting and Locating - Select Air Handler Location**.



INSTALLATION

Installation

Ducts

Return Duct

WARNING Risk of carbon-monoxide poisoning. Can cause death.

Never install an unducted unit in the same space with combustion equipment. The resulting low room pressure could cause flue downdrafts.

NOTICE Risk of property damage.

NOTE: Chemicals should never be stored in a plenum room, or any room containing mechanical or electrical equipment. Outdoor air should never enter a plenum room.

NOTE: Where ducts are to be insulated, use only moisture-resistant insulation. High moisture levels can cause failure of fiber adhesives.

NOTE: Do not install a duct heater in the return duct.

NOTE: Do not allow any air other than room air to enter the return duct. Do not allow outdoor air or air mixed with outdoor air to enter the return duct.

NOTE: Poor return-duct design can prevent proper dehumidification by causing uneven air distribution over the evaporator. Reduced capacity and/or equipment damage may result.

IMPORTANT!

Allow straight length in the return duct as shown.

This straight length must be the same size as the connection on the unit. There should be no elbows, transitions, offsets, or other flow interruptions closer than 2.5 X WIDTH of the return-duct opening.

If turning vanes are not used in elbows, allow a length of straight duct equal to at least 5 X WIDTH.

NOTE: For units with return-plenum boxes, the minimum straight length for the return duct is five times the lesser dimension of the return-duct connection. See **Product Description - Available Air Connections**.

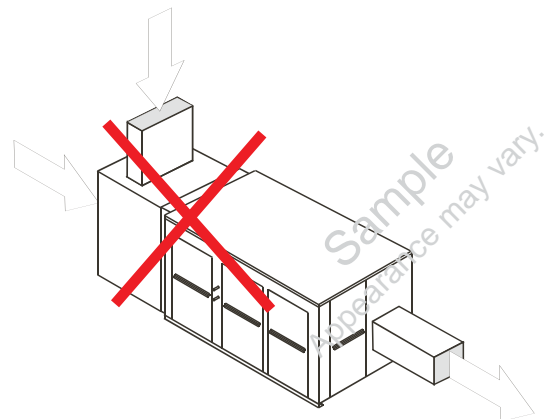
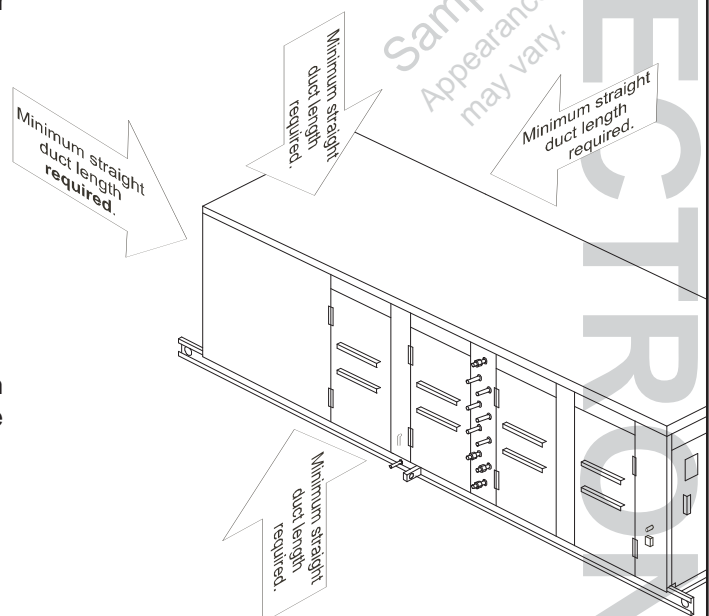
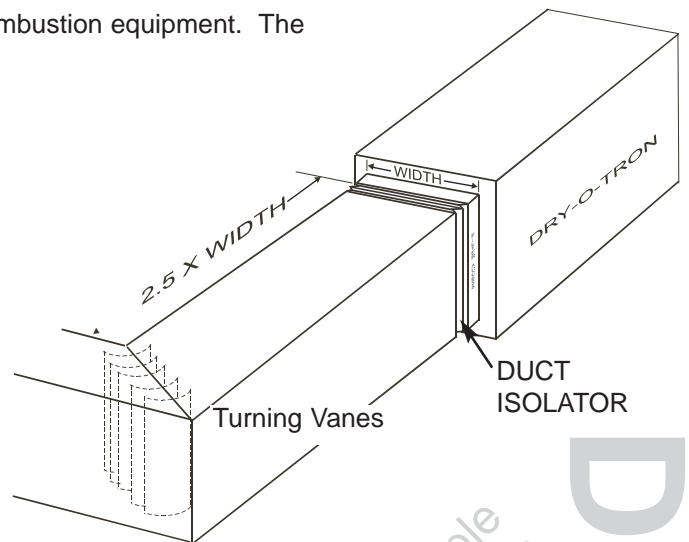
IMPORTANT!

Do not connect an outdoor-air intake to the return duct. Do not allow outdoor air to mix with return air.

IMPORTANT!

Temporarily cover the return grille with paper or plastic to prevent concrete or plaster dust from entering the return duct. This cover should be removed after all such dusts have been cleaned up and removed.

Horizontal Units



INSTALLATION

NOTICE Risk of unit damage.
Do not allow construction dusts to enter a unit.

COVER RETURN GRILLE DURING CONSTRUCTION.

IMPORTANT!

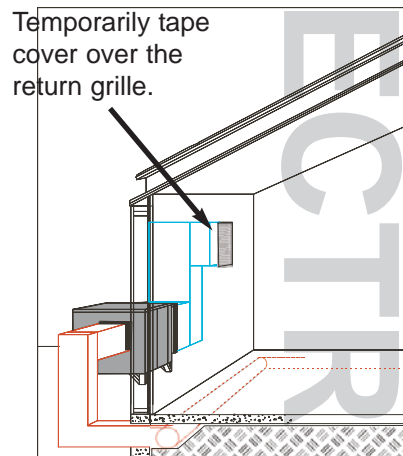
Unless the ductwork is to be installed after all construction dusts have been removed, care should be taken to prevent dust from entering the ducts, **especially the return duct**. If concrete or plaster dusts are allowed to enter the unit, they may permanently bind to the coil surfaces, reducing airflow and heat transfer. **Filters will not prevent this.**

If concrete, plaster work, or cleanup will be ongoing after the return duct is installed, tape paper or plastic sheeting over the return grille(s) to prevent dust from entering the duct. The DRY-O-TRON® **must be OFF** until all dusts are removed. Remove the cover only after all concrete and plaster work is complete and the dusts have been cleaned up and removed.

Do not operate the unit when dusts are present or while the grille cover is still in place.

Important!

Never use the DRY-O-TRON® as a construction-site dehumidifier, cooler, or heater. Do **not** operate the unit while construction dusts are present.



DRY-O-TRON

INSTALLATION

Installation

Ducts

Supply Duct

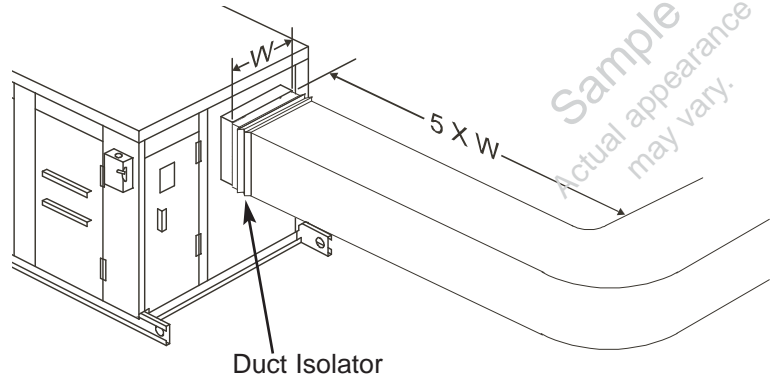
Supply Duct Near Unit

Refer to AMCA¹ guidelines for system-effect considerations.

To prevent unexpected reduction of airflow, a section of the supply duct should be full-sized and straight as it leaves the blower. This section should be straight for a distance of at least five times the blower width. There should be no elbows, transitions, offsets, duct heaters, or other flow interruptions closer than 5 X the width (W) of the blower.

NOTE: On special order, Dectron may be able to provide bottom-, top-, or side-discharge blowers, and/or reversed blower rotation. Minimum straight duct lengths still apply.

NOTE: Minimum straight supply-duct lengths are not required for units equipped with plenum blowers for supply air.



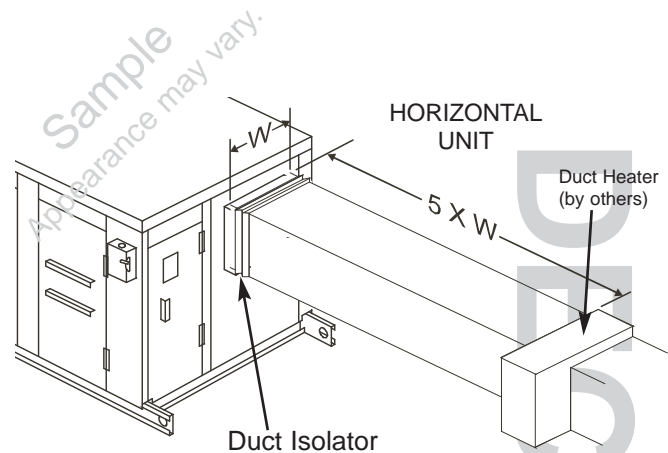
All installations should have space heat available year-round.

At some sites, the heating requirement may be met by external duct heaters (by others). To prevent hot spots and the resulting heater failures, locate the heater at least 5 times the duct width downstream from the blower, or from any airflow interruptions such as elbows and transitions.

On special order, for some models Dectron may be able to provide special close-coupled duct heaters that do not require the minimum straight length of duct. The minimum straight length before an elbow, tee, offset, transition, or other flow interruption will still apply.

NOTE: The basic DRY-O-TRON® does not produce significant heat - it recycles heat. A dedicated space heater must be ordered with the unit or must be provided by others. When ordered with the unit, the heater may be inside the cabinet.

NOTE: Building heat losses are calculated by others and consequently space heaters are sized by others. **Dectron does not select space-heater capacities.**



INSTALLATION

DECTRON

1. Air Movement and Control Association International, Inc.
30 West University Drive
Arlington Heights, Illinois 60004-1893

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INSTALLATION

Installation

Ducts

Ventilation

NOTICE Optional Equipment

Ventilation, Method 1

This ventilation method is not subject to the minimum temperatures or maximum flow rates for entering outdoor air listed elsewhere in this manual, since the outdoor air does not enter the unit. In this case, heater sizes and maximum flow rates are determined by others.

The mechanical system must ensure that adequate ventilation, including the introduction of outdoor air, is provided according to the applicable building codes. The quality of the indoor air is extremely important to ensure user comfort.

Make-up air requirements should conform to ASHRAE Standard 62.1-2004 or its latest revision.

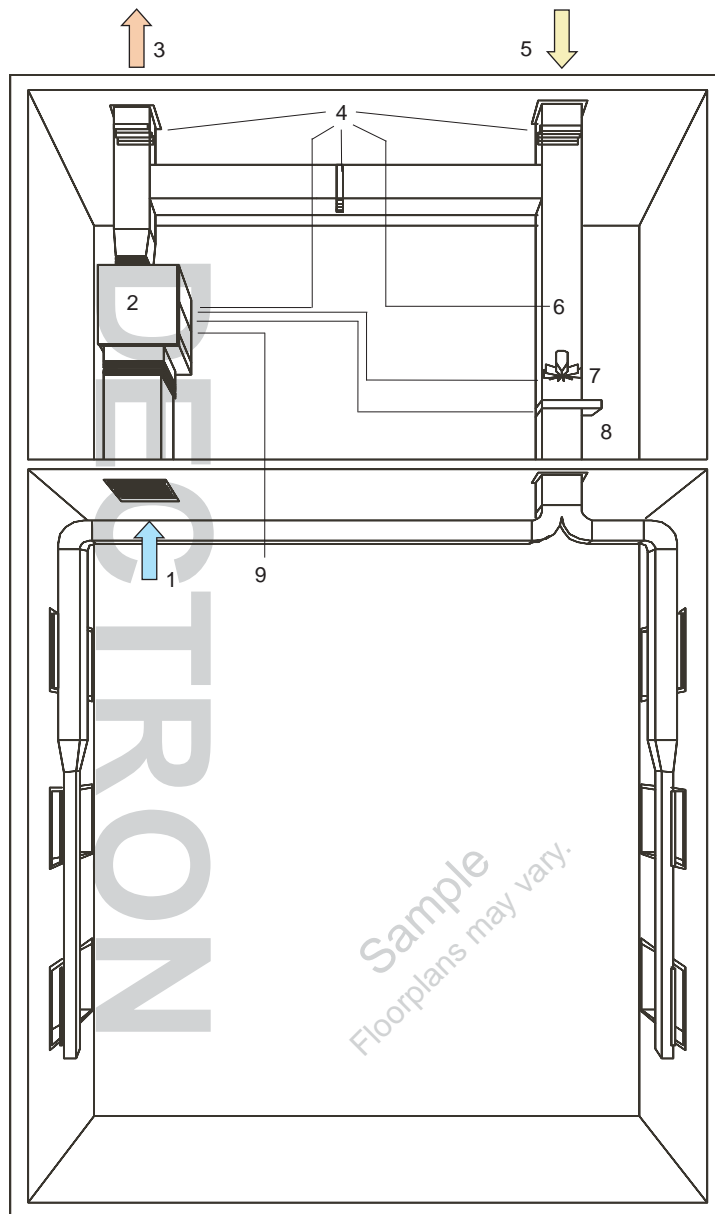
DRY-O-TRON® units are available in a number of configurations which will easily accept the introduction of controlled quantities of outdoor air. Some units are equipped with a standard make-up air intake (may ship separately) which will allow up to 15% (30% with air-conditioning option) outdoor air. Units with the economizer option come with a built-in mixing box for the introduction of up to 100% make-up air during cooling mode.

Standard units can also be used with external mixing boxes and damper arrangements. Some units may have control contacts for ventilation systems by others. Some units may have a 24VAC/80VA power supply for ventilation to operate the damper motors.

During outdoor-air ventilation modes the moisture load in the room will vary according to the outdoor air conditions.

IMPORTANT!

All outdoor air inlets must have a separate air filter.



- | | |
|---|--|
| 1. Return air | 7. Supply blower (by others) |
| 2. DRY-O-TRON® as return air blower | 8. Auxiliary space heater (by others) controlled by DRY-O-TRON® |
| 3. Exhaust air | 9. Space temperature and humidity sensed and controlled by DRY-O-TRON® |
| 4. Modulating damper control, (Sizes 080 and larger) Power supply for ventilation | |
| 5. Make-up air (provide air filters) | |
| 6. Modulating thermostat (by others) | |

Sample Floorplans may vary.

INSTALLATION

Ducting Checklist

Installation

A copy of this checklist should be left with the unit.

Supply diffusers are arranged to wash any building surface (usually exterior) that might reach dewpoint.

your initials

Duct heaters (if any, by others) are installed more than 5 duct diameters downstream from the blower, unless labeled for closer installation.

your initials

Return grille is opposite the supply diffusers.

your initials

Ducts carrying air that may go below the dew point of the surrounding air have been covered with insulation and vapor retarder.

your initials

Ducts are sized for the specified air flow rates and do not exceed maximum external pressure drops.

your initials

Any fabric duct is held by dual-rail supports or is otherwise restrained from rotating.

your initials

Minimum straight lengths of duct at full filter-box size were installed at the filter-box connection to produce even airflow across the heat exchangers, and to minimize energy losses.

your initials

Minimum straight lengths of duct at full blower-width size are installed at the blower-outlet connection to minimize system effect and other airflow problems.

your initials

Flexible duct connectors are installed between the unit and all connected ducts.

your initials

Outdoor-air is not delivered into the return-air duct.

your initials

No concrete, plaster, or other construction dusts or spills are present inside the ducts.

your initials

A paper or plastic sheet has been installed over the return grille to prevent dust from settling inside the duct.

your initials

Checklist prepared by:

Date: _____
Model No. _____
Serial No. _____
Ref. No. _____

INSTALLATION

Installation

Piping

Warnings

! WARNING**Risk of falling. Can cause injury or death.**

Depending on the size and location of this product, some installation, service, and maintenance procedures could expose personnel to the risk of injury or death by falling. Designs should include adequate service and maintenance access. Use fall-protection equipment as appropriate.

! WARNING**Risk of contamination of breathing air. Can cause injury or death.**

Unexpected release of refrigerants can contaminate breathing air. Take precautions to insure adequate clean air.

! CAUTION**Risk of frostbite. Can cause injury.**

Contact with leaking refrigerant can cause frostbite. Wear protective clothing and safety goggles.

! CAUTION**Risk of contact with sharp edges, flying chips. Can cause injury.**

Cutting of tubes can produce flying chips and sharp edges. Wear gloves, safety glasses, and other protective equipment as appropriate. Debur sharp edges after cutting.

! CAUTION**Risk of contact with hot surfaces. Can cause injury.**

Joining tubes by brazing produces hot surfaces. Wear gloves, safety glasses, and other protective equipment as appropriate. Allow parts to cool before handling.

! WARNING**Risk of explosive depressurization. Can cause injury or death.**

Do not open, cut, or heat tubes or refrigeration devices until pressure has been relieved to atmospheric pressure.

! DANGER**Risk of explosion. Can cause injury or death.**

Shielding gas for brazing should be commercial dry nitrogen, carbon dioxide (CO₂), or other non-reactive gas. **Do not use oxygen. Do not use any fuel gas.**

To prevent the build-up of pressure, remove the cores from the access valves in the condenser tubes inside the unit, and limit the flow of gas. Use only enough shielding gas to force the air out of the tubes.

NOTICE

Risk of leaking water. Can cause property damage.

This product may use circulating water under pressure.

This product requires a free-flowing drain.

Freezing or other abnormal conditions could cause leakage or overflow.

Uncontrolled water can cause expensive damage to buildings and equipment. Do not locate this product above any equipment that could be damaged by water.

NOTICE

Risk of uncontrolled condensation. Can cause property damage.

This product is intended to control relative humidity and temperatures. Improper design, installation, and/or operation can lead to uncontrolled condensation of water, with associated property damage.

Installation

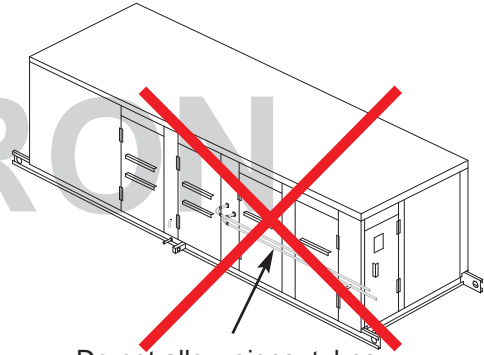
Piping

General

Required Clearances

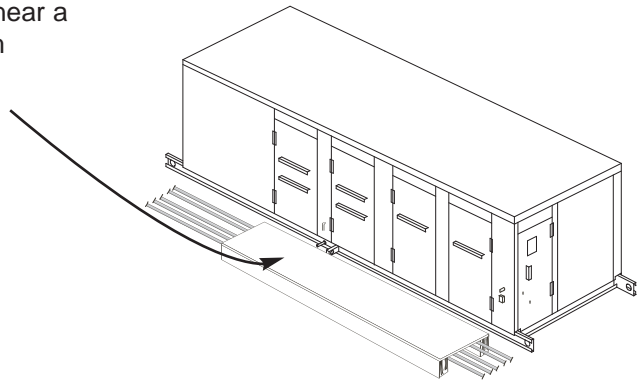
Ducts, pipes, tubes, conduits, etc., must be arranged not to obstruct access to the unit or to its internal parts. All doors and/or panels must be accessible and must be able to open to at least 90°. The minimum working clearances must be maintained. (See section **Lifting & Locating - Select Air Handler Location.**)

Unless specified for single-side access, there are access doors and/or panels on the front and back sides and for the electrical panel.



Do not allow pipes, tubes, conduits, etc., to obstruct access panels or doors.

Pipes, conduits, etc., should not be routed along the floor near a unit. Where this must be done, construct a working platform (by others) to allow access without damage.



INSTALLATION

NOTICE Optional Equipment

Special Requirements for Optional Equipment

Optional equipment may have special piping requirements.

If your unit is equipped with the optional DryCooler feature, request and refer to Dectron OM Appendix M1 - DryCooler.

If your unit is equipped with the optional Heatco gas furnace, request and refer to Dectron OM Appendix H2 - HTCO Furnace.

If your unit is equipped with the optional TEGA gas furnace, request and refer to Dectron OM Appendix H9 - TEGA Furnace.

If your unit is equipped with an optional Raypak Hi-Delta gas boiler (models 122-322), request and refer to Dectron OM Appendix H6 - Raypak 1000.53E HiDelta Boilers 122-322.

If your unit is equipped with an optional Raypak Hi-Delta gas boiler (models 302B - 902B), request and refer to Dectron OM Appendix H7 - Raypak 1000.501C HiDelta Boilers 302B-902B.

If your unit is equipped with an optional Raypak Hi-Delta gas boiler (models 992B-2342B), request and refer to Dectron OM Appendix H8 - Raypak 1000.511B HiDelta boilers 992B-2342B.

Refrigerant

Piping

Installation

! WARNING

Risk of frostbite, contamination of breathing air, and suffocation. Can cause injury or death.

Installation of this product may involve an extension (by others) of one or more relief-valve outlet tubes. Check with the local code-enforcement authority for requirements. Where required, follow these instructions and those in the applicable codes.

! WARNING

Risk of explosive depressurization. Can cause injury or death.
Do not heat relief valves.

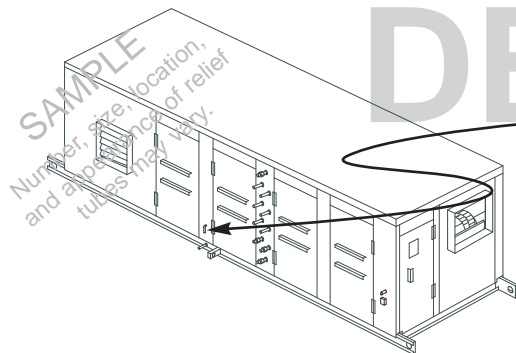
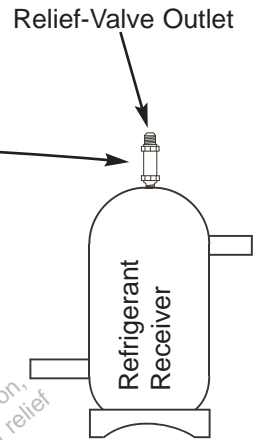
NOTICE Optional Equipment

RELIEF TUBE

Some units have refrigerant-relief valves that open to control pressures in the event of a critical emergency.

Where this is the case, some smaller units may not have relief-valve outlet tubes and thus may deliver refrigerant to the interior of the unit. Should it be necessary to add relief-valve outlet tubes, use tubing at least as large as the outlet size of the relief valve.

In other units, relief valves may be equipped with outlet tubes that deliver any expelled refrigerant to a point outside the unit cabinet. The end of the outlet tube is usually located low on the cabinet and is bent downward to prevent the entry of foreign materials. There may be more than one such relief tube.



In some cases where units are installed indoors, the relief-valve outlet tube may be required to be extended outdoors. Consult the local code-enforcement authorities.

Ex: Note the total refrigerant charge given on the unit nameplate.

If the refrigerant quantity exceeds the allowable amount for the space, the relief-valve outlet tube may have to be extended.

In this case, the extension tube should not be smaller than the original relief tube. There may be other requirements for sizing the relief-tube extension. Consult relevant codes and your local code-enforcement authorities.

The relief tube should terminate at a point at least 15 feet (4.6 m) above grade and at least 20 feet (6.1 m) from any window, exit, air intake, or ventilation opening. The end of the relief tube should be protected from clogging by insects, insect nests, or other foreign materials. There may be other requirements for terminating the tube.

Consult your local codes or your local code-enforcement authorities for relief-tube extension requirements. Where codes, ordinances, and the findings of your local code-enforcement authorities are more restrictive than these recommendations, the codes, ordinances, and official findings take precedence over these recommendations.

INSTALLATION

UNITS WITH AIR-COOLED AIR CONDITIONING ONLY REMOVING TUBE CAPS

NOTICE **Optional Equipment.** Where an air-cooled condenser is present, follow the instructions in this manual and in all applicable codes.

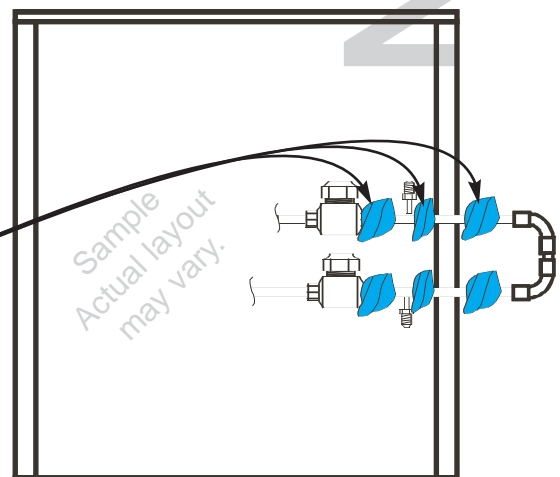
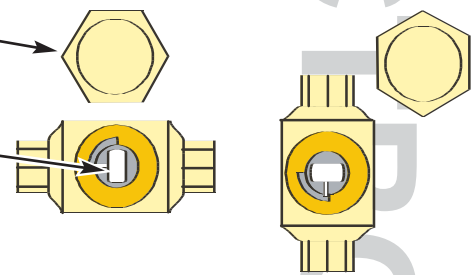
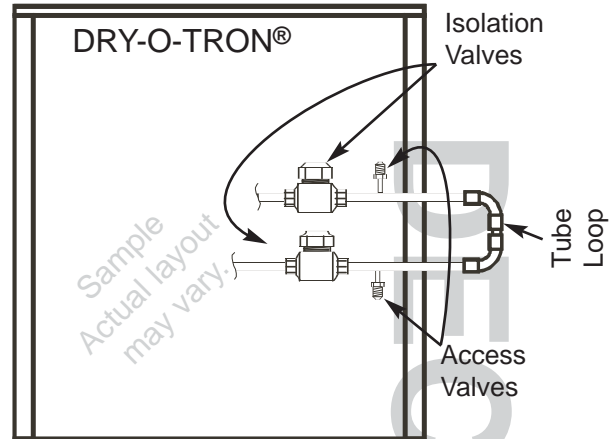
Units with the air-cooled air-conditioning option ship with a tube loop protruding from the unit cabinet.

NOTE: Some units may have several pairs of tubes to be connected to the remote condenser(s). Only one pair is shown here.

NOTE: It is important to identify the correct tubes for the circuit. Labels are applied to the cabinet to identify the tubes. Do not cross the circuits.

To remove the tube loop follow these steps:

1. Open the appropriate access door or panel.
2. Locate the isolation valves for the tubes. Remove the valve caps by unscrewing them. Retain the caps and any cap gaskets or O-rings.
3. Be sure the isolation valves are closed. The stem flats should be at right angles to the tube.
4. Locate the access valves for the tubes. (See above.)
5. Remove and retain the access-valve caps and any O-rings.
6. Check that there is no pressure inside the tube loop. If there is pressure it may be necessary to reclaim the contents. The contents may be refrigerant mixed with air, and thus may not be suitable for re-use.
7. Remove and retain the access-valve cores.
8. Remove the tube loop with a tube cutter. To prevent metal chips getting inside the tube, do not use a saw. If the tube-loop elbows are to be heated for removal, the tube grommets, access valves, and isolation valves must be protected from heat by wrapping the tubes with wet towels or by applying a commercial heat-trapping compound.



INSTALLATION

**UNITS WITH AIR-COOLED AIR CONDITIONING ONLY
ASSEMBLING CONDENSER TUBES**

NOTICE Optional Equipment

NOTICE Risk of property damage. Where remote condenser is present, follow the instructions in this manual and in all applicable codes.

IMPORTANT:

Contact Dectron before exceeding the maximum tube length specified on the unit nameplate. Contact Dectron before changing the tube size specified on the unit nameplate. (See Product Description - Unit Nameplate.)

IMPORTANT (R-410A units):

Where the specified tube O.D. is larger than 7/8", applicable codes may require Type K tube. Consult your local code-enforcement office.

IMPORTANT:

Use only clean copper tube. Never allow dirt, water, or other

foreign materials to enter the remote condenser or the tubes connecting it to the DRY-O-TRON®. Foreign material may damage valves and other components.

If the insides of the tubes are contaminated with dirt, oil, sludge, rust, or other materials, then they must be thoroughly cleaned or replaced.

IMPORTANT:

Never allow liquid water to enter the remote condenser or the tubes connecting it.

Water must be removed from the remote condenser and the tubes that connect it to the DRY-

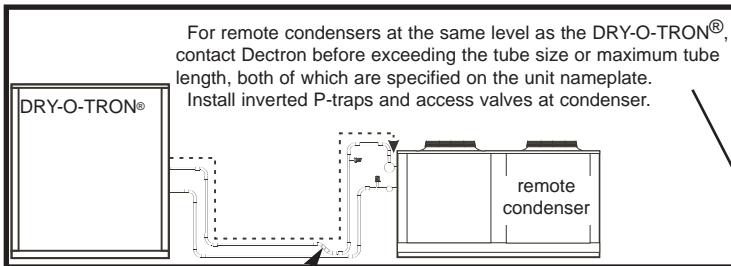
O-TRON®. Evacuation will take much longer if liquid water is present.

Vertical-lift hot-gas tubes should be segmented into lifts of not more than 20 feet (9 m) with P-traps between each segment. The total lift for one hot-gas tube should not exceed 50 feet (15 m).

Note: Some DRY-O-TRON® units may have several pairs of tubes to the remote condenser.

Further piping details are discussed on following pages.

Brazing requirements are discussed on a following page.



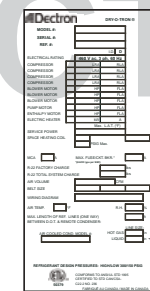
Whenever hot-gas tubes go upward for more than 3 feet (1 m), install a P-trap at the bottom.

Some DRY-O-TRON® units may have several pairs of tubes to the remote condenser. Only one pair of tubes is shown here.

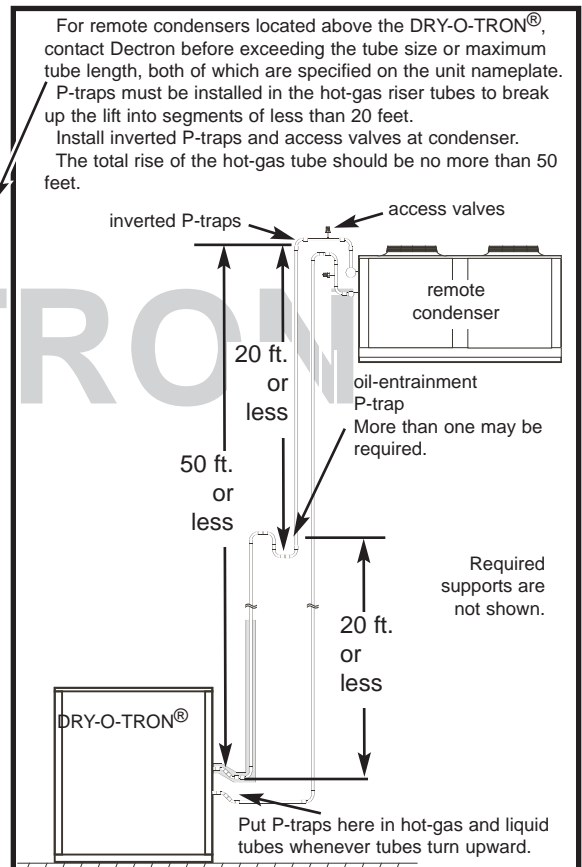
Horizontal tube runs should slope downward in the direction of flow at least 1/4" per 10 ft. (0.2cm/m).

All tubes, pipes, conduits, etc., must be separately supported by others. Do not apply a torque or axial load to the unit tube connections.

Contact Dectron for remote condensers located below the DRY-O-TRON®.



See Product Description - Unit Nameplate



INSTALLATION

**UNITS WITH AIR-COOLED AIR CONDITIONING ONLY
ASSEMBLING CONDENSER TUBES**

NOTICE **Optional Equipment.** Where an air-cooled condenser(s) is present, follow the instructions in this manual and in all applicable codes.

BRAZING

Brazing tubes while they contain air will produce damaging copper-oxide scale inside the tube.

Before beginning to braze tubes, set up an arrangement like the one illustrated below. A small flow of shielding gas will purge the air out of the tubes, and protect them from scaling.

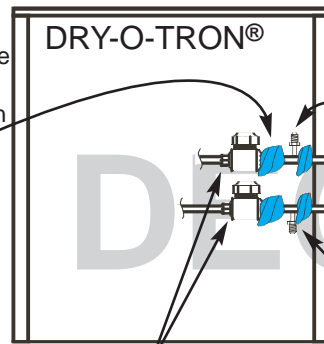
! DANGER

Risk of explosion. Can cause injury or death.

The shielding gas should be commercial dry nitrogen, carbon dioxide (CO₂), or other non-reactive gas. **Do not use oxygen. Do not use any fuel gas.** To prevent the build-up of pressure, remove the cores from the access valves in the condenser tubes, and limit the flow of gas. Use only enough shielding gas to force the air out of the tubes.

Use commercial dry nitrogen, carbon dioxide, or other dry inert gas.

**WARNING: DO NOT USE OXYGEN.
DO NOT USE ANY FUEL GAS.**



Required supports are not shown.

Protect the condenser manifolds from brazing heat by wrapping tubes with wet towels, or by coating with a commercial heat-trapping compound.

Before starting flow of shielding gas, remove and retain the cores from these access valves.

Isolation valves should remain closed.

Protect the tube grommets and the internal valves from brazing heat by wrapping tubes and valves with wet towels, or by coating with a commercial heat-trapping compound.

NOTE: Some DRY-O-TRON® units may have several pairs of tubes to the remote condenser. Only one pair of tubes is shown here.

! CAUTION

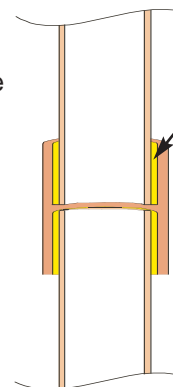
Risk of contact with hot surfaces. Can cause injury.

Joining tubes by brazing produces hot surfaces. Wear gloves, safety glasses, and other protective equipment as appropriate. Allow parts to cool before handling.

Beginning at the joints nearest the shield-gas fill point, braze the copper tube joints using an AWS¹ BCuP filler.

If flux must be used, use only enough flux to braze. Excess flux can contaminate the refrigeration system and damage components.

When brazing is complete, stop the flow of shield gas and replace the cores and caps of all access valves.



IMPORTANT:

Check carefully for leaks.

1. American Welding Society
550 N.W. LeJeune Road
Miami, Florida 33126
USA
www.aws.org

INSTALLATION

Refrigerant

Piping

Installation

UNITS WITH AIR-COOLED AIR CONDITIONING ONLY
EVACUATION AND REFRIGERANT CHARGING

NOTICE **Optional Equipment.** Where an air-cooled condenser is present, follow the instructions in this manual and in all applicable codes.

IMPORTANT:
Check for leaks before attempting to evacuate the condenser and tubes.

IMPORTANT:
Some DRY-O-TRON® units may have several pairs of tubes to the remote condenser. Each pair must be evacuated and charged independently.

- (1) Set up an arrangement like the one shown below, with vacuum pump, electronic vacuum gauge, refrigerant, and refrigerant scale, all by others.
- (2) Using core-removal adapters, (by others) temporarily remove the access-valve cores.
- (3) Evacuate the condenser and tubes.

IMPORTANT:
The remote condenser and the tubes connecting it to the DRY-O-TRON® must be evacuated to a pressure below 250 microns of mercury as measured by an electronic vacuum gauge.

Compound gauges as found on refrigeration manifolds are not adequate. Do not attempt to use a manifold compound gauge to determine evacuation pressure.

To insure a correct reading, install the electronic vacuum gauge far away from the vacuum pump.

- After proper evacuation:
- (4) Weighing the amount added, break the vacuum with as much liquid refrigerant as possible.
 - (5) Open the condenser isolation valves (2 per circuit) located inside the DRY-O-TRON®. (See next page.)

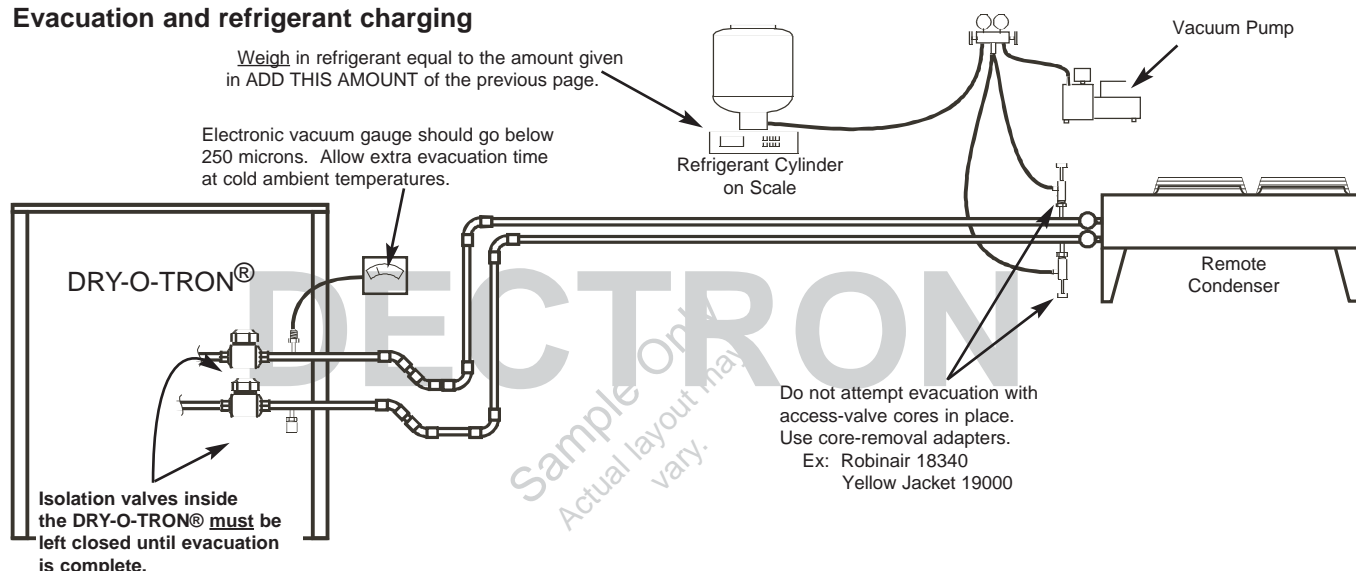
CAUTION: Once these valves have been opened, they should not be closed again unless 1 pound (500g) of refrigerant is reclaimed from the condenser and into the receiver (or the pressure is reduced below 10 PSIG (69kPa)) immediately after closing the valves.

- (6) Locate and open the refrigerant-receiver isolation valves (2 per circuit). (See next page.)

CAUTION: Once these valves have been opened, they should not be closed again unless 1/2 pound (250g) of refrigerant is reclaimed from the filter-drier and into the receiver (or the pressure is reduced below 10 PSIG (69 kPa)) immediately after closing the valves.

- (7) Pump refrigerant into the remote condenser access valves until the entire weight given in **BOX E** of the preceding page has been added. If necessary, a refrigerant pump or a refrigerant-recovery machine may help.
- (8) Replace valve cores.

Evacuation and refrigerant charging



INSTALLATION

Installation

Piping

Refrigerant

UNITS WITH AIR-COOLED AIR CONDITIONING ONLY
OPENING ISOLATION VALVES

NOTICE **Optional Equipment.** Where an air-cooled condenser is present, follow the instructions in this manual and in all applicable codes.

NOTE: Some units may have several pairs of tubes to be connected to the remote condenser(s). Only one pair is shown here.

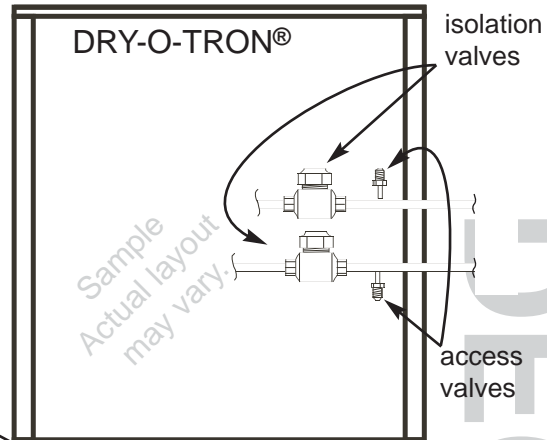
NOTE: It is important to identify the correct tubes for the circuit. Labels are applied to the cabinet to identify the tubes. Do not open the wrong valves.

NOTE: Some valves may have a tag marked "DO NOT ADJUST". Do **NOT** adjust any such valves.

To open the isolation valves, follow these steps:

1. Open the appropriate access door or panel.
2. Locate the isolation valves for the tubes. Remove the valve caps by unscrewing them. Retain the caps and seals.

NOTE: Some isolation valves may have dowel pins and stops to limit their range of movement. Where this is the case, be careful to turn the valve stem only 90° in the proper direction.



WARNING Risk of explosive depressurization. Can cause injury or death.

Once these valves have been opened, they should **not** be closed again unless 1 pound (500g) of refrigerant is reclaimed from the condenser immediately after closing the valves.

3. Open the isolation valves by turning the valve stems 90° in the proper direction.
4. Locate the receiver(s) for the circuit.

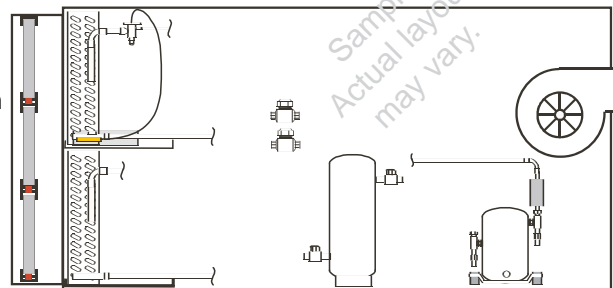
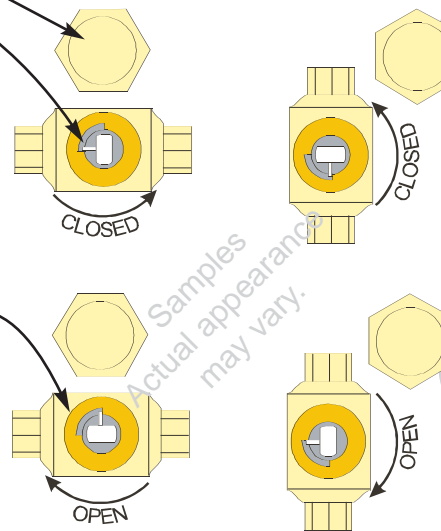
NOTE: Some units have two or more circuits, each of which may have one or more receivers. It is important to identify the correct receiver(s).

WARNING Risk of explosive depressurization. Can cause injury or death.

Once these valves have been opened, they should **not** be closed again unless 1/2 pound (250g) of refrigerant is reclaimed from the filter-drier immediately after closing the valves.

5. Open the receiver-inlet and receiver-outlet valves, as shown in step 3.

CAUTION: Once these valves have been opened, they should **not** be closed again unless 1/2 pound (250g) of refrigerant is reclaimed from the filter-drier immediately after closing the valves.



The refrigeration circuit is now open to the remote condenser.

INSTALLATION

Refrigerant

Piping

Installation

UNITS WITH AIR-COOLED AIR CONDITIONING ONLY
ADDING PRE-DETERMINED AMOUNT OF OIL

NOTE: If a pre-determined amount of oil was not specified by Dectron, skip this page.

NOTICE Optional Equipment. Where an air-cooled condenser is present, follow the instructions in this manual and in all applicable codes.

! WARNING

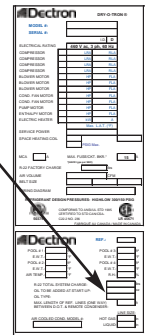
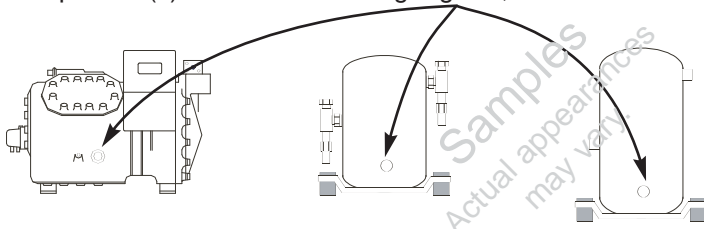


Risk of flying liquids, gases, particles. Can cause eye injury.

This task may involve risk of exposure to flying materials which can cause eye injury. Always wear protective safety glasses or goggles, as appropriate.

Examine the compressor(s).

If the compressor(s) has an oil-level sight glass, then there will be no pre-determined amount of oil to add at startup.



If the compressor(s) does **not** have an oil-level sight glass, then the unit nameplate will have a predetermined amount of oil to add at startup. Copy that amount into the box at right.

OIL TO BE ADDED
[Empty box for recording oil amount]

INSTALLATION

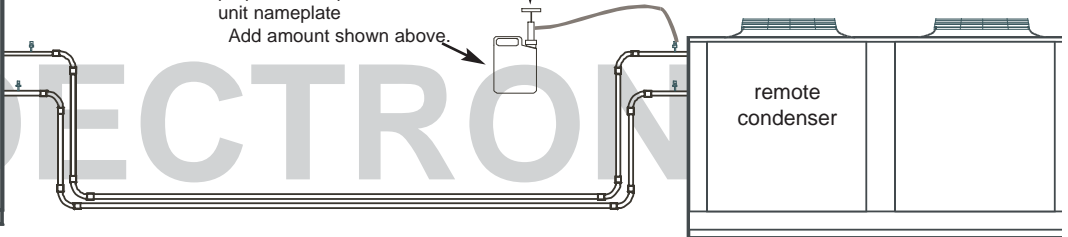
Oil can be added with a pump after refrigerant has been added.

oil pump
Ex: Robinair 14388
Nu-Calgon 4814-0

proper oil as specified on unit nameplate
Add amount shown above.



Shut-off valves inside the DRY-O-TRON® must be left closed until condenser pressure is above atmospheric.



remote condenser

Installation

Refrigerant-Piping Checklist

NOTICE Optional Equipment. Where an air-cooled condenser is present, inspect and verify these conditions.

Leave a copy of the checklist with the unit.

All pipes and tubes (by others) are arranged so as not to block service access to the unit.

your initials

During brazing, valves were protected from overheating by wrapping with wet towels or by other means.

your initials

For units with air-cooled air conditioning, the maximum external tube length specified on the unit nameplate has not been exceeded.

your initials

During brazing, adequate heat was applied to allow the brazing filler to penetrate all joints completely.

your initials

For units with air-cooled air conditioning, the tube sizes specified on the unit nameplate were used to connect the unit to the remote condenser.

your initials

For units with air-cooled air conditioning, the hot-gas tube(s) have been insulated as appropriate to prevent accidental contact.

your initials

For units with air-cooled air conditioning, the remote condenser is not located below the DRY-O-TRON®, unless Dectron has been consulted.

your initials

For units with air cooled air conditioning, the remote condenser and the connecting tubes were evacuated to a pressure below 250 microns of mercury, as measured by an electronic micron-level vacuum gauge.

your initials

P-traps have been provided (by others) at the specified locations.

your initials

For units with air-cooled air conditioning, the condenser isolation valves have been opened.

your initials

All refrigerant tubes (by others) have been sloped downward in the direction of flow.

your initials

For units with air-cooled air conditioning, the correct amount and type of refrigerant has been added.

your initials

All refrigerant tubes (by others) are supported (by others) so as not to apply any torque or axial loads on the DRY-O-TRON® or on the remote condenser, if any.

your initials

For units with air-cooled air conditioning, any specified amount of oil has been added.

your initials

Where refrigerant tubes penetrate a building surface, P-traps (by others) have been provided to prevent condensation or icing inside the building.

your initials

During brazing, the interiors of refrigerant tubes were protected by flooding with an inert gas.

your initials

Date: _____
Model No. _____
Serial No. _____
Ref. No. _____

Checklist prepared by: _____

INSTALLATION

Water- or Fluid-Cooled A/C Piping Installation

UNITS WITH WATER-COOLED OR FLUID-COOLED AIR CONDITIONING ONLY
FLOW-SWITCH INSTALLATION

NOTICE **Optional Equipment.** Where the unit has water-cooled air conditioning, follow the instructions in this manual and in all applicable codes.

NOTE: Some units may be provided with a DryCooler. In this case, refer to Appendix M1.

IMPORTANT:
Contact Dectron before changing the temperature range or flow rate of the water or fluid. (See Product Description - Unit Nameplate.)

IMPORTANT:
Never allow dirt or other foreign materials to enter the tubes connecting to the DRY-O-TRON®. Foreign material may cause damage to valves and other components.
If the insides of the tubes are contaminated with dirt, oil, sludge, rust, or other materials, then the pipes must be thoroughly cleaned.

Where connection must be made to metal tube other than copper tube, install a dielectric union between the different tubes to reduce corrosion.

Where flux must be used, use only enough flux to solder. Excess flux can contaminate the heat transfer fluid.

IMPORTANT:
Constant water or fluid flow is essential. All pumps, cooling towers, fans, etc., involved in cooling the water or fluid must be enabled whenever the DRY-O-TRON® is operational. Do not allow a timer or other device to inhibit operation at any time the DRY-O-TRON® is operational.

IMPORTANT:
Cooling water must be protected from freezing if the water flow could be interrupted during low ambient temperatures.

IMPORTANT:
If a fluid other than water is used for condenser cooling, use only the type and concentration specified on the unit nameplate. (See Product Description - Unit Nameplate.)

Water or Fluid Flow Switch
The flow switch (see field wiring diagram) must be installed. See details below and on following pages.

NOTE: The maximum fluid pressure should not exceed 140 PSI (0.98 MPa).

NOTE: Refer to information shipped with flow switch.

INSTALLATION

Pre-Assembly of Flow Switch

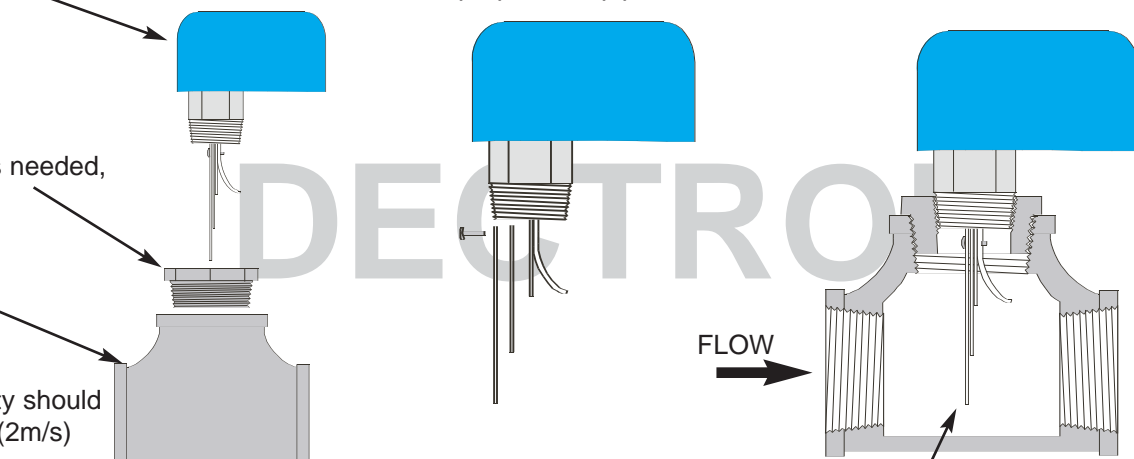
Flow switch (supplied by Dectron, may require installation by others)

Bushing, as needed, by others

Pipe Tee, by others

Flow velocity should be 6.5 ft/s (2m/s) or less.

Flow switch has three paddles, two of which can be removed, as needed, for proper fit in pipe tee.



Bottom of flow-switch paddle must have adequate clearance for smooth operation.

Installation Piping Water- or Fluid-Cooled A/C

UNITS WITH WATER-COOLED OR FLUID-COOLED AIR CONDITIONING ONLY

NOTICE **Optional Equipment.** Where the unit has water-cooled air conditioning, follow the instructions in this manual and in all applicable codes.

All tubes, pipes, conduits, etc., must be separately supported by others. Do not apply a torque or axial load to the unit tube connections.

Water-flow switch (supplied by Dectron, installed by others) screws 1/2" (12 cm) into a pipe tee (by others).

NOTE: The switch may be factory installed, in which case no installation is needed.

NOTE: Pipe locations may vary. See labels on unit.

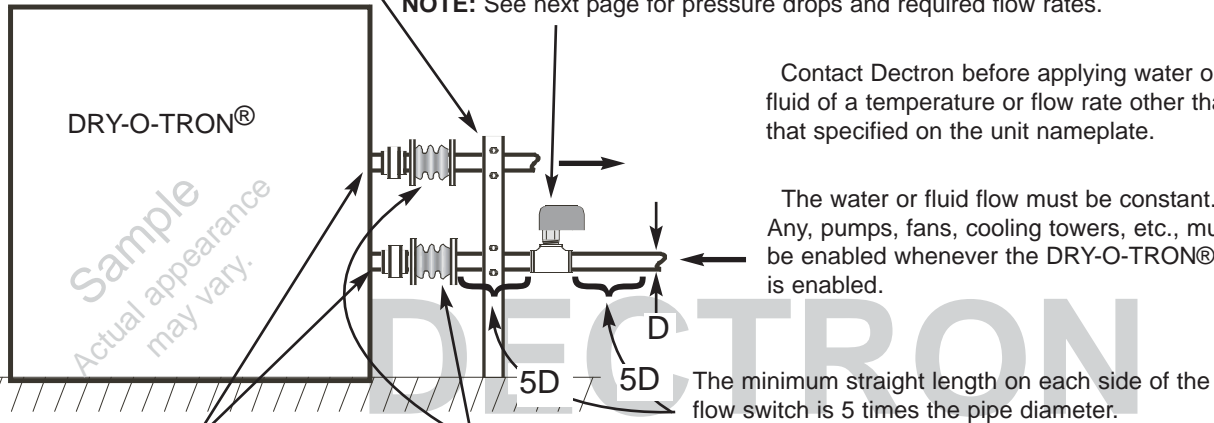
NOTE: Directional arrow on flowswitch body must correspond to direction of flow.

NOTE: When testing for leaks, do not apply more than 140 PSI to the flow switch.

NOTE: See next page for pressure drops and required flow rates.

Contact Dectron before applying water or fluid of a temperature or flow rate other than that specified on the unit nameplate.

The water or fluid flow must be constant. Any pumps, fans, cooling towers, etc., must be enabled whenever the DRY-O-TRON® unit is enabled.



The minimum straight length on each side of the flow switch is 5 times the pipe diameter.

Port locations may vary. See the unit port labels: WATER IN WATER OUT

Install flexible connectors to prevent the application of torques or axial loads to the DRY-O-TRON® connections.

INSTALLATION

NOTE: See next page for required flows.

NOTE: Installing the flow switch in a pipe that is not horizontal may change the expected set point ranges.

NOTE: Installing the flow switch other than paddles-down may change the expected set point ranges.

Pipe NPT	Paddle	Min. Adjust.		Max. Adjust.		Max. Flow	
		GPM	L/min	GPM	L/min	GPM	L/min
1"	1	4.8	18	11.9	45	19	72
1¼	1	44	43	26	100	31	120
1½	1	17	63	35	135	43	163
2	1+2	13	50	39	150	69	264
	1	40	151	58	220	69	264
2½	1+2	28	105	93	355	114	432
	1	94	356	95	360	114	432
3	1+2+3	27	100	59	225	161	612
	1+2	60	226	127	480	161	612
	1	127	481	134	510	161	612
4	1+2+3	53	200	101	385	276	1044
	1+2	102	386	216	820	276	1044
	1	217	821	230	870	276	1044
5	1+2+3	93	350	157	594	426	1613
	1+2	157	595	334	1265	426	1613
	1	334	1266	355	1342	426	1613
6	1+2+3	140	530	221	836	599	2268
	1+2	221	837	470	1780	599	2268
	1	471	1781	499	1890	599	2268

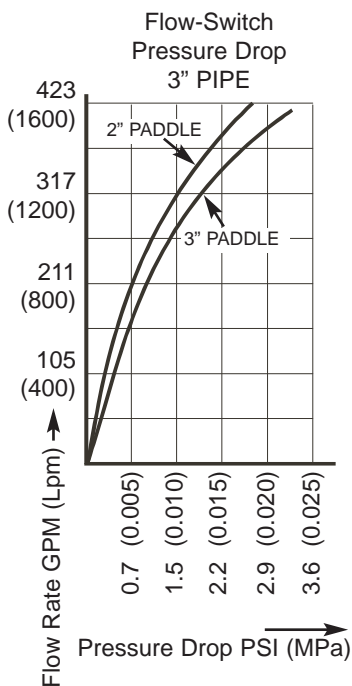
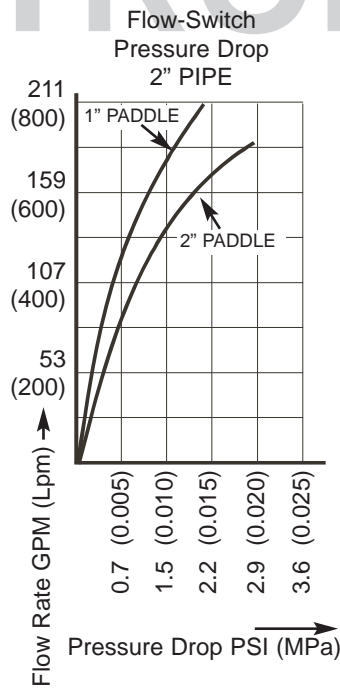
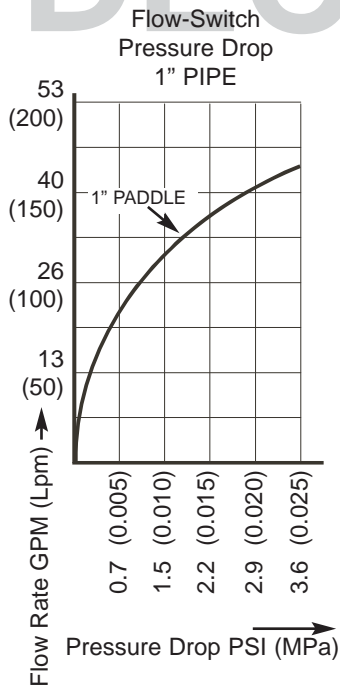
Water- or Fluid-Cooled A/C

Piping

Installation

UNITS WITH WATER-COOLED OR FLUID-COOLED AIR CONDITIONING ONLY

NOTICE **Optional Equipment.** Where the unit has water-cooled air conditioning, follow the instructions in this manual and in all applicable codes.



CONDENSER-WATER FLOW (water-cooled air-conditioning units only)

Units with optional water-cooled air conditioning must have a constant flow of fluid of the correct temperature.

Unit Size	Flow GPM (Lpm) Water @ 90°F (32°C) Co-axial condenser
007	6 (23)
016	8.5 (32)
024	15 (57)
035	20 (76)
045	20 (76)
054	30 (114)
070	40 (151)

DryCooler FLUID FLOW (DryCooler-option only)

Units with DryCooler-cooled air conditioning must have a flow of fluid of the correct temperature.

Other requirements apply. Refer to [Appendix M1](#).

Unit Size	Flow GPM (Lpm) 50% Eth. Glycol Solution @ 110°F (43°C) Brazed-plate condenser
007	
016	8 (30)
024	10 (38)
035	15 (57)
045	20 (76)
054	20 (76)
070	30 (114)

INSTALLATION

Installation

Piping

Heating

WATER-HEATED, GLYCOL-HEATED, OR STEAM-HEATED UNITS ONLY

NOTICE **Optional Equipment.** Where the unit has water-cooled air conditioning, follow the instructions in this manual and in all applicable codes.

NOTE: Unless otherwise noted, rated heating capacity with hot-water or glycol heat exchangers requires the fluid temperature to be between 160°F (71°C) and 180°F (82°C). Flow rates should be within of the amount specified in the unit submittal.

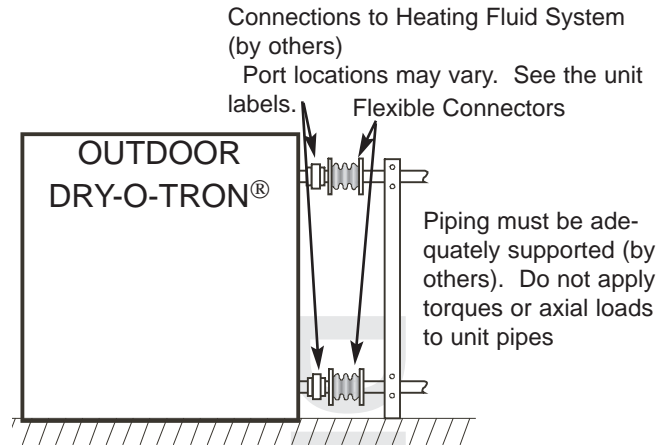
Connect the heating-fluid tubes between the DRY-O-TRON® unit and the hot-fluid source. Where connection must be made to metal tube other than copper tube, install a dielectric union between the different tubes to reduce corrosion.

All tubes, pipes, conduits, etc., must be separately supported by others. Do not apply a torque or axial load to the unit tube connections.

For units heated by glycol solution do not use galvanized pipe or tube.

Where copper tubes are soft-soldered, use only enough flux to solder. Excess flux can contaminate the heat-transfer fluid.

Where copper tubes are silver brazed, the inside of the tube must be protected from oxidation during brazing by flooding the tube with an inert gas such as nitrogen, argon, or carbon dioxide.



INSTALLATION

! DANGER

Risk of explosion. Can cause injury or death.

The shielding gas should be commercial dry nitrogen, carbon dioxide (CO₂), or other non-reactive gas. **Do not use oxygen. Do not use any fuel gas.**

! CAUTION

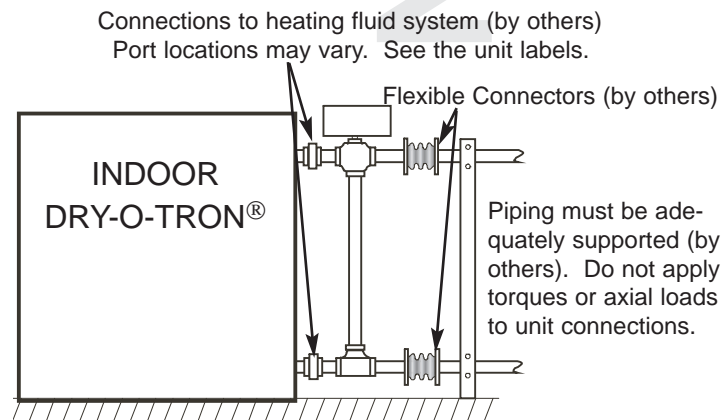
Risk of contact with hot surfaces. Can cause injury.

Joining tubes by brazing produces hot surfaces. Wear gloves, safety glasses, and other protective equipment as appropriate. Allow parts to cool before handling.

Indoor DRY-O-TRON® units with integral steam or hot water heating have external valves (supplied by Dectron, installed by others). Install and connect this valve with its accompanying tube assembly as shown.

IMPORTANT!

See Installation - Wiring - Heating Valve for proper methods of wiring this valve.



Condensate Drain

Piping

Installation

NOTICE Risk of leaking water. Can cause property damage.

This product requires a free-flowing drain.

Freezing or other abnormal conditions could cause leakage or overflow.

Important!

The condensate drain must be installed and the P-trap must be filled before starting the unit.

Δ Select materials

Ordinary schedule 40 PVC or ABS plastic pipe is adequate in most cases. Do not reduce the pipe size below that provided on the unit.

Δ Install P-trap

For horizontal units, an adequate P-trap must be installed. If a P-trap is provided with the unit, use it. If one is not provided, use the recommended size P-trap. The P-trap must be sized for negative 1.5 inch water column pressure (or lower) in the DRY-O-TRON® cabinet.

For long runs or possible unintentional traps, a vent on the outlet side of the P-trap may be necessary. Follow standard procedures.

Δ Route drain pipe

Route the drain pipe so that the only trap is the P-trap. In horizontal runs, slope the pipe downward at least 1/4" per foot (2 cm per meter).

Deliver the condensate to a suitable non-freezing point. Where installed for a natatorium, condensate may be returned to the pool for water savings, or it may be sent to a drain. Check local codes for allowable procedures. Expect many gallons of water per hour, year-round.

Δ Pipe Support

All tubes, pipes, conduits, etc., must be separately supported by others. Do not apply a torque or axial load to the unit tube stubs.

Δ Fill P-trap

To prevent air from being drawn through the condensate drain pipe, the P-trap must be filled with water before starting the unit blowers. Failure to do this will cause the drain pan to overflow during operation.

Δ Condensate pump

If a condensate pump must be used, be sure it has enough pressure and volume capability. If the condensate is to be delivered to a pipe that might be pressurized above atmospheric pressure, install a check valve to prevent backflow.

Some DRY-O-TRON® units have bottom condensate drains. Bottom-drain arrangements may have to be made before the unit is placed.

NOTE: Units with the gas furnace option may have more than one condensate drain. Refer to appendices H2 or H9.

NOTE: The unit can be expected to operate year-round. Depending on conditions, bottom drains may have to be protected against freezing.

NOTE: Any required drain vents may not be shown here.

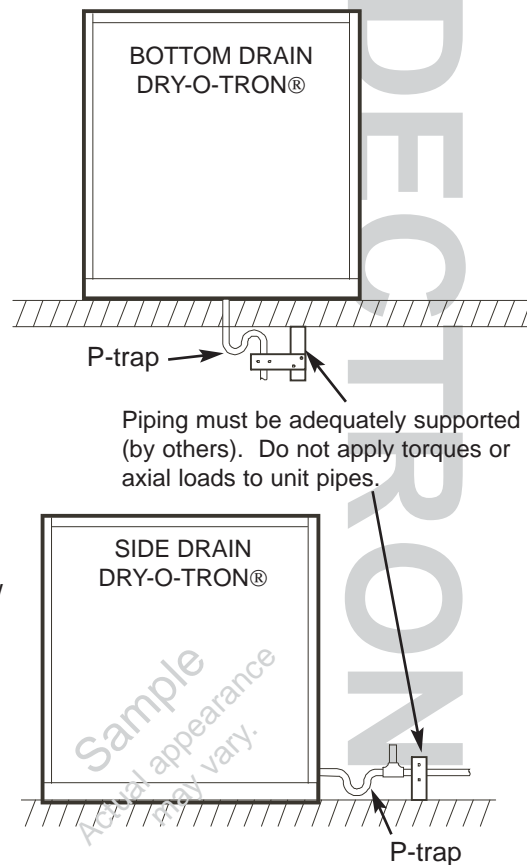
Some DRY-O-TRON® units have side condensate drains. Use the same pipe materials and methods used for bottom condensate drains.

NOTE: Since the unit operates year-round, side drains on outdoor units must be protected against freezing where freezing is possible. This may require heat-tracing and insulation. Condensate must be delivered to a non-freezing point.

NOTE: For locations that may experience outdoor temperatures below freezing, select a non-freezing point of discharge for condensate since the unit operates year round. Even the smallest units will release hundreds of pounds of condensate per day.

Where outdoor temperatures below freezing may occur, releasing condensate onto a roof is not recommended.

NOTE: Any required drain vents may not be shown here.



INSTALLATION

Installation

Water / Fluid Piping Checklist

A copy of this checklist should be left with the unit.

For units with water-cooled or fluid-cooled air conditioning, exclusive of units with the optional DryCooler,

- a) confirm that the flowswitch (supplied by Dectron, installed by others) has been properly installed.
- b) confirm that the tubes have been properly installed and supported so as not to apply a torque or axial load to the unit tube stubs.
- c) confirm that the pipes, tubes, pumps, expansion tanks, etc., are sized to provide the specified temperature and flow rate.

your initials

your initials

your initials

Regarding condensate drains -

- a) confirm that the condensate P-trap is installed and filled with water.
- b) confirm that the condensate pipe slopes downward away from the unit at least 1/4" per foot of run.
- c) confirm that condensate will be delivered to an appropriate non-freezing location.

your initials

your initials

your initials

For outdoor units with side drains, and for other units as needed, confirm that the condensate drain pipe is protected from freezing temperatures, and/or reliably heat-traced as necessary.

your initials

For indoor units with hot-water, hot-glycol, or steam heating coils internal to the unit,

- a) confirm that the heating diverting valve has been properly installed.
- b) confirm that adequate piping supports and flexible joints have been provided (by others) to prevent the application of any torque or axial loads to the unit connections.
- c) confirm that any pipes, tubes, pumps, expansion tanks, etc. (by others) are sized to provide the specified temperature and flow rate.

your initials

your initials

your initials

For sites requiring a condensate pump, confirm that the pump will handle the expected amount of condensate.

your initials

INSTALLATION

Date: _____
 Model No. _____
 Serial No. _____
 Ref. No. _____

Checklist prepared by: _____

General

Wiring

Installation

! WARNING

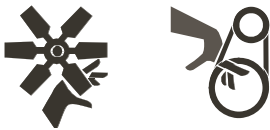


Risk of electric shock. Can cause injury or death.

Some installation and service procedures could expose personnel to the risk of electric shock. Electric shock can cause injury or death.

The unit controller **does not disconnect** electrical energy from the unit, even in the OFF condition. Use only approved devices (e.g. locking safety switch), to disconnect, lockout, and tagout all sources of electrical energy before working inside the unit cabinet. Follow all applicable safety regulations.

! WARNING



Risk of contact with moving parts. Can cause injury or death.

This product contains rotating parts and V-belt drives. Some installation, service, and maintenance procedures could expose personnel to the risk of injury or death from contact with these parts.

Using only approved devices (e.g. locking safety switch), disconnect, lockout, and tagout all sources of electrical energy before working inside the unit cabinet. Allow adequate time for rotating parts to stop. Follow all applicable safety regulations.

Do not operate the unit until ductwork or a screen is installed at each blower outlet.

! WARNING



Risk of falling. Can cause injury or death.

Depending on the size and location of this product, some installation, service, and maintenance procedures could expose personnel to the risk of injury or death by falling.

Designs should include adequate service and maintenance access. Use fall-protection equipment as appropriate.

! CAUTION

Risk of contact with sharp edges, flying chips. Can cause injury.

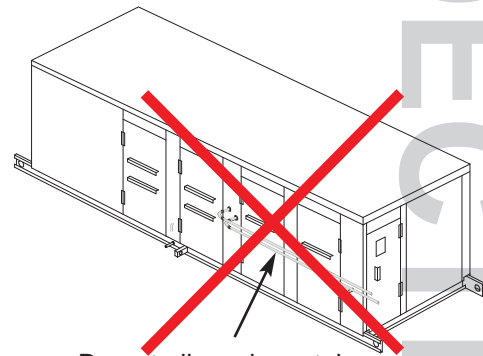
Drilling and cutting of cabinets and conduits can produce flying chips and sharp edges. Wear gloves, safety glasses, and other protective equipment as appropriate. Debur sharp edges after cutting.

Required Clearances

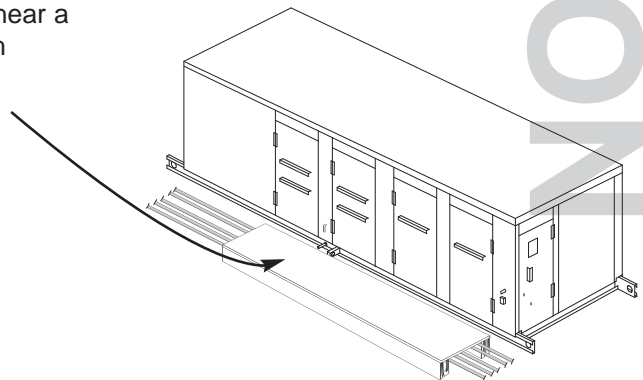
Ducts, pipes, tubes, conduits, etc., must be arranged not to obstruct access to the unit or to its internal parts. All doors and/or panels must be accessible and must be able to open to at least 90°. The minimum working clearances must be maintained. (See section **Lifting & Locating - Select Air Handler Location.**)

Unless specified for single-side access, there are access doors and/or panels on the front and back sides and at the electrical panel

Pipes, conduits, etc., should not be routed along the floor near a unit. Where this must be done, construct a working platform (by others) to allow access without damage.



Do not allow pipes, tubes, conduits, etc., to obstruct access panels or doors.



INSTALLATION

Installation

Wiring

General

NOTICE Optional Equipment.

Where options include those listed below, refer to the stated manual appendix for proper installation procedures.

Optional equipment may have special wiring requirements.

If your unit is equipped with the optional Modbus communications feature, refer to [Dectron OM Appendix C1 - Modbus](#).

If your unit is equipped with the optional BACnet PTP communications feature, refer to [Dectron OM Appendix C2 - BACnet PTP](#).

If your unit is equipped with the optional LONtalk® FTT-10A communications feature, refer to [Dectron OM Appendix C3 - LONtalk](#).

If your unit is equipped with the optional Man-Machine Interface feature, refer to [Dectron OM Appendix C5 - MMI](#).

If your unit is equipped with the optional http, BACnet Ethernet, or BACnet IP communications features, refer to [Dectron OM Appendix C6 - LANLink2](#).

If your units are equipped for optional group operation via shared sensors, refer to [Dectron OM Appendix C7 - Shared Sensor Adapter](#).

If your unit is equipped with the optional Heatco gas furnace, refer to [Dectron OM Appendix H2 - HTCO Furnace](#).

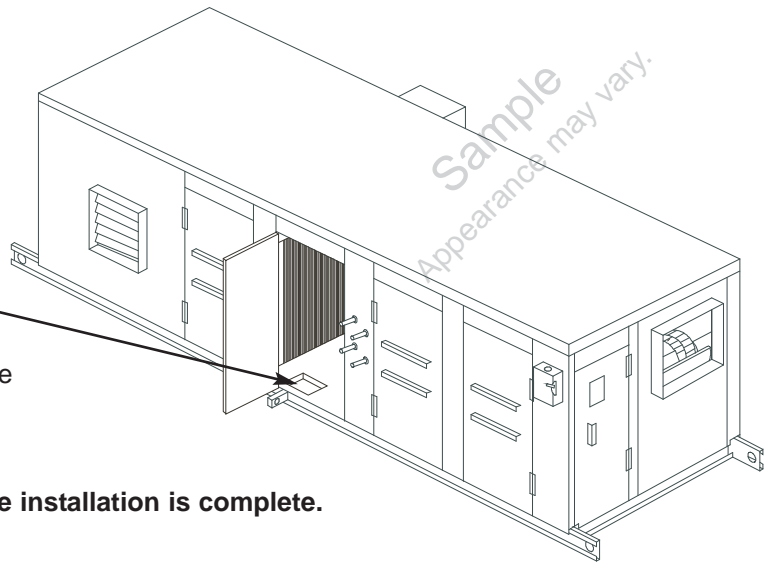
If your unit is equipped with the optional TEGA gas furnace, refer to [Dectron OM Appendix H9 - TEGA Furnace](#).

If your unit is equipped with an optional Raypak Hi-Delta gas boiler (models 122-322), refer to [Dectron OM Appendix H6 - Raypak 1000.53E HiDelta Boilers 122-322](#).

If your unit is equipped with an optional Raypak Hi-Delta gas boiler (models 302B - 902B), refer to [Dectron OM Appendix H7 - Raypak 1000.501C HiDelta Boilers 302B-902B](#).

If your unit is equipped with an optional Raypak Hi-Delta gas boiler (models 992B-2342B), refer to [Dectron OM Appendix H8 - Raypak 1000.511B HiDelta boilers 992B-2342B](#).

If your unit is equipped with the optional DryCooler feature, refer to [Dectron OM Appendix M1 - DryCooler](#).



Some units may be equipped with a pipe chase.

Where this is the case, it may be possible to route conduits through the chase into the building.

IMPORTANT!

Pipe chases must be closed and sealed before installation is complete.

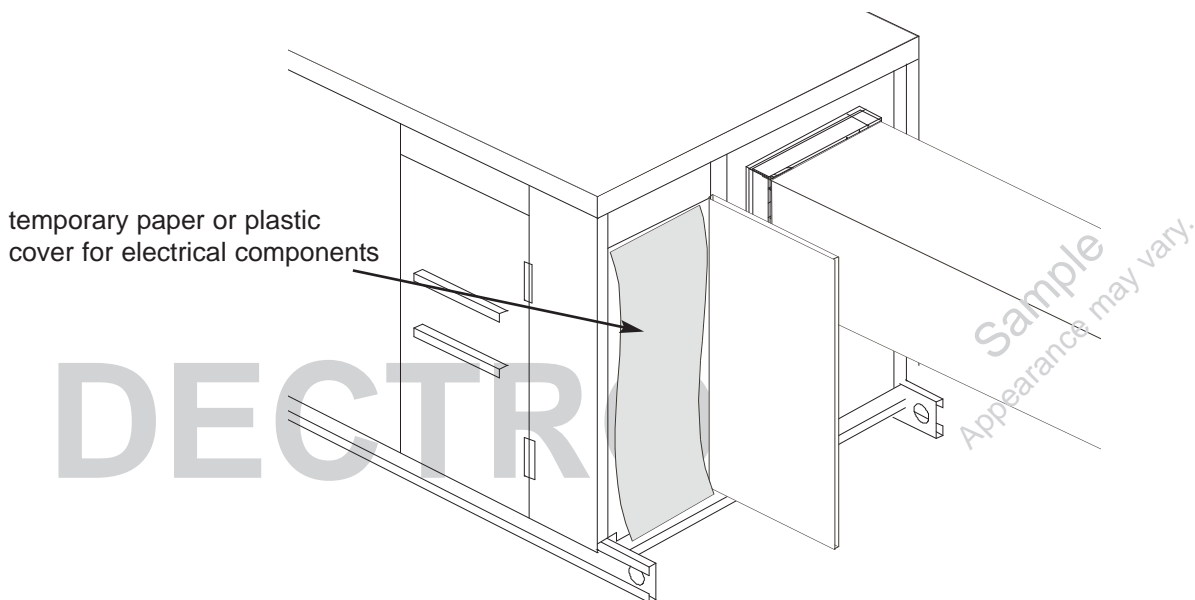
IMPORTANT!

Temporarily cover all control components in the electrical enclosure with paper or plastic sheet before drilling or sawing the enclosure. Tape the sheet carefully at the top.

Failure to install this temporary cover could allow metal chips to enter electrical components, resulting in failure.

IMPORTANT!

Remove the temporary cover before applying electric power.



temporary paper or plastic cover for electrical components

INSTALLATION

! WARNING**Risk of stray voltage.**

Ground the unit using the grounding lug provided.

**NOTICE Risk of insulation failure. Risk of conduit damage.**

Seal all conduits attached to dehumidifiers. Failure to do so could allow water to build up inside conduits.

NOTICE Risk of overheating electrical connections.

Use only copper wire to connect the unit. The power input lugs are not sized for use with other wire. For units with factory-supplied disconnects, follow instructions inside the disconnect.

NOTICE Risk of overheating motors.The unit complies with NEMA MG-1 and other standards for applied voltage. The applied average voltage should be within $\pm 10\%$ of the nameplate voltage. See ANSI C84.1. Phase voltages must be balanced within 2%.**NOTICE Risk of incorrect control voltage for 208V units.**

For 208/230V units, a minimum of 187V is required for compressor starting at locked-rotor current (see NEMA MG-1).

The motors of a 230V unit are designed to run on 208V also. Some units may require that the 208V primary tap on the control transformer be connected and the 230V tap be disconnected and insulated. Some units may require a 208V transformer. See the wiring diagram for the unit.

NOTICE Risk of failure to start.Use properly sized wire. Refer to the unit nameplate for electrical ratings. Select minimum wire sizes according to applicable codes, with allowance for voltage drops. **Unit terminal voltage should be within $\pm 10\%$ of nameplate value under all conditions, including compressor starting.****NOTICE Risk of compressor damage. Risk of failure to start.**

(three-phase units only)

Insure the proper phase sequence. All the motors in the unit are connected for the same phase sequence. Be sure the phase sequence is correct before completing the installation.

NOTE: The blower running direction can be used to test phase sequence.

For units with air-cooled air conditioning, wire the remote condenser according to the wiring diagram provided with it. **Insure that the fan motors turn in the correct direction.**

Power

Wiring

Installation



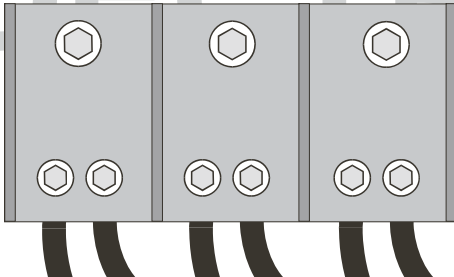
Risk of electric shock. Can cause injury or death.

The unit controller does not disconnect electrical energy from the unit, even in the OFF condition. Use only approved devices (e.g. locking safety switch), to disconnect, lockout, and tagout all sources of electrical energy before working inside the unit cabinet. Follow all applicable safety regulations.

Connect input power here.

Use copper wire only. Torque all connectors per NEC 110-14, UL486A, or relevant code.

Conduit seals are required. See previous notes.



3Φ shown. 1Φ will have two lugs only.

For units with factory-installed disconnects, connect power to the disconnect switch using the instructions in the switch.

After power wiring is complete, and when safe to do so, turn on the branch-circuit disconnect switch. In some cases the blower may start.

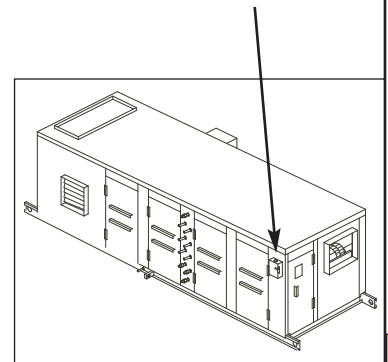
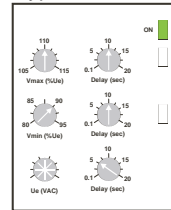
Some DRY-O-TRON® units may have voltage monitors that prevent operation in the event the branch circuit has voltage that is too high, too low, has lost a phase, or has reversed phase sequence.

If the green LED is not lit, confirm that the applied voltage is within ±10% of the nameplate voltage (NEMA MG-1), that all three phases are present, and that the phase sequence is correct. (See subsequent page.) Correct as necessary.

Type 1 monitor



Type 2 monitor



INSTALLATION

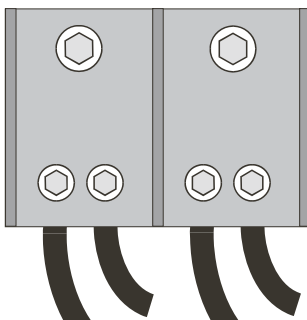
Some units may be equipped with separately wired circuits for service light(s) and service convenience receptacle(s). In this case, connect a separate 115VAC / 15A / 1Φ branch circuit to the service power lugs as shown. Refer to the unit wiring diagram. A ground-fault circuit interrupter may be required. Consult relevant codes.

Place a label on the electrical enclosure and on all access panels or doors that open to the service light and/or convenience receptacles stating that more than one disconnect is required to disconnect all electric power.

Connect input power here.

Use copper wire only. Torque all connectors per NEC 110-14, UL486A, or relevant code.

Conduit seals are required. See previous page.



Installation

Wiring

Power

! WARNING



Risk of electric shock. Can cause injury or death.

The unit controller does not disconnect electrical energy from the unit, even in the OFF condition. Use only approved devices (e.g. locking safety switch), to disconnect, lockout, and tagout all sources of electrical energy before working inside the unit cabinet. Follow all applicable safety regulations.

Some units may be equipped with separately wired circuits for an electric heater. In this case, connect a separate branch circuit as specified on the unit nameplate or in the unit submittal data to the heater power lugs as shown. Refer to the unit wiring diagram.

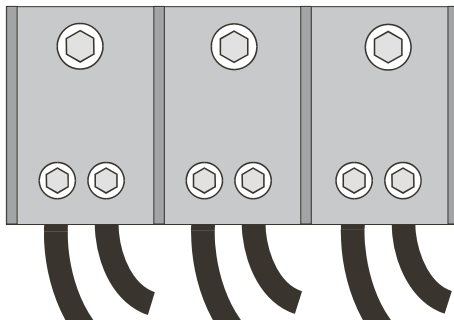
A ground-fault circuit interrupter may be required. Consult relevant codes.

Place a label on the electrical enclosure on all access panels or doors that open to the heater stating that more than one disconnect is required to disconnect all electric power.

Connect input power here.

Use copper wire only. Torque all connectors per NEC 110-14, UL486A, or relevant code.

Conduit seals are required.
See previous page.



3Φ shown.
1Φ will have
two lugs only.



INSTALLATION

Units with remote air-cooled condensers only

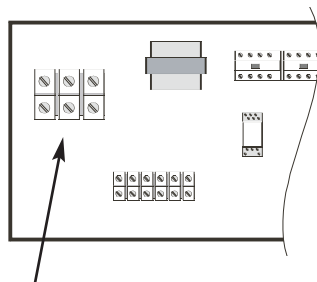
! WARNING



Risk of electric shock. Can cause injury or death.

The unit controller does not disconnect electrical energy from the unit, even in the OFF condition. Use only approved devices (e.g. locking safety switch), to disconnect, lockout, and tagout all sources of electrical energy before working inside the unit cabinet. Follow all applicable safety regulations.

Some installations may incorporate remote air-cooled condensers. Where this is the case, wire the condenser as shown in the condenser wiring diagram.



Connect input power here.

Use copper wire only. Torque all connectors per NEC 110-14, UL486A, or relevant code.



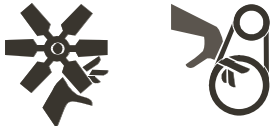
UNITS WITH VOLTAGE MONITOR ONLY



Risk of contact with moving parts. Can cause injury or death.

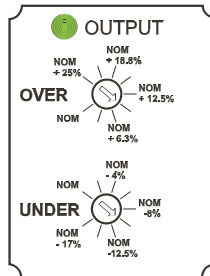
This product contains rotating parts and V-belt drives. Some installation, service, and maintenance procedures could expose personnel to the risk of injury or death from contact with these parts.

Using only approved devices (e.g. locking safety switch), disconnect, lockout, and tagout all sources of electrical energy before working inside the unit cabinet. Allow adequate time for rotating parts to stop. Follow all applicable safety regulations.

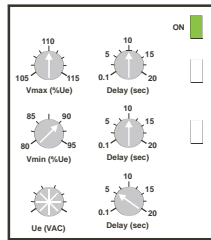


Identify the type of voltage monitor present.

TYPE 1



TYPE 2



For TYPE 2 monitors, skip to next page.

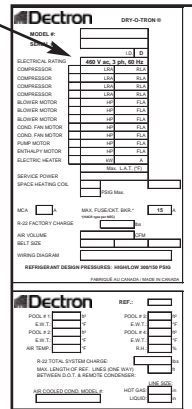
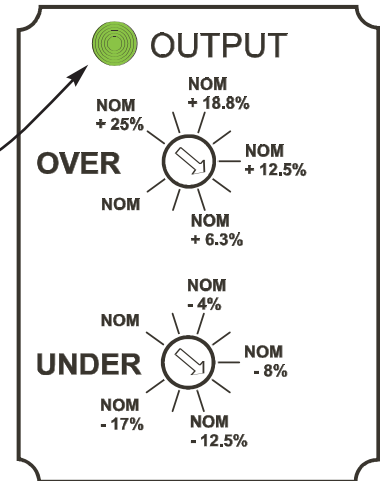
Type 1 Voltage Monitor

After power wiring is complete, and when safe to do so, turn on the branch-circuit disconnect switch. In some cases the blower may start. Some DRY-O-TRON® units may have voltage monitors that prevent operation in the event the branch circuit has voltage that is too high, too low, has lost a phase, or has reversed phase sequence.

If the green LED is not lit, confirm that the applied voltage is within $\pm 10\%$ of the nameplate voltage (NEMA MG-1), that all three phases are present, and that the phase sequence is correct. Be sure that the knob(s) are set correctly.

The over-voltage setting should be at nominal voltage plus 10%.

The under-voltage setting should be at nominal voltage minus 10%.



INSTALLATION

Type 2 Voltage Monitor

Be sure the Vmax time delay is set to 10 seconds.

Be sure that Vmax is set to 110%. Higher values may allow overheating of internal motors.

Do not adjust the voltage monitor without the explicit instructions from Dectron.

Be sure the Vmin time delay is set to 10 seconds.

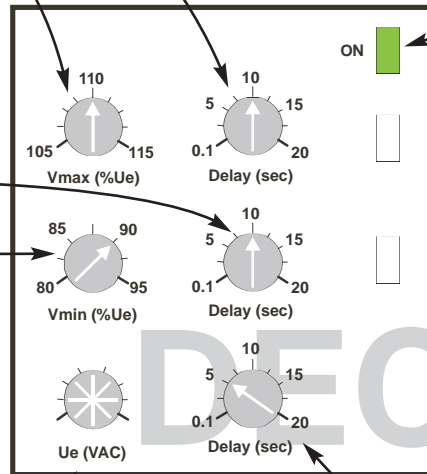
Be sure that Vmin is set to 90%. Lower values may allow overheating of internal motors.

Do not adjust the voltage monitor without explicit instructions from Dectron.

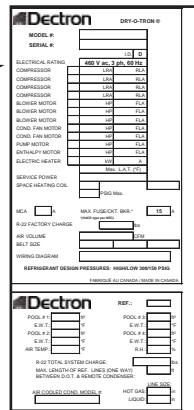
Be sure that Ue is set to the nominal voltage shown on the Dectron nameplate.

When the branch circuit voltages are correct, the green ON LED should be on.

If it is not on, or is flashing, see the following page for more details.



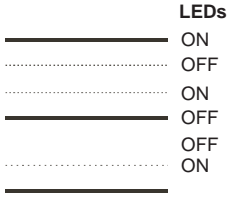
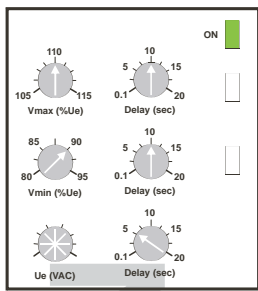
DECTRON



Be sure the Ue time delay is 5 seconds or less.

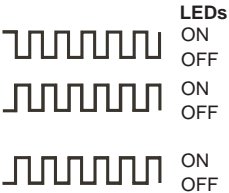
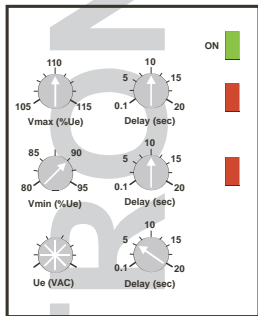
INSTALLATION

UNITS WITH TYPE 2 VOLTAGE MONITOR ONLY



Normal

When the green LED is on steady, the voltage is within normal range, all phase voltages are present, and the phase sequence is correct. No action is needed.

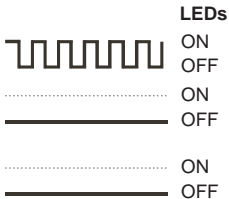
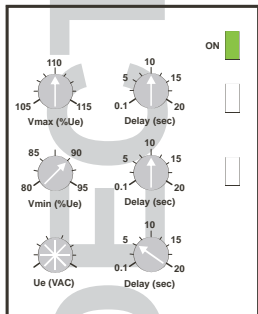


Incorrect Phase Sequence

When the green LED alternates with both red LEDs, the branch-circuit phase sequence is wrong, and the DRY-O-TRON® cannot operate.

Disconnect electrical power from the branch circuit, follow all safety procedures, and remove any two branch-circuit conductors from the input lugs. Exchange their places and re-connect. Tighten as appropriate. Do not change any factory-installed wires.

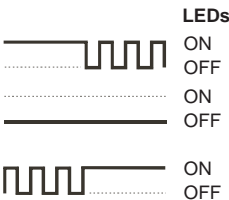
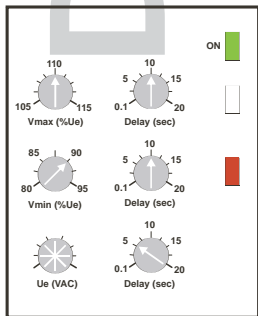
Following all safety procedures, re-apply electrical power. The voltage monitor should be normal as shown above.



Phase Loss

When the green LED is flashing and both red LEDs are off, the branch circuit does not have all three phases, and the DRY-O-TRON® cannot operate.

Have a qualified electrician fix the problem and re-apply electrical power. The voltage monitor should be normal as shown above.

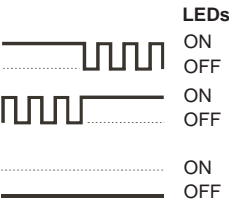
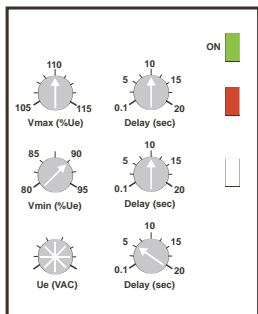


Incoming Voltage Below Minimum Allowable

When the green LED is flashing and the lower red LED is on, the incoming voltage is too low, and the DRY-O-TRON® cannot operate.

Voltages below this level will result in motor overheating. Do not adjust the voltage monitor without explicit instructions from Dectron.

Have a qualified electrician fix the problem and re-apply electrical power. The voltage monitor should be normal as shown above.



Incoming Voltage Above Maximum Allowable

When the green LED is flashing and the upper red LED is on, the incoming voltage is too high, and the DRY-O-TRON® cannot operate.

Voltages above this level will result in motor overheating. Do not adjust the voltage monitor without explicit instructions from Dectron.

Have a qualified electrician fix the problem and re-apply electrical power. The voltage monitor should be normal as shown above.

INSTALLATION

Where DRY-O-TRON® units are mounted outdoors, it is best **NOT** to mount electrical disconnect switches or circuit breakers on the DRY-O-TRON® cabinet, because the resulting holes allow rainwater to be drawn into the insulated walls by the pressures inside the unit.

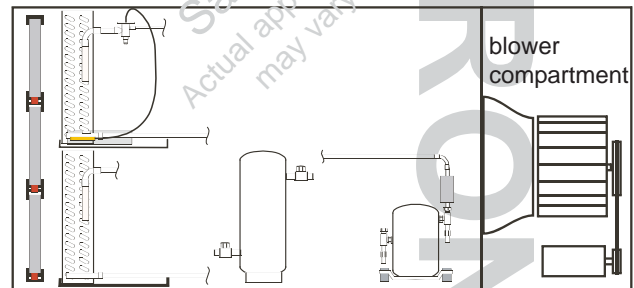
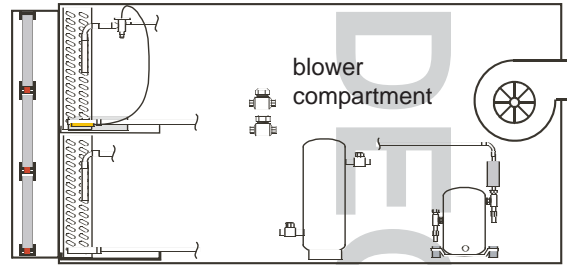
Where such mounting must be done, use care to seal all penetrations to stop the movement of air and water vapor. Caulk around the top and sides of such devices to keep rainwater water from getting behind them.

All conduits entering outdoor units should be sealed.

Units with housed blowers, as shown at right, may have strong negative air pressures inside the unit cabinet, including inside the electrical enclosure. Rainwater may be drawn into a disconnect box that is exposed to this negative pressure.

In some situations, fumes from chemical storage or combustion products from boilers, etc., may be drawn into the DRY-O-TRON® unit from remote locations via the conduit system. **This MUST be prevented.**

Units with plenum-type supply-air blowers will have a strong positive air pressure inside the blower compartment. There may also be a strong positive pressure inside the electrical enclosure. A conduit seal is required to prevent condensation throughout the conduit system.



INSTALLATION

Optional Remote Display

The communication system between the controller and a remote display (if any) is based on ANSI/IEEE RS-485. For best results, proper RS-485 wiring and splicing methods should be used. These include, but are not limited to the use of shielded RS-485 cable ($Z_0=120\Omega$, e.g. Belden 7202A), the use of connectors designed for RS-485, minimized untwist of conductors, etc.

In some cases, shorter lengths of cable may allow approximations to RS-485 methods. These methods are shown on the following pages. Methods for longer cables will work for shorter cables also.

All conduits connected to a dehumidifier should be sealed.

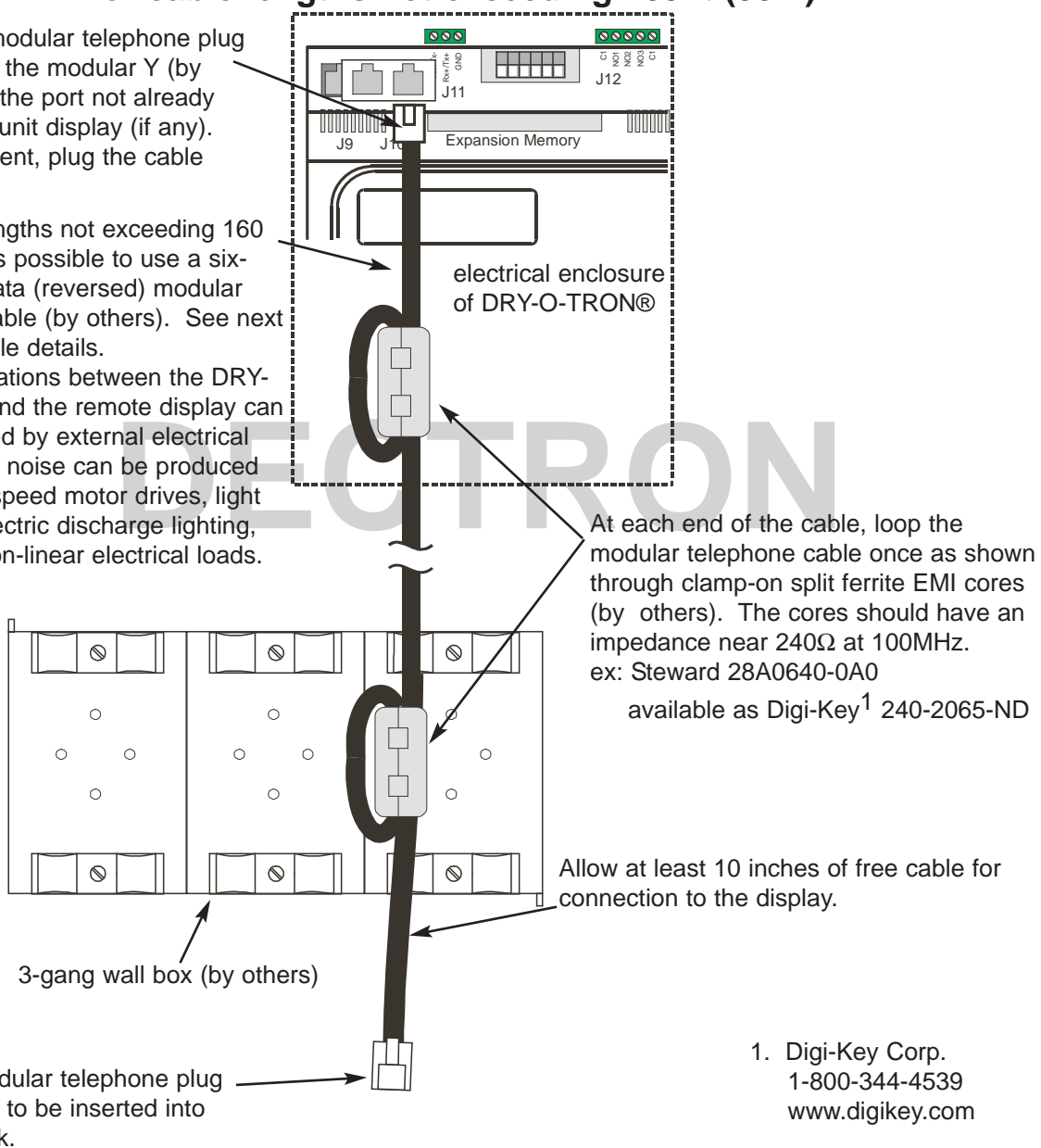
NOTE: Any remote display must be located in a space where it will not be exposed to the natatorium atmosphere or to the fumes from stored chemicals. Do not locate it in the same space where chemicals are stored.

For cable lengths not exceeding 160 ft (50m) -

Insert 6P6C modular telephone plug (by others) into the modular Y (by Dectron). Use the port not already used for the in-unit display (if any). If no Y is present, plug the cable into J10.

For cable lengths not exceeding 160 ft. (50m), it is possible to use a six-conductor data (reversed) modular telephone cable (by others). See next page for cable details.

Communications between the DRY-O-TRON® and the remote display can be interrupted by external electrical noise. Such noise can be produced by variable speed motor drives, light dimmers, electric discharge lighting, and other non-linear electrical loads.



At each end of the cable, loop the modular telephone cable once as shown through clamp-on split ferrite EMI cores (by others). The cores should have an impedance near 240Ω at 100MHz. ex: Steward 28A0640-0A0 available as Digi-Key¹ 240-2065-ND

Allow at least 10 inches of free cable for connection to the display.

1. Digi-Key Corp.
1-800-344-4539
www.digikey.com

INSTALLATION

Optional Remote Display

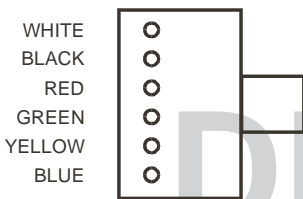
Assembling data (reversed) modular telephone cable

Note that the lock tabs of the plugs are on opposite sides of the cable. (Colors are for example only, colors may vary by cable vendor.)

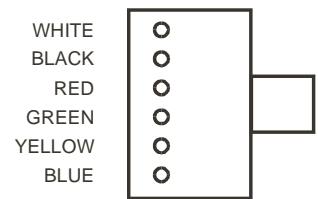
TOP VIEW



END VIEW

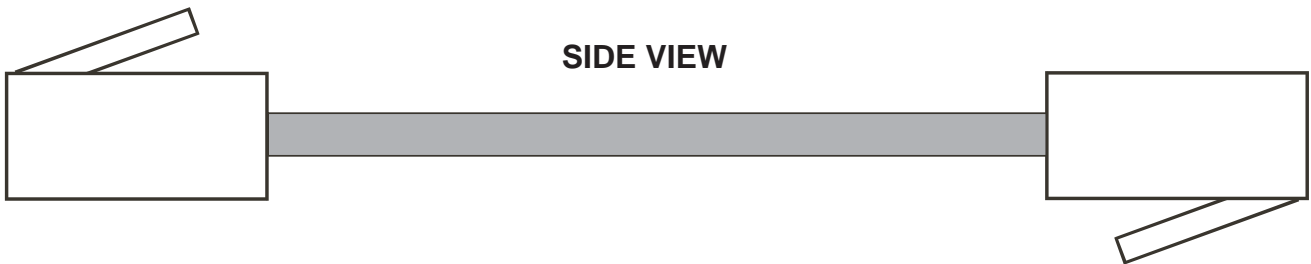


END VIEW

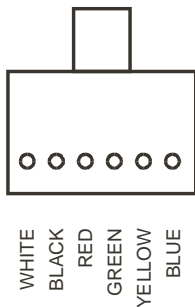


DECTRON

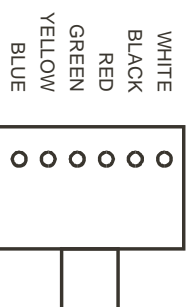
SIDE VIEW



END VIEW



END VIEW



INSTALLATION

Control Signals

Wiring

Installation

Optional Remote Display
For cable lengths not exceeding 650 ft (200m) -

Insert 6P6C modular telephone plug (by others) into the modular Y (by Dectron). Use the port not already used for the in-unit display (if any).

Loop the modular telephone cable once as shown through clamp-on split ferrite EMI core (by others). The cores should have an impedance near 240Ω at 100MHz.

ex: Steward 28A0640-0A0 available as Digi-Key⁴ 240-2065-ND

Short six-conductor data (reversed) modular telephone cable (by others). See previous page for cable details.

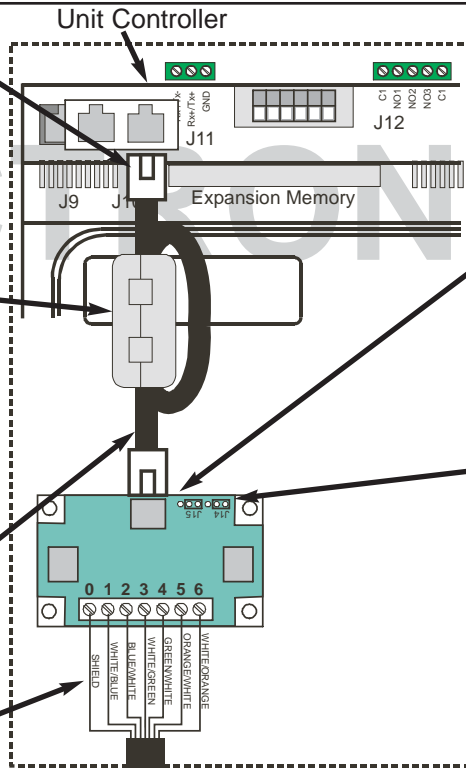
Keep pairs together. **DO NOT SPLIT PAIRS.** Minimize untwist.

Minimum 24 AWG copper 3-pair shielded RS-485 cable, $Z_0 = 120\Omega$
ex: Belden³ 7202A
Maximum length 650 ft (200m)

Keep pairs together. **DO NOT SPLIT PAIRS.** Minimize untwist.

Where TCONN6J000 (shown) is used, jumpers J14 and J15 must be on pins 1 & 2 as shown.

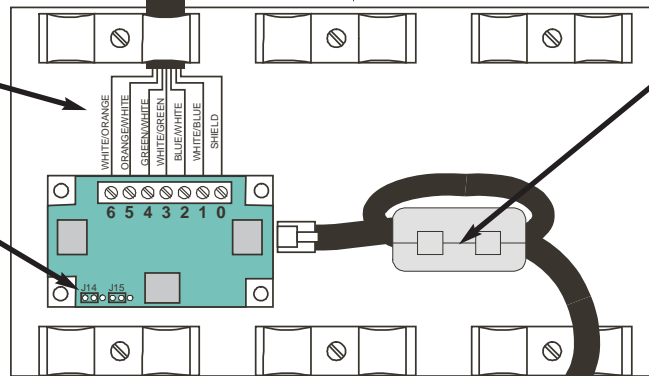
Short six-conductor data (reversed) modular telephone cable (by others). See previous page for cable details. Allow at least 10 inches of free cable for connection to the display. The six-pin modular telephone plug (by others) is to be inserted into the display jack.



Modular cable to round cable adapter, (by others), two required
Ex: Carel¹ TCONN6J000 (shown)
Ex: Leviton 40276-I, (not shown) available as Grainger² 5C381

Where TCONN6J000 (shown) is used, jumpers J14 and J15 must be on pins 1 & 2 as shown.

Cable conductor-terminal assignment			
terminal	function	cable pair	conductor
0	GND	SHIELD	
1	+VRL (-30Vdc)	1	A
2	GND	1	B
3	Rx/Tx-	2	A
4	Rx/Tx+	2	B
5	GND	3	A
6	+VRL (-30Vdc)	3	B



Clamp-on split ferrite EMI core (by others), as above.

1. CAREL USA LLC
Ph: (717) 664-0500
Fax: (717) 664-0449
www.carelusa.com
2. USA
W.W. Grainger
Ph: 1-888-361-8649
www.grainger.com
- Canada
Acklands Grainger
Ph: 1-800-668-8989
www.acklandsgrainger.com
3. Belden
Ph: 314-854-8000
www.belden.com
4. Digi-Key Corp.
1-800-344-4539
www.digikey.com

INSTALLATION

Installation

Wiring

Control Signals

Optional Remote Display
 For cable lengths not exceeding 1640 ft (500m) -
Consult factory for longer cable requirements.

Loop the modular telephone cable once as shown through clamp-on split ferrite EMI cores (by others). The cores should have an impedance near 240Ω at 100MHz.

ex: Steward 28A0640-0A0 available as Digi-Key⁴ 240-2065-ND

Minimum 24 AWG copper 1-pair shielded RS-485 cable, $Z_0 = 120\Omega$

ex: Belden³ 7200A
 Maximum length 1640 ft (500m)

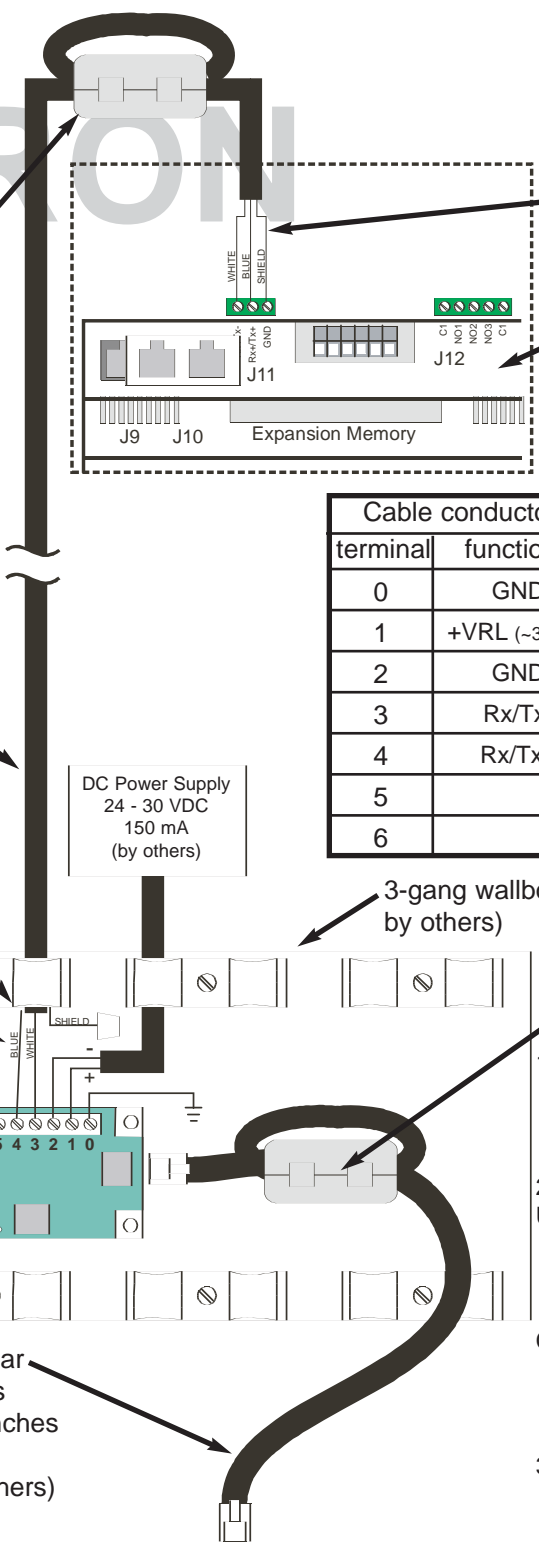
Insulate shield at this end. Do not connect shield to a terminal.

Keep pair together. **DO NOT SPLIT PAIRS.** Minimize untwist.

Modular cable to round cable adapter, (by others), one required
 Ex: Carel¹ TCONN6J000 (shown)
 Ex: Leviton 40276-I, (not shown) available as Grainger² 5C381

Where TCONN6J000 (shown) is used, jumpers J14 and J15 must be on pins 1 & 2 as shown.

Short six-conductor data (reversed) modular telephone cable (by others). See previous page for cable details. Allow at least 10 inches of free cable for connection to the display. The six-pin modular telephone plug (by others) is to be inserted into the display jack.



Keep pair together. **DO NOT SPLIT PAIRS.** Minimize untwist.

Unit Controller

terminal	function	cable pair	conductor
0	GND		
1	+VRL (~30Vdc)		
2	GND		
3	Rx/Tx-	1	A
4	Rx/Tx+	1	B
5			
6			

3-gang wallbox, (by others)

Clamp-on split ferrite EMI core (by others), as above.

1. CAREL USA LLC
 Ph: (717) 664-0500
 Fax: (717) 664-0449
 www.carelusa.com

2. USA
 W.W. Grainger
 Ph: 1-888-361-8649
 www.grainger.com

Canada
 Acklands Grainger
 Ph: 1-800-668-8989
 www.acklandsgrainger.com

3. Belden
 Ph: 314-854-8000
 www.belden.com

4. Digi-Key Corp.
 1-800-344-4539
 www.digikey.com

INSTALLATION

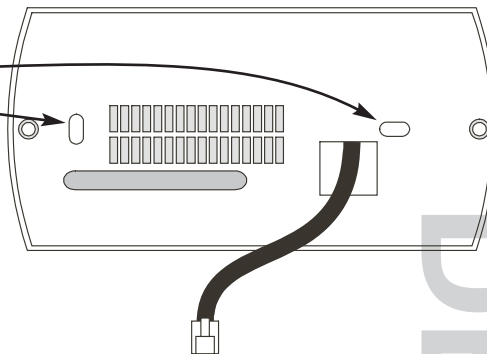
Optional Remote Controller Display, if any

NOTICE Risk of component failure.

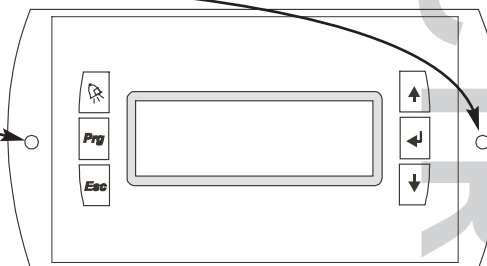
Where used, a remote display must be located in a space where it will not be exposed to the natatorium atmosphere or to the fumes from stored chemicals. Do not locate it in the same space where chemicals are stored. Do not locate it in direct sunlight.

Remove the display from its box. Refer to the instructions included. Separate the display into its three pieces.

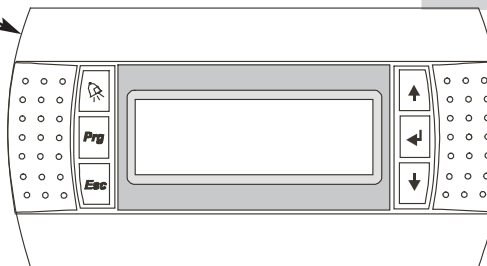
Thread the end of the cable through the hole in the sub-base as shown. Using care to maintain level, screw the sub-base to the wall box here.



Connect the cable to the modular telephone jack on the back of the display. Screw the display to its sub-base here.



Snap the front cover over the display.



NOTE: The display may show "NO LINK" if the DRY-O-TRON® is powered. This is normal, and will be corrected under the **STARTUP** section.

INSTALLATION

DECTRON

Installation

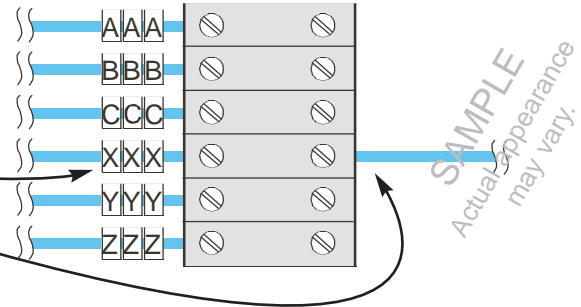
Wiring

Control Signals

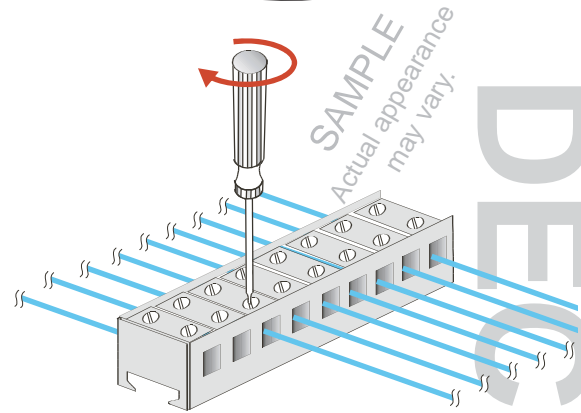
A field-wiring terminal strip is provided. Terminals are identified by the factory-attached wire numbers.

Ex: Instructions state to connect a field-installed wire to terminal XXX.

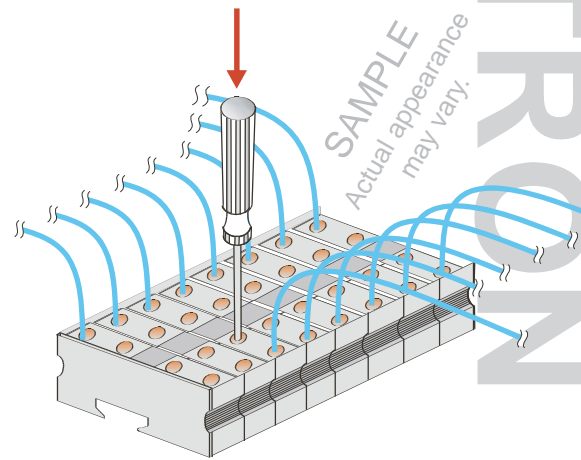
1. Find wire numbers XXX.
2. Connect wire on the matching terminal.



Some field-wiring terminal strips may have box-lug terminals. In this case, insert a stripped wire into the lug and tighten the screw.

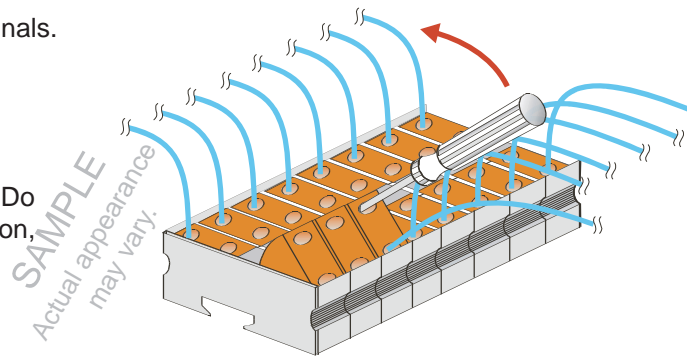


Some field-wiring terminal strips may have spring terminals. In this case, insert a small screwdriver into the release port, then insert a stripped wire into the wire port. Hold the wire in place and remove the screwdriver.



Some field-wiring terminal strips may have IDC terminals. In this case, insert the end of a wire into the wire port. Insert a small screwdriver, Allen wrench, etc., into the other port and turn the plastic cam as shown.

These terminal strips are suitable for use with 22 - 16 AWG having uncoated PVC or PE insulation. Do not use coated PVC or PE insulation. Do not use Teflon, Tefzel, Kynar, Kapton, Silicone Rubber, or Hypalon insulation.



INSTALLATION

DECTRON

Control Signals

Wiring

Installation

OPTIONAL EXTERNAL ON/OFF SPACE HEATERS

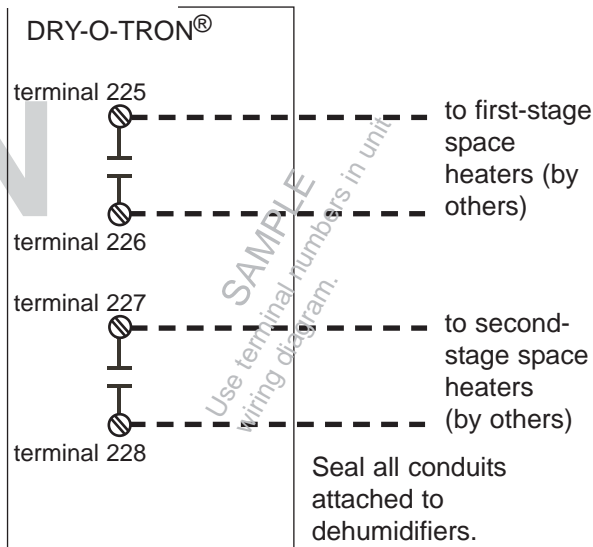
NOTICE Optional equipment
 Risk of building damage.
 All installations must have space heat available year-round. Failure to control space temperature can lead to unexpected changes in evaporation rate and humidity.

In the case of external ON/OFF space heaters, the space-heater controls must be wired to the DRY-O-TRON® controls (see unit field-wiring diagram in the unit information package). For ON/OFF controls, the installer must arrange the connections so that a dry-contact switch closure in the DRY-O-TRON® will enable the space heater. When the dry contacts are open, the space heater should be disabled.

NOTE: External space heaters should be provided with a airflow-proving switch (by others).

If possible the heater should be divided into as many stages as there are ON/OFF heating outputs on the DRY-O-TRON®. This will help in tuning the system to prevent over- and under-shooting of space temperature.

The DRY-O-TRON® dry contacts are rated 5A at 24VAC 60Hz. Do not overload these outputs. Do not attempt to use an internal DRY-O-TRON® power source unless so directed by Dectron.



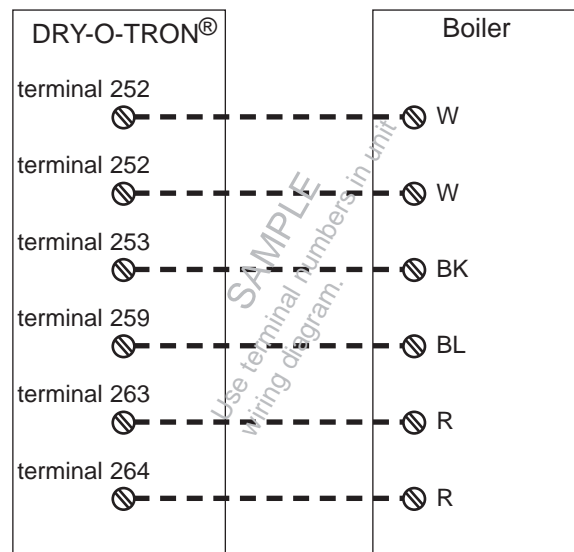
Similar circuits are used for any other space heaters. See the unit field-wiring diagram in the unit information package.

OPTIONAL REMOTE GAS BOILER

NOTICE Risk of building damage.
 All installations must have space heat available year-round. Failure to control space temperature can lead to unexpected changes in evaporation rate and humidity.

Some units may be equipped to control a remote Raypak gas boiler for space heating. Where this is the case, connect the boiler controls as shown at right.

The DRY-O-TRON® dry contacts are rated 5A at 24VAC 60Hz. Do not overload these outputs. Do not attempt to use an internal DRY-O-TRON® power source unless so directed by Dectron.



Seal all conduits attached to dehumidifiers.

Similar circuits are used for any other space heaters. See the unit field-wiring diagram in the unit information package.

INSTALLATION

Installation

Wiring

Control Signals

OPTIONAL EXTERNAL-VALVE PROPORTIONAL SPACE HEATERS (BY DECTRON)

NOTICE Risk of building damage.
 All installations need space heat to be available year-round. Failure to control space temperature can lead to unexpected changes in evaporation and humidity.

Space-heaters must be wired to and controlled by the DRY-O-TRON® unit (see unit field-wiring diagram in unit information package).

The proportional space-heating output is rated 2 - 10VDC at 10mA, direct acting. The load impedance should not be less than 1kΩ. Do not overload this output.

The output voltage range can be modified in the field for 0-10VDC at 10mA, and/or for reverse action. Contact Dectron for instructions.

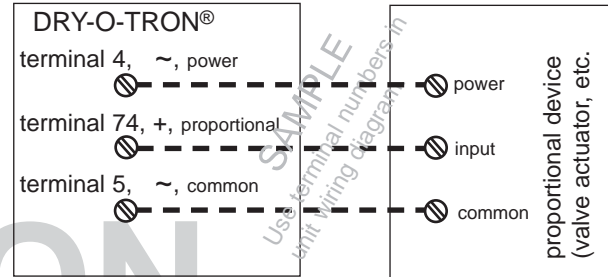
NOTE: External space heaters should be provided with an airflow-proving switch (by others).

Some indoor units may be equipped with proportional hot-water or steam heaters, where the heat exchanger is inside the unit and the control valve is outside the unit.

In this case, the valve assembly may ship separately and require installation in the field.

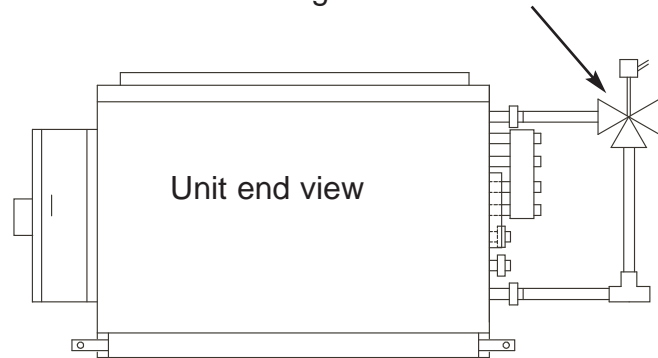
After the tube unions have been made up tight, connect the three wires numbered as shown in the diagram to the numbered wires from the valve actuator.

Match wire numbers.



Seal all conduits attached to dehumidifiers.

Location of Heating Valve on Indoor Units



INSTALLATION

OPTIONAL REMOTE PROPORTIONAL CONTROL FOR SPACE-HEATERS (BY OTHERS)

NOTICE Risk of building damage.
 All installations need space heat to be available year-round. Failure to control space temperature can lead to unexpected changes in evaporation and humidity.

Space-heaters must be wired to and controlled by the DRY-O-TRON® unit (see unit field-wiring diagram in unit information package).

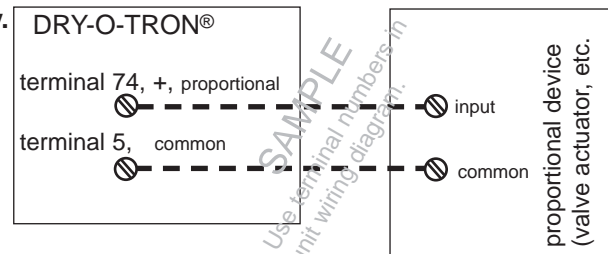
The proportional space-heating output is rated 2 - 10VDC at 10mA, direct acting. The load impedance should not be less than 1kΩ. Do not overload this output.

The output voltage range can be modified in the field for 0-10VDC at 10mA, and/or for reverse action. Contact Dectron for instructions.

NOTE: External space heaters should be provided with an airflow-proving switch (by others).

Some units may be equipped to control remote proportional space heater by others. Where this is the case wire as shown at right.

Do not attempt to use an internal DRY-O-TRON® power source unless so directed by Dectron.



Seal all conduits attached to dehumidifiers.

Control Signals

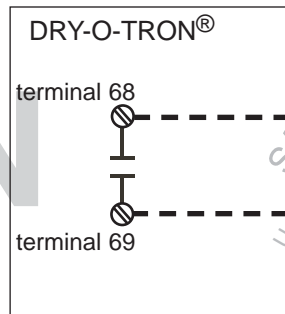
Wiring

Installation

OPTIONAL FAN-INTERLOCK OUTPUT

Some DRY-O-TRON® units may have a fan interlock output coincident with blower operation.

The DRY-O-TRON® dry contacts are rated 5A at 24VAC 60Hz. Do not overload these outputs. Do not attempt to use an internal DRY-O-TRON® power source unless so directed by Dectron.



Use terminal numbers in unit wiring diagram.

Contacts are closed while supply blower runs.

Seal all conduits attached to dehumidifiers.

INSTALLATION

Installation

Wiring

Control Signals

OPTIONAL REMOTE CONDENSER OR DRYCOOLER

Some DRY-O-TRON® units may be provided with an air-cooled condenser or a DryCooler. In this case the remote air-cooled condenser controls or the DryCooler controls must be wired to the DRY-O-TRON® controls (see unit wiring diagram). The remote condenser or the DryCooler has its own power supply so there is a dry-contact switch closure to enable the remote condenser or the DryCooler.

The DRY-O-TRON® dry contacts are rated 5A at 24VAC 60Hz. Do not attempt to use an internal DRY-O-TRON® power source unless so directed by Dectron.

In some cases the size of the control wire may have to be increased to allow for contactor inrush. See the chart at right.

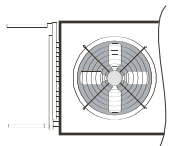
Some condenser control transformers may not be rated for Class 2 wiring methods. (See NEC Art. 725, CEC Art. 16.) In this case, use Class 1 wiring methods.

In some cases temperature switches inside the remote condenser or the DryCooler may have to be adjusted. See **Startup - Adjustments**.

wire length (ft)	Condenser control wire size (AWG)					
	1	2	3	4	5	6
10	20	20	20	20	20	18
20	20	20	20	20	18	14
30	20	20	20	20	18	14
40	20	20	20	18	16	12
50	20	20	20	18	14	10
60	20	20	20	16	14	10
70	20	20	18	16	14	10
80	20	20	18	16	12	10
90	20	20	18	16	12	10
100	20	20	18	14	12	10
110	20	20	16	14	12	10

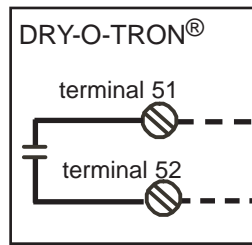
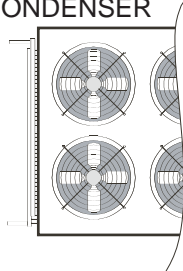
INSTALLATION

ONE-ROW CONDENSER

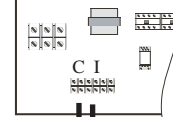


OR

TWO-ROW, SINGLE-CIRCUIT CONDENSER



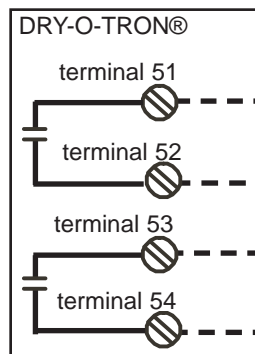
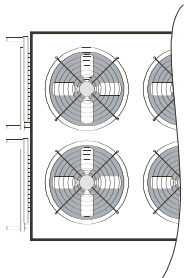
Remote Condenser



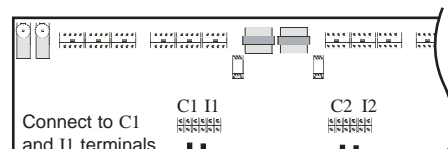
Connect to C and I terminals. No polarity.

Seal all conduits attached to dehumidifiers.

TWO-ROW, DUAL CIRCUIT CONDENSER



Remote Condenser

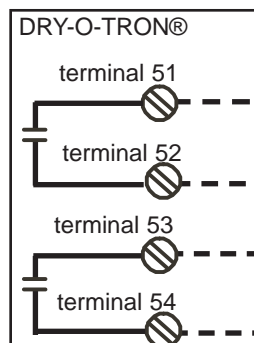
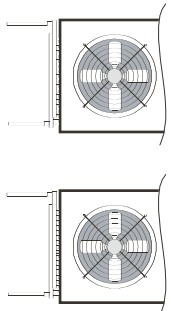


Connect to C1 and I1 terminals. No polarity.

Connect to C2 and I2 terminals. No polarity.

Seal all conduits attached to dehumidifiers.

TWO SEPARATE CONDENSERS



Remote Condenser for refrigerant circuit #1



Connect to C and I terminals. No polarity.

Remote Condenser for refrigerant circuit #2



Seal all conduits attached to dehumidifiers.

Control Signals

Wiring

Installation

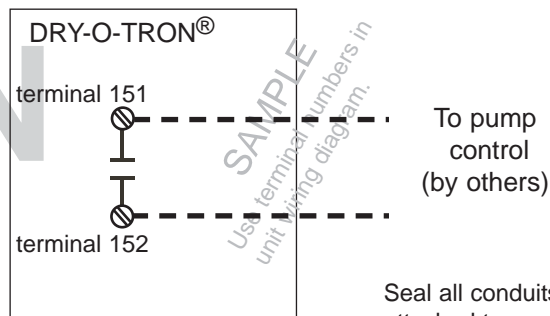
OPTIONAL REMOTE PUMP FOR COOLING WATER / FLUID CIRCULATION (BY OTHERS)

Some units may be equipped for the control of a remote pump (by others) which circulates water or glycol fluid to cool the air-conditioning system.

In this case, connect the pump control as shown in the unit wiring diagram or as shown at right.

Refer to unit wiring diagram.

The DRY-O-TRON® dry contacts are rated 5A at 24VAC 60Hz. Do not overload these outputs. The DRY-O-TRON® does not provide output voltage for ventilation, except with the option "Power Supply for Ventilation". Do not attempt to use an internal DRY-O-TRON® power source unless the option "Power Supply for Ventilation" is present.

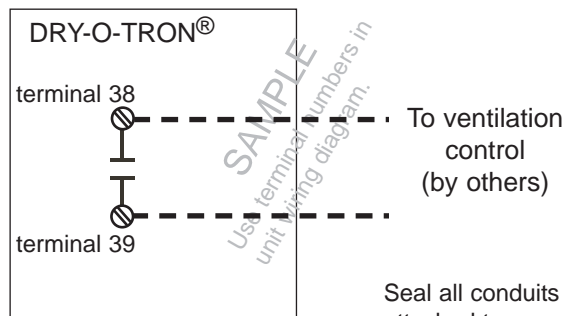


Seal all conduits attached to dehumidifiers.

OPTIONAL REMOTE VENTILATION (BY OTHERS) (POWER BY OTHERS)

Some units may be equipped for the control of a ventilation system by others. Unless the optional ventilation power supply was ordered, the ventilation system must have its own power supply so that a circuit closure will enable ventilation.

The DRY-O-TRON® dry contacts are rated 5A at 24VAC 60Hz. Do not overload these outputs. The DRY-O-TRON® does not provide output voltage for ventilation, except with the option "Power Supply for Ventilation". Do not attempt to use an internal DRY-O-TRON® power source unless the option "Power Supply for Ventilation" is present.



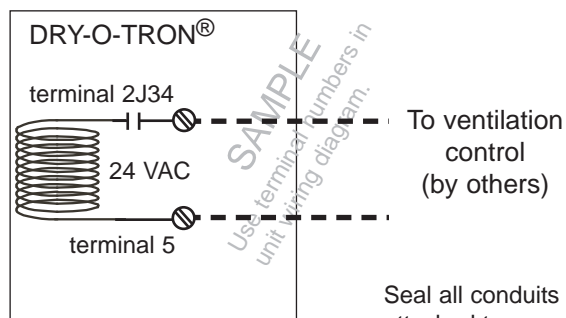
Seal all conduits attached to dehumidifiers.

OPTIONAL REMOTE VENTILATION (BY OTHERS) (OPTIONAL POWER BY DECTRON)

Some units may be equipped with a line-item option called "Power Supply for Ventilation", where up to 80 VA at 24 VAC is made available for the control of a ventilation system (by others).

In this case, there will be a 24VAC ventilation signal derived from the internal control-power system of the unit.

NOTE: The electrical power supply for the "Power Supply for Ventilation" option is not suitable for Class 2 wiring methods.



Seal all conduits attached to dehumidifiers.

INSTALLATION

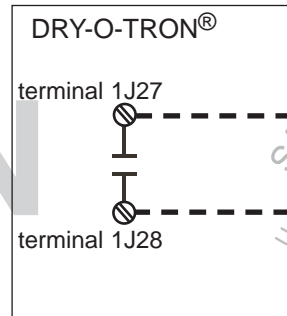
Installation

Wiring

Control Signals

GENERAL ALARM

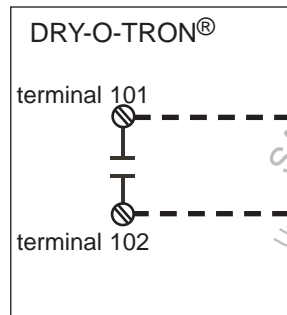
DRY-O-TRON® units are provided with an output for a general alarm. A dry-contact switch closure is provided to trigger an alarm (by others) in the event of a condition that prevents the normal operation of the unit. The DRY-O-TRON® dry contacts are rated 5A at 24VAC 60Hz. Do not overload these outputs. Do not attempt to use an internal DRY-O-TRON® power source unless so directed by Dectron.



Contacts close to enable general alarm (by others).
Seal all conduits attached to dehumidifiers.

DIRTY-FILTER ALARM (OPTIONAL)

Some DRY-O-TRON® units may have an optional alarm to indicate that the pressure drop across the return-air filters is excessive, indicating dirty filters. A dry-contact switch closure is provided to trigger an alarm (by others) in the event of excessively dirty filters. The DRY-O-TRON® dry contacts are rated 5A at 24VAC 60Hz. Do not overload these outputs. Do not attempt to use an internal DRY-O-TRON® power source unless so directed by Dectron.



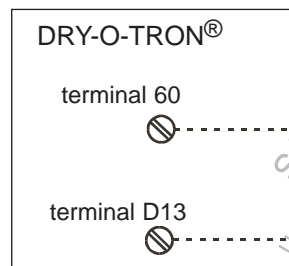
Contacts close to enable dirty-filter alarm (by others).
Seal all conduits attached to dehumidifiers.

FIRESTAT CONNECTION

WARNING Risk of improper fire/smoke response.

For units requiring a firestat interlock, remove the jumper between the firestat inputs or as shown on the unit wiring diagram. In the jumper's place substitute an isolated normally closed switch closure from the fire alarm (by others).

If the fire alarm is triggered, the resulting open circuit between these terminals will cause the DRY-O-TRON® to execute an orderly shutdown, including blowers.



Firestat or smoke detector switch opens on alarm.
Seal all conduits attached to dehumidifiers.

INSTALLATION

Control Signals

Wiring

Installation

OPTIONAL OUTDOOR AIR-TEMPERATURE SENSOR (IF ANY)

Some units may have an outdoor air-temperature sensor.

NOTICE Risk of operational mode failure.
Units with the Economizer, EconoPurge, and/or the Intelligent Energy Saver option must have the outdoor-air temperature sensor.

For some units, the remote outdoor air-temperature sensor may ship uninstalled, and thus must be installed in the field.

NOTICE Risk of component damage.
Sensor must be properly installed.

Select a location for the sensor that will be:

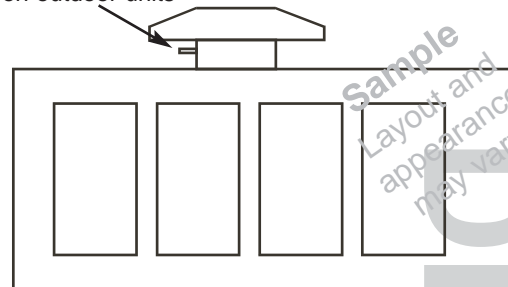
1. always in representative outdoor air,
2. out of direct sunlight during all seasons and all times of day
3. out of other abnormal temperature conditions such as ventilation exhaust streams,
4. protected from rain, sleet, ice, etc.,
5. within 350 ft (106 m) of the DRY-O-TRON®, and
6. protected against damage or vandalism.

Route the cable to avoid sources of electrical noise. Wire the sensor as shown on the unit field-wiring diagram in the unit information package. Connect any cable shields at the DRY-O-TRON® end only.

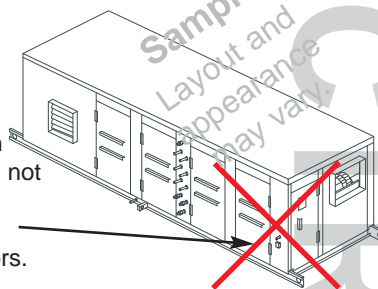
Seal all conduits attached to dehumidifiers.

If an outdoor temperature sensor is unexpectedly connected or disconnected in the field, the controller configuration may have to be changed.

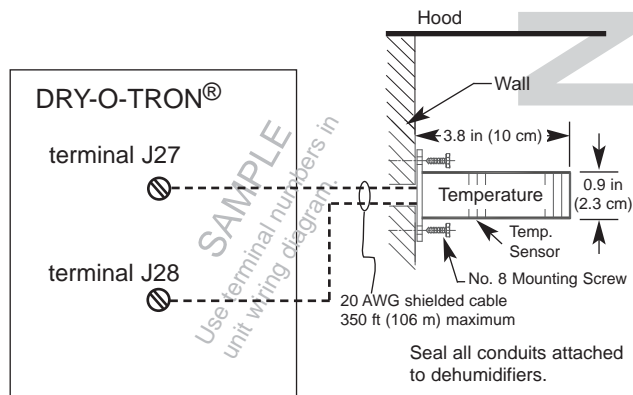
possible location on outdoor units



The side of an outdoor unit is not an adequate location for outdoor sensors.



Install outdoor sensors where they will **NOT** be damaged and will **NOT** be exposed to rain or direct sunlight.



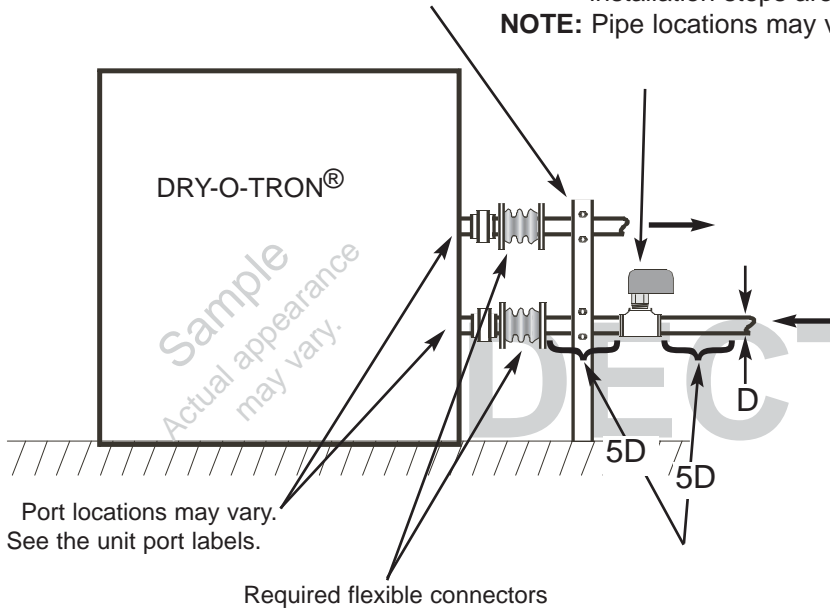
INSTALLATION

Units with Water-Cooled Air Conditioning Only

The water-flow switch (supplied by Dectron, installed by others) screws 1/2" (12 cm) into a pipe tee (by others) in the inlet-water pipe.

NOTE: The switch may be factory installed, in which case no installation steps are required.

NOTE: Pipe locations may vary.



Contact Dectron before applying water or fluid of a temperature or flow rate other than that specified on the unit nameplate or in the unit submittal data.

Unless the DRY-O-TRON® unit has a control output for cooling-water flow, the water or fluid flow must be constant. Any pumps, fans, cooling towers, etc., must be enabled whenever the DRY-O-TRON® unit is enabled.

INSTALLATION

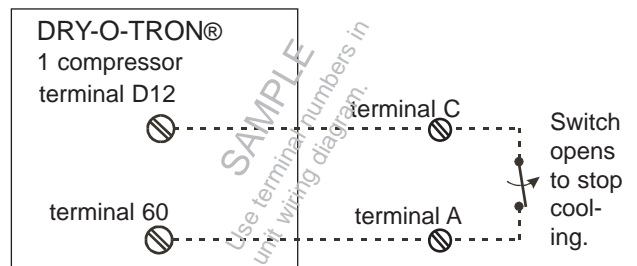
OPTIONAL WATER FLOW-SWITCH INPUT

For units with water- or fluid-cooled air conditioning, remove the jumper between terminals 60 and

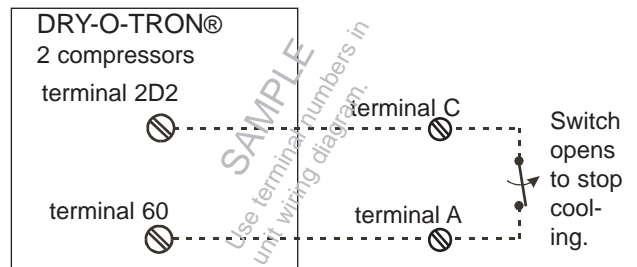
- (a) terminal D12 for single-compressor units,
- (b) terminal 2D2 for two-compressor units, or
- (c) as shown on the unit wiring diagram.

In the jumper's place substitute the output of the fluid flow switch (supplied by Dectron, possibly installed by others).

An open circuit between these terminals will cause the DRY-O-TRON® to execute an orderly shutdown, including blowers.



Seal all conduits attached to dehumidifiers.



Seal all conduits attached to dehumidifiers.

Control Signals

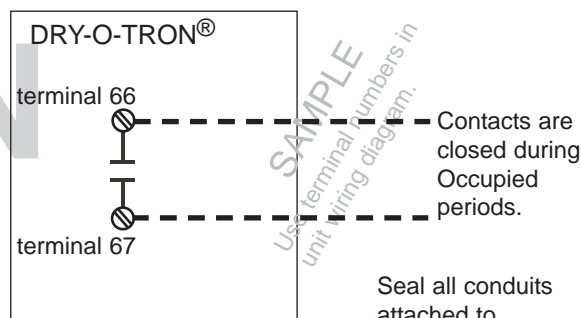
Wiring

Installation

OPTIONAL OCCUPIED-PERIOD OUTPUT

Some DRY-O-TRON® units may have an isolated switch-closure output that closes during occupied periods.

The DRY-O-TRON® dry contacts are rated 5A at 24VAC 60Hz. Do not overload these outputs. Do not attempt to use an internal DRY-O-TRON® power source unless so directed by Dectron.



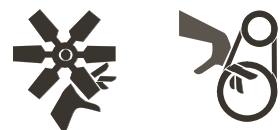
Seal all conduits attached to dehumidifiers.

REMOTE BLOWER SWITCH INPUT



Risk of contact with moving parts. Can cause injury or death.

This product contains rotating parts and V-belt drives. Some installation, service, and maintenance procedures could expose personnel to the risk of injury or death from contact with these parts.



Where service tasks might expose a person to moving parts or other stored energy, **opening the remote-blower switch input is not a sufficient safeguard.**

Using only approved devices (e.g. locking safety switch), disconnect, lockout, and tagout all sources of electrical energy before working inside the unit cabinet. Allow adequate time for rotating parts to stop. Follow all applicable safety regulations.

Do not operate the unit until ductwork or a screen is installed at each blower outlet.

NOTICE Risk of building damage.

Risk of condensation on unprepared surfaces.

Risk of freezing damage.

Risk of biological fouling.

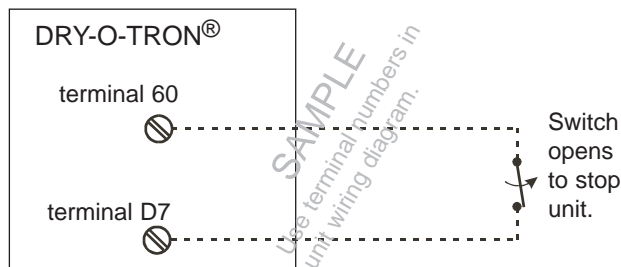
Risk of unit damage.

NOTE: Be very careful when using this input. Do not stop the unit except briefly for service as long as the humidity load is present. Stopping the unit while the humidity load is present may lead to condensation of water inside the building or inside the unit, with resulting water damage.

NOTE: Do not use this input to stop the unit during un-occupied periods.

For units requiring a remote blower switch, remove the jumper between terminals 60 and D7, or as shown on the unit wiring diagram. In the jumper's place substitute an isolated normally-closed switch closure (by others).

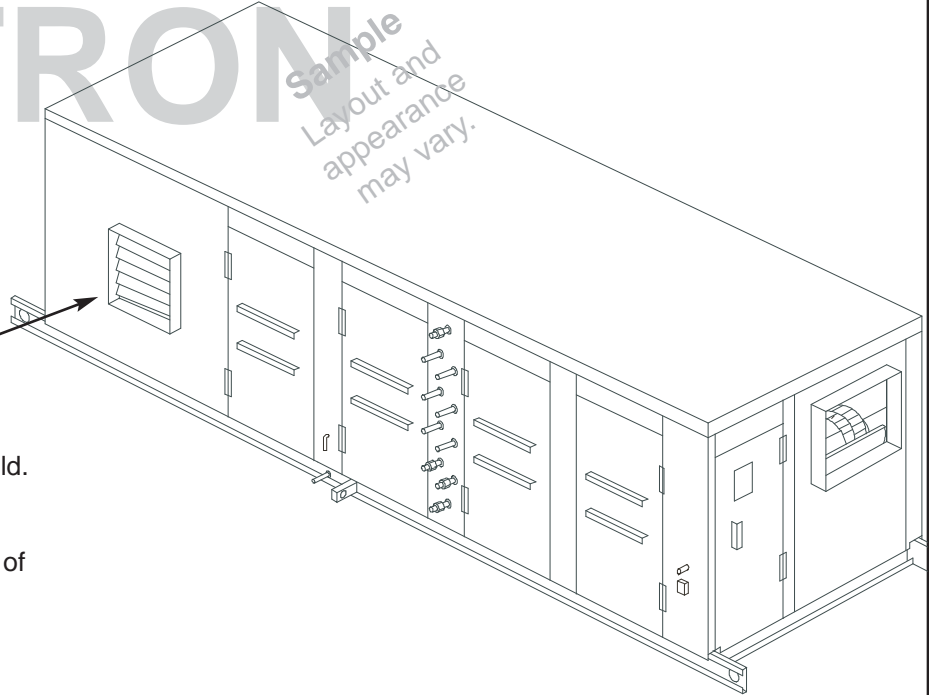
An open circuit between these terminals will cause the DRY-O-TRON® to execute an orderly shutdown, including blowers.



Seal all conduits attached to dehumidifiers.

INSTALLATION

DECTRON
Sample Layout and appearance may vary.



Some units may have motorized damper sections that ship separately. In this case, the damper section(s) must be installed in the field.

Note that these motorized damper sections may require the connection of several wires at installation.

Match wire numbers and splice together carefully.

INSTALLATION

! WARNING

Risk of fire and smoke propagation.

Pipe chases, where present, **must be sealed** around the pipes, conduits, etc. A metal cap is provided with the unit to assist with closure.

In some cases, pipes chases may be subject to fire-stopping requirements. Consult applicable codes and the local code-enforcement authority.

NOTICE Risk of unexpected air flows and pressurizations.

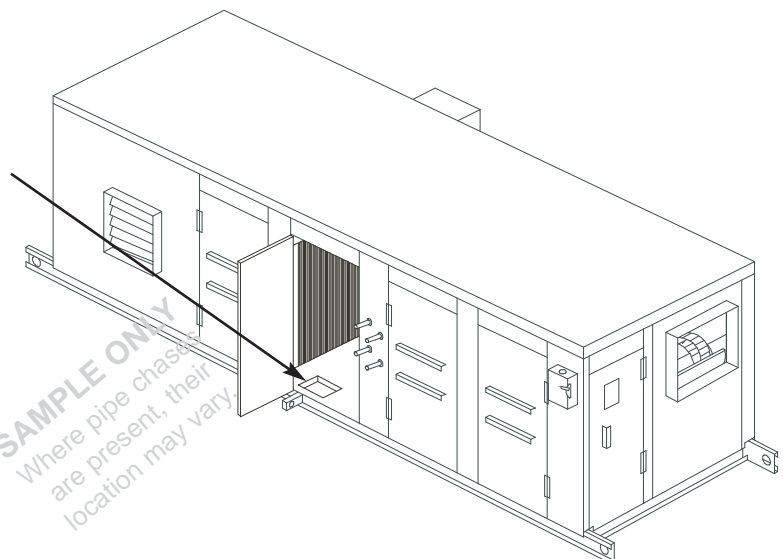
Air must not be allowed to flow through a pipe chase. Such air flow could lead to contamination of air and to unexpected pressurization of spaces. A pipe chase must be sealed.

Underside Pipe Chases

Some units may have pipe chases in the base of the unit. These chases may be intended to enclose conduits, heating-water pipes, steam pipes, etc.

IMPORTANT: Use the included chase cap to assist in sealing any pipe chases. Air must not be allowed to move through a chase.

IMPORTANT: In some cases, pipes chases may be subject to fire-stopping requirements. Consult applicable codes.



Wiring Checklist

Wiring

Installation

A copy of this checklist should be left with the unit.

Confirm that any required wiring specified on the unit-specific field-wiring diagram has been accomplished.

your initials

For units equipped for optional group operation via shared sensors, confirm that connections described in Dectron OM Appendix C7 - Shared Sensor Adapter have been accomplished.

your initials

For units equipped with the optional DryCooler feature, confirm that connections described in Dectron OM Appendix M1 - DryCooler have been accomplished.

your initials

For units equipped with the optional Modbus communications feature, confirm that connections described in Dectron OM Appendix C1 - Modbus have been accomplished.

your initials

For units equipped with the optional Heatco gas furnace, confirm that connections described in Dectron OM Appendix H2 - HTCO Furnace have been accomplished.

your initials

For units equipped with the optional BACnet PTP communications feature, confirm that connections described in Dectron OM Appendix C2 - BACnet PTP have been accomplished.

your initials

For units equipped with the optional TEGA gas furnace, confirm that connections described in Dectron OM Appendix H9 - TEGA Furnace have been accomplished.

your initials

For units equipped with the optional LONtalk® FTT-10A communications feature, confirm that connections described in Dectron OM Appendix C3 - LONtalk have been accomplished.

your initials

For units equipped with an optional Raypak Hi-Delta gas boiler (models 122-322), confirm that connections described in Dectron OM Appendix H6 - Raypak 1000.53E HiDelta Boilers 122-322 have been accomplished.

your initials

For units equipped with the optional Man-Machine Interface feature, confirm that connections described in Dectron OM Appendix C5 - MMI have been accomplished.

your initials

For units equipped with an optional Raypak Hi-Delta gas boiler (models 302B - 902B), confirm that connections described in Dectron OM Appendix H7 - Raypak 1000.501C HiDelta Boilers 302B-902B have been accomplished.

your initials

For units equipped with the optional http, BACnet Ethernet, or BACnet IP communications features, confirm that connections described in Dectron OM Appendix C6 - LANLink2 have been accomplished.

your initials

For units equipped with an optional Raypak Hi-Delta gas boiler (models 992B-2342B), confirm that connections described in Dectron OM Appendix H8 - Raypak 1000.511B HiDelta boilers 992B-2342B have been accomplished.

your initials

Checklist prepared by: _____

Date: _____
Model No. _____
Serial No. _____
Ref. No. _____

INSTALLATION

Installation

Wiring

Wiring Checklist

A copy of this checklist should be left with the unit.

Confirm that the unit is connected to a branch circuit with voltages which will always be within ±10% of the unit-nameplate value.

your initials

For outdoor units, confirm that all conduits connected to the unit have been sealed.

your initials

Confirm that the unit is connected to a branch circuit with the proper current ratings, as specified on the unit nameplate.

your initials

For units with the optional remote controller display, confirm that the wiring has been done using the materials and methods specified in this manual.

your initials

Confirm that only copper wire was used to power the unit.

your initials

For units with fire/smoke alarm inputs, confirm that the input has been properly wired and that the circuit has been tested.

your initials

Confirm that branch-circuit and feeder (if any) wiring were sized to allow at least the minimum voltage during compressor starting.

your initials

Confirm that all applicable sensor and control-signal circuits have been connected as described in this manual.

your initials

Confirm that all power-lug screws, including factory-tightened ones, were checked for tightness and proper torque.

your initials

Confirm that any outdoor relative-humidity transducer has been installed with the sensor pointing downward.

your initials

Confirm that the unit and any remote condenser, DryCooler, etc., have been properly grounded.

your initials

For units with air-cooled air conditioning, confirm that the proper control-wire sizes have been used to enable the remote condenser or DryCooler.

your initials

Confirm that electrical components were covered during installation to protect against drill chips, etc.

your initials

For units having extension modules on the controllers, confirm that any remote transducers have been configured for the correct signals.

your initials

For 3Φ units, confirm that all three phases are present, balanced within 2%, and that the phase sequence is correct.

your initials

For units equipped with service light and receptacle, confirm that a suitable branch circuit has been properly connected to the service-power lugs.

your initials

Date: _____
Model No. _____
Serial No. _____
Ref. No. _____

Checklist prepared by: _____

INSTALLATION



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Remote Condenser Adjustments	80
Pre-Startup Checklist	84
Controller Interface	89
Enable Operation	95
Adjustments	99
Instructions for Warranty Registration	104
Warranty Registration	105

NOTICE

Risk of unit damage.

Applying an incorrect voltage can cause damage to important parts of the unit. Be sure the branch-circuit voltage to be applied to the unit corresponds to the rated voltage stated on the unit nameplate.

NOTICE

Risk of unit damage.

Compressor crankcase heaters must be ON for at least 12 hours before enabling a compressor. Any damage resulting from a failure to allow this heat-up time is not covered by the Dectron warranty.

NOTICE

Risk of property damage.

This unit is not a convenience air conditioner - it is a process dehumidifier that is closely sized to the expected load. Any errors in installation, balancing, or startup will be obvious in operation.

NOTICE

The information presented in this section represents Dectron's best effort as of the time of issue. Compliance with the requirements and recommendations in this section should produce a proper startup of the equipment.

Where any steps are not clear, Dectron offers technical assistance at 1-800-667-6338 or 1-800-676-2566.

Dectron does not warrant that the information herein is complete for any particular application. In some cases job-specific requirements may cause modifications which may not appear in this section. Such modifications will be documented in addenda.

Follow all applicable safety rules and regulations, and all applicable codes. Where any recommendation in this manual conflicts with legal requirements, the legal requirements take precedence.

Dectron, Inc. does not engage in Startup contracting. All costs, risks, and responsibilities of properly starting the equipment are borne by others.

Dectron does offer on-site factory personnel to supervise of the startup process. There is a fee for this service. See details later in this section.

STARTUP

Startup

Safety Warnings

! WARNING

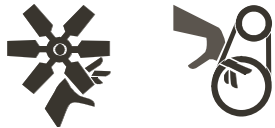


Risk of electric shock. Can cause injury or death.

Some startup procedures could expose personnel to the risk of electric shock. Electric shock can cause injury or death.

The unit controller does **not** disconnect electrical energy from the unit, even in the OFF condition. Use only approved devices (e.g. locking safety switch), to disconnect, lockout, and tagout all sources of electrical energy before working inside the unit cabinet. Follow all applicable safety regulations.

! WARNING



Risk of contact with moving parts. Can cause injury or death.

This product contains rotating parts and V-belt drives. Some startup procedures could expose personnel to the risk of injury or death from contact with these parts.

Using only approved devices (e.g. locking safety switch), disconnect, lockout, and tagout all sources of electrical energy before working inside the unit cabinet. Allow adequate time for rotating parts to stop. Follow all applicable safety regulations.

Do not operate the unit until ductwork or a screen is installed at each blower outlet.

! WARNING



Risk of flying liquids, gases, particles. Can cause eye injury.

Many tasks involve risk of exposure to flying materials which can cause eye injury. Always wear protective safety glasses or goggles, as appropriate.

! WARNING



Risk of blistering. Can cause injury.

Some surfaces inside an operating unit may be at elevated temperatures. The compressor, refrigerant-discharge tubes, and heat exchangers can become extremely hot during operation.

Compressor crankcase heaters can be extremely hot at any time electrical power is applied.

Turn off the unit and allow time for these parts to cool before working inside the unit cabinet. Wear protective clothing (gloves, sleeves, etc.) while working on these parts. Use gloves and other protective equipment to prevent injury.

! WARNING



Risk of pinching or crushing. Can cause injury.

Depending on the size of this product, some startup procedures could expose personnel to the risk of injury by pinching or crushing.

Access doors and panels are under a strong negative pressure when the blower(s) is running. Opening doors may be difficult. Closing doors must be done with a tool to prevent hands from being caught.

! WARNING



Risk of falling. Can cause injury or death.

Depending on the size and location of this product, some startup procedures could expose personnel to the risk of injury or death by falling.

Designs should include adequate service and maintenance access. Use fall-protection equipment as appropriate.

STARTUP

! WARNING

Risk of frostbite. Risk of eye damage.
 Improper handling of refrigerants and refrigerant hoses can allow release of liquid refrigerant. Exposure to liquid refrigerant can cause frostbite and severe eye damage. Wear gloves, eye protection, and any other appropriate protective equipment. Follow all safety procedures.

! WARNING

Risk of suffocation.
 Improper handling of refrigerants and refrigerant hoses can allow release of refrigerant gases. In a confined space, these heavier-than-air gases may accumulate and displace oxygen, leading to suffocation.
 Confirm adequate ventilation before proceeding.

! WARNING

Risk of contamination of breathing air. Can cause injury or death.
 Application of this product may involve the intake of outdoor air. The point of intake must be carefully chosen to prevent intake of contaminants.
 Application of this product may involve air-handling equipment, e.g. ducts, cabinets, plenums, etc., which operate below atmospheric pressure. Such equipment must be carefully located and installed to prevent the intake of contaminants.
 Follow the instructions in this manual and all applicable codes.

! WARNING

Risk of explosive pressure release. Can cause injury or death.
 This product contains refrigerant liquid and vapor under high pressure. Some installation and service procedures could expose personnel to the risk of explosive discharge. Some startup procedures could expose personnel to the risk of frostbite from release of refrigerant.
 Reclaim refrigerant to reduce the pressure to atmospheric before working on pipes, valves, heat exchangers, compressors, pressure switches, etc.
 Once opened, do not close any manual refrigerant valves that might isolate refrigerant from the relief valve. If necessary, install relief valves (by others).

NOTICE

Risk of uncontrolled condensation. Can cause property damage.
 This product is intended to control relative humidity and temperatures. Improper design, installation, and/or operation can lead to uncontrolled condensation of water, with associated property damage.
 Read and follow the instructions in this manual. Optional material will be noted as being optional. All other material should be considered as important to the proper function of the product.

NOTICE

Risk of leaking water. Can cause property damage.
 This product may use circulating water under pressure.
 This product requires a free-flowing drain.
 Freezing or other abnormal conditions could cause leakage or overflow. Uncontrolled water can cause expensive damage to buildings and other equipment. Do not locate this product above any equipment that could be damaged by water.

STARTUP

Startup

Pre-Startup Adjustments

! WARNING



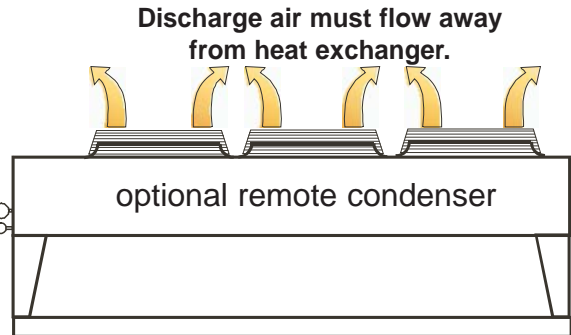
Risk of contact with moving parts. Can cause injury or death.
Do not attempt to defeat the fan guards. Do not insert foreign objects through fan guards.

CONDENSER FAN ROTATION

(units with air-cooled air-conditioning option only)

Units with optional air-cooled air conditioning will have a remote condenser. The condenser fans must rotate so as to produce airflow away from the heat exchanger.

Single-phase fans will inherently turn the proper direction. If three-phase fans turn the wrong way, a qualified person should disconnect the branch circuit and interchange any two wires on the power inlet lugs in the condenser control enclosure. **Do not move any factory-installed wires.**



! WARNING



Risk of electric shock. Can cause injury or death.

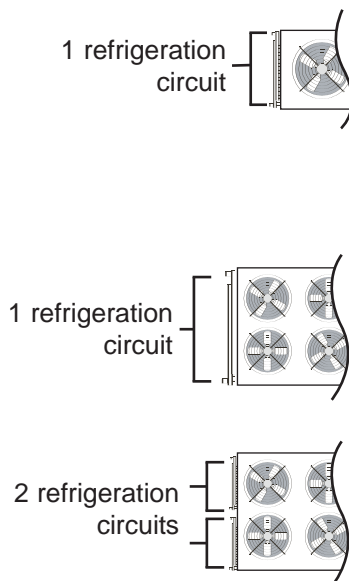
Exposed electric terminals may be present inside electrical and control enclosures. Disconnect the branch circuit, and lockout and tagout sources of electric energy before opening covers. Follow all safety regulations.

CONDENSER FAN THERMOSTATS (units with air-cooled air-conditioning option only)

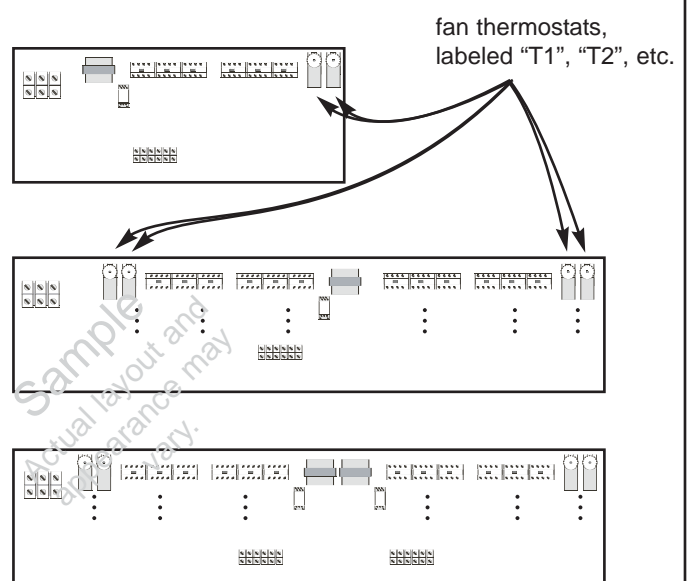
Units with optional air-cooled air conditioning will have a remote condenser. Some remote condensers may have more than one fan. Condensers with multiple fans have a minimum number of fans that run continuously whenever the DRY-O-TRON® is in cooling mode. Any other fans will be controlled by thermostats sensing outdoor air temperature.

The thermostats must be adjusted at installation, using the diagrams below and on the next page.

FAN ARRANGEMENT



CONDENSER CONTROL ENCLOSURE



STARTUP

Pre-Startup Adjustments

Startup

		THERMOSTAT SETTINGS											
		T1	T2	T3	T4	T5	T6	T7	T8	T9	T10	T11	T12
1 refrigeration circuit		70											
1 refrigeration circuit		65	70										
1 refrigeration circuit		60	65	70									
1 refrigeration circuit		60	65	70	75								
1 refrigeration circuit		60	65	70	75	80							
1 refrigeration circuit		55	60	65	70	75	80						
1 refrigeration circuit		65	70										
2 refrigeration circuits		65	65	70	70								
1 refrigeration circuit		60	65	70									
2 refrigeration circuits		60	60	65	65	70	70						
1 refrigeration circuit		60	65	70	75								
2 refrigeration circuits		60	60	65	65	70	70	75	75				
1 refrigeration circuit		60	65	70	75	80							
2 refrigeration circuits		60	60	65	65	70	70	75	75	80	80		
1 refrigeration circuit		55	60	65	70	75	80						
2 refrigeration circuits		55	55	60	60	65	65	70	70	75	75	80	80

DECTRON

STARTUP

Data subject to change without notice.

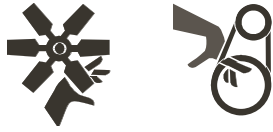
Startup

Pre-Startup Adjustments

! WARNING

Risk of contact with moving parts. Can cause injury or death.

This product contains rotating parts and V-belt drives. Some installation, service, and maintenance procedures could expose personnel to the risk of injury or death from contact with these parts.



Using only approved devices (e.g. locking safety switch), disconnect, lockout, and tagout all sources of electrical energy before working inside the unit cabinet. Allow adequate time for rotating parts to stop. Follow all applicable safety regulations.

Be sure that the following manual valves have been opened:

1. Depending on the size of the unit, the compressor(s) may have manual isolation valves. Where present, these valves must be opened before attempting to operate the compressor(s). Do not open these valves until the compressor crankcase heaters have been turned on.
2. Depending on the type of unit, there may be refrigerant receivers. Where present, receivers on each circuit will have two isolation valves. These valves must be opened before attempting to operate the compressor(s).

! WARNING

Risk of explosive depressurization. Can cause injury or death.

Once these valves have been opened, they should not be closed again unless 1/2 pound (250g) of refrigerant is reclaimed from the filter-drier and into the receiver (or the pressure is reduced below 10 PSIG (69 kPa)) **immediately after** closing the valves.

3. For units with air-cooled air conditioning only - the condenser tubes of each circuit will have isolation valves inside the cabinet. These valves must be opened before attempting to operate the compressor(s).

! WARNING

Risk of explosive depressurization. Can cause injury or death.

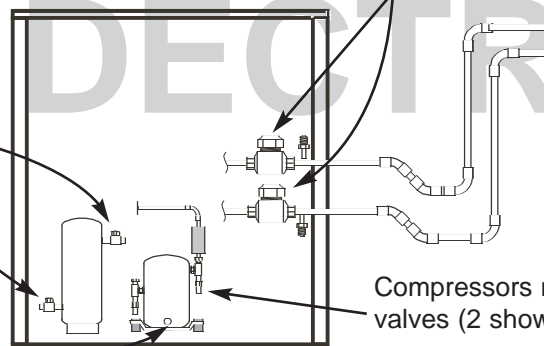
Once these valves have been opened, they should not be closed again unless 1 pound (500g) of refrigerant is reclaimed from the condenser and into the receiver (or the pressure is reduced below 10 PSIG (69kPa)) **immediately after** closing the valves.

4. Do not adjust any other manual valves at this time.

Units with air-cooled air conditioning only -
Each condenser tube will have an isolation valve (2 shown).

Any receivers will have
isolation valves (2 shown).

Some compressors may have
oil sight glasses.
Where present, be sure the oil
level is correct.



Compressors may have isolation
valves (2 shown).

DECTRON
Sample
Actual layout
may vary.

STARTUP

Pre-Startup Adjustments

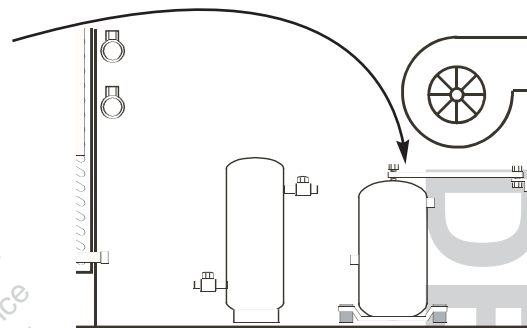
Startup

Some units may ship with wooden spacer blocks to maintain component positions during shipping. Open the unit access panels or doors and remove any wooden blocks.

Where wire or plastic wraps are used to hold the wooden blocks in place, remove them also. Do not leave loose materials inside the unit.

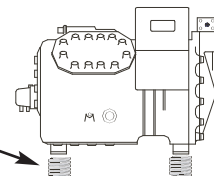
NOTE: Do not remove perforated-channel braces unless specifically instructed to do so.

Some units may ship with a metal brace restraining the top of the compressor(s). Inspect the compressors and remove any top braces.



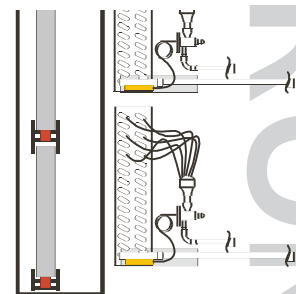
*Samples
Appearance
may vary.*

Some units may ship with compressor mounting springs compressed. Where this is the case, loosen the bolts just enough to allow the compressor(s) to float on the springs.



Refrigerant distributor tubes may be touching after shipment. Operating the unit with tubes touching each other can lead to refrigerant leaks.

Inspect all the distributor tubes and gently separate them so that they do not touch. If necessary, separate them with plastic spiral wrap or silicone caulk.



Carefully test all refrigerant tubes, refrigerant components, and tube joints (including factory joints) for leaks, using a reliable electronic leak detector. Repair all leaks as necessary.

STARTUP

Startup

Pre-Startup Checklist

Print your initials in the boxes to indicate completion. Print "N/A" for items which are not applicable to the installation.

Space

Confirm that space heat is available and that the room temperature can be held near nameplate value.

your initials

Confirm that the walls and ceiling have been adequately insulated and have a proper vapor barrier (see Building - Moisture Migration).

your initials

Confirm that any windows are installed and so constructed as to allow proper airflow over the glass (see Building - Moisture Migration).

your initials

Air Distribution

Confirm that all ducts have been sized and installed correctly to limit the external static pressure to no more than the specified amount at full rated flow. See Installation - Ducts.

your initials

Confirm that no construction dust or other debris is in the return duct or the outdoor-air intake duct (if any).

your initials

Confirm that no construction dust or other debris will be drawn into the return duct or the outdoor-air intake duct (if any).

your initials

Confirm that the plastic or paper covers over all return grille(s) have been removed.

your initials

Confirm that all grilles and diffusers are unobstructed.

your initials

Confirm that air distribution is arranged to cause proper flow in all parts of the space. See Installation - Air Distribution.

your initials

Confirm that air distribution is arranged to cover all surfaces that might reach dew point. See Installation - Air Distribution.

your initials

Confirm that arrangements have been made for any tall or very tall windows. See Installation - Air Distribution.

your initials

Confirm that supply diffusers are arranged to deliver air to windows, doors, or other possibly cold surfaces at a sharp angle and from a short distance. See Installation - Air Distribution - Supply Diffusers.

your initials

For fabric duct, confirm that the duct is supported in such a way that it will not rotate. See Installation - Air Distribution - Fabric Duct.

your initials

Confirm that ducts that might go below the dew point of the surrounding air have been properly insulated. See Installation - Ducts - Ventilation - Outdoor-Air Intake Duct.

your initials

Date: _____

Model No. _____

Serial No. _____

Ref. No. _____

Completed by _____ Ph. () - - - - -

Data subject to change without notice.

STARTUP

Pre-Startup Checklist

Startup

Piping

Confirm that pipes, conduits, etc., will not interfere with the opening of access doors or panels. See **Installation - Piping - General**.

Confirm that any external refrigerant tubes are installed in compliance with the recommendations of this manual and published standards. See **Installation - Piping - Refrigerant**.

For air-cooled units, confirm that refrigerant piping is installed and free of leaks.

For air-cooled units, confirm that remote-condenser tubes have the outside diameters specified on the unit nameplate.

For air-cooled units, confirm that the remote condenser and its connecting tubes have been evacuated as described in this manual. See **Installation - Piping - Adding Refrigerant**.

For air-cooled units, confirm that the condenser tubes are not longer than specified on the nameplate.

For air-cooled units, confirm that the hot-gas riser tubes (if any) are properly trapped. (See **Installation - Piping - Refrigerant**.)

For air-cooled units, confirm that the correct amount of refrigerant (if any) has been added. See **Installation - Piping - Adding Refrigerant**.

Date: _____

Ref. No. _____

Model No. _____

Serial No. _____

Completed by _____ Ph. () _____ - _____

For air-cooled units, confirm that the correct amount of oil (if any) has been added. See **Installation - Piping - Oil Charging**.

Confirm that the refrigerant-relief tube (if any) on indoor units has been extended and terminated as appropriate. See **Installation - Piping - Refrigerant - Relief Tube**.

For units with water-cooled air conditioning, confirm that the pipes for cooling water have been installed per published standards and the recommendations in this manual. See **Installation - Piping - Water-or Fluid-Cooled A/C**.

Units with water-heat, glycol-heat, or steam-heat only: Confirm that the pipes for heating water have been installed per published standards and the recommendations in this manual. See **Installation - Piping - Heating**.

Confirm that the heating fluid system (if any) is installed and free of leaks.

Confirm that the condensate drain has been installed per published standards and the recommendations in this manual. See **Installation - Piping - Condensate Drain**.

Confirm that the condensate drain has been tested by pouring a bucket of water into it. See **Installation - Piping - Condensate Drain**.

For units requiring a condensate pump, confirm that the pump is operating.

For units with boilers or furnaces, confirm that the fuel gas is supplied between 7" W.C. and 14" W.C., or at a special pressure specified at time of order.

For units with boilers or furnaces, confirm that the fuel gas piping is correctly sized.

Confirm that all special piping arrangements specified in appropriate appendices have been made. See **Installation - Piping - General**.

Remote Condenser or Dry-Cooler®

Confirm that the condenser or Dry-Cooler® is located properly for good airflow (see **Installation-Locate Condenser**).

Confirm that the voltage to be applied corresponds to that specified on the nameplate and NEMA MG-1.

Confirm that the remote condenser or Dry-Cooler is properly grounded.

Confirm that only copper conductors are connected to the input lugs.

Confirm that the fan cycling thermostats (if any) are adjusted. (See **Startup - Pre-Startup Adjustments**.)

Confirm that the condenser top and side clearances are at least as large as specified in **Installation-Locate Condenser**.

Confirm that no dirt, leaves, or other debris will be drawn into the heat exchangers.

Confirm that any shipping blocks, spacers, or retainers have been removed.

your initials

your initials

your initials

your initials

your initials

your initials

your initials

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your initials

your initials

your initials

STARTUP

Startup

Pre-Startup Checklist

Wiring

Confirm that the voltage to be applied to the unit is within ±10% of the rated voltage stated on the unit nameplate and to the other requirements of **Installation - Wiring - Power**.

your initials

For units with air-cooled air conditioning, confirm that the voltage applied to the remote condenser corresponds to that specified on the condenser nameplate.

your initials

Confirm that the size of the wire supplying electric power to the DRY-O-TRON® is adequate for the circuit ampacity shown on the nameplate.

your initials

For long lengths of power wiring or marginal voltage, confirm that the wire size is adequate for less than 10% voltage drop under compressor starting current.

your initials

Confirm that only copper wire was used for any connections to the DRY-O-TRON®.

your initials

Confirm that the unit is properly grounded.

your initials

Confirm that all electrical connections have been checked for tightness and re-torqued as necessary.

your initials

Confirm that all electrical enclosures are clean and dry.

your initials

For 3-phase units, confirm that the phase sequence is correct for proper blower rotation. See **Setup - Airflow**.

your initials

Confirm that all conduits entering units have been sealed. See **Installation - Wiring - Power** and **Installation - Wiring - Control Signals**.

your initials

For units with optional remote controller displays, confirm that the remote displays are wired per the recommendations in this manual. See **Installation - Wiring - Control Signals - Optional Remote Display**.

your initials

Confirm that all control signals are wired per published standards and the recommendations in this manual. See **Installation - Wiring - Control Signals**.

your initials

Confirm that any special wiring has been accomplished per the instructions in any applicable appendix. See **Installation - Wiring - Special**.

your initials

Ducts

For end-return units, confirm that the the return duct has the minimum straight length (see **Installation - Unit-Duct Connections**).

your initials

Confirm that the supply duct has the minimum straight length (see **Installation - Unit-Duct Connections**).

your initials

For units with outdoor air intakes, confirm that the intake duct is properly connected (see **Installation - Air Distribution - Ventilation**).

your initials

For units with an outdoor air intake, confirm that the intake hood is unobstructed.

your initials

Confirm that outdoor air will be heated as necessary to assure that all outdoor air entering the unit will be above 32°F (0°C). See **Installation - Minimum Outdoor-Air Temperature**.

your initials

Confirm that the ventilation-duct procedures specified in this manual and in the appropriate appendices have been applied. See **Installation - Ducts - Ventilation**.

your initials

Confirm that the outdoor air intake duct (if any) is not brought into the unit's return duct. See **Installation - Air Distribution - Ventilation**.

your initials

For units with duct-mounted heaters, confirm that the heater is no closer than 5 times the width of the duct to the DRY-O-TRON®.

your initials

Date: _____
Model No. _____
Serial No. _____
Ref. No. _____

Checklist prepared by: _____

STARTUP

Pre-Startup Checklist

Startup

Test, Adjust, and Balance

Confirm that the balance report shows all airflows to be within ±10% of the required values. See **Test, Adjust, Balance**.

For water-cooled units, confirm that the balance report shows cooling-water flow within ±10% of the required values. See **Test, Adjust, Balance**.

For units equipped with a Dry-Cooler, confirm that the balance report shows glycol flow within ±10% of the required values. See **Test, Adjust, Balance**.

For units equipped with hot-water or steam heat, confirm that the balance report shows flow within ±10% of the required values. See **Test, Adjust, Balance**.

Confirm that the T.A.B. checklist is completely and suitably filled out. See **Test, Adjust, Balance**.

your initials

your initials

your initials

your initials

your initials

Unit preparation

Confirm that adequate space has been left around the DRY-O-TRON® (see **Installation - Unpacking and Locating**).

For indoor DRY-O-TRON® units, confirm that the unit is supported on vibration isolators (see **Installation - Isolators and Drain**).

Confirm that all shipping blocks, shipping braces, compressor locks, etc., have been removed or released for normal operation.

Confirm that all blower belts are properly aligned and tensioned. See **Test, Adjust, Balance**.

Confirm that all blowers turn in the correct direction. See **Test, Adjust, Balance**.

For units with an outdoor air intake, confirm that the intake hood is unobstructed.

Confirm that the air heat exchangers are clean.

Confirm that all air filters are clean and in place. See **Test, Adjust, Balance**.

Confirm that power has been applied to the crankcase heaters for at least 12 hours.

Confirm that any dampers, actuators, hoods, etc., shipped separately are properly installed. See **Installation - Pre-Assembly**.

your initials

your initials

your initials

your initials

your initials

your initials

your initials

your initials

your initials

Other

For units with duct heaters by others, confirm that all settings allow space heating when so commanded by the unit.

For units with hot-water or steam space heat, confirm that all settings allow space heating when so commanded by the unit.

For units with gas furnaces or gas boiler space heat, confirm that all settings allow space heating when so commanded by the unit.

For units with water-cooled air conditioning, confirm that cooling water will be immediately available when commanded by the unit.

For units with air-cooled air condenser(s) or DryCooler(s), confirm that the device is powered and ready to operate.

your initials

your initials

your initials

your initials

your initials

Checklist prepared by: _____

Date: _____

Model No. _____

Serial No. _____

Ref. No. _____

STARTUP

Startup

Pre-Startup Adjustments

! WARNING



Risk of electric shock. Can cause injury or death.

Exposed electric terminals may be present inside electrical and control enclosures. Disconnect the branch circuit, and lockout and tagout sources of electric energy before opening covers. Follow all safety regulations.

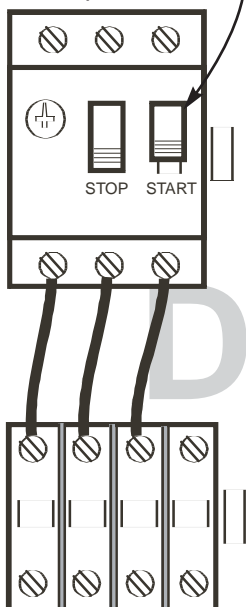
On some units, the motors have internal overload protectors. On other units, motor protection involves external overload protectors in the electrical enclosure. Using the unit wiring diagram, determine if the blowers and/or compressors have external overload protectors in the electrical enclosure.

If so, locate the overloads for each blower and for each compressor. Units with optional built-on boilers may also have overloads for glycol pumps.

Where external overload protectors are present, select the type of protector below and follow the instructions for that type. Other protector types are possible.

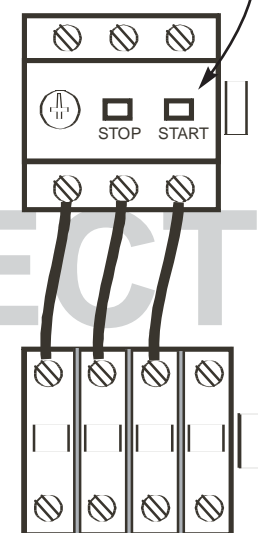
To enable the motor or to reset the overload protector, press START.

To disable a motor, press STOP.



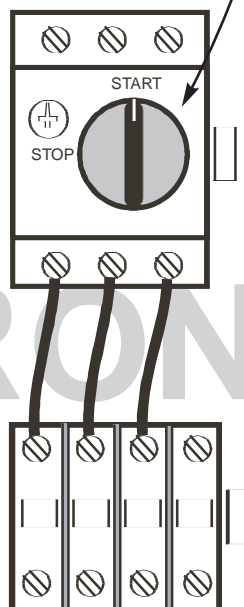
To enable the motor or to reset the overload protector, press START.

To disable a motor, press STOP.

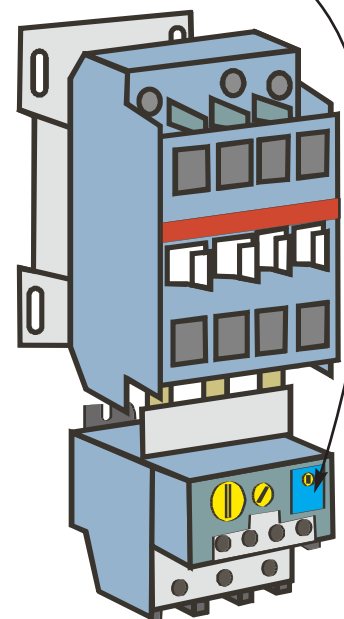


To enable the motor or to reset the overload protector, turn the knob clockwise to the START position.

To disable a motor, turn the knob to the STOP position.



To enable the motor or to reset the overload protector, push in the blue button.



STARTUP

NOTICE Risk of unit damage.

Call Dectron before changing the trip points.

NOTE: Do not mount a controller remote interface where it may come into contact with air from the natatorium or from the chemical-storage area. An office area is the best choice.

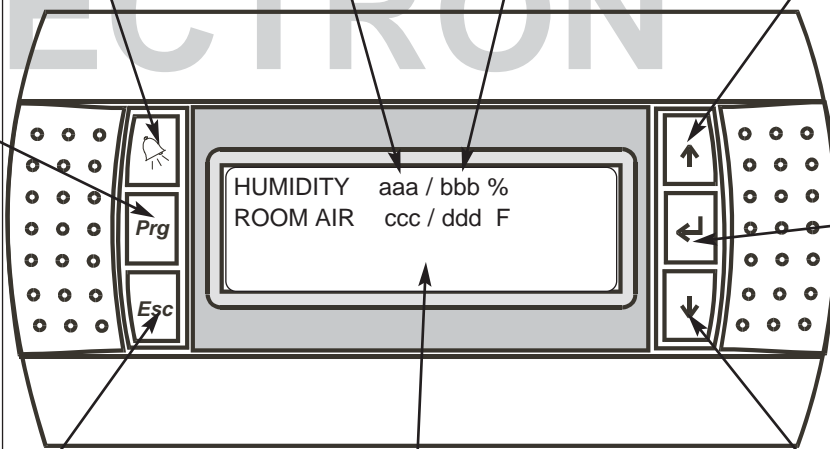
is used to access the list of alarm conditions, if any exist.

is used to scroll upward through screens and to increase settings.

While in the default screen, press the **Prg** button to display the program version.

If an alarm is being displayed, press **Prg** to access HELP screens.

Default screen
present value set point



is used to navigate around the screen and to accept inputs.

ESC is used to return to previous interface levels.

The backlit LCD screen displays any needed information on the operation of the system.

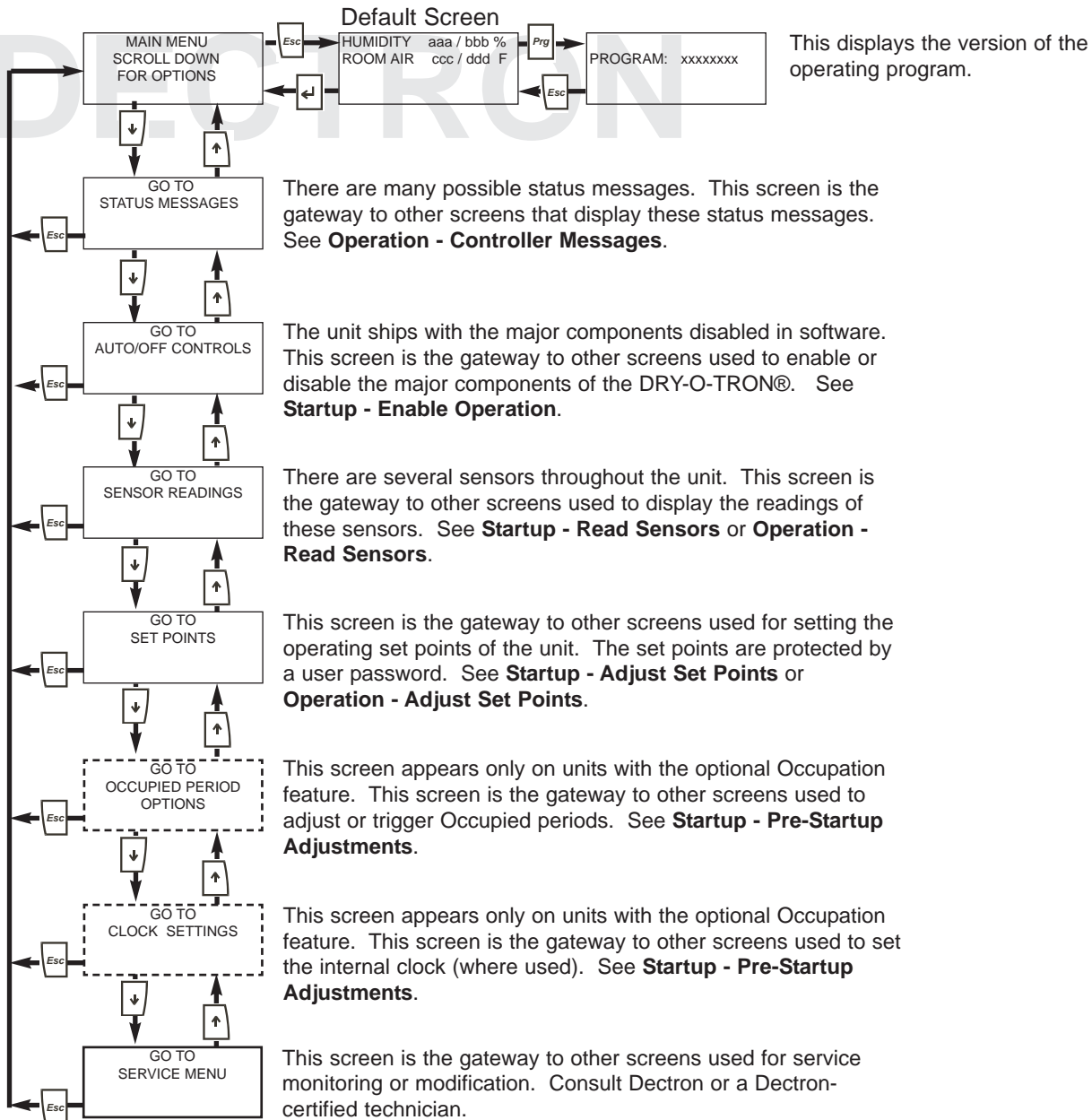
is used to scroll downward through screens and to decrease settings.

Startup

Controller Interface

NOTE: In the images and the discussion, “aaa”, “bbb”, “ccc”, “ddd”, and “xxxxxxx” are placeholders. Your screen will actually show the current values for your unit.

NOTE: For a controller interface map, see **Operation**.



STARTUP

Determine Compressor & Refrigerant Types

Startup

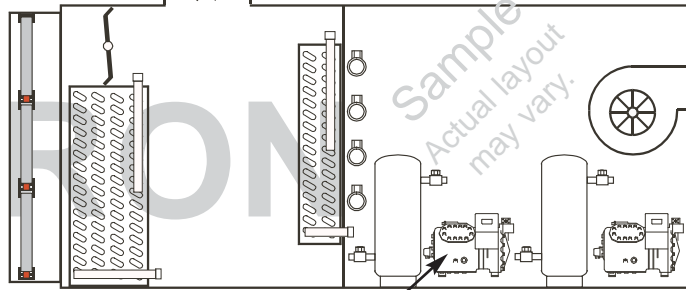
WARNING



Risk of contact with moving parts. Can cause injury or death.

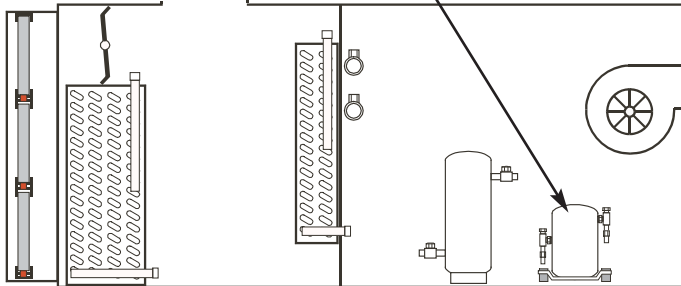
This product contains rotating parts and V-belt drives. Some installation, service, and maintenance procedures could expose personnel to the risk of injury or death from contact with these parts.

Using only approved devices (e.g. locking safety switch), disconnect, lockout, and tagout all sources of electrical energy before working inside the unit cabinet. Allow adequate time for rotating parts to stop. Follow all applicable safety regulations.



Note the type of compressor from the compressor label, and record it below.

ex: Copeland, Trane, Bitzer, etc.



My compressor is a

Refer to the unit nameplate.
Determine the type of refrigerant.

Dectron DEH-D-TROK #

MODEL # _____ SERIAL # _____

ELECTRICAL RATING: 208 V 3 PH 60 HZ

COMPRESSOR: _____

CONDENSER MOTOR: _____

BLOWER MOTOR: _____

COND. FAN MOTOR: _____

EVAPORATOR MOTOR: _____

ELECTRIC HEATER: _____

SPACE HEATING COIL: _____

MAX. FLOODOUT SWIT: _____

8-22 FACTORY CHARGE: _____

AIR VOLUME: _____

WIRING DIAGRAM: _____

REFRIGERANT DESIGN PRESSURE: HIGH/LOW SWITCH PAIR

COMPARED TO MANUAL AND THIS COMPARED TO SPECIFICATION

REFRIGERANT TYPE: _____

AS COOLED COND. MODEL: _____

My refrigerant is

STARTUP

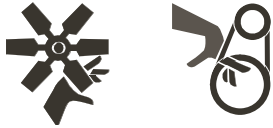
Startup

Prepare to Adjust Expansion Valve(s)

➔ The expansion valve(s) must be adjusted at startup, since airflow affects the evaporator loading. ⬅
 To obtain proper operation and long life, it is important to adjust the expansion valve(s) as described here.

➔ Do not attempt to adjust the expansion valve based on evaporator superheat. ⬅

! WARNING

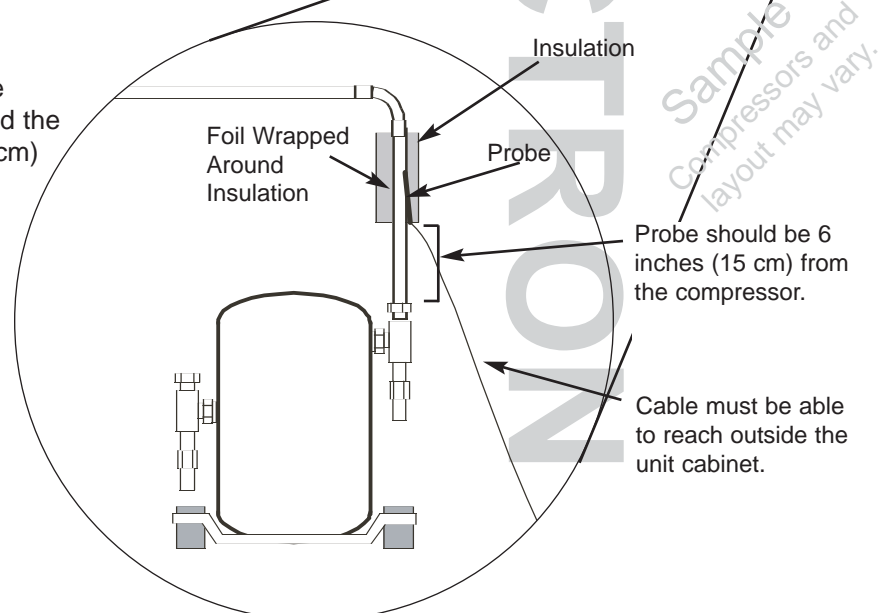
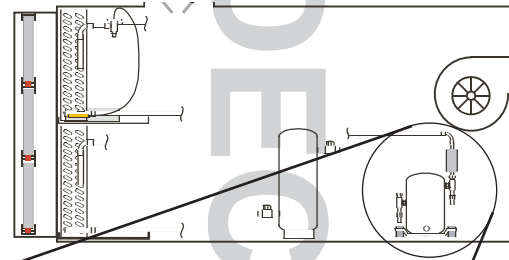


Risk of contact with moving parts. Can cause injury or death.

This product contains rotating parts and V-belt drives. Do not approach any moving parts while electric power is applied to unit. Use only approved devices (e.g. locking safety switch), to disconnect, lockout, and tagout all sources of electrical energy before working inside the unit cabinet. Allow adequate time for rotating parts to stop. Follow all applicable safety regulations.

1. For units with air-cooled air conditioning, be sure that the specified additional refrigerant has been added. See **Product Description - Unit Nameplate, Installation - Piping - Refrigerant, and Startup - Add Refrigerant.**
2. Be sure that the airflows have been adjusted as described previously in this section.
3. Be sure that the room temperature and relative humidity are near the values shown on the unit nameplate. (See **Product Description - Unit Nameplate**).
4. If the evaporator-bypass damper is manually operated, be sure that it is fully open.

5. Locate the compressor for the circuit being adjusted.
6. Attach the probe of a remote-reading electronic thermometer (by others) to the compressor-discharge tube approximately 6 inches from the compressor shell. The thermometer should have a range including 100 to 250°F (38 - 120°C).
7. Wrap 1/2 inch (1cm) thick insulation around the tube-probe assembly. The insulation should go all the way around the tube, and extend at least 3 inches (8 cm) along the tube on both sides of the probe end.
8. Wrap the insulation with foil or foil-backed tape. Close the foil tightly (especially the ends) against the turbulent airflow that will form inside the cabinet.



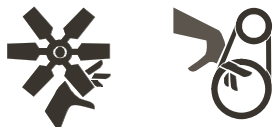
STARTUP

GO TO NEXT PAGE.

Prepare to Adjust Expansion Valve(s)

Startup

WARNING



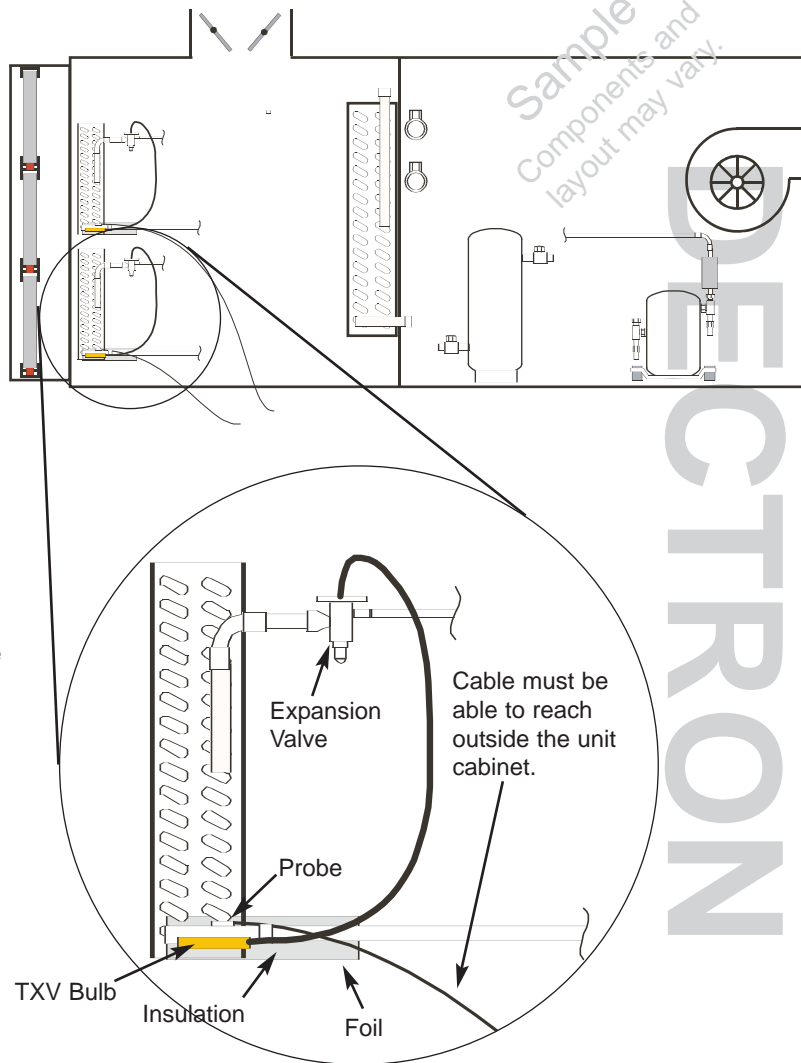
Risk of contact with moving parts. Can cause injury or death.

This product contains rotating parts and V-belt drives. Do not approach any moving parts while electric power is applied to unit. Use only approved devices (e.g. locking safety switch), to disconnect, lockout, and tagout all sources of electrical energy before working inside the unit cabinet. Allow adequate time for rotating parts to stop. Follow all applicable safety regulations.

If there are two or more expansion valves **for each refrigeration circuit**, then follow the steps below. Otherwise, skip to next page.

- 8a. Attach the probes of remote-reading electronic thermometers to the evaporator-suction tubes 6 to 18 inches from the evaporators. The thermometers should have a range including 32 to 80°F (0-27°C).
- 8b. Wrap 1/2 inch (1cm) thick insulation around the tube-probe assembly. The insulation should go all the way around the tube, and extend at least 3 inches (8 cm) along the tube on both sides of the probe.
- 8c. Wrap the insulation with foil or foil-backed tape. Close the foil tightly (especially the ends) against the turbulent airflow that will form inside the cabinet.
- 8d. Route the probe cables through the door or access panel to allow temperatures to be read with the unit running.

GO TO NEXT PAGE.



STARTUP

Startup

Check / Add Oil

! WARNING



Risk of flying liquids, gases, particles. Can cause eye injury.

This task may involve risk of exposure to flying materials which can cause eye injury. Always wear protective safety glasses or goggles, as appropriate.

! WARNING

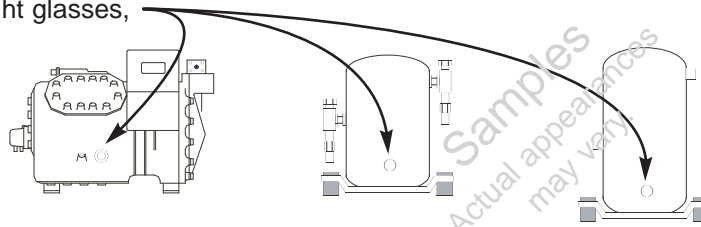


Risk of contact with moving parts. Can cause injury or death.

This product contains rotating parts and V-belt drives. Do not approach any moving parts while electric power is applied to unit. Use only approved devices (e.g. locking safety switch), to disconnect, lockout, and tagout all sources of electrical energy before working inside the unit cabinet. Allow adequate time for rotating parts to stop. Follow all applicable safety regulations.

For units without oil-level sight glasses, any needed additional oil was added under "Add Pre-Determined Amount of Oil" on a previous page.

For units with oil-level sight glasses,



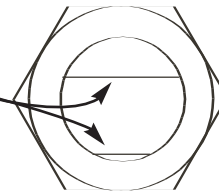
the oil level must be monitored carefully during the startup phase.

Be sure that the room temperature is within 4°F (2.2°C) and the relative humidity is within 10% of the unit-nameplate values. Check the oil level

1. 30 minutes after starting the compressor,
2. each hour for the four (4) hours after starting the compressor ,
3. before leaving for the day, and
4. on the second startup day.

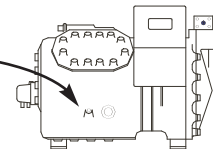
Add or remove oil to keep the level as near the middle of the sight glass as possible, and in any case between 1/8 and 3/4 full.

NOTICE Risk of compressor damage.
DO NOT OVERFILL OR UNDERFILL.



For semi-hermetic compressors, oil can be added through the oil fill plug. Use standard procedures per compressor manufacturers.

For scroll compressors and hermetic reciprocator compressors, add oil through the low-pressure convenience access valve, mounted on the unit cabinet.



The oil may appear slightly foamy until 30 minutes after the expansion valve is properly adjusted. After the expansion valve(s) is adjusted, the oil should not appear foamy. If the oil appears to be foaming after 30 minutes of operation after the expansion valve is adjusted, contact Dectron.

STARTUP

IMPORTANT!

This energy recycling dehumidification system has been tested under design conditions at the factory.

Start-up must be performed by a qualified factory-trained service and installation technician.

Once startup is completed, all portions of the "Startup Report and Warranty Registration" form **must** be completely filled in and a copy **must** be sent to the Dectron factory in order to register and validate the warranty. A copy can be faxed to the factory office at 514-334-9184.

NOTICE Risk of equipment damage.

Do NOT turn on the electric power unless the branch-circuit voltage matches that specified on the unit nameplate.

NOTICE Risk of equipment damage.

Indoor units require a minimum equipment-room temperature of 70°F (21°C). Units may not start reliably at lower equipment-room temperatures. Contact Dectron if this temperature cannot be maintained.

NOTICE Risk of equipment damage.

Where compressors are equipped with oil-level sight glasses, the oil level should be monitored closely during the first 10 hours of operation.

NOTICE**IMPORTANT!****Heating, Cooling, or Dehumidifying Construction Sites****Risk of equipment damage. Risk of property damage.**

The DRY-O-TRON® unit is not a convenience air conditioner. Its capacity is matched to the expected load. Any damage to the unit and any performance reduction due to abuse or improper installation will be obvious once the building begins normal use.

Never use the unit to heat, cool, or dehumidify a construction site. The air coils must be protected from construction dusts until all construction dusts have been removed from the space, from the return duct, and from the outdoor-air intake (if any). Construction dusts bind to the cooling coil permanently and cannot be removed. Once bound, the dusts reduce heat transfer and airflow rate.

Filters will not prevent this.

The resulting performance reduction and possible component damage are **not** covered by the Dectron warranty.

Startup

Enable Operation

! WARNING

Risk of contact with moving parts. Can cause injury or death.

This product contains rotating parts and V-belt drives. Some installation, service, and maintenance procedures could expose personnel to the risk of injury or death from contact with these parts.



Using only approved devices (e.g. locking safety switch), disconnect, lockout, and tagout all sources of electrical energy before working inside the unit cabinet. Allow adequate time for rotating parts to stop. Follow all applicable safety regulations.

! WARNING

Risk of pinching or crushing. Can cause injury.

Access doors and panels are under a strong negative pressure when the blower(s) is running. Opening doors may be difficult. Closing doors must be done with a tool to prevent hands from being pinched or crushed.

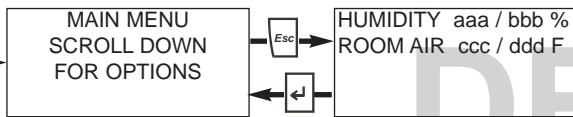


NOTE: Close all doors and/or access panels before starting the blower.

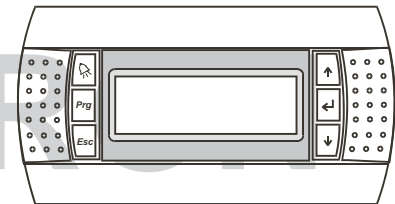
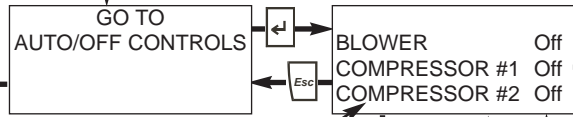


DO NOT PROCEED UNLESS THE CRANKCASE HEATER HAS BEEN ON FOR AT LEAST 12 HOURS.

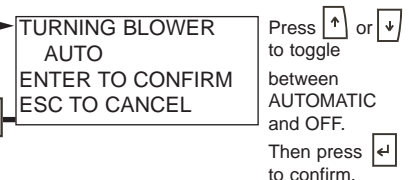
Default Screen



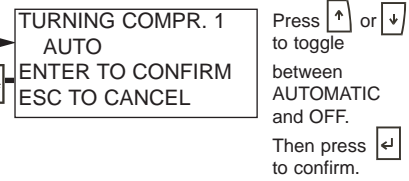
Press repeatedly to reach screen below.



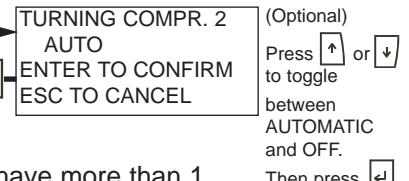
For a controller interface map, see Operation.



Press or to toggle between AUTOMATIC and OFF. Then press to confirm.



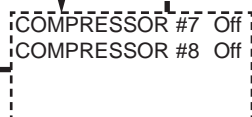
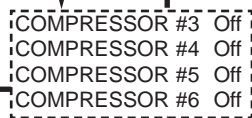
Press or to toggle between AUTOMATIC and OFF. Then press to confirm.



(Optional) Press or to toggle between AUTOMATIC and OFF. Then press to confirm.

For best results, start the compressor(s) for one circuit at a time. Later instructions will return you to this page for subsequent circuits.

optional screens and compressors



Some units may have more than 1 or 2 compressors. Where this is the case all or parts of the screens at left may appear.

Follow the procedures above for each compressor in turn.

STARTUP

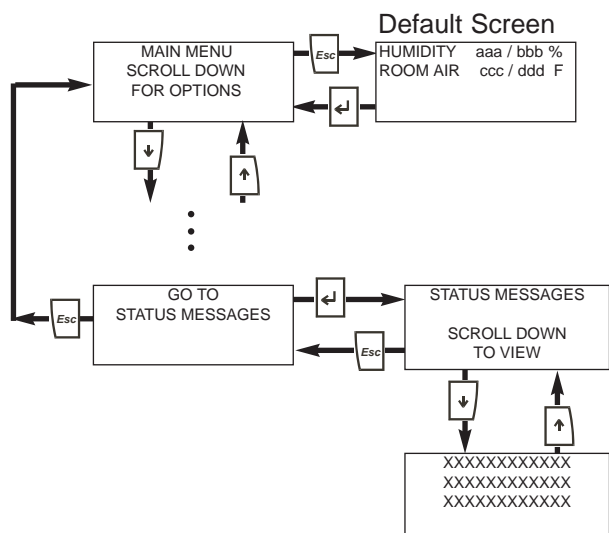
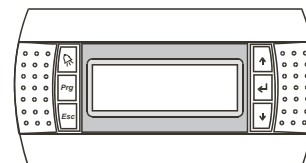
Check Status

Enable Operation

Startup

To check the current status messages, use the controller-interface map below access the STATUS MESSAGES screen.

Press or to view all the status messages



NOTE: In the images and the discussion, “aaa”, “bbb”, “ccc”, “ddd”, and “xxx” are placeholders. Your screen will actually show the current values for your unit.

Press or as necessary to see all the status messages.

Refer to the following page for a list of status messages and their meanings. Some units may have special status messages. In this case, refer to the Sequence of Operation supplied with the unit.

Press repeatedly to return to the main menu or the default screen.

If a compressor does not start:

1. **IMPORTANT!** The room conditions must be approximately as shown on the unit nameplate.
2. Check that the software compressor enable is actually set to AUTO.
3. Check that the compressor-overload device (if any) is ON.
4. Check STATUS MESSAGES (next page) to be sure that
 - 4a. the blower is ON, and
 - 4b. the Firestat is in the normal condition.
5. Correct the above as necessary.

If the compressor still does not start, temporarily change the set points (third page following) to cause it to do so.

NOTE: Air-compartment access doors or panels must remain closed while the compressor(s) is running, except briefly for expansion-valve adjustment.

NOTE: The evaporator pressure may not be stable for a few minutes. This is normal. If instability persists, it should be corrected when the expansion valve is adjusted (see following instructions).

STARTUP

Startup

Enable Operation

Check Status

STATUS MESSAGES

SCROLL DOWN
TO VIEW

Press  repeatedly to view any of the following Status messages that apply at the moment.

NOTE: In the list below the letter "X" is a placeholder for a number referring to a particular refrigeration circuit. On your screen the appropriate number will appear rather than the "X".

- A/C ON - The Air-Conditioning feature is operating.
- AIR HEATING CALL - The temperature of the room is below set point minus offset minus differential.
- ASCT X ON - The minimum OFF time for compressor X has not elapsed.
- AUX. AIR HEATING ON STAGE 1 - First stage auxiliary air heating is ON.
- AUX. AIR HEATING ON STAGE 2 - Second stage auxiliary air heating is ON.
- AUX. AIR HEATING ON STAGE 3 - Third stage auxiliary air heating is ON.
- AUX. AIR HEATING ON STAGE 4 - Fourth stage auxiliary air heating is ON.
- BLOWER ON - Blower is operating.
- BLOWER REMOTE SWITCH OFF - The blower is turned off by remote manual input.
- BLOWER TURNED OFF - See **Startup - Enable Operation**.
- COMPRESSOR X EMERGENCY SWITCH OFF - The manual ON/OFF switch is OFF.
- COMPRESSOR X PUMPDOWN - Compressor X is preparing to shut down.
- COMPRESSOR X TURNED OFF - See **Startup - Enable Operation**.
- COOLING CALL - The temperature of the room is above set point plus offset plus differential.
- DEHUMIDIFICATION CALL - The relative humidity of the room is above set point plus differential.
- DEHUMIDIFICATION ON - One or more compressors are operating.
- EVAPORATOR DAMPER CLOSED - The evaporator bypass damper is closed to divert air to the evaporator.
- ECONOMIZER ON - The Economizer feature is operating.
- GAS BOILER ON - The gas boiler on units so equipped is operating.
- LEAD LAG ON - Compressor 2 is first stage.
- MANUAL RESET REQUIRED - A fatal alarm has occurred. See **Operation - Start, Stop, Reset**.
- MAXIMUM EXHAUST BLOWER ON - The maximum amount of room air is being exhausted.
- MINIMUM EXHAUST BLOWER ON - The standby amount of room air is being exhausted.
- OCCUPIED PERIOD - Time-of-day is defined as that in which people are usually present.
- OIL RETURN MODE X ON - Refrigerant is being diverted through the outdoor condenser for oil return.
- PLEASE WAIT... Compressor X will auto reset - A possibly fatal alarm is being analyzed.
- PURGE MODE ON - Room air is being exhausted to dilute superchlorination gases.
- VENTILATION ON - Cooling or dehumidification by ventilation is enabled in the event of compressor failure or no air-conditioning option.
- ZERO REHEAT ON - Supply air temperature is limited to the return air temperature.

STARTUP

Set Point Adjustment

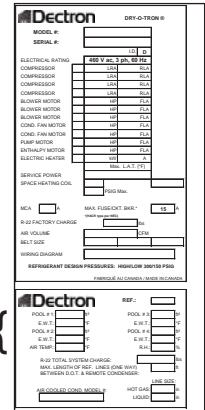
Startup



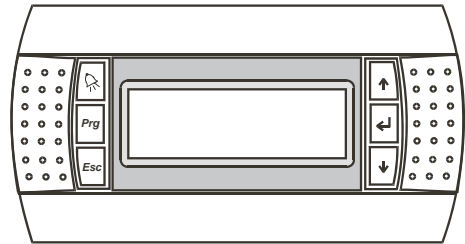
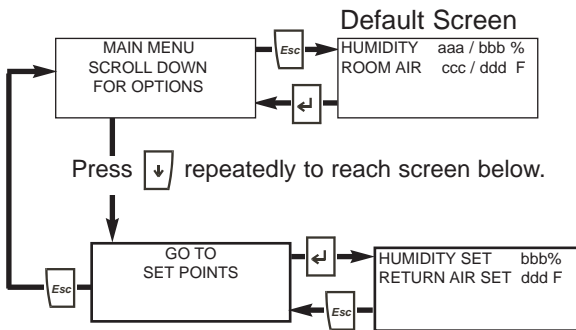
During startup, set points may have to be changed in order to produce required operating modes.

It is important to return all set points to the values specified on the unit nameplate before the startup is complete.

Each unit is carefully sized to match the expected load, as specified in the original order. Attempting to operate the unit at conditions that are not near the nameplate values can have unexpected results.



The operating set points are viewed and adjusted as shown below. If asked for a password, enter 1793 for units made before April 2005. For units made since April 2005, enter 17 or 1793. To clear the password, select YES when prompted to log off.



Press [left arrow] to move the cursor around the screen.

aaa is the present indoor relative humidity.

bbb% is the relative humidity set point. If a change is desired, press [left arrow] as needed to move the cursor to aaa%, then press [up arrow] or [down arrow] to change the set point.

ccc is the present room air temperature.

ddd F is the room air temperature set point. If a change is desired, press [left arrow] as needed to move the cursor to ddd F, then press [up arrow] or [down arrow] to change the set point.

NOTE: In the image above and the discussion at right, "bbb", "ddd", "eee", and "ggg" are placeholders. Your screen will actually show the set points originally ordered for your unit.

For a controller interface map, see **Operation**.

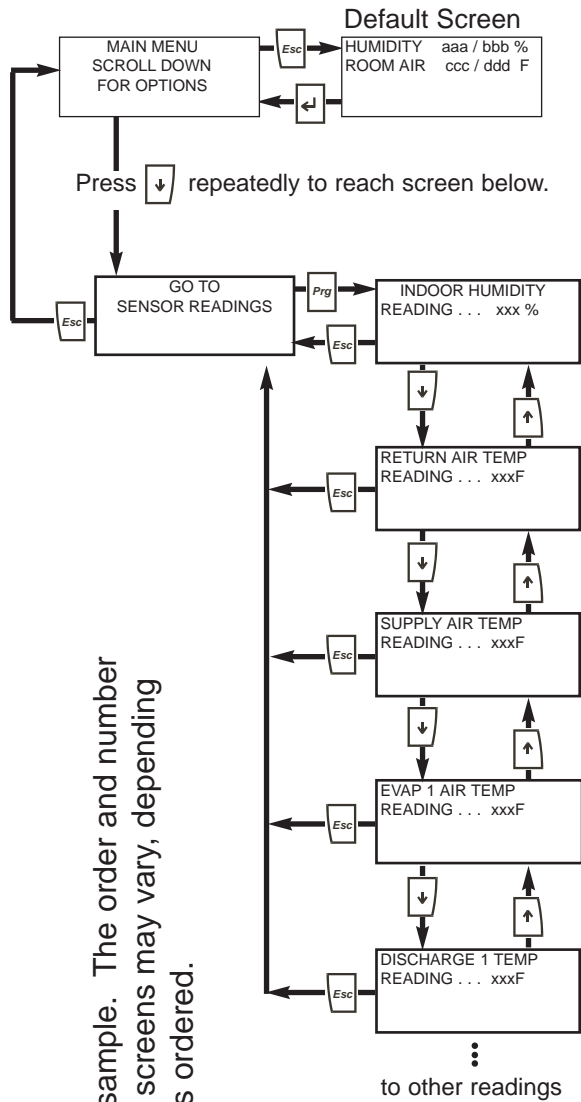
STARTUP

Startup

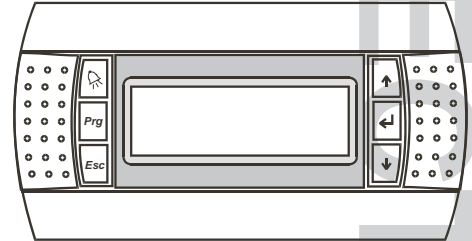
Read Sensors

The values of some sensor signals are displayed on the default screen. To read all sensors, follow the steps below.

NOTE: In the images and the discussion below, "aaa", "bbb", "ccc", "ddd", and "xxx" are placeholders. Your screen will actually show the current values for your unit.



For a controller interface map, see **Operation**.



This screen displays the relative humidity of the room air, as measured at the return duct

This screen displays the temperature of the room air, as measured at the return duct

This screen displays the temperature of the supply air, as measured at the DRY-O-TRON® supply blower.

This screen displays the temperature of the air leaving the evaporator of the first refrigeration circuit.

This screen displays the temperature of the hot refrigerant gas leaving the #1 compressor. This is important to a proper startup. See **Startup - TXV Adjustment**.

This is a sample. The order and number of sensor screens may vary, depending on options ordered.

STARTUP

Adjust Expansion Valve

Startup

1. Be sure the compressor(s) of the circuit being adjusted is running. If not, return to **Startup - Enable Operation**.
2. If the unit does not operate in dehumidification mode (status message DEHUMIDIFY ON, see **Operation - Controller Messages**.), then temporarily decrease the humidity set point to cause it to do so. (See **Startup - Adjust Set Points**)
3. Be sure that the refrigerant sight glass is completely full of liquid, with no bubbles. If bubbles are present, return to step 1 or contact Dectron.

4. Check that the room air dry-bulb temperature is approximately 82°F with a wet-bulb temperature of approximately 68°F. Operate the unit in dehumidification mode for at least 30 minutes. There should be no bubbles in the sight glass. The suction temperature should be 34 - 45°F (1 - 7°C). The condensing pressure should in one of the following ranges:

(See **Startup- Determine Refrigerant Type**, on a previous page.)

R22	R134A	R407C	R410A
225-260	145 - 170	245 - 295	295 - 400
PSIG	PSIG	PSIG	PSIG

5. Allow the unit to run in dehumidification mode for at least 20 minutes, then read the compressor discharge-gas temperature using the remote-reading thermometer (by others) set up under **Prepare to Adjust Expansion Valve**. The temperature should be in one of the following ranges:

(See **Startup- Determine Refrigerant Type**, on a previous page.)

R-22 (degrees above condensing temperature)	R134A (degrees above condensing temperature)	R-407C (degrees above condensing temperature)	R-410A (degrees above condensing temperature)
60 - 80°F	50 - 70°F	50 - 70°F	40 - 60°F
33 - 44°C	28 - 39°C	28 - 39°C	22 - 33°C

6. (a) If the compressor discharge-gas temperature is too low, close the expansion valve(s) 1/2 turn at a time, allowing at least 15 minutes between adjustments, until the compressor discharge-gas temperature is in the proper range for the compressor type.
- (b) If the compressor discharge-gas temperature is too high, open the expansion valve(s) 1/2 turn at a time, allowing at least 15 minutes between adjustments, until the compressor discharge-gas temperature is in the proper range for the compressor type.
- (c) Where each refrigeration circuit has two or more expansion valves, adjust the expansion valves together as much as possible. Complete the adjustments by referring to the previous page, and, using the thermometer probes discussed there, adjust the associated expansion valves to keep the average expansion-valve-bulb temperatures as near the same as possible, while meeting the requirements of (a) and (b) above.
7. Allow the DRY-O-TRON® to operate continuously for at least 1 hour after the last adjustment, then check to be sure the compressor discharge-gas temperature is in the correct range for the type of compressor.

STARTUP

Startup

Check Discharge Sensor



Risk of blistering. May cause injury.

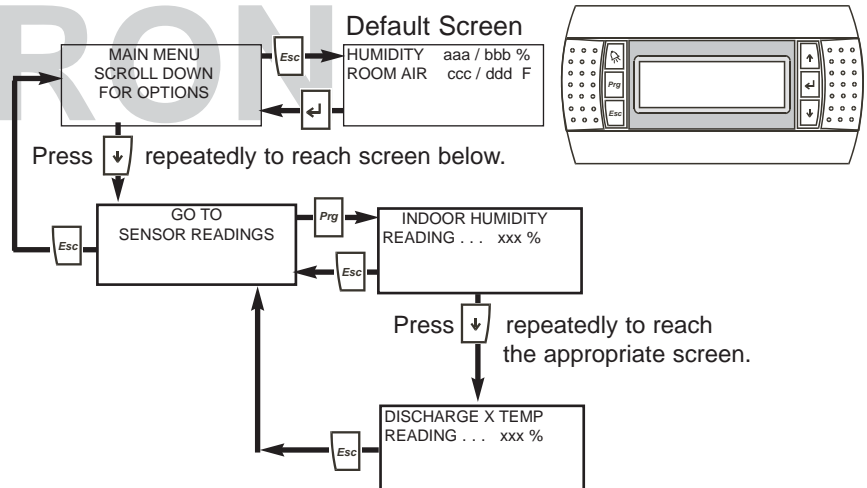
Some surfaces inside a unit may be at elevated temperatures. Use gloves and other protective equipment to prevent injury.



NOTE: In the images and the discussion below, “aaa”, “bbb”, “ccc”, “ddd”, and “xxx” are placeholders. Your screen will actually show the current values for your unit.

1. Check the calibration of the unit's compressor-discharge gas temperature sensor by following the interface map shown at right.

The indicated temperature should agree with the reading of the installer's thermometer within 10°F (4°C). If it does not, be sure your thermometer is accurate, then contact Dectron if necessary.



2. Replace the expansion-valve caps.
3. Return the set points to normal, as noted on the unit nameplate (see **Product Description - Unit Nameplate**).
4. **IMPORTANT:** Remove the temporary jumper wire across the CLP switch.
5. Close the access panels or doors.
6. If the unit has more than one refrigeration circuit and not all of the circuits have yet been adjusted, repeat pages **Prepare to Adjust Expansion Valve(s)** through **Check Discharge Sensor** for other refrigeration circuits.

STARTUP

Check Pressures

Startup



WARNING

Risk of frostbite. Risk of eye damage.

Improper handling of refrigerants and refrigerant hoses can allow release of liquid refrigerant. Exposure to liquid refrigerant can cause frostbite and severe eye damage. Wear gloves, eye protection, and any other appropriate protective equipment. Follow all safety procedures.

Check that the room air dry-bulb temperature is approximately 82°F with a wet-bulb temperature of approximately 68°F. Operate the unit in dehumidification mode for at least 30 minutes.

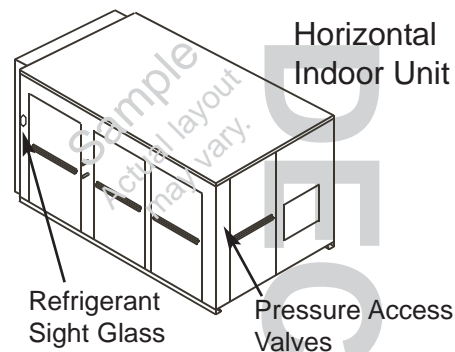
a) The refrigerant sight glass should be full of liquid. There should be no bubbles. The suction temperature should be 34 - 45°F (1 - 7°C).

b) The evaporator pressure should be between:

R22	R134A	R407C	R410A
60 - 78	30 - 41	55 - 72	105 - 1130
PSIG	PSIG	PSIG	PSIG

c) The condenser pressure should be between:

R22	R134A	R407C	R410A
225-260	145 - 170	245 - 295	295 - 400
PSIG	PSIG	PSIG	PSIG



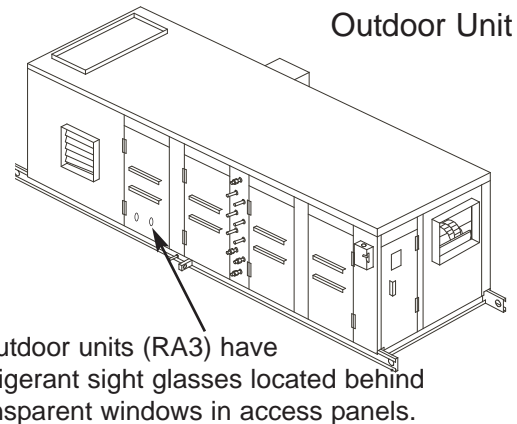
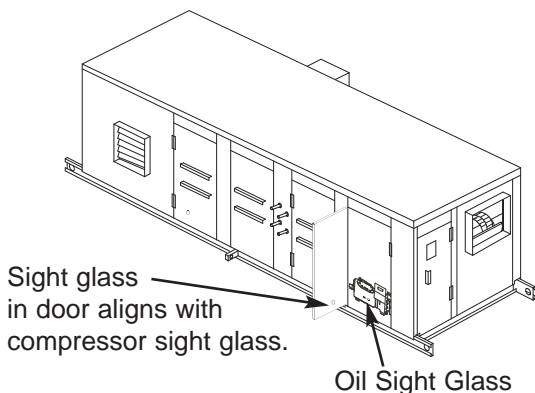
Note: Units with multiple refrigeration circuits will have multiple sight glasses, suction-access valves, and discharge-access valves.

d) Some units may have compressor oil-pressure access valves. The pressure on any oil-pressure access valve should be no less than 25 PSI above evaporator pressure.

e) The compressors of some units may have oil-level sight glasses. In this case, the oil level should be near the middle of the sight glass. The oil in the sight glass should not be foaming.

f) The temperature of hot gas leaving the compressor(s) should be in one of the following ranges:

R-22 (degrees above condensing temperature)	R134A (degrees above condensing temperature)	R-407C (degrees above condensing temperature)	R-410A (degrees above condensing temperature)
60 - 80°F	50 - 70°F	50 - 70°F	40 - 60°F
33 - 44°C	28 - 39°C	28 - 39°C	22 - 33°C



STARTUP

Startup

The Start-up Report and Warranty Registration form must be completed and a copy must be sent directly to Dectron within one week of starting a compressor.

NOTE: Some compressors and electric motors may have part-winding start or Y- Δ start. In this case, the compressor currents to be recorded are the total phase currents, not the currents for each individual winding.

The startup form can be faxed to Dectron at 1-514-334-9184.

Dectron provides training for installers and service technicians for a nominal fee. Contact the Dectron service department for details, or download the information at <http://dot-library.dyndns.org>.

In some cases Dectron may be able to provide Dectron personnel to **supervise** the startup procedure for a fee. In this case, the Dectron employee will travel to the site and supervise, guide, and assist the contractor in the start-up. The Dectron employee does not do the start-up, he or she supports and trains the contractor as the contractor does the start-up. This service is referred to as "factory startup **supervision**".

Factory startup supervision must be purchased in advance to allow for scheduling personnel. Before Dectron personnel can be assigned to the task, the Dectron service department must receive:

1. the completed pre-startup checklist found in **Startup - Pre-Startup Checklist**.

Each applicable item of the checklist must be initialed (use "N/A" where an item is not applicable) and both sides of all pages of the checklist must be signed and dated by the responsible party. The responsible party must be authorized to obligate his company to pay for the factory startup assistance.

2. telephone confirmation from the responsible party to the Dectron service department that all applicable steps of the installation and startup procedure, along with any other steps specified by the Dectron service department have been completed.

The responsible party may request a specific date for the factory startup supervision. The Dectron service department will then schedule factory startup supervision with the responsible party.

Upon accepting the scheduled date for factory startup supervision, the responsible party accepts the responsibility to:

1. provide a qualified and licensed (as necessary) refrigeration technician to be on site for the duration of the factory startup supervision,

The technician will accomplish the startup while being instructed as necessary by the Dectron employee. This training will be of great value in any future service to the equipment.

2. provide and install any extra material such as refrigerant, wire, or other,
3. provide any necessary equipment such as hand tools, instruments, pumps, ladders, etc., and
4. make available as necessary any other personnel necessary to the startup, such as plumbing and electrical contractors.

NOTE: If upon arrival the Dectron employee sees that installation steps have been neglected he will return to Dectron and the full price of the factory startup supervision will be billed. Examples of such neglected steps include, but are not limited to:

incomplete connection of electric power,
incomplete ductwork,
incomplete connection of remote condenser (if any), and
incomplete control wiring.

DRY-O-TRON® DA3 Series Startup Report & Warranty Registration

Warranty void unless this form is completed and submitted within 1 week after startup.

Begin with the unit turned OFF. See safety warnings on a previous page.

Installation Name:

page 1 of 4

Installation Address:

Dectron Representative Firm:

Yes Proper air distribution: <input type="checkbox"/> No Proper duct design: <input type="checkbox"/> N/A Proper ventilation provided: <input type="checkbox"/> Vapor retarder installed properly: <input type="checkbox"/> Chemicals stored in the Mechanical Room: <input type="checkbox"/> Adequate service access provided: <input type="checkbox"/> Vibration isolation provided: <input type="checkbox"/> Flex duct installed at Inlet and Outlet of DRY-O-TRON®: <input type="checkbox"/>	Condensate drain installed: <input type="checkbox"/> Condensate drain tested: <input type="checkbox"/> Condensate pump (if any) installed properly: <input type="checkbox"/> Branch-circuit disconnect switch installed: <input type="checkbox"/> Remote condenser (if any) installed properly: <input type="checkbox"/> Remote operator panel (if any) installed properly: <input type="checkbox"/> Outdoor temperature sensor (if any) installed properly: <input type="checkbox"/> Wire connections checked for tightness: <input type="checkbox"/>	Startup checklists complete: <input type="checkbox"/> Blower rotation on 3-phase motors correct: <input type="checkbox"/> Airflow and blower speed adjusted: <input type="checkbox"/> Refrigerant charge OK: <input type="checkbox"/> Fault codes displayed on operator panel: <input type="checkbox"/> Set points are at design conditions: <input type="checkbox"/> Bypass damper open in room temp. > 78° F: <input type="checkbox"/> Measured Airflow: <input type="text"/> cfm
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See unit nameplate for the following information:

Unit Model: <input type="text"/>	Unit Serial #: <input type="text"/>	Unit Ref #: <input type="text"/>
----------------------------------	-------------------------------------	----------------------------------

Supply Airflow: <input type="text"/> CFM	Supply Blower Belt Size (if any) <input type="text"/>	Return Blower Belt Size (if any) <input type="text"/>
	Min. Exh. Blower Belt Size (if any) <input type="text"/>	Max. Exh. Blower Belt Size (if any) <input type="text"/>

For units with air-cooled air conditioning only:

Maximum Allowable Length of Tubes: ft.

See unit nameplate.

	Cir. 1		Cir. 2	Cir. 3	Cir. 4	Cir. 5	Cir. 6	Cir. 7	Cir. 8
Hot-Gas Tube Size(s) (O.D.)	<input type="text"/>	if any →	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
Liquid Tube Size(s) (O.D.)	<input type="text"/>	if any →	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>

See compressor nameplate(s) for the following information:

if any	Comp 1 Model # <input type="text"/>	Comp 1 Serial # <input type="text"/>
	Comp 2 Model # <input type="text"/>	Comp 2 Serial # <input type="text"/>
	Comp 3 Model # <input type="text"/>	Comp 3 Serial # <input type="text"/>
	Comp 4 Model # <input type="text"/>	Comp 4 Serial # <input type="text"/>
	Comp 5 Model # <input type="text"/>	Comp 5 Serial # <input type="text"/>
	Comp 6 Model # <input type="text"/>	Comp 6 Serial # <input type="text"/>
	Comp 7 Model # <input type="text"/>	Comp 7 Serial # <input type="text"/>
	Comp 8 Model # <input type="text"/>	Comp 8 Serial # <input type="text"/>

STARTUP

Data subject to change without notice.

Startup

Warranty Registration

Unit Ref. Number

See safety warnings on a previous page.

Page 2 of 4

Check here and skip to next section if there is no remote condenser.

Check here and skip to next section if condenser is factory-assembled to unit.

Check here and skip to next section if there is no DryCooler.

	L1 - L2	L2 - L3 (3Φ only)	L3 - L1 (3Φ only)	Nameplate Voltage
Optional Condenser or DryCooler Voltage (V) (when running)	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>

Optional outdoor air-cooled condenser(s) (if any) location: Above D-O-T Below D-O-T Same level as D-O-T

Measured Refrigerant-Tube Size(s)

Connecting Unit to Remote Condenser:

	Circuit 1	if any						
		Cir. 2	Cir. 3	Cir. 4	Cir. 5	Cir. 6	Cir. 7	Cir. 8
Hot Gas O.D. (in.)	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
Liquid O.D. (in.)	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
Tube Length (ft.)	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>

See safety warnings on a previous page. Close all access doors and panels. Be sure the O/A damper is in Occupied-Period position.

Start the supply blower. Note that other blowers may start also. After 3 minutes of blower operation, record the following:

	L1 - L2	L2 - L3 (3Φ only)	L3 - L1 (3Φ only)	Nameplate
Supply-Blower Voltage (V) (when running)	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>

	#1	if any						
		#2	#3	#4	#5	#6	#7	#8
Supply-Blower Current(s) (A) (when running)	L1	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
	(3Φ only)	L2	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
		L3	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
Nameplate Supply-Blower Current (A)	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	

See safety warnings on a previous page. Adjust set points to cause all compressors to operate in dehumidification (only) mode. For compressors with part-winding or Y-Δ start, record the total phase currents. After 5 minutes of operation, record the following:

	L1 - L2	L2 - L3 (3Φ only)	L3 - L1 (3Φ only)	Nameplate
Compressor Voltage (V) (when all running)	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>

	#1	if any						
		#2	#3	#4	#5	#6	#7	#8
Compressor Current(s) (A) (when all running)	L1	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
	(3Φ only)	L2	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
		L3	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
Nameplate	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	

Data subject to change without notice.

STARTUP

Warranty Registration

Startup

NOTE: To obtain adequate readings, a delay of ten (10) minutes is required after every operation or adjustment.

	Standby (Blowers Only)	Dehumidification Only			Cooling Only	Page 3 of 4
Entering-Air Temp. °F	<input type="text"/>	<input type="text"/>			<input type="text"/>	
Leaving-Air Temp. °F	<input type="text"/>	<input type="text"/>			<input type="text"/>	
Room Humidity %	<input type="text"/>	<input type="text"/>			<input type="text"/>	
						Unit Ref. Number
Outdoor-Air Temp. °F	<input type="text"/>	<input type="text"/>			<input type="text"/>	See safety warnings on a previous page.
Condenser Pressure (PSIG) (By Compressor #)		1 <input type="text"/> 5 <input type="text"/>			1 <input type="text"/> 5 <input type="text"/>	
		2 <input type="text"/> 6 <input type="text"/>			2 <input type="text"/> 6 <input type="text"/>	
		3 <input type="text"/> 7 <input type="text"/>			3 <input type="text"/> 7 <input type="text"/>	
		4 <input type="text"/> 8 <input type="text"/>			4 <input type="text"/> 8 <input type="text"/>	
Suction Pressure (PSIG) (By Compressor #)		1 <input type="text"/> 5 <input type="text"/>			1 <input type="text"/> 5 <input type="text"/>	
		2 <input type="text"/> 6 <input type="text"/>			2 <input type="text"/> 6 <input type="text"/>	
		3 <input type="text"/> 7 <input type="text"/>			3 <input type="text"/> 7 <input type="text"/>	
		4 <input type="text"/> 8 <input type="text"/>			4 <input type="text"/> 8 <input type="text"/>	
Oil Gauge Pressure (if available) (PSIG) (By Compressor #)		1 <input type="text"/> 5 <input type="text"/>			1 <input type="text"/> 5 <input type="text"/>	
		2 <input type="text"/> 6 <input type="text"/>			2 <input type="text"/> 6 <input type="text"/>	
		3 <input type="text"/> 7 <input type="text"/>			3 <input type="text"/> 7 <input type="text"/>	
		4 <input type="text"/> 8 <input type="text"/>			4 <input type="text"/> 8 <input type="text"/>	
Sight Glass Clear (Yes, No, or N/A) (By Compressor #)		1 <input type="text"/> 5 <input type="text"/>			1 <input type="text"/> 5 <input type="text"/>	
		2 <input type="text"/> 6 <input type="text"/>			2 <input type="text"/> 6 <input type="text"/>	
		3 <input type="text"/> 7 <input type="text"/>			3 <input type="text"/> 7 <input type="text"/>	
		4 <input type="text"/> 8 <input type="text"/>			4 <input type="text"/> 8 <input type="text"/>	
Average TX Valve Bulb Temperature (°F) (By Compressor #)		1 <input type="text"/> 5 <input type="text"/>			1 <input type="text"/> 5 <input type="text"/>	
		2 <input type="text"/> 6 <input type="text"/>			2 <input type="text"/> 6 <input type="text"/>	
		3 <input type="text"/> 7 <input type="text"/>			3 <input type="text"/> 7 <input type="text"/>	
		4 <input type="text"/> 8 <input type="text"/>			4 <input type="text"/> 8 <input type="text"/>	
Compressor Discharge-Gas Temperature (°F) (By Compressor #)	1 <input type="text"/> 5 <input type="text"/>	1 <input type="text"/> 5 <input type="text"/>			1 <input type="text"/> 5 <input type="text"/>	
	2 <input type="text"/> 6 <input type="text"/>	2 <input type="text"/> 6 <input type="text"/>			2 <input type="text"/> 6 <input type="text"/>	
	3 <input type="text"/> 7 <input type="text"/>	3 <input type="text"/> 7 <input type="text"/>			3 <input type="text"/> 7 <input type="text"/>	
	4 <input type="text"/> 8 <input type="text"/>	4 <input type="text"/> 8 <input type="text"/>			4 <input type="text"/> 8 <input type="text"/>	
Temperature of Air Leaving Cooling- Coil (°F) (By Compressor #)	1 <input type="text"/> 5 <input type="text"/>	1 <input type="text"/> 5 <input type="text"/>			1 <input type="text"/> 5 <input type="text"/>	
	2 <input type="text"/> 6 <input type="text"/>	2 <input type="text"/> 6 <input type="text"/>			2 <input type="text"/> 6 <input type="text"/>	
	3 <input type="text"/> 7 <input type="text"/>	3 <input type="text"/> 7 <input type="text"/>			3 <input type="text"/> 7 <input type="text"/>	
	4 <input type="text"/> 8 <input type="text"/>	4 <input type="text"/> 8 <input type="text"/>			4 <input type="text"/> 8 <input type="text"/>	

Data subject to change without notice.

STARTUP

Startup

Warranty Registration

NOTE: To obtain adequate readings, a delay of ten (10) minutes is required after every operation or adjustment.

Page 4
of 4

Unit Ref.
Number

See safety warnings on a previous page.

	Space Heating			
Entering-Air Temp. °F	<input type="text"/>			
Heated-Air Temp. °F	<input type="text"/>			
Room Humidity %	<input type="text"/>			
Outdoor-Air Temp. °F	<input type="text"/>			
Outdoor-Rel. Hum. °F	<input type="text"/>			
Boiler Pump (if any) (if in unit) Current (A)	<input type="text"/>			
Electric Heater (if any) Average Current (A)	<input type="text"/>			
Electric Heater (if any) Average Voltage (V)	<input type="text"/>			
Supply-Blower Voltage (with heater ON) (V)	<input type="text"/>			

Comments:

Form completed by:

Company name:

Date:

Telephone:

Staple copies of the completed and signed four-page Warranty Registration Form together.
 Attach copies of the completed and signed air-balance and water-balance reports.
 Attach copies of the completed and signed Pre-Startup Checklist.
 Attach any desired further comments or explanatory material. Send all of the above to:

DECTRON INC. 4300 Poirier Boulevard Montreal, QC. H4R 2C5 Canada Fax: 514-334-9184	OR	DECTRON INC. 10898 Crabapple Road Suite 103 Roswell, GA 30075 U.S.A. Fax: 770-649-0243
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Data subject to change without notice.

STARTUP

DECTRON

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OPERATION

Operation

Safety Warnings

! WARNING



Risk of electric shock. Can cause injury or death.

Some operation and maintenance procedures could expose personnel to the risk of electric shock. Electric shock can cause injury or death.

The unit controller does not disconnect electrical energy from the unit, even in the OFF condition. Use only approved devices (e.g. locking safety switch), to disconnect, lockout, and tagout all sources of electrical energy before working inside the unit cabinet. Follow all applicable safety regulations.

! WARNING



Risk of contact with moving parts. Can cause injury or death.

This product contains rotating parts and V-belt drives. Some operation and maintenance procedures could expose personnel to the risk of injury or death from contact with these parts.

Using only approved devices (e.g. locking safety switch), disconnect, lockout, and tagout all sources of electrical energy before working inside the unit cabinet. Allow adequate time for rotating parts to stop. Follow all applicable safety regulations.

Do not operate the unit unless ductwork or a screen is installed at each blower outlet.

! WARNING



Risk of flying liquids, gases, particles. Can cause eye injury.

Some operation and maintenance procedures involve risk of exposure to flying materials which can cause eye injury. Always wear protective safety glasses or goggles, as appropriate.

! WARNING



Risk of blistering. Can cause injury.

Some surfaces inside an operating unit may be at elevated temperatures. The compressor, refrigerant-discharge tubes, and heat exchangers can become extremely hot during operation.

Compressor crankcase heaters can be extremely hot at any time electrical power is applied.

Turn off the unit and allow time for these parts to cool before working inside the unit cabinet. Wear protective clothing (gloves, sleeves, etc.) while working on these parts. Use gloves and other protective equipment to prevent injury.

! WARNING



Risk of pinching or crushing. Can cause injury.

Depending on the size of this product, some operation and maintenance procedures could expose personnel to the risk of injury by pinching or crushing.

Access doors and panels are under a strong negative pressure when the blower(s) is running. Opening doors may be difficult. Closing doors must be done with a tool to prevent hands from being caught.

! WARNING



Risk of falling. Can cause injury or death.

Depending on the size and location of this product, some operation and maintenance procedures could expose personnel to the risk of injury or death by falling.

Designs should include adequate service and maintenance access. Use fall-protection equipment as appropriate.

OPERATION

Safety Warnings

Operation

**WARNING****Risk of contamination of breathing air. Can cause injury or death.**

Application of this product may involve the intake of outdoor air. The point of intake must be carefully chosen to prevent intake of contaminants.

Application of this product may involve air-handling equipment, e.g. ducts, cabinets, plenums, etc., which operate below atmospheric pressure. Such equipment must be carefully located and installed to prevent the intake of contaminants.

Follow the instructions in this manual and all applicable codes.

NOTICE**Risk of uncontrolled condensation. Can cause property damage.**

This product is intended to control relative humidity and temperatures. Improper design, installation, and/or operation can lead to uncontrolled condensation of water, with associated property damage.

Read and follow the instructions in this manual. Optional material will be noted as being optional. All other material should be considered as important to the proper function of the product.

NOTICE**Risk of leaking water. Can cause property damage.**

This product may use circulating water under pressure.

This product requires a free-flowing drain.

Freezing or other abnormal conditions could cause leakage or overflow. Uncontrolled water can cause expensive damage to buildings and other equipment. Do not locate this product above any equipment that could be damaged by water.

NOTICE**Risk of unit damage.**

This product uses refrigerant and oil. If the unit has been without electric power for more than two days, a period of 12 hours with electric power applied is required before operating the compressors again. This is necessary to allow compressor crankcase heaters to heat the compressor oil, thus reducing the concentration of refrigerant dissolved in the oil.

NOTICE**Risk of unit damage.**

If service or repair requires the closing of manual refrigerant valves, follow the procedures in **Service-Closing Manual Valves**.

Operation

Maintenance

The following steps are important to the proper function and long life of the unit.

Every Month

See subsequent task descriptions for safety warnings, etc.

► Check the Air Filters

- All units have return-air filters. The unit cannot work properly with dirty filters. Units with outdoor-air intakes must have filters for the outdoor-air intake also. Units with the Economizer, Purge, or EconoPurge options may have filters before the reheat coil also.
- All dirty filters should be replaced with identical new filters. Filters for outdoor air should be moisture resistant.
- Some units may have airflow options as described in Product Description at the front of this manual. For these options, refer to filter requirements in the appropriate manual appendix.
- Units with boilers may have an intake-air filter. This filter should be checked and cleaned even in cooling season.
- **Do not operate the unit for any amount of time without all filters in place.**

► Check the compressor(s) oil level, if compressor(s) is equipped with an oil-level sight glass.

► Check the lubrication schedules for the blower(s) and motor(s). Lubricate as appropriate.

► Check the belt(s) (if any) on all blower(s)

- Check for excessive wear. Be sure the belt(s) will operate another month.
- Check the blower-belt tension and alignment. Belts should not be so loose as to cause increased slip, nor so tight as to cause excessive shaft-bearing wear. **CAUTION: Never open a sheave to remove, install, or adjust a belt - use the belt tensioning screw only. Only a qualified technician should change sheave settings.**

► Check that the temperature and humidity set points are near those specified on the unit nameplate.

► Check that the condensate drain pan(s) is clean.

► For units with air-cooled air conditioning or DryCooler air conditioning, check for free airflow in the remote heat exchanger.

- Clean any trash or leaves that might interfere with proper airflow.
- Remove any vegetation or other material that might interfere with airflow at the bottom, sides, or top.

► Eliminate chemical fumes

- For indoor units, remove all chemicals from the DRY-O-TRON® equipment room.
- For all units, remove all chemicals from any space that allows fumes to leak into the space served by the DRY-O-TRON®.

Every Six Months

Check that there are no bubbles in the sight glass after 10 minutes of compressor operation.

► See **Startup - Adjustments**.

Check the compressor discharge temperature.

► For units with gas-fueled boilers, check the heat-transfer fluid properties.

► • See the fluid properties later in this section.

Every Twelve Months

► Check for blower bearing wear.

► Grease the blower bearings.

- Use a high quality grease for HVAC applications.
- Do not over-grease. Add grease until just a little oozes out from the bearing shield.

► Check the condensate drain pan for any accumulated residue. Clean as necessary.

► Check the air heat transfer coils for dirt and/or trash.

- If the coils are dirty
 - △ Clean the coils with a solution of mild soap in warm water. Do not use corrosive cleaning agents.
 - △ Increase the frequency of filter replacement. Dirty filters leak dirt onto the coils.

In the event of an extended shutdown, contact Dectron for a copy of Appendix M4 - Storing Units.

Maintenance

Operation

Each year, photostat this page and the following page and post them near the unit for use by maintenance personnel.

Use the maintenance list from the preceding page and the task descriptions from subsequent pages to accomplish each maintenance task, then record that accomplishment in the maintenance record.

Initial each completion box.

YEAR												
_____	Date											

Space Temperature												
Space Temperature Set Point												
Space Humidity												
Space Humidity Set Point												

Equipment room and all connecting rooms clear of all chemicals?												
---	--	--	--	--	--	--	--	--	--	--	--	--

Model _____ Serial Number _____



Operation

Maintenance

Maintenance Record

YEAR	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
Date											

Air filters clean and in place?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Unit not exposed to chemical fumes?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Set points near nameplate values?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Blower belt wear and tension OK?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Condensate drain-pan clean?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Remote heat-exchanger clean?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Remote heat-exchanger fans OK?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Compressor oil levels OK (where possible)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Sight glass clear?						<input type="checkbox"/>						<input type="checkbox"/>	
Compressor discharge temperature						Compressor #1 _____ °F						Compressor #1 _____ °F	
						Compressor #2 _____ °F	<input type="checkbox"/>						Compressor #2 _____ °F
						Compressor #3 _____ °F						Compressor #3 _____ °F	
						Compressor #4 _____ °F						Compressor #4 _____ °F	
						Compressor #5 _____ °F						Compressor #5 _____ °F	
						Compressor #6 _____ °F						Compressor #6 _____ °F	
						Compressor #7 _____ °F						Compressor #7 _____ °F	
						Compressor #8 _____ °F						Compressor #8 _____ °F	
NOTE: Compressors 2 through 8 are optional and may not be present on all units.													
Electrical terminals tight?						<input type="checkbox"/>						<input type="checkbox"/>	
Heat-transfer fluid OK?						<input type="checkbox"/>						<input type="checkbox"/>	
Electric motors lubricated?											<input type="checkbox"/>		
Blower bearings OK and greased?						For specific schedules, see Operation-Maintenance-Blower Lubrication					<input type="checkbox"/>		
Air-side heat-transfer coils clean?											<input type="checkbox"/>		

Model _____ Serial Number _____

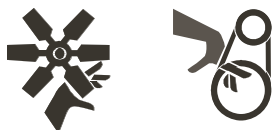
OPERATION

Air Filters

Maintenance

Operation

! WARNING



Risk of contact with moving parts. Can cause injury or death.

This product contains rotating parts and V-belt drives. Some procedures could expose personnel to the risk of injury or death from contact with these parts.

Using only approved devices (e.g. locking safety switch), disconnect, lockout, and tagout all sources of electrical energy before working inside the unit cabinet. Allow adequate time for rotating parts to stop. Follow all applicable safety regulations.

Do not operate the unit until ductwork or a screen is installed at each blower outlet.

! WARNING



Risk of falling. Can cause injury or death.

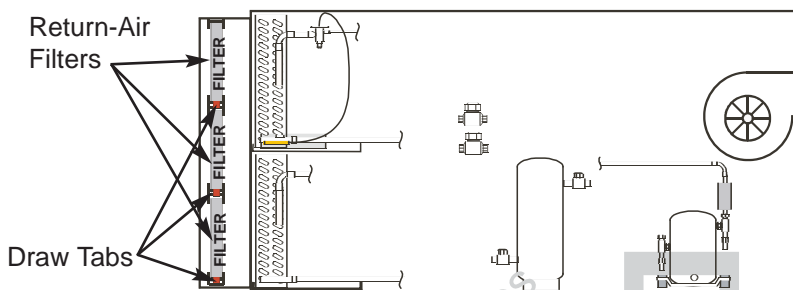
Depending on the size and location of this product, some installation, service, and maintenance procedures could expose personnel to the risk of injury or death by falling.

Use fall-protection equipment as appropriate.

CHECK THAT ALL FILTERS ARE CLEAN AND IN PLACE

Basic horizontal units may have return-air filters just before the cooling coil. Use draw tabs (if any) to remove all filters, then replace them. This assures that all filters are present.

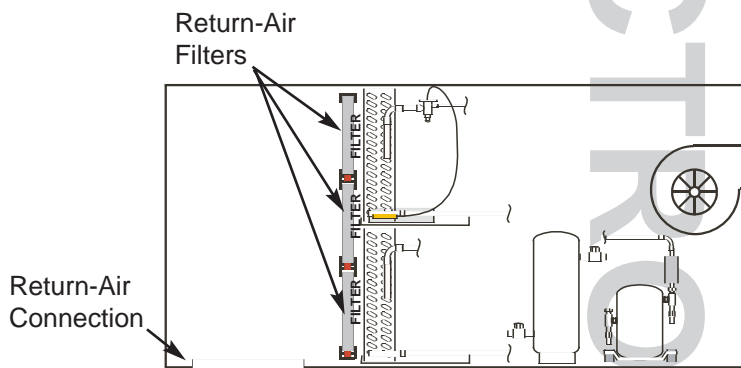
The size and number of filters and draw tabs may vary.



Some horizontal units may have bottom return-air connection, as shown. Most such units have lift-out return-air filters accessible through a door.

Filters for outdoor air must be moisture resistant.

The location, size, and number of filters may vary.



Samples
Actual layout
may vary.

DECTRON

OPERATION

Operation

Maintenance

Blower Belts

! WARNING



Risk of contact with moving parts. Can cause injury or death.

This product contains rotating parts and V-belt drives. Some procedures could expose personnel to the risk of injury or death from contact with these parts.

Using only approved devices (e.g. locking safety switch), disconnect, lockout, and tagout all sources of electrical energy before working inside the unit cabinet. Allow adequate time for rotating parts to stop. Follow all applicable safety regulations.

Do not operate the unit until ductwork or a screen is installed at each blower outlet.

NOTICE

Never open a sheave to remove, install, or adjust a belt - use the belt tensioning screw only. Only a qualified air-balance technician or HVAC technician should change sheave settings.

Belts should not be frayed, glazed, or excessively worn. Follow standard belt-inspection procedures recommended by the belt manufacturer.

To check belt tension, first disconnect electric power from the unit and follow all recommended safety precautions. **Obtain and use a V-Belt tension gauge according to the instructions provided with it.** Most major belt manufacturers provide or recommend a suitable gauge for their belts.

In an emergency, the guidelines below may help until a belt tension gauge is obtained.

Measure the distance in inches between the shaft centers. Multiply the number of inches by 1/64. This will be the deflection (D) in the diagram at right.

ex: For S=32 inches,
 $D = S \times 1/64$
 $D = 32\text{in} \times 1/64 = 1/2 \text{ in.}$

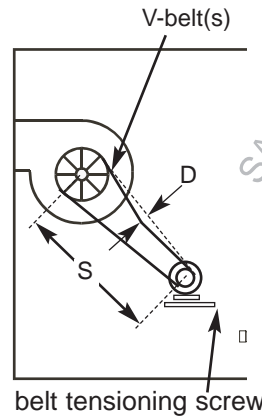
Measure the diameter of the smaller sheave.

Read the V-belt cross-section size from the belt label or from the unit nameplate.

Adjust the belt tension to cause the force needed to produce the deflection D to be near that shown in the table on the next page.

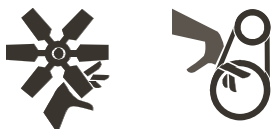
ex: For the above example of 32 inches between shaft centers, assume that the belt is a new B60 and that the smaller sheave is 7 inches in diameter. From the table on the next page, a new B60 belt with a 7 inch small sheave should require 6.3 pounds of force to produce the 1/2 inch deflection.

Adjust the belt tension until the measured force necessary to produce the 1/2 inch deflection is about 6.3 pounds.



OPERATION

WARNING



Risk of contact with moving parts. Can cause injury or death.

This product contains rotating parts and V-belt drives. Some procedures could expose personnel to the risk of injury or death from contact with these parts.

Using only approved devices (e.g. locking safety switch), disconnect, lockout, and tagout all sources of electrical energy before working inside the unit cabinet. Allow adequate time for rotating parts to stop. Follow all applicable safety regulations.

Do not operate the unit until ductwork or a screen is installed at each blower outlet.

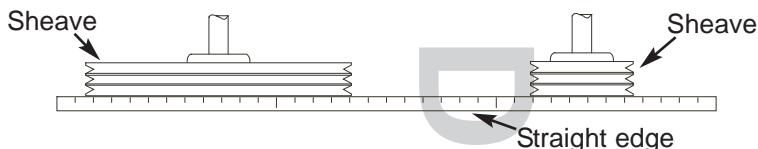
V-Belt Tensioning

Belt size	Small sheave diameter (in)	Deflection force (lbs.)		
		Initial Installation	Re-tensioning	
			Max.	Min.
A	3.0 - 3.4	3.3	2.9	2.2
	3.6 - 4.2	3.5	3.1	2.4
	4.6 - 6.0	3.7	3.3	2.5
B	4.6 - 5.4	6.0	5.1	4.0
	5.6 - 7.4	6.3	5.5	4.2
	8.6 - 9.4	6.6	5.7	4.4
C	7.0 - 8.5	13.2	11.5	8.8
	9.0 - 12.0	13.9	12.1	9.3
	13.0 - 16.0	14.6	12.6	9.7
D	12.0 - 15.5	26.5	22.9	17.6
	16.0 - 18.0	27.8	24.3	18.7
	22.0 - 27.0	29.1	25.6	19.6
E	17.7 - 23.6	39.7	34.4	26.5
	23.7 - 31.5	41.7	36.2	27.8
	31.6 - 39.3	43.7	37.9	29.1
AX	2.1 - 3.4	4.4	3.7	2.9
	3.6 - 4.2	4.6	4.0	3.1
	4.6 - 6.0	4.9	4.2	3.3
BX	3.7 - 5.4	7.7	6.6	5.1
	5.6 - 7.4	8.2	7.1	5.5
	8.6 - 9.4	8.6	7.5	5.7
CX	5.8 - 8.5	17.2	15.0	11.5
	9.0 - 12.0	18.1	15.7	12.1
	13.0 - 16.0	19.0	16.5	12.8
3V	2.65 - 3.35	5.5	4.8	3.9
	3.65 - 4.12	6.4	5.7	4.4
	4.5 - 5.6	7.5	6.6	5.1
	6.0 - 10.6	8.6	7.5	5.7
5V	7.1 - 8.5	19.2	16.7	13.0
	9.0 - 11.8	23.3	20.3	15.6
	12.5 - 16.0	27.3	23.8	18.5
8V	12.5 - 16.0	50.9	44.3	34.4
	17.0 - 20.0	57.1	49.8	38.6
	21.2 - 24.8	61.3	53.3	41.4
3VX	2.2 - 3.35	5.5	4.8	3.9
	3.65 - 4.12	6.4	5.7	4.4
	4.5 - 5.6	7.5	6.6	5.0
	6.0 - 10.6	8.6	7.5	5.7
5VX	4.4 - 8.5	19.2	16.7	13.0
	9.0 - 11.8	23.3	20.3	15.6
	12.5 - 16.0	27.3	23.8	18.5

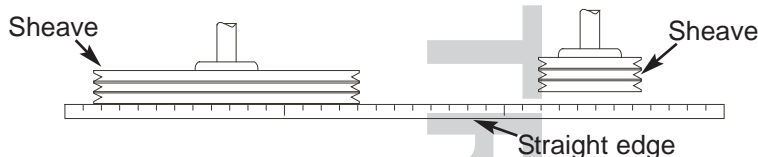
Where sheaves carry more than one belt, never replace only one belt. If any belt must be replaced, replace all the belts with new ones. When replacing multiple belts use only new belts from the same manufacturer and the same lot number, or use matched belts. Failure to do this will result in severe belt wear.

When removing or replacing belts, always relieve the belt tension to position the belts. Severe belt damage and reduction of belt life can be caused by prising or walking a belt onto a sheave.

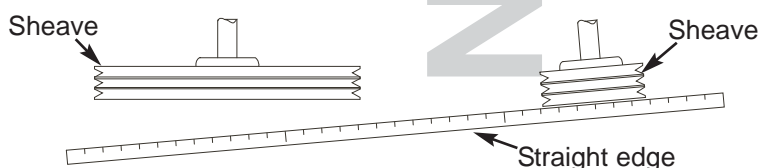
Belt sheaves must be properly aligned, as shown below.



While the sheaves were aligned at the factory, future adjustments may cause varying degrees of misalignment. A common problem is parallel misalignment, as shown below. Parallel misalignment causes excessive belt, sheave, and bearing wear.



Another common problem is angular misalignment, as shown below. Angular misalignment causes excessive belt, sheave, and bearing wear.



Operation

Maintenance

Motor Lubrication

! WARNING



Risk of contact with moving parts. Can cause injury or death.

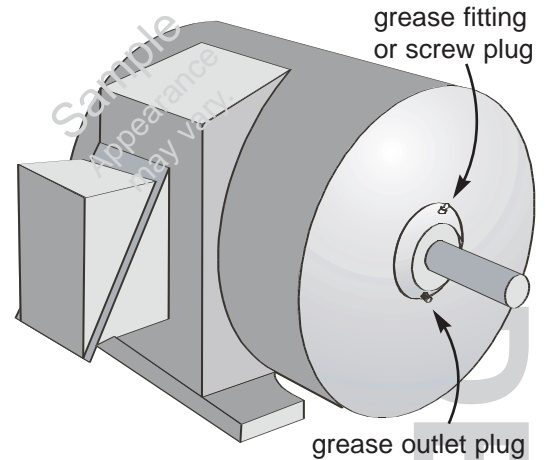
This product contains rotating parts and V-belt drives. Some procedures could expose personnel to the risk of injury or death from contact with these parts.

Using only approved devices (e.g. locking safety switch), disconnect, lockout, and tagout all sources of electrical energy before working inside the unit cabinet. Allow adequate time for rotating parts to stop. Follow all applicable safety regulations.

Do not operate the unit until ductwork or a screen is installed at each blower outlet.

Some smaller motors may be permanently lubricated. Other electric motors may have grease fittings and grease outlet plugs. Use the lubricating instructions provided on the motor nameplate or in accompanying documents. If no instructions are available, then until the proper instructions can be obtained

- a) use Shell Dolium R or Chevron SRI grease, and
 - b) once per year use the following instructions:
1. Be sure the electric power to the unit is OFF, locked out, and tagged out.
 2. Clean all grease fittings or plugs to remove any paint, dirt, or dust.
 3. Clean any dirt or old grease from around a grease outlet plug.
 4. Remove and retain the grease outlet plug. Do not allow it to become dirty.
 5. Use a small clean round brush to clean out any hardened grease that may have accumulated in the grease outlet.
 6. Does the motor have a grease fitting or a screw-plug for adding grease?



Grease Fitting

Screw Plug

- 6a. NEMA 215 Frame and smaller - add 1 or 2 gun strokes
NEMA 254 -365 Frame - add 2 or 3 gun strokes
NEMA 404 Frame and larger - add 3 or 4 gun strokes
Stop if grease begins to come out of the grease outlet or around the shaft. Do not over-grease. Do not get grease on belts.
- 6b. Wipe off any excess grease.
- 6c. If possible, put a plastic cap over the grease fitting to keep it clean.

- 6a. Remove grease plug.
- 6b. NEMA 215 Frame and smaller - add a 2 or 3-inch string of grease
NEMA 254 Frame and larger - add a 3 to 5-inch string of grease
- 6c. Wipe off any excess grease. Do not get grease on belts.
- 6d. Re-install grease plug.

7. Repeat steps 1-9 for the bearing at the other end of the shaft.
8. Close all doors and access panels and, if safe to do so, allow the motor to run at full load for about 30 minutes.
9. Again be sure the electric power to the unit is OFF, locked out, and tagged out.
10. Wipe off any excess grease that has appeared on the outside of the motor or shaft.
11. Clean and re-install the grease outlet plug.
12. If safe and practical to do so, return the motor to operation.

OPERATION

ELECTRON

! WARNING



Risk of contact with moving parts. Can cause injury or death.

This product contains rotating parts and V-belt drives. Some procedures could expose personnel to the risk of injury or death from contact with these parts.

Using only approved devices (e.g. locking safety switch), disconnect, lockout, and tagout all sources of electrical energy before working inside the unit cabinet. Allow adequate time for rotating parts to stop. Follow all applicable safety regulations.

Some smaller blowers may be permanently lubricated. Other blowers may have bearings that have grease fittings or oil ports and require lubrication. Where this is the case, use the lubricating instructions provided on the blower nameplate or in accompanying documents. If no instructions are available, then until the proper instructions can be obtained

- a) Use a high-quality NLGI No. 2 or No. 3 multipurpose ball-bearing grease with rust inhibitors and anti-oxidant additives. Examples are:
 - Shell - Alvania No. 2
 - Gulf - Gulfcrown No. 2
 - Mobil - Mobilith AW2 / Mobilith SHC100
 - American - Rykon Premium 2
- b) Follow the schedule below, based on size and speed of blower shaft.

Initial Relubrication Schedule (Months)

Ball Bearing Pillow Blocks

Speed (RPM)	500	1000	1500	2000	2500	3000	3500	4000	4500
Shaft Diameter									
1/2" through 1 1/16"	6	6	5	3	3	2	2	2	1
1 5/16" through 2 7/16"	6	5	4	2	2	1	1	1	1
2 1/16" through 2 15/16"	5	4	3	2	1	1	1		
3 7/16" through 3 15/16"	4	3	2	1	1	1			

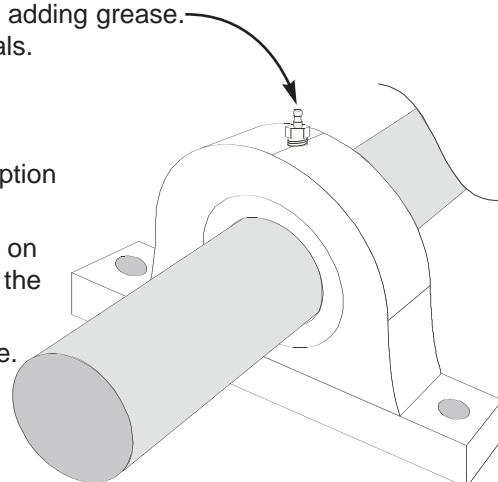
1. Be sure the electric power to the unit is OFF, locked out, and tagged out.
2. Clean all grease fittings or plugs to remove any paint, dirt, or dust.
3. If possible and safe to do so, slowly turn the blower by hand while adding grease.
4. Add grease just until a small amount of grease oozes from the seals.
5. Repeat for the bearing on the other end of the shaft.
6. When safe an practical to do so, return the blower to operation.

NOTE: Some units have more than one blower. See Product Description for suggested search locations.

NOTE: The frequency of lubrication may have to be changed, based on hours of operation, temperature, surrounding conditions, and the condition of the purged grease.

NOTE: Grease the bearings before an extended shutdown or storage.

NOTE: During an extended shutdown, rotate the blower shaft monthly.



Operation

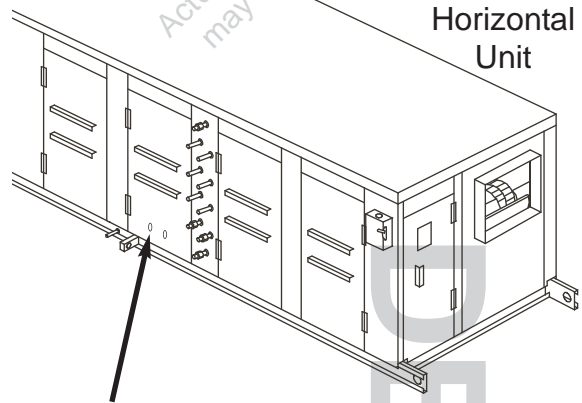
Check Refrigerant Level

Maintenance

Be sure there are no bubbles or droplets in the refrigerant sight glasses after ten minutes of compressor operation.

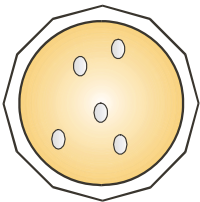
If bubbles or droplets are noted, contact Dectron or a Dectron-certified technician.

Sample
Actual layout
may vary.

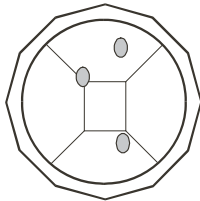


Horizontal Unit

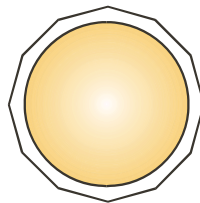
Some units have sight glasses located behind transparent windows in access panels.



Bubbles in the sight glass indicate problems such as a possible loss of refrigerant.



Oil droplets in the sight glass may indicate severe problems such as loss of refrigerant.

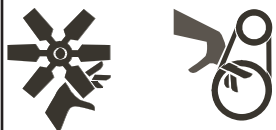


After 15 minutes of compressor operation, the sight glass should be clear and full of liquid refrigerant.

DECTRON

OPERATION

! WARNING

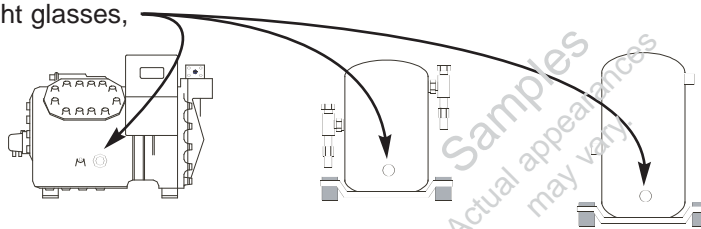


Risk of contact with moving parts. Can cause injury or death.

This product contains rotating parts and V-belt drives. Do not approach any moving parts while electric power is applied to unit. Use only approved devices (e.g. locking safety switch), to disconnect, lockout, and tagout all sources of electrical energy before working inside the unit cabinet. Allow adequate time for rotating parts to stop. Follow all applicable safety regulations.

For units without oil-level sight glasses, oil levels cannot be checked.

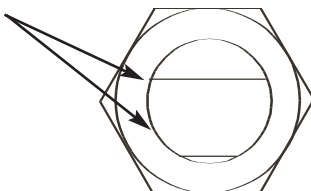
For units with oil-level sight glasses,



the oil level must be monitored as part of schedule maintenance.

Be sure that the room temperature is within 4°F (2.2°C) and the relative humidity is within 10% of the unit-nameplate values. Check the oil level after 30 minutes of compressor operation.

The oil level should be as near the middle of the sight glass as possible, and in any case between 1/4 and 3/4 full.



If the oil level is incorrect after 30 minutes of compressor operation, contact a Dectron-certified technician.

NOTICE Risk of compressor damage.
DO NOT OVERFILL OR UNDERFILL.

The oil may appear foamy until 30 minutes after the expansion valve is properly adjusted. After the valve is adjusted, the oil should not appear foamy. If the oil appears to be foaming after 30 minutes of operation after the expansion valve is adjusted, contact Dectron.

Dectron

OPERATION

Operation

Fire/Smoke Alarm Testing

Some DRY-O-TRON® units may be connected to fire/smoke alarms, which may be tested periodically. In this case, activation of the alarm will cause an immediate shut-down of the unit. Activation of the fire/smoke alarm may also cause fire dampers (by others) or other devices to close.

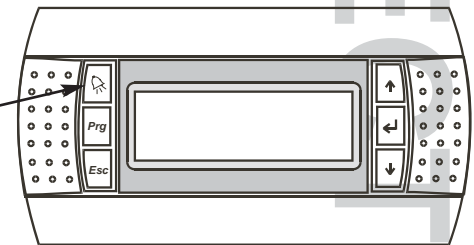
After the test, and when safe to do so, restarting the unit requires:

For units with automatic fire/smoke-alarm reset

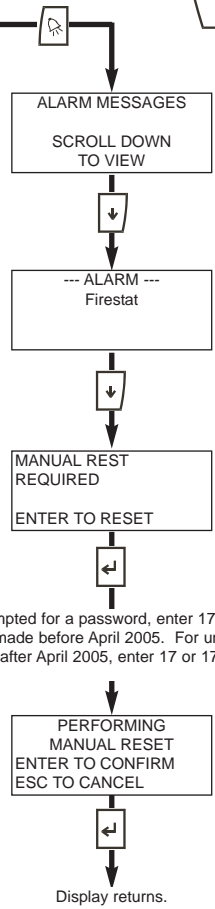
1. Reset the fire/smoke alarm system (by others). Be sure that the alarm's isolated output to the DRY-O-TRON® is closed.
2. Confirm that any fire dampers or fire doors are back to the normal operating position.
3. The unit should re-start automatically.

For units with manual fire/smoke-alarm reset

1. Reset the fire/smoke alarm. Be sure that the alarm's isolated output to the DRY-O-TRON® is closed.
2. Confirm that any fire dampers or fire doors are back to the normal operating position.
3. Reset the DRY-O-TRON® unit as shown below.



The alarm button will be illuminated. Press it to see the current alarm(s). Press repeatedly to see any other current alarms.



Reset

The message "MANUAL RESET REQUIRED" may appear. Follow the instructions on screen to accomplish a manual reset.

Press to initiate the resetting process.
Note: Not all alarms require manual reset.

Press to proceed with the resetting process.
 Press to cancel the resetting process.

DRY-O-TRON

OPERATION

Check Discharge Temps.

Maintenance

Operation



Risk of contact with hot surfaces. Can cause injury.

This product contains surfaces which can cause burn injury. The compressor, refrigerant-discharge tubes, and heat exchangers can become extremely hot during operation.

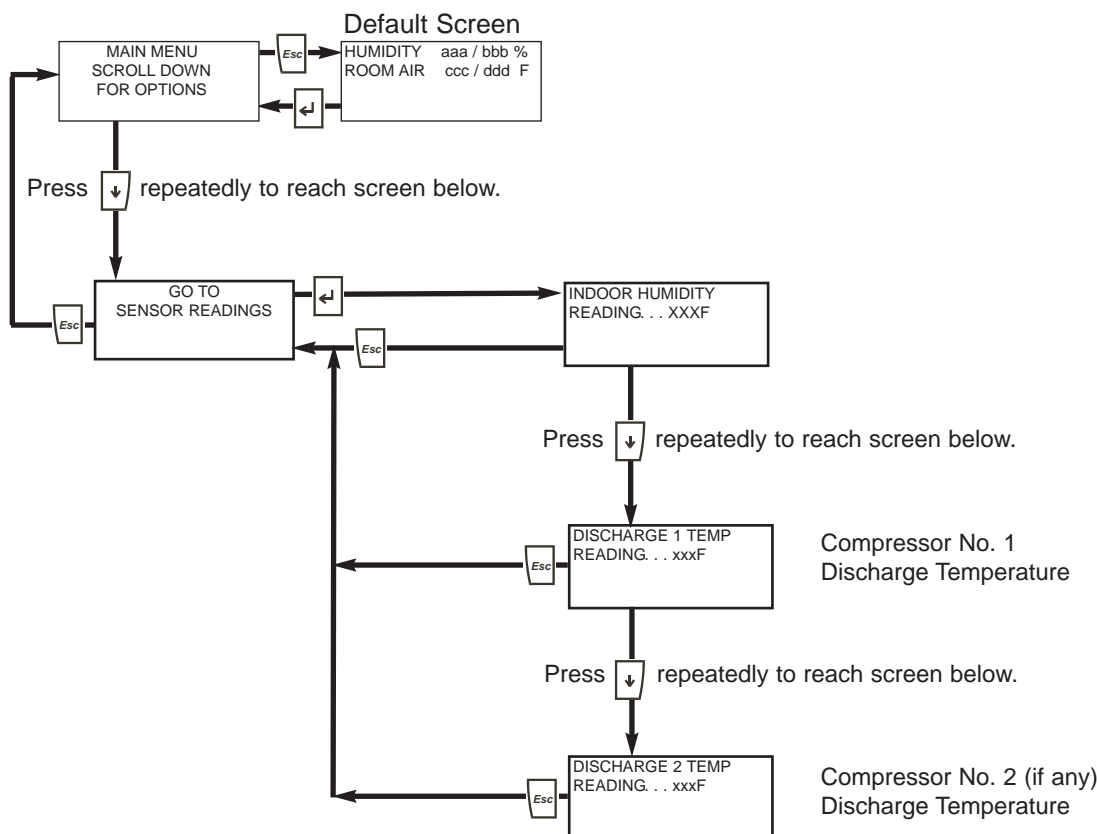
Turn off the unit and allow time for these parts to cool before working inside the unit cabinet. Wear protective clothing (gloves, sleeves, etc.) while working on these parts.

1. Determine the type of compressor present, as noted in **Startup - Determine Compressor Type**. Determine the type of refrigerant from the unit nameplate.
2. Check that the room air dry-bulb temperature is approximately 82°F with a wet-bulb temperature of approximately 68°F. Operate the unit in dehumidification mode for at least 30 minutes. The refrigerant sight glass should be full of liquid; there should be no bubbles. The suction temperature should be 34 - 45°F (1 - 7°C).

(See **Startup-Determine Refrigerant Type**.)

R-22 (degrees above condensing temperature)	R134A (degrees above condensing temperature)	R-407C (degrees above condensing temperature)	R-410A (degrees above condensing temperature)
60 - 80°F 33 - 44°C	50 - 70°F 28 - 39°C	50 - 70°F 28 - 39°C	40 - 60°F 22 - 33°C

NOTE: In the images and the discussion below, “aaa”, “bbb”, “ccc”, “ddd”, and “xxx” are placeholders. Your screen will actually show the current values for your unit.



OPERATION

Operation

Maintenance

Check Drain Pans

WARNING



Risk of contact with moving parts. Can cause injury or death.

This product contains rotating parts and V-belt drives. Some procedures could expose personnel to the risk of injury or death from contact with these parts.

Using only approved devices (e.g. locking safety switch), disconnect, lockout, and tagout all sources of electrical energy before working inside the unit cabinet. Allow adequate time for rotating parts to stop. Follow all applicable safety regulations.

Do not operate the unit until ductwork or a screen is installed at each blower outlet.

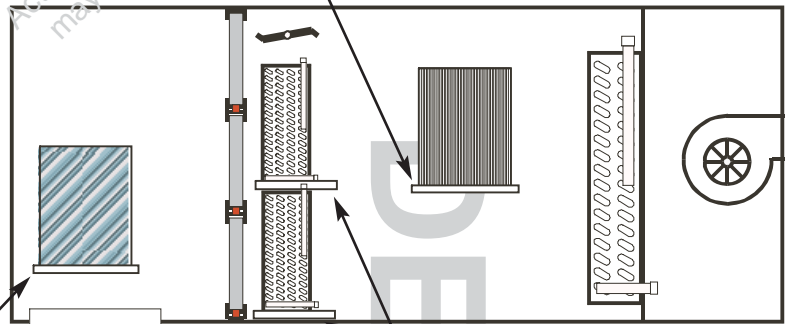
Horizontal units may have one or more drain pans to collect condensate and deliver it to the drains.

Drain pans should be checked to be sure they drain completely and to be sure material is not accumulating.

Drain pans may collect dirt or other foreign materials.

Keep them clean by washing them out as necessary. Be sure the condensate drain works.

Units with the pumped- SmartSaver option may have a drain pan under the intake-air heat exchanger.



Units with the SmartSaver option will have a drain pan under the exhaust heat exchanger.

All horizontal units will have a drain pan(s) under the cooling heat exchanger(s).

Sample
Actual layout
may vary.

DECTRON

OPERATION

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OPERATION

Operation

Heating and Cooling Availability

Heating Availability

Room-temperature control is an important part of humidity control.

The dehumidifier capacity is matched to the rated pool-evaporation rate. The pool-evaporation rate will increase if

1. the pool temperature remains the same while room temperature is decreased, or
2. the pool temperature is increased while the room temperature remains the same.

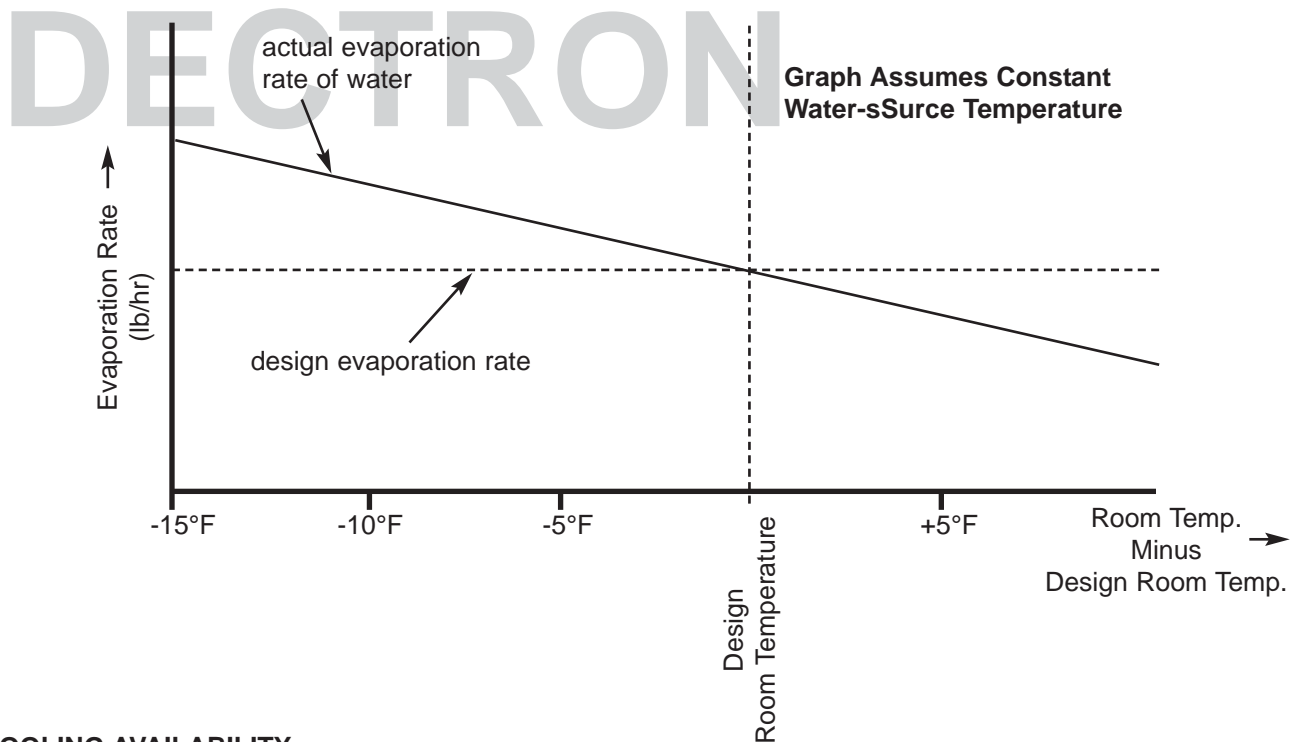
Space heat must be under the control of the DRY-O-TRON®. All installations must have space heat available year-round. The DRY-O-TRON® will command only enough heat to keep the evaporation rate within a workable range.

NOTE: Where space heaters are by others, the space heaters must heat the supply air. Do not install a heater in the return duct.

NOTE: For units with hot-water or hot-glycol space heaters by Dectron, unless otherwise noted, full heating capacity requires the water or fluid temperature to be between 160°F (71°C) and 180°F (82°C).

NOTE: Unless equipped with a space heater, the DRY-O-TRON® does not produce significant heat - it recycles heat. A dedicated space heater must be ordered with the unit or provided by others.

NOTE: Building heat losses are calculated by others and consequently are sized by others. Dectron does not select space-heater capacities.



COOLING AVAILABILITY

Where the DRY-O-TRON® unit has the cooling option and any required cooling water or other fluid is provided by others, it is essential that the cooling water or fluid be available at any time the DRY-O-TRON® may be operating.

Do not turn off cooling water or fluid based on time-of-day, time-of-year, outdoor temperature, or other considerations.

OPERATION

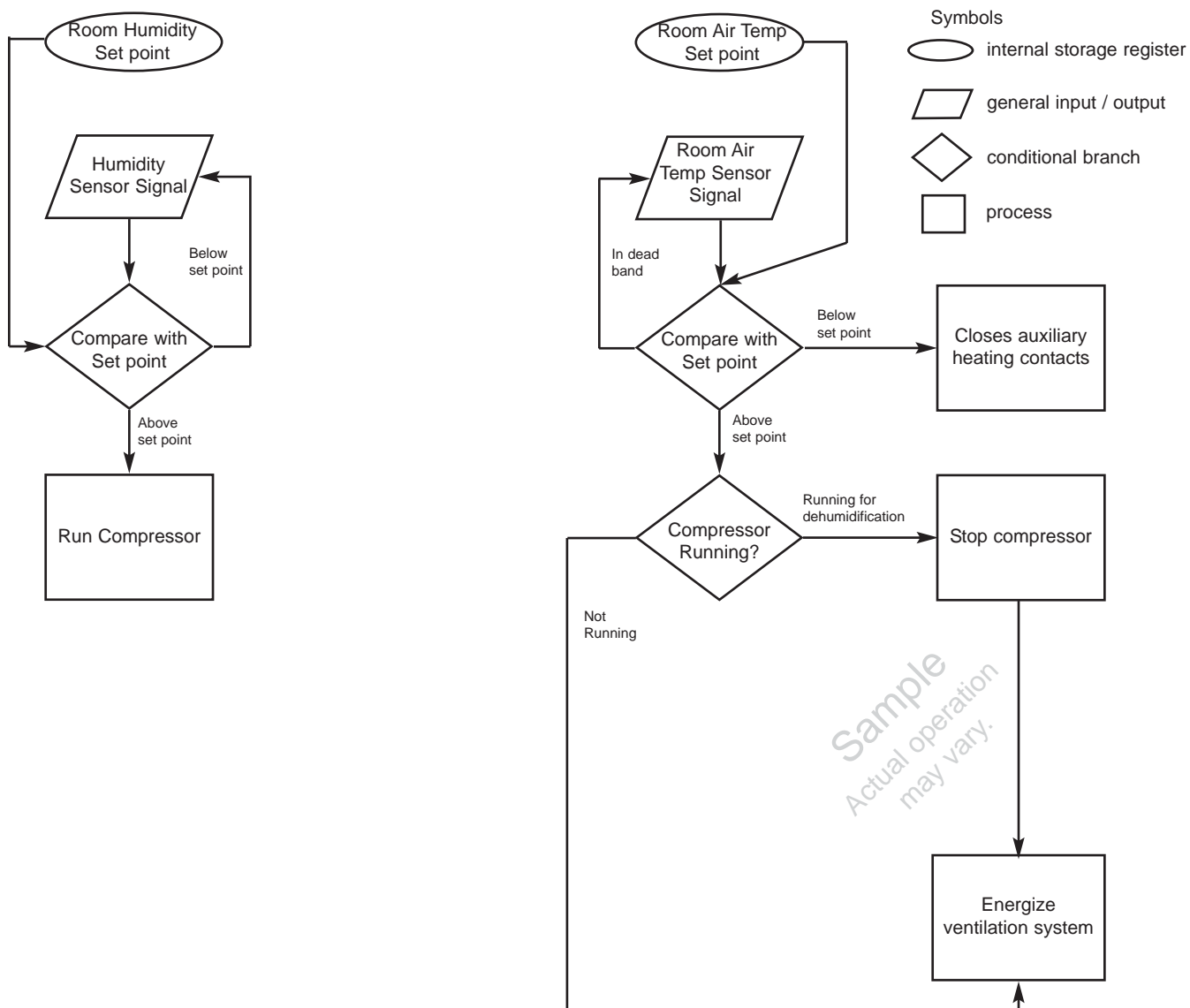
Logical Flowchart

Operation

- Δ Dehumidification - On a call for dehumidification only, the DRY-O-TRON® operates in minimum water heating mode.
- Δ Cooling - On a call for cooling, the DRY-O-TRON® is stopped even when dehumidification is called for. Ventilation signals are activated to open outdoor air dampers, controlled by the modulating supply-air thermostat (supplied by others).
- Δ Space Heating - On a call for space heating, the DRY-O-TRON® operates as above for dehumidification. The auxiliary space heating system is activated by contacts provided.

DECTRON

Units Without Air Conditioning



OPERATION

Operation

Logical Flowchart

Δ Dehumidification

On a call for dehumidification only, DRY-O-TRON® operates in dehumidification with minimum water-heating mode.

Δ On a call for cooling

The A/C hot gas solenoid valve is energized and the outdoor condenser fan is operating. The DRY-O-TRON® runs in air-conditioning mode.





Δ Pool Water Heating

Pool water temperature is maintained by minimum and maximum water heating modes. On a call for pool water heating, the pool water hot gas solenoid valve is energized. The DRY-O-TRON® operates in maximum water-heating mode.

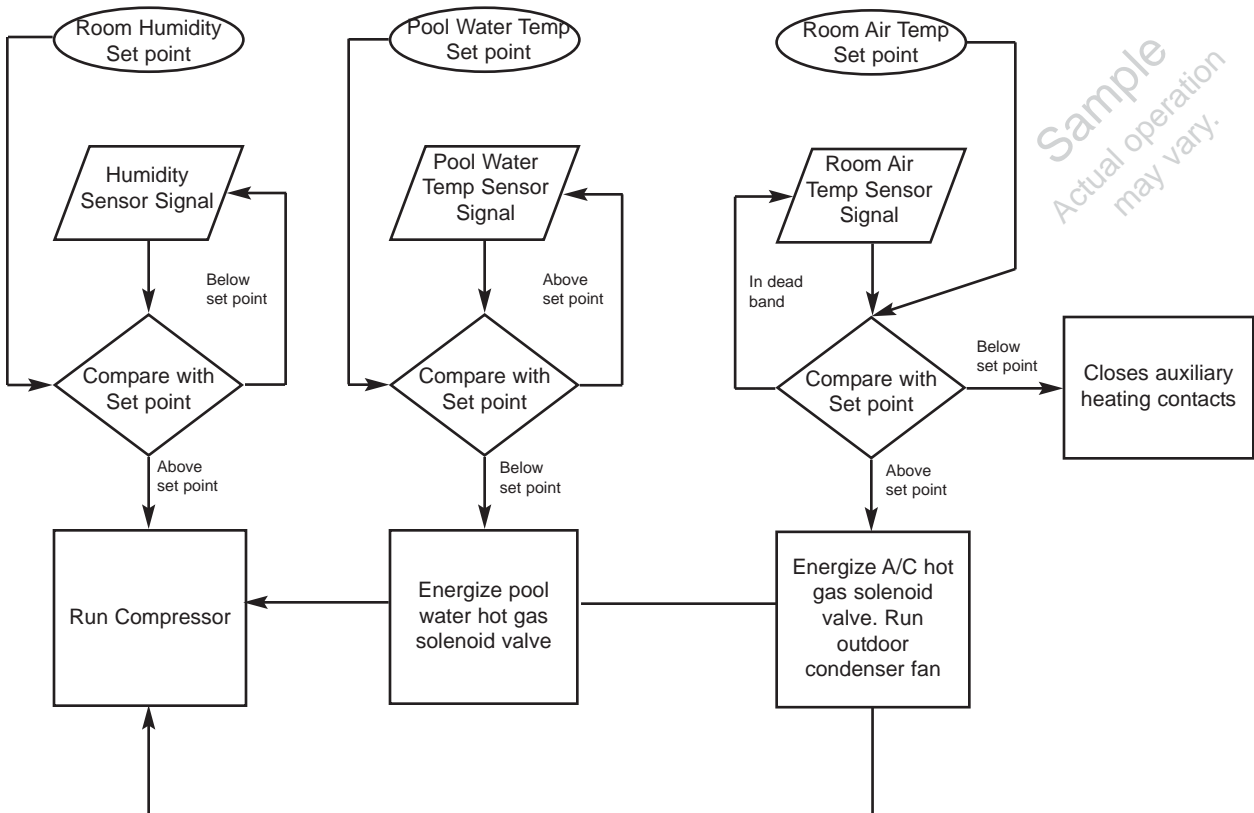
Δ Space Heating

On a call for space heating, the DRY-O-TRON® operates as above for dehumidification and pool-water heating. In addition, the auxiliary space heating system is activated by contacts provided.

Symbols

-  internal storage register
-  general input / output
-  conditional branch
-  process

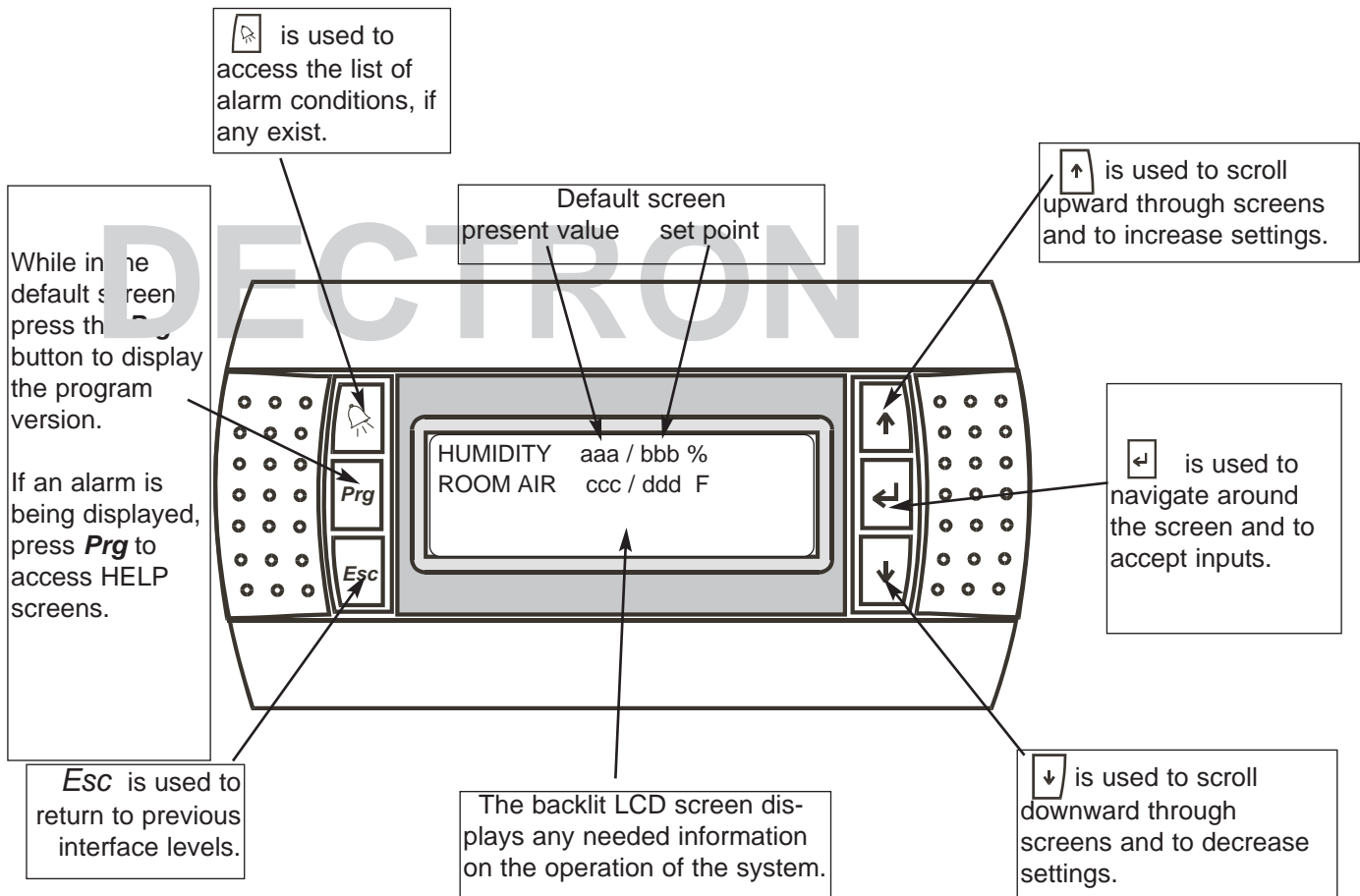
Units With Air Conditioning



OPERATION

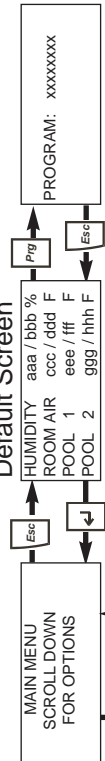
Supervisaire[®] Controller Interface

Operation



Default Screen

NOTE: In the images and the discussions, "aaa", "bbb", "ccc", "ddd", and "xxx" are placeholders. Your screen will actually show the current values for your unit.



NOTE:

Screens shown in dashed lines are optional and may not appear on all units.

Note: If User Password is requested, enter 1793 for units made before April 2005, and 17 or 1793 for units made after April 2005.

See **Operation - Status Messages** for a list of possible messages and their meanings.



Press **↑** or **↓** to toggle between AUTO and OFF.
Press **←** to move the cursor around the screen. Press **↑** or **↓** to toggle between AUTOMATIC and OFF.

Press **←** to move the cursor around the screen. Press **↑** or **↓** to toggle between AUTOMATIC and OFF.

Press **←** to move the cursor around the screen. Press **↑** or **↓** to toggle between AUTOMATIC and OFF.

NOTICE: Risk of uncontrolled condensation.

Risk of property damage. Set points should be kept at rated values. If they must be changed, set points must be changed together. See subsequent page for details.

Press **←** to navigate around the screen. Press **↑** or **↓** to change set points. (POOL 2 SET is Optional.)

Press **←** to navigate around the screen. Press **↑** or **↓** to start Purge mode or to change Purge time.

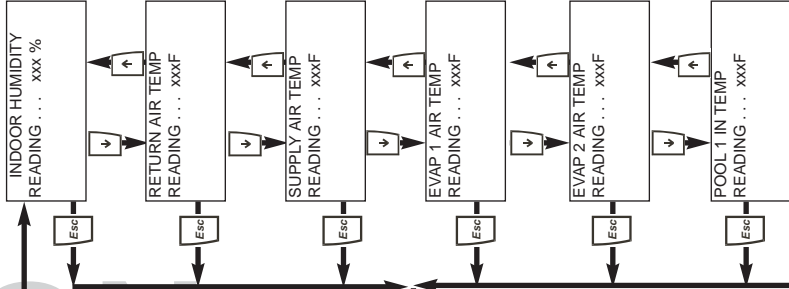
**DS Series
Supervisaire® User
Interface Map
JH 2010**

In the event of a failure, the button will illuminate. Press it to view the ALARM screen.

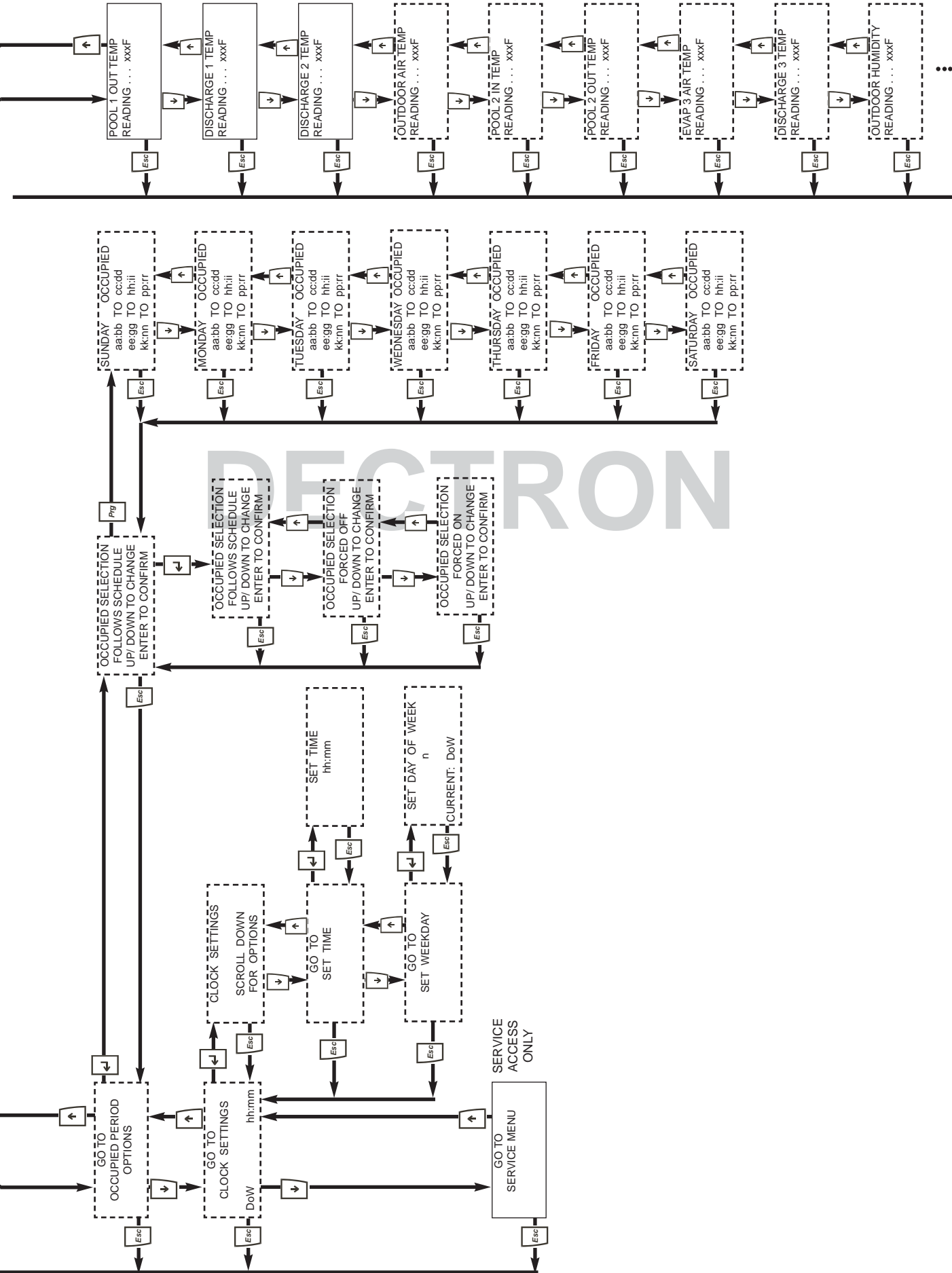


Alarm messages will be displayed. See **OPERATION - CONTROLLER DIAGNOSTICS.**

Sensors displayed and order of display may vary depending on options.



Sensors displayed and order of display may vary depending on options.

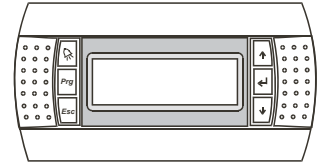


Operation

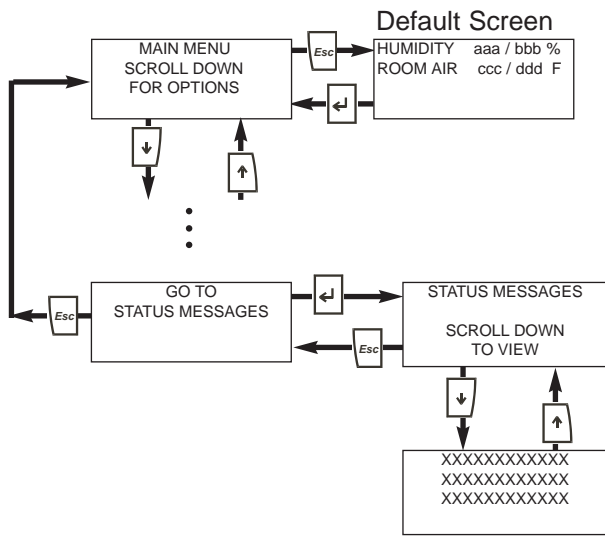
Read Status Messages

If it is desired to check the current status messages, using the controller-interface map below access the STATUS MESSAGES screen.

Press or to view all status messages.



DECTRON



NOTE: In the images and the discussions, “aaa”, “bbb”, “ccc”, “ddd”, and “xxx” are placeholders. Your screen will actually show the current values for your unit.

Press or as necessary to see all the status messages.

Refer to the following page for a list of status messages and their meanings. Some units may have special status messages. In this case, refer to the Sequence of Operation supplied with the unit.

Press repeatedly to return to the main menu or the default screen.

OPERATION

Read Status Messages

Operation

STATUS MESSAGES

SCROLL DOWN
TO VIEW

Press  repeatedly to view any of the following Status messages that apply at the moment.

NOTE: In the list below the letter "X" is a placeholder for a number referring to a particular refrigeration circuit. On your screen the appropriate number will appear rather than the "X".

- A/C ON - The Air-Conditioning feature is operating.
- AIR HEATING CALL - The temperature of the room is below set point minus offset minus differential.
- ASCT X ON - The minimum OFF time for compressor X has not elapsed.
- AUX. AIR HEATING ON STAGE 1 - First stage auxiliary air heating is ON.
- AUX. AIR HEATING ON STAGE 2 - Second stage auxiliary air heating is ON.
- AUX. AIR HEATING ON STAGE 3 - Third stage auxiliary air heating is ON.
- AUX. AIR HEATING ON STAGE 4 - Fourth stage auxiliary air heating is ON.
- BLOWER ON - Blower is operating.
- BLOWER REMOTE SWITCH OFF - The blower is turned off by remote manual input.
- BLOWER TURNED OFF - See **Startup - Enable Operation**.
- COMPRESSOR X EMERGENCY SWITCH OFF - The manual ON/OFF switch is OFF.
- COMPRESSOR X PUMPDOWN - Compressor X is preparing to shut down.
- COMPRESSOR X TURNED OFF - See **Startup - Enable Operation**.
- COOLING CALL - The temperature of the room is above set point plus offset plus differential.
- DEHUMIDIFICATION CALL - The relative humidity of the room is above set point plus differential.
- DEHUMIDIFICATION ON - One or more compressors are operating.
- EVAPORATOR DAMPER CLOSED - The evaporator bypass damper is closed to divert air to the evaporator.
- ECONOMIZER ON - The Economizer feature is operating.
- GAS BOILER ON - The gas boiler on units so equipped is operating.
- LEAD LAG ON - Compressor 2 is first stage.
- MANUAL RESET REQUIRED - A fatal alarm has occurred. See **Operation - Start, Stop, Reset**.
- MAXIMUM EXHAUST BLOWER ON - The maximum amount of room air is being exhausted.
- MINIMUM EXHAUST BLOWER ON - The standby amount of room air is being exhausted.
- OCCUPIED PERIOD - Time-of-day is defined as that in which people are usually present.
- OIL RETURN MODE 1 ON - Refrigerant is being diverted through the outdoor condenser for oil return.
- OIL RETURN MODE 2 ON - Refrigerant is being diverted through the outdoor condenser for oil return.
- PLEASE WAIT... Compressor X will auto reset - A possibly fatal alarm is being analyzed.
- POOL 1 AUX ON - An auxiliary heater is heating pool 1 water.
- POOL 2 AUX ON - An auxiliary heater is heating pool 2 water.
- POOL 1 HEATING CALL - The temperature of pool 1 water is below set point minus differential.
- POOL 2 HEATING CALL - The temperature of pool 1 water is below set point minus differential.
- POOL 1 HEATING ON - Water from pool 1 is being heated.
- POOL 2 HEATING ON - Water from pool 2 is being heated.
- PURGE MODE ON - Room air is being exhausted to dilute superchlorination gases.
- VENTILATION ON - Cooling or dehumidification by ventilation is enabled in the event of compressor failure or no air-conditioning option.
- ZERO REHEAT ON - Supply air temperature is limited to the return air temperature.

Operation

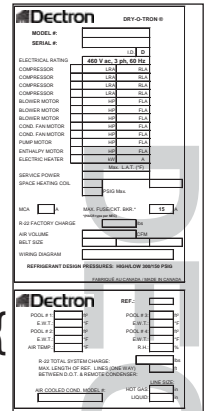
Set-Point Adjustment

NOTICE Risk of unit damage.

Unless the unit submittal data specifies special operating conditions, do not attempt to operate the unit at a space temperature below 78°F (25.6°C). See further instructions below.

NOTICE Risk of uncontrolled evaporation.

Improper changes to air and water temperatures can profoundly affect the rate of pool evaporation. See further instructions below.

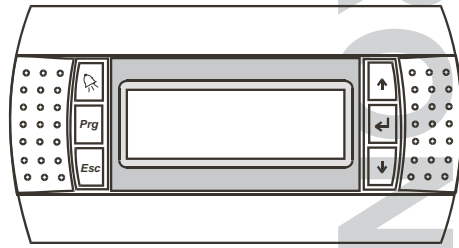
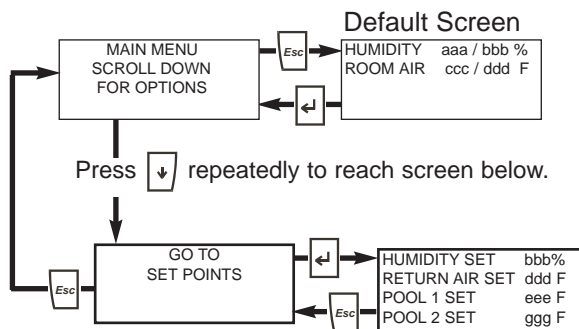


Set points should be kept near the values that appear on the unit nameplate.

Each unit is carefully sized to match the expected load, as specified in the original order. Attempting to operate a unit far from rated conditions can have unexpected results, such as excessive evaporation, condensation in unexpected locations, and other problems. If set points must be changed, air-temperature set point and water-temperature set point must be changed together.

NOTE: Unless the unit submittal data specifies special operating conditions, do not attempt to operate the unit at a space temperature **below 78°F (25.6°C)**.

The operating set points are viewed and adjusted as shown below. If asked for a password, enter 1793 for units made before April 2005. For units made since April 2005, enter 17 or 1793. To clear the password, select YES when prompted to log off.



Press to move the cursor around the screen.

aaa is the present indoor relative humidity.

bbb% is the relative humidity set point. If a change is desired, press as needed to move the cursor to **aaa%**, then press or to change the set point.

ccc is the present room air temperature.

ddd F is the room air temperature set point. If a change is desired, press as needed to move the cursor to **ddd F**, then press or to change the set point.

eee F is the pool #1 temperature set point. If a change is desired, press as needed to move the cursor to **eee F**, then press or to change the set point.

ggg F is the pool #2 temperature set point. If a change is desired, press as needed to move the cursor to **ggg F**, then press or to change the set point.

NOTE: In the image above and the discussion at right, “bbb”, “ddd”, “eee”, and “ggg” are placeholders. Your screen will show the set points for your unit.

NOTE: The test “Pool 2 Set . . . gggF” is optional and may not appear on all units.

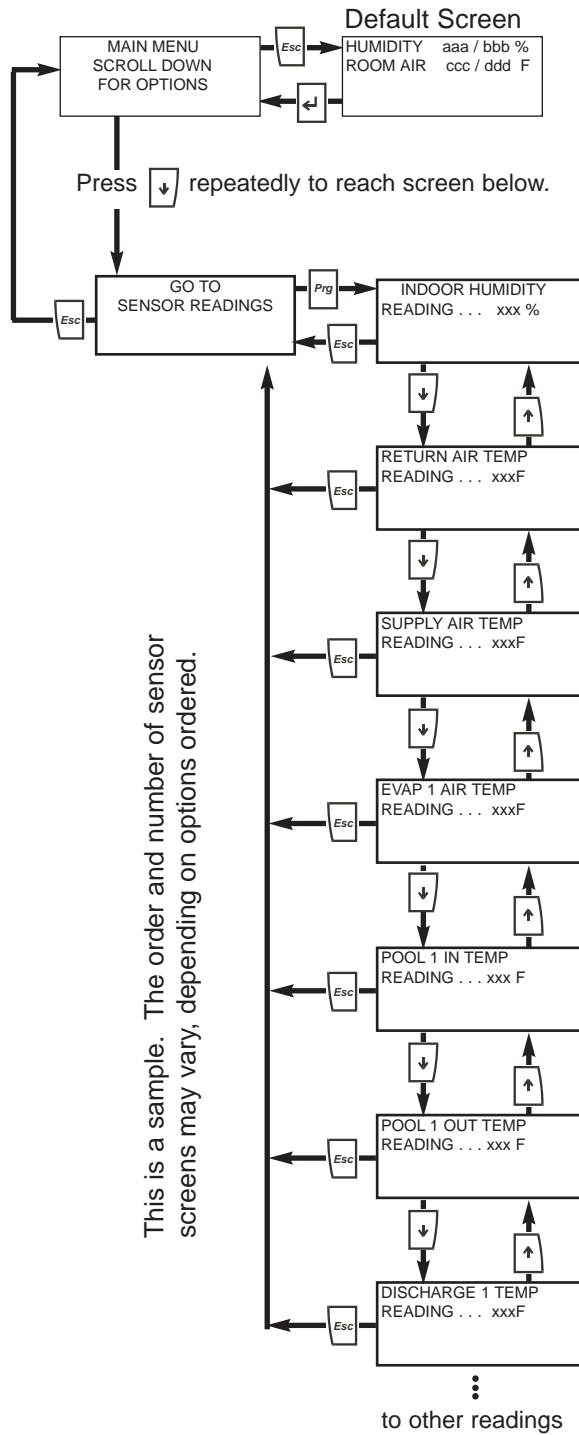
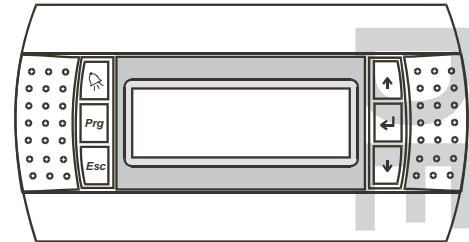
OPERATION

Read Sensors

Operation

The values of some sensor signals are displayed on the default screen, as at right. To read all sensors, follow the steps below.

NOTE: In the images and the discussion below, "aaa", "bbb", "ccc", "ddd", and "xxx" are placeholders. Your screen will actually show the current values for your unit.



This is a sample. The order and number of sensor screens may vary, depending on options ordered.

- This screen displays the relative humidity of the room air, as measured at the return duct
- This screen displays the temperature of the room air, as measured at the return duct
- This screen displays the temperature of the supply air, as measured at the DRY-O-TRON® supply blower.
- This screen displays the temperature of the air leaving the evaporator of the first refrigeration circuit.
- This screen displays the temperature of the pool #1 water entering the DRY-O-TRON®.
- This screen displays the temperature of the pool #1 water leaving the DRY-O-TRON®.
- This screen displays the temperature of the hot refrigerant gas leaving the #1 compressor. This is important to a proper startup. See **Startup - TXV Adjustment**.

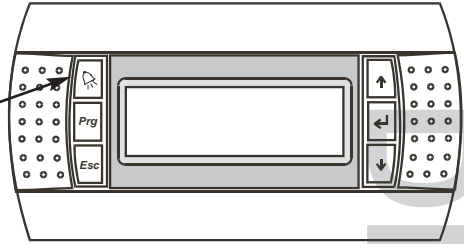
DRY-O-TRON

OPERATION

Operation

Alarms

Dectron has a network of contractors who have been trained by Dectron to install and service this product. Please call 1-800-676-2566 or 1-800-667-6338 to find the contractor nearest your site.



If the alarm button is illuminated, press it to see the current alarm(s). Press [Down Arrow] repeatedly to see all current alarms.

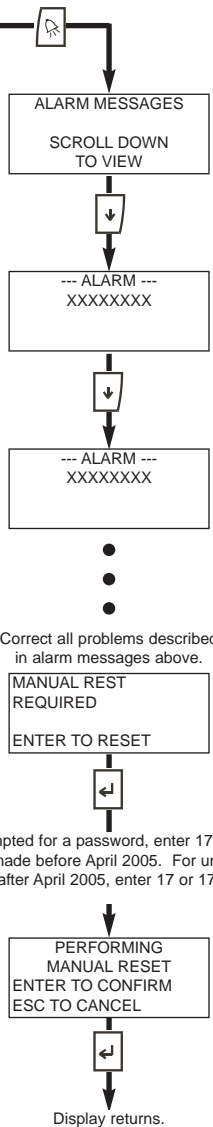
To get an explanation of an alarm, first get the alarm on screen. Press [Prg] to get the explanation.

For a list of alarm messages, see **Operation - Alarm Messages.**

Reset

If the message "MANUAL RESET REQUIRED" appears among the unit status messages, follow the instructions on screen to accomplish a manual reset.

NOTE: Only certain specific alarms require manual reset. Other alarms are automatic reset when the problem is corrected.



Press [Enter] to initiate the resetting process. **Note:** Not all alarms require manual reset.

Press [Enter] to proceed with the resetting process. Press [Esc] to cancel the resetting process.

DECTRON

OPERATION



Risk of electric shock. Can cause injury or death.

Some installation and service procedures could expose personnel to the risk of electric shock. Electric shock can cause injury or death.



The unit controller does not disconnect electrical energy from the unit, even in the OFF condition. Use only approved devices (e.g. locking safety switch), to disconnect, lockout, and tagout all sources of electrical energy before working inside the unit cabinet. Follow all applicable safety regulations.



Risk of explosive pressure release. Can cause injury or death.

This product contains refrigerant liquid and vapor under high pressure. Some installation and service procedures could expose personnel to the risk of explosive discharge. Some installation and service procedures could expose personnel to the risk of frostbite from release of refrigerant.

Reclaim refrigerant to reduce the pressure to atmospheric before working on pipes, valves, heat exchangers, compressors, pressure switches, etc.

Once opened, do not close any manual refrigerant valves that might isolate refrigerant from the relief valve. If necessary, install relief valves (by others).



Risk of top-heavy units tipping over. Can cause property damage, injury, or death.



Risk of contact with moving parts. Can cause injury or death.

This product contains rotating parts and V-belt drives. Some installation, service, and maintenance procedures could expose personnel to the risk of injury or death from contact with these parts.



Using only approved devices (e.g. locking safety switch), disconnect, lockout, and tagout all sources of electrical energy before working inside the unit cabinet. Allow adequate time for rotating parts to stop. Follow all applicable safety regulations.



Risk of falling. Can cause injury or death.

Depending on the size and location of this product, some installation, service, and maintenance procedures could expose personnel to the risk of injury or death by falling.



Designs should include adequate service and maintenance access. Use fall-protection equipment as appropriate.

OPERATION

Operation

Supervisaire[®] Controller Diagnostics **WARNING****Risk of frostbite. Risk of eye damage.**

Improper handling of refrigerants and refrigerant hoses can allow release of liquid refrigerant. Exposure to liquid refrigerant can cause frostbite and severe eye damage. Wear gloves, eye protection, and any other appropriate protective equipment. Follow all safety procedures.

 **WARNING****Risk of suffocation.**

Improper handling of refrigerants and refrigerant hoses can allow release of refrigerant gases. In a confined space, these heavier-than-air gases may accumulate and displace oxygen, leading to suffocation.

Confirm adequate ventilation before proceeding.

 **WARNING****Risk of contamination of breathing air. Can cause injury or death.**

Application of this product may involve the intake of outdoor air. Do not store any contaminants near the point of intake.

Application of this product may involve air-handling equipment, e.g. ducts, cabinets, plenums, etc., which operate below atmospheric pressure. Such equipment must be carefully located and installed to prevent the intake of contaminants.

Follow the instructions in this manual and all applicable codes.

 **CAUTION****Risk of contact with hot surfaces. Can cause injury.**

This product contains surfaces which can cause burn injury.

The compressor, refrigerant-discharge tubes, and heat exchangers can become extremely hot during operation.

Compressor crankcase heaters can be extremely hot at any time electrical power is applied.

Turn off the unit and allow time for these parts to cool before working inside the unit cabinet. Wear protective clothing (gloves, sleeves, etc.) while working on these parts.

NOTICE**Risk of leaking water. Can cause property damage.**

This product may use circulating water under pressure.

This product requires a free-flowing drain.

Freezing or other abnormal conditions could cause leakage or overflow.

Uncontrolled water can cause expensive damage to buildings and other equipment.

Maintain all drains and piping systems to prevent leaks and overflows.

NOTICE**Risk of uncontrolled condensation. Can cause property damage.**

This product is intended to control relative humidity and temperatures. Improper design, installation, and/or operation can lead to uncontrolled condensation of water, with associated property damage.

Read and follow the instructions in this manual.

Supervisaire® Controller Diagnostics

Operation

ALARM	POSSIBLE CAUSES	CHECKS & CORRECTIONS
A/C LOW WATER FAULT	Reduction of cooling water flow. Water pressure switch incorrectly adjusted.	<ul style="list-style-type: none"> • Be sure the correct water flow is present. • Adjust switch. See section Startup - Adjust Flow Switches.
BLOWER OVERLOAD	Cabinet doors left open Excessive airflow Overload device manual switch is OFF Blower motor current too high Unexpected open switch circuit Defective overload device	<ul style="list-style-type: none"> • Close all cabinet doors. Reset overload. • Be sure airflow is as specified on unit nameplate. Check switch position visually. <ul style="list-style-type: none"> • Press the OFF switch, then press the ON switch. Check that the blower motor current is not higher than the unit nameplate value. <ul style="list-style-type: none"> • Adjust the branch circuit voltage to the nameplate value ±10%. • Adjust the blower sheaves to produce design airflow. Check for loose terminals on overload device auxiliary switch. <ul style="list-style-type: none"> • Tighten as necessary Check for continuity of overload device auxiliary switch <ul style="list-style-type: none"> • Replace as necessary Replace overload device as necessary. Contact Dectron or your Dectron representative for referral to a Dectron-certified technician.

OPERATION

Operation

Supervisaire[®] Controller Diagnostics

ALARM	POSSIBLE CAUSES	CHECKS & CORRECTIONS
<p>COMPRESSOR X HIGH PRESSURE FAULT, where "X" is a placeholder. Your display will actually show a number associated with a particular refrigeration circuit.</p>	<p>Manual isolation valves not opened at installation</p> <p>Loss of cooling water on water-cooled units</p> <p>Loss of airflow in remote condensers on air-cooled units</p> <p>Improperly adjusted pressure control valve(s)</p> <p>Return air temperature too high</p> <p>Fouled or damaged reheat coil</p> <p>Excess refrigerant</p> <p>Defective high pressure switch</p>	<ul style="list-style-type: none"> • Be sure all isolation valves are opened. • Be sure water flow is correct. See Startup - Adjust Flow Switches. • Be sure the cooling water temperature is not above that stated on the unit nameplate. • Be sure the remote condenser safety switch is ON. Be sure that all fuses (if any) are good. • For polyphase condensers, be sure that all phases are present. Be sure the fans turn the proper direction. • Be sure that there are no walls, fences, bushes, or other airflow interruptions near the remote condenser. See Installation - Locate Remote Condenser. • Be sure the remote condenser is clean. • Consult Dectron or a Dectron-certified technician. • Be sure set points correspond to those shown on the unit nameplate. • Be sure controller outputs are not calling for heating. See unit wiring diagram. • Be sure reheat coil is not coated with foreign materials such as dirt from unfiltered outdoor air or scum from spas / hot tubs. • Be sure reheat coil is not corroded. Corrosion is due to poor chemical storage or excessive chloramine production. • This will be most common in warm weather. Be sure the total refrigerant charge corresponds to the amount shown on the unit nameplate. • Consult Dectron or a Dectron-certified technician.

OPERATION

Data subject to change without notice.

Supervisaire® Controller Diagnostics

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ALARM	POSSIBLE CAUSES	CHECKS & CORRECTIONS
<p>COMPRESSOR X HIGH DISCHARGE FAULT, where "X" is a placeholder. Your display will actually show a number associated with a particular refrigeration circuit.</p>	<p>Improperly adjusted refrigerant expansion valve(s) Excessive return airflow Inadequate refrigerant Defective temperature sensor</p>	<ul style="list-style-type: none"> • Consult Dectron or a Dectron-certified technician. • Contact an air-balance service to be sure the airflow is within tolerance. • With the compressor running, check for bubbles in the sight glass(es). If bubbles are present contact Dectron or a Dectron-certified technician. • Consult Dectron or a Dectron-certified technician.
<p>COMPRESSOR X LOW DISCHARGE FAULT, where "X" is a placeholder. Your display will actually show a number associated with a particular refrigeration circuit.</p>	<p>Improperly adjusted refrigerant expansion valve(s) Inadequate return airflow Improperly adjusted pressure control valve(s)</p>	<ul style="list-style-type: none"> • Consult Dectron or a Dectron-certified technician. • Contact an air-balance service to be sure the airflow is within tolerance. • Consult Dectron or a Dectron-certified technician.
<p>COMPRESSOR X LOW PRESSURE FAULT, where "X" is a placeholder. Your display will actually show a number associated with a particular refrigeration circuit.</p>	<p>Manual isolation valves not opened at installation Inadequate refrigerant charge Low room air temperature Low room humidity Inadequate return airflow Clogged refrigerant filter-drier Improperly adjusted pressure control valves Defective refrigerant expansion valve Defective pressure switch</p>	<ul style="list-style-type: none"> • Be sure all manual isolation valves are open. • The refrigerant sight glasses must be completely full whenever the compressor has been running for at least five minutes. If this is not the case, consult Dectron or a Dectron-certified technician. • Be sure set points correspond to those shown on unit nameplate. Be sure room heater is working properly. • Be sure set points correspond to those shown on unit nameplate. Be sure outdoor makeup airflow rate is not excessive. • Contact an air-balance service to be sure the airflow is within tolerance. • Consult Dectron or a Dectron-certified technician. • Consult Dectron or a Dectron-certified technician. • Consult Dectron or a Dectron-certified technician. • Consult Dectron or a Dectron-certified technician.

OPERATION

Operation **Supervisaire[®] Controller Diagnostics**

ALARM	POSSIBLE CAUSES	CHECKS & CORRECTIONS
<p>COMPRESSOR X OIL FAILURE, where "X" is a placeholder. Your display will actually show a number associated with a particular refrigeration circuit.</p>	<p>Low oil level in compressor crankcase</p> <p>Excessive compressor wear</p> <p>Compressor oil pump failure</p> <p>Compressor oil pressure switch failure</p>	<ul style="list-style-type: none"> • Check oil level in compressor oil sight glass. • Be sure the evaporator pressure does not operate below 50 PSI for significant periods. • For units with air-cooled air conditioning, be sure the refrigerant tubes to the remote condenser are not longer than the length specified on the unit nameplate. • For units with air-cooled air conditioning, be sure the refrigerant tubes to the remote condenser are the same O.D. as specified on the unit nameplate. • For units with air-cooled air conditioning where the remote condenser is more than 20 feet above the DRY-O-TRON[®], be sure the hot-gas riser tube(s) have P-traps as specified in this manual. • Consult Dectron or a Dectron-certified technician. • Consult Dectron or a Dectron-certified technician. • Oil pressure should be more than 10 PSI above evaporator pressure. • Consult Dectron or a Dectron-certified technician.
<p>COMPRESSOR X OVERHEAT, where "X" is a placeholder. Your display will actually show a number associated with a particular refrigeration circuit.</p>	<p>Applied voltage out of tolerance or out of balance</p> <p>Low oil level in compressor crankcase</p> <p>Evaporator pressure too low or hot gas bypass valve open too long (when so equipped).</p> <p>Defective refrigerant expansion valve</p> <p>Defective compressor overheat detector</p>	<ul style="list-style-type: none"> • A qualified person should be sure that the average applied voltage is within $\pm 10\%$ of the nameplate value and that the individual phase voltages are within $\pm 1\%$ of the average voltage (See NEMA MG-1). • See "OIL PRESSURE FAILURE" above • Be sure the evaporator pressure does not operate below 55 PSI for significant periods. Be sure HGBV is properly adjusted. • Consult Dectron or a Dectron-certified technician. • Consult Dectron or a Dectron-certified technician.

Data subject to change without notice.

Supervisaire® Controller Diagnostics

Operation

ALARM	POSSIBLE CAUSES	CHECKS & CORRECTIONS
<p>COMPRESSOR X OVERLOAD, where "X" is a placeholder. Your display will actually show a number associated with a particular refrigeration circuit.</p>	<p>Applied voltage out of tolerance or out of balance</p> <p>Evaporator bypass damper closed when room is above 78°F and 40%rh.</p> <p>Room temperature too high</p> <p>Room humidity too high</p> <p>Defective compressor overload device</p>	<ul style="list-style-type: none"> • A qualified person should be sure that the average applied voltage is within ±10% of the nameplate value and that the individual phase voltages are within ±1% of the average voltage (See NEMA MG-1). Reset overload. • Be sure evaporator-bypass damper is fully open when the room temperature is above 78°F and the room relative humidity is above 40%. • Manual dampers should be locked in the open position when room is above 78°F and 40%rh. Automatic dampers have a motorized actuator to open the damper when the temperature of the air leaving the evaporator is above 50°F. Reset overload. • Be sure that the room temperature set point is near the value specified on the unit nameplate. Reset overload. • Be sure that the space heater is responding to signals from the DRY-O-TRON®. Reset overload. • Be sure that the room humidity set point is near the value specified on the unit nameplate. Reset overload. • Compare trip current to maximum current specified on unit nameplate. A qualified person should adjust or replace the overload as necessary.
<p>COMPRESSOR X PUMPDOWN TOO LONG, where "X" is a placeholder. Your display will actually show a number associated with a particular refrigeration circuit.</p>	<p>Leaking liquid line solenoid valve</p> <p>Leaking hot gas bypass valve(s) shutoff solenoid valve(s) (where so equipped)</p>	<ul style="list-style-type: none"> • Consult Dectron or a Dectron-certified technician. • Consult Dectron or a Dectron-certified technician.

OPERATION

Operation **Supervisaire[®] Controller Diagnostics**

ALARM	POSSIBLE CAUSES	CHECKS & CORRECTIONS
<p>COOLING PERFORMANCE ALARM</p>	<p>A minimum temperature difference across the evaporator has not been produced after five minutes of refrigeration.</p>	<ul style="list-style-type: none"> • Be sure the associated refrigerant sight glass is full. No droplets should be visible on the inside of the sight glass. No bubbles should be visible in the sight glass after five minutes of operation. • Be sure the return airflow rate is as specified. • Be sure all manual isolation valves are fully open. • Be sure the refrigerant filter-drier is not clogged. • Be sure the refrigerant expansion valve is properly adjusted. • Be sure the pressure control valves have not been adjusted. Contact Dectron or a Dectron-certified technician.
<p>DISCHARGE X SENSOR FAULT, where "X" is a placeholder. Your display will actually show a number associated with a particular refrigeration circuit.</p>	<p>The signal from the compressor discharge temperature sensor is out of range.</p>	<ul style="list-style-type: none"> • Be sure the sensor cable is properly connected to both the sensor and the controller. • Disconnect the cable from the controller and check the resistance of the sensor and cable combination. Compare to the chart at the end of this section. If the resistance is outside the allowable range, disconnect the cable from the sensor and be sure the resistance of the cable is above 1 million ohms. Connect the ends of the cable wires together and be sure the cable resistance is less than 5 ohms. If either condition fails, replace cable. Compare the resistance of the sensor itself to the sensor resistance chart. Replace sensor if necessary. Connect sensor and cable to controller.
<p>DIRTY FILTERS</p>	<p>The signal from the filter differential pressure sensor indicates dirty filters. Defective sensor or wires.</p>	<ul style="list-style-type: none"> • Install clean filters. • Check for continuity.

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Supervisaire® Controller Diagnostics

Operation

ALARM	POSSIBLE CAUSES	CHECKS & CORRECTIONS
<p>EVAPORATOR X SENSOR FAULT, where "X" is a placeholder. Your display will actually show a number associated with a particular refrigeration circuit.</p>	<p>The signal from the evaporator leaving air temperature sensor is out of range.</p>	<ul style="list-style-type: none"> • Be sure the sensor cable is properly connected to both the sensor and the controller. • Disconnect the cable from the controller and check the resistance of the sensor and cable combination. Compare to the chart at the end of this section. If the resistance is outside the allowable range, disconnect the cable from the sensor and be sure the resistance of the cable is above 1 million ohms. Connect the ends of the cable wires together and be sure the cable resistance is less than 5 ohms. If either condition fails, replace cable. Compare the resistance of the sensor itself to the sensor resistance chart. Replace sensor if necessary. Connect sensor and cable to controller.
<p>EXPANSION MODULE COMMUNICATION FAILURE</p>	<p>Cable or addressing problem</p>	<ul style="list-style-type: none"> • Consult Dectron or a Dectron-certified technician.
<p>FIRESTAT ALARM Where so equipped, the DRY-O-TRON® will shut down.</p>	<p>Fire or smoke present Fire alarm (by others) has been tested but not completely reset Broken fire alarm wiring (by others) Shorted fire alarm wiring (by others)</p>	<ul style="list-style-type: none"> • Be sure there is no fire. • Contact your fire alarm technician. • Contact your fire alarm technician. • Contact your fire alarm technician.
<p>FREEZESTAT ALARM The signal from freeze-stat (where so equipped) indicates imminent freezing of the heating coil. Where so equipped, the DRY-O-TRON® will shut down.</p>	<p>Heating fluid (water or steam) too cold Inadequate flow of heating fluid (water or steam) Excessive outdoor airflow rate Outdoor air temperature unexpectedly low. Return air filters too dirty Defective freezestat</p>	<ul style="list-style-type: none"> • Be sure heating source is operating and properly adjusted. • Be sure flow rates are as specified. • Be sure the outdoor air intake rate is as specified. • Outdoor air intake rate may have to be reduced during coldest weather. • Replace with clean filters. • Check that the air temperature at the heating coil is approximately 40°F when the freezestat trips.

OPERATION

Operation **Supervisaire[®] Controller Diagnostics**

ALARM	POSSIBLE CAUSES	CHECKS & CORRECTIONS
<p>GAS BOILER ALARM</p>	<p>A general failure of an associated gas boiler supplied by Dectron.</p>	<ul style="list-style-type: none"> • Consult the boiler manual.
<p>GLYCOL PUMP OVER-LOAD The motor protection device for the glycol pump (where so equipped) has tripped.</p>	<p>Excessive glycol viscosity</p> <p>Glycol temperature colder than expected.</p> <p>Applied voltage out of tolerance or out of balance</p>	<ul style="list-style-type: none"> • Be sure the glycol is of the proper type and concentration. • Be sure glycol temperature is above -30°F. • A qualified person should be sure that the average applied voltage is within ±10% of the nameplate value and that the individual phase voltages are within ±1% of the average voltage (See NEMA MG-1). Reset overload.
<p>HUMIDITY SENSOR FAULT Humidity sensor signal is out of range.</p>	<p>Sensor cable disconnected</p> <p>Sensor cable broken or shorted</p> <p>Defective sensor</p>	<ul style="list-style-type: none"> • Be sure the sensor cable is properly connected to both the sensor and the controller. • Disconnect the cable from the sensor and from the controller and be sure the resistance of the cable is above 1 million ohms. Connect the ends of the cable wires together at the sensor end and be sure the cable resistance is less than 5 ohms. If either condition fails, replace the cable. Compare the output signal of the sensor itself to the expected value. Replace sensor if necessary. Connect sensor and cable to controller.
<p>MAX. EXHAUST BLOWER OVERLOAD (Purge mode equipped units) The motor protection device for the larger exhaust air blower has tripped.</p>	<p>Excess Maximum Exhaust airflow rate</p> <p>Applied voltage out of tolerance or out of balance</p>	<ul style="list-style-type: none"> • Be sure the Maximum Exhaust airflow rate is as specified. Excess airflow can overload some blowers. • A qualified person should be sure that the average applied voltage is within ±10% of the nameplate value and that the individual phase voltages are within ±1% of the average voltage (See NEMA MG-1). Reset overload.

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ALARM	POSSIBLE CAUSES	CHECKS & CORRECTIONS
<p>MIN. EXHAUST BLOWER OVERLOAD (Purge mode equipped units) The motor protection device for the smaller exhaust air blower has tripped.</p>	<p>Excess Maximum Exhaust airflow rate Applied voltage out of tolerance or out of balance</p>	<ul style="list-style-type: none"> • Be sure the Minimum Exhaust airflow rate is as specified. Excess airflow can overload some blowers. • A qualified person should be sure that the average applied voltage is within $\pm 10\%$ of the nameplate value and that the individual phase voltages are within $\pm 1\%$ of the average voltage (See NEMA MG-1). Reset overload.
<p>OUTDOOR HUMIDITY SENSOR FAULT Outdoor humidity sensor (where so equipped) signal is out of range.</p>	<p>Sensor cable disconnected Sensor cable broken or shorted Defective sensor</p>	<ul style="list-style-type: none"> • Be sure the sensor cable is properly connected to both the sensor and the controller. • Disconnect the cable from the sensor and from the controller and be sure the resistance of the cable is above 1 million ohms. Connect the ends of the cable wires together at the sensor end and be sure the cable resistance is less than 5 ohms. If either condition fails, replace the cable. Compare the output signal of the sensor itself to the expected value. Replace sensor if necessary. Connect sensor and cable to controller.
<p>OUTDOOR TEMPERATURE SENSOR FAULT The signal from the outdoor air temperature sensor is out of range.</p>	<p>Sensor cable disconnected Sensor cable broken or shorted Defective sensor</p>	<ul style="list-style-type: none"> • Be sure the sensor cable is properly connected to both the sensor and the controller. • Disconnect the cable from the controller and check the resistance of the sensor and cable combination. Compare to the chart at the end of this section. If the resistance is outside the allowable range, disconnect the cable from the sensor and be sure the resistance of the cable is above 1 million ohms. Connect the ends of the cable wires together and be sure the cable resistance is less than 5 ohms. If either condition fails, replace cable. Compare the resistance of the sensor itself to the sensor resistance chart. Replace sensor if necessary. Connect sensor and cable to controller.

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Operation **Supervisaire[®]** Controller Diagnostics

ALARM	POSSIBLE CAUSES	CHECKS & CORRECTIONS
<p>POOL 1 IN SENSOR FAULT or POOL 2 IN SENSOR FAULT</p> <p>The signal from the inlet pool water temperature sensor is out of range.</p>	<p>Sensor cable disconnected</p> <p>Sensor cable broken or shorted</p> <p>Defective sensor</p>	<ul style="list-style-type: none"> • Be sure the sensor cable is properly connected to both the sensor and the controller. • Disconnect the cable from the controller and check the resistance of the sensor and cable combination. Compare to the chart at the end of this section. If the resistance is outside the allowable range, disconnect the cable from the sensor and be sure the resistance of the cable is above 1 million ohms. Connect the ends of the cable wires together and be sure the cable resistance is less than 5 ohms. If either condition fails, replace cable. • Compare the resistance of the sensor itself to the sensor resistance chart. Replace sensor if necessary. Connect sensor and cable to controller.

OPERATION

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Operation

ALARM	POSSIBLE CAUSES	CHECKS & CORRECTIONS
<p>POOL 1 LEAVING WATER TOO HOT or POOL 2 LEAVING WATER TOO HOT</p> <p>The temperature of the water returning to the pool has exceeded 120°F. The unit will shut down.</p>	<p>Inadequate pool water flow rate</p> <p>Pool water temperature too high</p>	<ul style="list-style-type: none"> • Be sure the pool water flow rate is as specified in this manual. • Be sure the pool water set point is as specified. • Be sure the pool water heating solenoid valve closes. Check the solenoid valve signal. Replace the valve as necessary.
<p>POOL 1 LOW WATER FAULT or POOL 2 LOW WATER FAULT</p> <p>The flow detection pressure switch circuit is open. Pool water heating is inhibited.</p>	<p>Inadequate pool water flow rate</p> <p>Pool water pressure switch is not adjusted</p> <p>Defective pool water pressure switch.</p>	<ul style="list-style-type: none"> • Be sure the pumps are working. • Be sure the valves are in the correct position. • Check and set water flow rate as discussed in Startup - Adjustments. • Set as discussed in Startup - Adjustments. • Set as discussed in Startup - Adjustments. If the switch cannot be adjusted, contact Dectron for a replacement.
<p>POOL 1 OUT SENSOR FAULT or POOL 2 OUT SENSOR FAULT</p> <p>The signal from the inlet pool water temperature sensor is out of range.</p>	<p>Sensor cable disconnected</p> <p>Sensor cable broken or shorted</p> <p>Defective sensor</p>	<ul style="list-style-type: none"> • Be sure the sensor cable is properly connected to both the sensor and the controller. • Disconnect the cable from the controller and check the resistance of the sensor and cable combination. Compare to the chart at the end of this section. If the resistance is outside the allowable range, disconnect the cable from the sensor and be sure the resistance of the cable is above 1 million ohms. Connect the ends of the cable wires together and be sure the cable resistance is less than 5 ohms. If either condition fails, replace cable. • Compare the resistance of the sensor itself to the sensor resistance chart. Replace sensor if necessary. Connect sensor and cable to controller.

OPERATION

Operation **Supervisaire[®] Controller Diagnostics**

ALARM	POSSIBLE CAUSES	CHECKS & CORRECTIONS
<p>POOL 1 PERFORMANCE ALARM or POOL 2 PERFORMANCE ALARM</p> <p>The pool water temperature difference is less than 8°F after 5 minutes of heating.</p>	<p>Pool water flow rate too high</p> <p>Pool water temperature sensors not calibrated</p> <p>Loss of refrigeration capacity</p> <p>Pool heating diverting valve not functioning</p>	<ul style="list-style-type: none"> • Be sure the pool water flow rate is as specified. • Consult Dectron or a Dectron-certified technician. • Be sure the refrigerant sight glass is full. There should be neither bubbles nor droplets. • Consult Dectron or a Dectron-certified technician.
<p>POWER FAILURE</p> <p>The voltage monitor circuit is open.</p>	<p>Input voltage out of range</p> <p>Input voltage phase rotation reversed</p> <p>One or more phases of the input voltage are missing</p> <p>For 460 V units, there is a crack in the socket of the voltage monitor</p> <p>Defective voltage monitor</p>	<ul style="list-style-type: none"> • A qualified person should be sure that the average applied voltage is within $\pm 10\%$ of the nameplate value and that the individual phase voltages are within $\pm 1\%$ of the average voltage (See NEMA MG-1). <ul style="list-style-type: none"> • Note that the input voltage can go below nominal $\pm 10\%$ at the moment of compressor startup. A qualified person should measure the input voltage at the moment of compressor startup. • A qualified person should interchange any two wires of the branch circuit. Do not move any factory-installed wires. • A qualified person should determine that all phases are present. Check fuses and/or circuit breakers. • A qualified person should inspect the socket. Replace as necessary. • Consult Dectron or a Dectron-certified technician.

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Operation

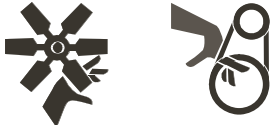
UNITS WITH VOLTAGE MONITOR ONLY



Risk of contact with moving parts. Can cause injury or death.

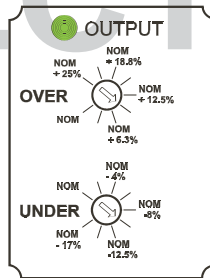
This product contains rotating parts and V-belt drives. Some installation, service, and maintenance procedures could expose personnel to the risk of injury or death from contact with these parts.

Using only approved devices (e.g. locking safety switch), disconnect, lockout, and tagout all sources of electrical energy before working inside the unit cabinet. Allow adequate time for rotating parts to stop. Follow all applicable safety regulations.

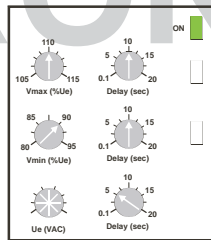


Identify the type of voltage monitor present.

TYPE 1



TYPE 2



For TYPE 2 monitors, skip to next page.

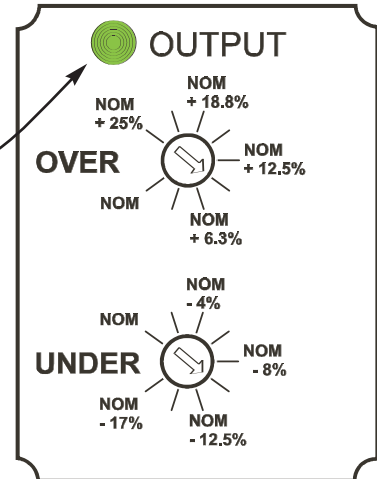
Type 1 Voltage Monitor

After power wiring is complete, and when safe to do so, turn on the branch-circuit disconnect switch. In some cases the blower may start. Some DRY-O-TRON[®] units may have voltage monitors that prevent operation in the event the branch circuit has voltage that is too high, too low, has lost a phase, or has reversed phase sequence.

If the green LED is not lit, confirm that the applied voltage is within $\pm 10\%$ of the nameplate voltage (NEMA MG-1), that all three phases are present, and that the phase sequence is correct. Be sure that the knob(s) are set correctly.

The over-voltage setting should be at nominal voltage plus 10%.

The under-voltage setting should be at nominal voltage minus 10%.



OPERATION

UNITS WITH TYPE 2 VOLTAGE MONITOR ONLY

Be sure the Vmax time delay is set to 10 seconds.

Be sure that Vmax is set to 110%. Higher values may allow overheating of internal motors.

Do not adjust the voltage monitor without the explicit instructions from Dectron.

Be sure the Vmin time delay is set to 10 seconds.

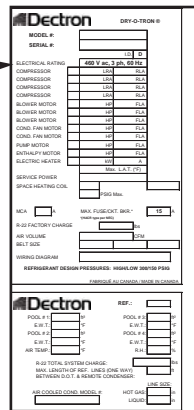
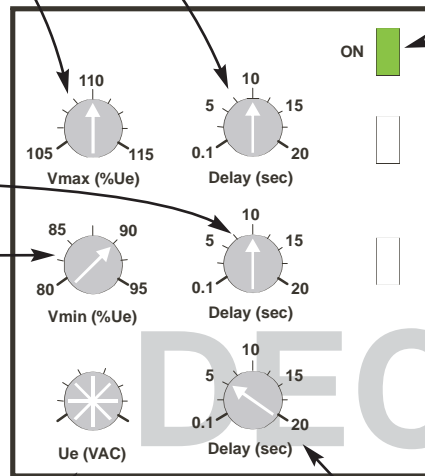
Be sure that Vmin is set to 90%. Lower values may allow overheating of internal motors.

Do not adjust the voltage monitor without explicit instructions from Dectron.

Be sure that Ue is set to the nominal voltage shown on the Dectron nameplate.

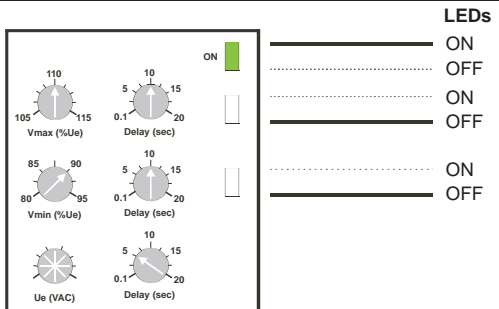
When the branch circuit voltages are correct, the green ON LED should be on.

If it is not on, or is flashing, see the following page for more details.



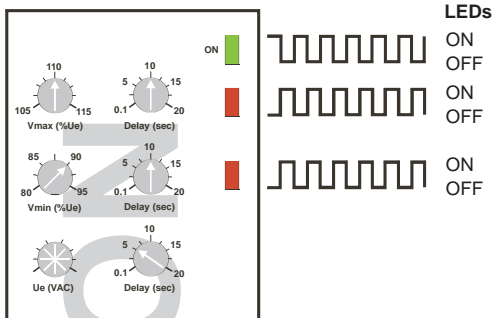
Supervisaire® Controller Diagnostics

Operation



Normal

When the green LED is on steady, the voltages are within normal range, all voltages are present, and the phase sequence is correct. No action is needed.

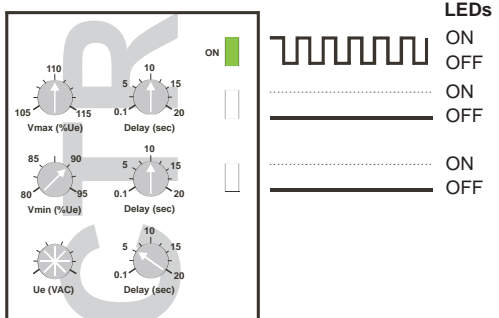


Incorrect Phase Sequence

When the green LED alternates with both red LEDs, the incoming branch circuit phase sequence is wrong, and the DRY-O-TRON cannot operate.

Disconnect electrical power from the branch circuit, follow all necessary and proper safety procedures, and remove any two branch-circuit conductors from the input lugs. Exchange their places and reconnect. Tighten as appropriate.

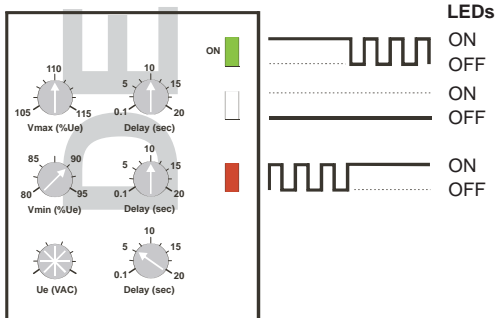
Following all safety procedures, re-apply electrical power. The voltage monitor should be normal as shown above.



Phase Loss

When the green LED is flashing and with both red LEDs are off, the incoming branch circuit does not have all three phases, and the DRY-O-TRON cannot operate.

Have a qualified electrician fix the problem and re-apply electrical power. The voltage monitor should be normal as shown above.

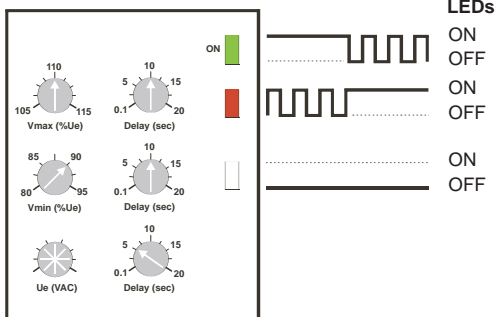


Incoming Voltage Below Minimum Allowable

When the green LED is flashing and the lower red LED is on, the incoming voltage is too low, and the DRY-O-TRON cannot operate.

Voltages below this level will result in motor overheating. Do not adjust the voltage monitor without explicit instructions from Dectron.

Have a qualified electrician fix the problem and re-apply electrical power. The voltage monitor should be normal as shown above.



Incoming Voltage Above Maximum Allowable

When the green LED is flashing and the upper red LED is on, the incoming voltage is too high, and the DRY-O-TRON cannot operate.

Voltages above this level will result in motor overheating. Do not adjust the voltage monitor without explicit instructions from Dectron.

Have a qualified electrician fix the problem and re-apply electrical power. The voltage monitor should be normal as shown above.

OPERATION

Operation **Supervisaire® Controller Diagnostics**

ALARM	POSSIBLE CAUSES	CHECKS & CORRECTIONS
<p>RETURN AIR SENSOR FAULT</p> <p>The signal from the return air temperature sensor is out of range.</p>	<p>Sensor cable disconnected</p> <p>Sensor cable broken or shorted</p> <p>Defective sensor</p>	<ul style="list-style-type: none">• Be sure the sensor cable is properly connected to both the sensor and the controller.• Disconnect the cable from the controller and check the resistance of the sensor and cable combination. Compare to the chart at the end of this section. If the resistance is outside the allowable range, disconnect the cable from the sensor and be sure the resistance of the cable is above 1 million ohms. Connect the ends of the cable wires together and be sure the cable resistance is less than 5 ohms. If either condition fails, replace cable.• Compare the resistance of the sensor itself to the sensor resistance chart. Replace sensor if necessary. Connect sensor and cable to controller.
<p>SUPPLY AIR SENSOR FAULT</p> <p>The signal from the supply air temperature sensor is out of range.</p>	<p>Sensor cable disconnected</p> <p>Sensor cable broken or shorted</p> <p>Defective sensor</p>	<ul style="list-style-type: none">• Be sure the sensor cable is properly connected to both the sensor and the controller.• Disconnect the cable from the controller and check the resistance of the sensor and cable combination. Compare to the chart at the end of this section. If the resistance is outside the allowable range, disconnect the cable from the sensor and be sure the resistance of the cable is above 1 million ohms. Connect the ends of the cable wires together and be sure the cable resistance is less than 5 ohms. If either condition fails, replace cable.• Compare the resistance of the sensor itself to the sensor resistance chart. Replace sensor if necessary. Connect sensor and cable to controller.

OPERATION

Data subject to change without notice.

Supervisaire[®] Controller Diagnostics

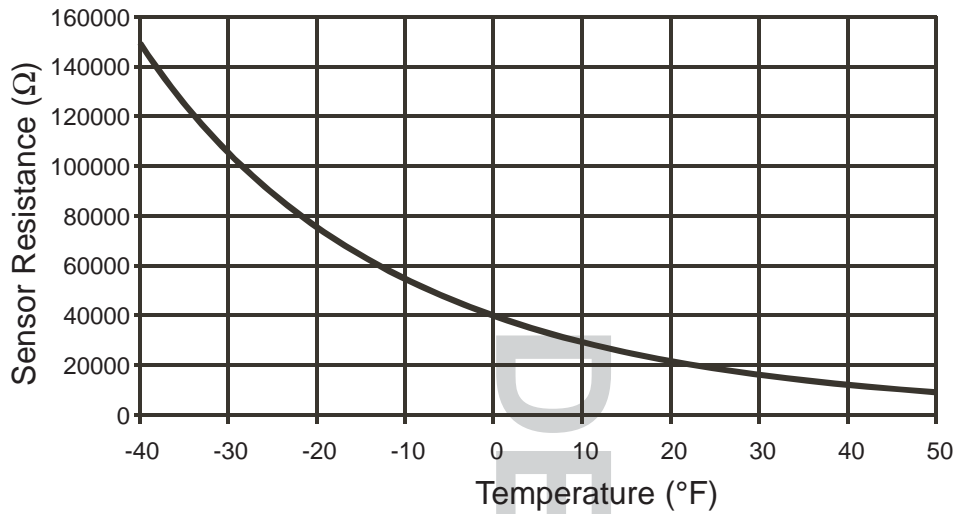
Operation

ALARM	POSSIBLE CAUSES	CHECKS & CORRECTIONS
<p>WALL SENSOR FAULT</p> <p>The signal from the wall temperature sensor (where so equipped) is out of range.</p>	<p>Sensor cable disconnected</p> <p>Sensor cable broken or shorted</p> <p>Defective sensor</p>	<ul style="list-style-type: none"> • Be sure the sensor cable is properly connected to both the sensor and the controller. • Disconnect the cable from the controller and check the resistance of the sensor and cable combination. Compare to the chart at the end of this section. If the resistance is outside the allowable range, disconnect the cable from the sensor and be sure the resistance of the cable is above 1 million ohms. Connect the ends of the cable wires together and be sure the cable resistance is less than 5 ohms. If either condition fails, replace cable. • Compare the resistance of the sensor itself to the sensor resistance chart. Replace sensor if necessary. Connect sensor and cable to controller.

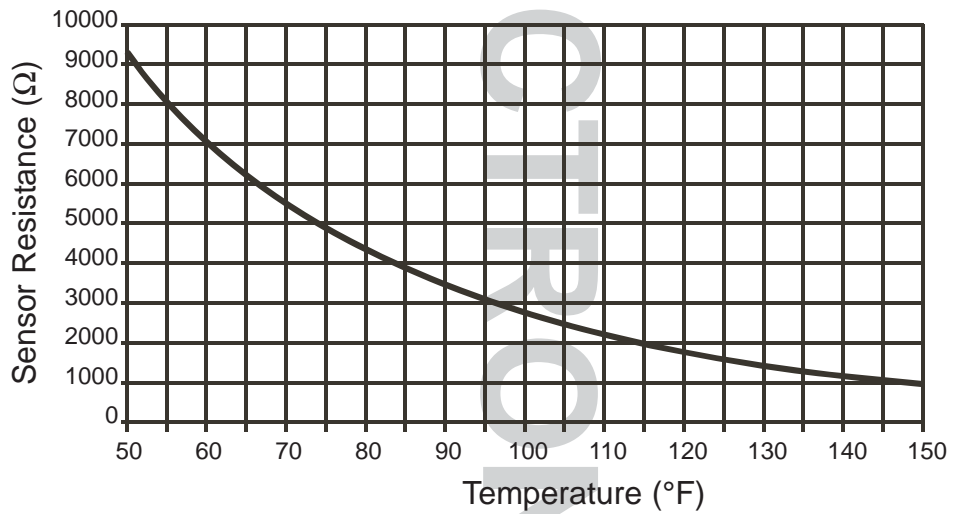


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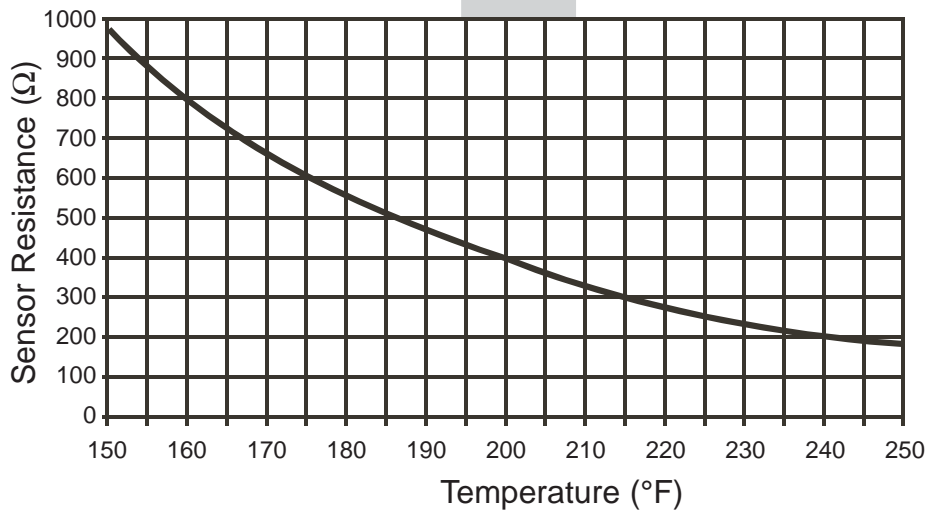
Use this chart for the temperature range -40°F to 50°F.



Use this chart for the temperature range 50°F to 150°F.



Use this chart for the temperature range 150°F to 250°F.



OPERATION

Problems not indicated by Supervisaire® Controller

SYMPTOM	POSSIBLE CAUSES	CHECKS & CORRECTIONS
<p>Unit not cooling</p>	<p>A/C solenoid valve is stuck in dehumidification position</p> <p>The return air sensor is out of calibration.</p> <p>Incorrectly adjusted head pressure bypass valve ORI-6 (5/8)</p>	<p>Verify that the three-way valve may be jammed:</p> <ol style="list-style-type: none"> 1. Force the suspect valve to operate and check for changes in operating temperatures and pressures. If no changes occur, then the valve is completely jammed and must be replaced. 2. If the unit runs fine in A/C, trips on high pressure in dehumidification mode, and also runs with higher than normal pressures in A/C alone, then the three-way valve is not shifting completely out of air conditioning. (This is assuming that no other cause for a high pressure trip can be found.) <ul style="list-style-type: none"> • Replace the defective valve. <p>Verify actual air temperature and compare with what is displayed on the controller.</p> <ul style="list-style-type: none"> • If the difference is less than 10°F re-calibrate sensor. See configuration and calibration page of service manual for return air sensor calibration. If more than 10°F replace sensor. <p>Check whether the hot gas is going to both the outdoor condenser and the reheat coil at the same time.</p> <ul style="list-style-type: none"> • All DS units have a head-pressure valve that allows the hot gas to circulate through the reheat coil during air conditioning should the head pressure exceed 325 PSIG. This could occur on abnormally hot days and prevents the unit from tripping on high pressure. This valve is an ORI-6 (5/8 inch) valve located in the compressor section of the unit. To check the valve adjustment: <ol style="list-style-type: none"> 1. Close the isolation valves for the outdoor condenser. 2. Run the unit in A/C mode. 3. The head pressure should rise to approximately 325 PSI.

Operation

Diagnostics - Mechanical

Problems not indicated by Supervisaire® Controller

SYMPTOM	POSSIBLE CAUSES	CHECKS & CORRECTIONS
<p>Unit not cooling (continued)</p>	<p>Wrongly adjusted head pressure bypass valve (ORI-6 5/8) (continued)</p> <p>Closed isolation valves for outdoor condenser</p> <p>Defective relay on S5 relay board</p> <p>Room load exceeds the cooling capacity of the unit</p>	<p>4. To adjust this valve, close it completely and then open it one turn.</p> <ul style="list-style-type: none"> • Replace defective valve. <p>Check position of ball valves.</p> <ul style="list-style-type: none"> • Open valves. <p>Check whether the A/C three-way valve is energized.</p> <ul style="list-style-type: none"> • Replace defective relay. <p>Check the air temperature differential through the DRY-O-TRON®.</p> <ul style="list-style-type: none"> • If the differential is 8°F - 10°F (4.5°C - 5.5°C) the unit is cooling properly.
<p>Compressor will not start</p> <p>Check controller status messages.</p>	<p>No demand</p> <p>Anti-short-cycle timer prevents startup for 3 minutes.</p> <p>Compressor overload is turned off or has tripped (three-phase units only)</p> <p>Compressor thermal protector is open</p> <p>Open water-pressure switch circuit</p> <p>Loose control or power wiring</p> <p>Water exit temperature above 120°F</p>	<ul style="list-style-type: none"> • Adjust the set points to the values on the unit nameplate. <p>Wait.</p> <ul style="list-style-type: none"> • Turn the overload on (where so equipped). • Allow one hour for compressor to cool. • Check circuit continuity. Check for water flow. Check pressure switch adjustment. • Check for electrical continuity under load. • Check the water flow rate. • Clear the fault code.

OPERATION

Data subject to change without notice.

Problems not indicated by Supervisaire® Controller

SYMPTOM	POSSIBLE CAUSES	CHECKS & CORRECTIONS
<p>Compressor will not start (continued)</p>	<p>Compressor crankcase full of liquid refrigerant</p> <p>Low voltage may cause failure to start (Long inadequately-sized branch circuit conductors may cause low voltage at inrush.)</p> <p>Defective start capacitor (single phase units only)</p> <p>Defective capacitor relay (single phase units only)</p> <p>Defective contactor</p> <p>Defective compressor</p>	<ul style="list-style-type: none"> • Be sure the crankcase heater has been warm for at least 12 hours prior to starting the compressor. • Use adequate branch circuit conductors. Consult Dectron for the use of a hard-start kit (single phase units only). • Consult Dectron for recommendations. • Replace capacitor. • Replace relay. • Check that the contactor is getting power. • Replace contactor. • Check compressor for shorts, open windings, and locked rotor. • Replace compressor.
<p>High humidity in the space</p>	<p>Incorrect duct design can produce stratification of room air.</p> <p>Incorrect duct design can cause improper evaporator air velocity.</p> <p>Incorrect duct design can reduce airflow below operating range.</p> <p>Incorrect blower speed can cause improper total airflow.</p>	<p>See the Installation section of this manual for proper duct design.</p> <ul style="list-style-type: none"> • Correct duct design as necessary. <p>See the Installation section of this manual for proper duct design.</p> <ul style="list-style-type: none"> • Correct duct design as necessary. <p>See the Installation section of this manual for proper duct design.</p> <ul style="list-style-type: none"> • Correct duct design as necessary. <p>Assure proper total airflow by testing.</p> <ul style="list-style-type: none"> • Adjust blower speed as appropriate.

Problems not indicated by Supervisaire® Controller

SYMPTOM	POSSIBLE CAUSES	CHECKS & CORRECTIONS
<p>High humidity in the space (continued)</p>	<p>Dirty air filters can seriously reduce the total airflow.</p> <p>Room air temperature being too high can reduce the dehumidification effect.</p> <p>Insufficient refrigerant can reduce the refrigeration effect. Excessive length of tube connecting to remote condenser (if so equipped) can cause refrigerant undercharge.</p> <p>Excessive amounts of refrigerant can reduce the refrigeration effect.</p> <p>Air-side clogging of the air reheat heat exchanger can reduce total airflow and heat transfer.</p> <p>Reduced heat transfer of a remote air-cooled condenser (if so equipped) can cause excessive condenser pressure.</p> <p>Non-condensable gases in the refrigeration system can reduce the refrigeration effect.</p> <p>Closed manual shut-off valves can reduce the refrigeration effect.</p> <p>Clogged filter-driers can reduce the refrigeration effect.</p>	<ul style="list-style-type: none"> • Be sure that the unit is always operated with clean air filters. • Adjust set point to range stated on unit nameplate. • Be sure there are no bubbles in the sight glass under any conditions. • Be sure the right amount of refrigerant is present. • Be sure the unit is only operated with clean filters in place. Always filter any outdoor air brought into the unit. If used in a natatorium do not locate the return grille near a spa or hot tub. • Be sure the remote condenser is clean and the fans are operating properly in cooling mode. • Always evacuate to 250 microns of mercury or better. • Be sure all manual valves that should be open are open. • If bubbles are visible in the sight glass, measure the liquid temperature on either side of the filter drier. A drop of more than 2°F is unacceptable. • Replace the liquid line filter-drier.

Data subject to change without notice.

Diagnostics-Mechanical

Operation

Problems not indicated by Supervisaire® Controller

SYMPTOM	POSSIBLE CAUSES	CHECKS & CORRECTIONS
<p>Room temperature too low</p>	<p>Set point too low</p> <p>Excessive outdoor-air intake</p> <p>Failure of auxiliary duct heater (by others)</p> <p>There is no space heater or space heater has inadequate capacity.</p>	<ul style="list-style-type: none"> • Adjust set points to values shown on unit nameplate. • Adjust outdoor intake rate to no more than 15% of total airflow. • Verify proper heater operation. Correct as necessary. • The DRY-O-TRON® does not produce significant heat - it recycles heat. A dedicated space heater must be ordered with the unit or provided by others. <p>NOTE: Building heat losses are calculated by others and consequently are sized by others. Dectron does not select space-heater capacities.</p>
<p>Room temperature too high</p>	<p>Set point too high</p> <p>Excessive outdoor-air intake</p> <p>Outdoor condenser dirty or fan(s) not operating</p> <p>Auxiliary duct heater ON with no heating demand</p> <p>Air-conditioning diverting valve stuck</p>	<ul style="list-style-type: none"> • Adjust set points to values shown on unit nameplate. • Adjust outdoor intake rate to no more than 15% of total airflow. • Be sure heat exchangers are clean. Assure fan operation. • Verify proper heater operation. Correct as necessary. <p>The three-way valve may be jammed:</p> <ol style="list-style-type: none"> 1. Force the suspect valve to operate and check for changes in operating temperatures and pressures. If no changes occur, then the valve is completely jammed and must be replaced. 2. If the unit runs fine in A/C, trips on high pressure in dehumidification mode, and also runs with higher than normal pressures in A/C alone, then the three-way valve is not shifting completely out of air conditioning. (This is assuming that no other cause for a high pressure trip can be found.) <ul style="list-style-type: none"> • Replace the defective valve.

OPERATION

Operation

Diagnostics - Mechanical

Problems not indicated by Supervisaire® Controller

SYMPTOM	POSSIBLE CAUSES	CHECKS & CORRECTIONS
<p>Supply-air temperature too low</p>	<p>Unit is in air-conditioning mode</p> <p>Excessive outdoor-air intake</p>	<ul style="list-style-type: none"> • Check set points. Verify operating of air-conditioning diverting valve--it may be jammed: <ol style="list-style-type: none"> 1. Force the suspect valve to operate and check for changes in operating temperatures and pressures. If no changes occur, then the valve is completely jammed and must be replaced. 2. If the unit runs fine in A/C, trips on high pressure in dehumidification mode, and also runs with higher than normal pressures in A/C alone, then the three-way valve is not shifting completely out of air conditioning. (This is assuming that no other cause for a high pressure trip can be found. • Replace the defective valve. • Adjust outdoor intake rate to no more than 15% of the total airflow.
<p>Low compressor oil pressure</p>	<p>Compressor crankcase full of liquid refrigerant</p> <p>Expansion valve incorrectly adjusted</p>	<ul style="list-style-type: none"> • Be sure the compressor crankcase heater is warm. Allow at least 12 hours for it to heat up before initial startup. • The compressor discharge temperature must be in the correct range. See Startup section. <p>There are only a limited number of ways in which liquid refrigerant can return to the compressor:</p> <ol style="list-style-type: none"> 1. The return air is too cold and/or dry and is not vaporizing the refrigerant in the evaporator. 2. The thermal expansion valve is misadjusted or defective and is not metering the refrigerant properly. 3. The pumpdown valve (on units so equipped) is leaking during the off cycle, allowing the evaporator to accumulate liquid. Oil failures caused by this problem will only occur the first 5 minutes after the compressor starts. 4. Allow at least 12 hours for the crankcase heater to warm up at initial startup. This will remove from the crankcase any liquid refrigerant that has accumulated during shipping and storage.

Data subject to change without notice.

OPERATION

Problems not indicated by Supervisaire® Controller

SYMPTOM	POSSIBLE CAUSES	CHECKS & CORRECTIONS
<p>Low compressor oil pressure (continued)</p>	<p>Low oil level in crankcase</p>	<ul style="list-style-type: none"> • Check for and correct any refrigerant leaks. Assure that proper steps have been taken to assure oil return. See installation diagram.
<p>Low condenser pressure</p>	<p>Room air temperature too low</p> <p>Room humidity too low</p> <p>Pool temperature too low</p> <p>ORI valve (water heating intensity) incorrectly set</p> <p>Insufficient refrigerant in system</p>	<ul style="list-style-type: none"> • Adjust set point to value shown on unit nameplate. • Adjust set point to value shown on unit nameplate. • Assure that outdoor air intake is not excessive. • Reduce water flow rate slightly until a reasonable temperature is achieved. • Turn the valve adjustment counter-clockwise until spindle is flush with housing. Turn the valve clockwise approximately 7.5 turns. The condenser pressure will depend on the refrigerant. Refer to chart in Startup section. • Add refrigerant to eliminate bubbles in the sight glass in all modes.
<p>High suction pressure</p>	<p>Room air temperature above normal can cause an increased load on the evaporator.</p> <p>Room relative humidity above normal can cause increased load on the evaporator.</p> <p>A closed evaporator-bypass damper can cause high air velocities in the evaporator.</p> <p>Improper duct design can cause high air velocities in the evaporator.</p> <p>Excessive total airflow can cause high air velocities in the evaporator.</p>	<ul style="list-style-type: none"> • Adjust set point to value shown on unit nameplate. • Adjust set point to value shown on unit nameplate. • Open the bypass damper whenever the room air temperature is above 78°F. • See the Installation section of this manual. Correct duct design as necessary. • Set total airflow by test to the value shown on unit nameplate.

Data subject to change without notice.

Operation

Diagnostics - Mechanical

Problems not indicated by Supervisaire® Controller

SYMPTOM	POSSIBLE CAUSES	CHECKS & CORRECTIONS
High suction pressure (continued)	A worn or damaged compressor may produce less refrigerant pumping.	<ul style="list-style-type: none"> • Compare compressor current to value shown on value shown on unit nameplate.
Evaporator icing	Dirty air filters reduce airflow Low room temperature Low airflow Low refrigerant charge Improper duct design	<ul style="list-style-type: none"> • Replace dirty filters. • Adjust set points to value shown on unit nameplate. • Close evaporator-bypass damper when air is below 78°F. • Assure blower turns proper direction (three-phase units only). • Assure blower belt tension is right. • Add refrigerant to eliminate bubbles in the sight glass in all modes. • See the Installation section of this manual for proper design.
Excessive noise	Lack of unit support isolators allows vibration to be transmitted to floors, etc. Lack of duct isolators allows vibration to be transmitted to the ducts. Loose blower belts and/or pulleys can produce unexpected noise. Improperly closed access panels can produce a whistling noise as air leaks into the cabinet. An incorrectly set expansion valve can cause liquid refrigerant flood back to the compressor with accompanying noise.	<ul style="list-style-type: none"> • See the Installation section of this manual for proper design. • See the Installation section of this manual for proper design. • Check blower belts and pulleys for proper tension and alignment. • Be sure that all panels are closed tightly and that all gaskets are in place. • Adjust the expansion valve to produce at least 160°F compressor discharge gas temperature.

OPERATION

Data subject to change without notice.

Diagnostics-Mechanical

Operation

Problems not indicated by Supervisaire® Controller

SYMPTOM	POSSIBLE CAUSES	CHECKS & CORRECTIONS
<p>Excessive noise (continued)</p>	<p>Liquid refrigerant in crankcase can cause excessive noise on startup.</p> <p>Failure of a blower bearing can produce a rumbling noise.</p>	<ul style="list-style-type: none"> • Be sure that the compressor crankcase heater is functioning. Allow at least 10 hours for the crankcase heater to warm up before initial startup. • Examine blower bearing for play or looseness. Replace as necessary.
<p>Unit runs continuously (no damage will result)</p> <p>NOTE: The blower is intended to run 100% of the time.</p> <p>NOTE: Each compressor has a minimum run time of 20 minutes.</p> <p>NOTE: Failure to pump down will stop the compressor and produce an alarm message.</p>	<p>Set points are out of range</p> <p>Heavy pool use can cause the water evaporation rate to increase dramatically.</p>	<ul style="list-style-type: none"> • Adjust set points to values shown on unit nameplate. • Conditions will return to normal after peak use subsides. • Be sure the original design activity factor has not been exceeded. This can be changed by the addition of water features (fountains, slides, etc.) or by changing the number of people using the facility, or by changing the activities the people engage in.
<p>Auxiliary air heating system stays on</p>	<p>Relay failure</p>	<ul style="list-style-type: none"> • This is indicative of a relay failure on the S5 board. Adjust the set points to be sure there is no heating demand. Check that the control voltage to the heating relay (see unit wiring diagram) is zero. If heat remains on, replace the relay.
<p>Corrosion or clogging of heat exchangers</p>	<p>Missing or dirty filters</p>	<ul style="list-style-type: none"> • Replace as needed.

OPERATION

Operation

Diagnostics - Mechanical

Problems not indicated by Supervisaire® Controller

SYMPTOM	POSSIBLE CAUSES	CHECKS & CORRECTIONS
Evaporator pressure oscillates more than 8 PSIG for more than 15 minutes after compressor starts	Compressor-discharge gas is too cold.	<ul style="list-style-type: none"> Adjust expansion valve(s). See Startup - Adjust Expansion Valve. <p>NOTE: Oscillation for 10 minutes after compressor starts is normal.</p>
Condenser pressure oscillates more than 5 PSIG	Normal for up to 3 minutes after compressor starts	<ul style="list-style-type: none"> If oscillation continues more than 10 minutes after compressor starts, contact Dectron or a Dectron-certified technician.

OPERATION

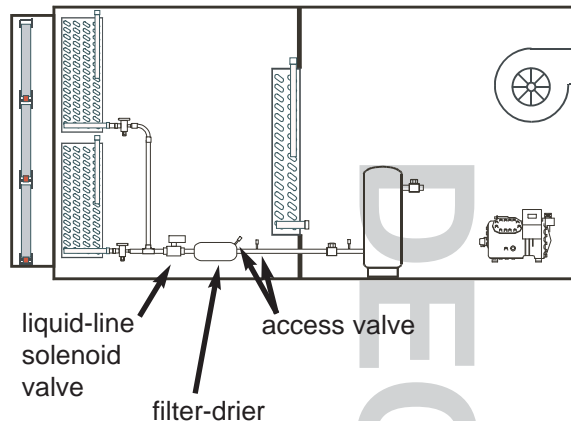
Closing Manual Valves

Service

Units with Liquid-line Solenoid Valves

Some units may have liquid-line solenoid valves. Should one of these units need service that requires closing the receiver-outlet isolation valve, follow these steps:

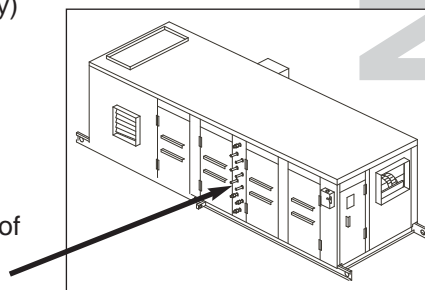
1. Locate the refrigerant liquid line associated with the circuit to be serviced.
2. There will be an access valve either in the filter-drier itself, or in the tube near the filter drier.
3. Set up a refrigerant reclaim machine (by others) on the access valve. Prepare to reclaim 1/2 pound of refrigerant.
4. Close the receiver-outlet isolation valve associated with the circuit to be serviced.
5. Immediately reclaim refrigerant from the liquid line filter-drier. One-half pound (by weight) or a reduction in pressure to less than 10 PSIG should be adequate.
This will allow any remaining liquid refrigerant to expand without damaging components.
6. If refrigerant is removed from the system, retain it for return to the unit after service is complete.



Units with the Air-Cooled Air Conditioning Option Only

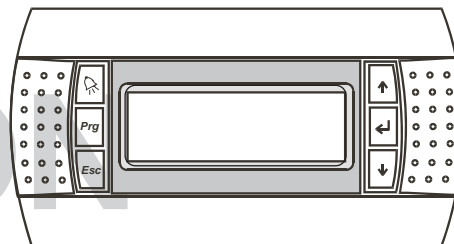
Should it be necessary to isolate the remote condenser (if any) from the unit, follow these steps:




1. Some units may have multiple refrigeration circuits. Determine which circuit must be isolated.
2. Determine which refrigerant-tubes on the unit connect that circuit to the remote condenser. These tubes are labelled.
3. Locate the remote-condenser access valves for the tubes of the circuit in question.
4. Set up a refrigerant-reclaim machine (by others) on the remote-condenser access valves for the circuit. Prepare to remove at least one pound of refrigerant, by weight.
5. There will be a manual isolation valve just inside the unit cabinet behind each tube. Close the two valves associated with the circuit.
6. Immediately reclaim one pound of refrigerant (by weight). This will provide enough volume for the remaining refrigerant to expand without damaging components.
7. Retain the reclaimed refrigerant for return to the unit after the service is complete.






Horizontal Unit

Over time, or in some adverse lighting situations, it may become necessary to adjust the contrast of the LCD display. To maximize LCD life, use only the minimum amount of contrast necessary.



To increase the contrast, simultaneously press and hold the  and  and  buttons until the contrast is correct.

To decrease the contrast, simultaneously press and hold the  and  and  buttons until the contrast is correct.

DECTRON

Terms of Limited Warranty

**DRY-O-TRON® Energy Recycling Dehumidifiers
(packaged units) and Factory Supplied Accessories**

General

Dectron Inc. warrants as set forth and for the time periods shown below that it will furnish to the original owner, through a Dectron Inc. authorized installing contractor or service organization, a new or rebuilt part for a part which has failed because of a defect in workmanship or material. Dectron Inc. reserves the right to apply handling and inspection charges in the case of parts or equipment improperly returned as defective whether under warranty or not.

Registration and Start-Up Report

Warranty void unless upon start-up of the unit the "Start-Up Report and Warranty Registration" is completed and sent to the factory within one week of initial start-up. This will also register the compressor warranty with the compressor manufacturer.

Initial 30-Day Warranty

During the first 30 days from initial start-up and subject to prior approval from the factory, Dectron Inc. will provide and/or reimburse the approved labor, materials, and shipping costs incurred in the replacement of a defective part.

Remainder of 25-Month Warranty

Upon expiry of the initial 30-day warranty, and until completion of the twenty-fifth month from date of shipment from Dectron Inc., if any part supplied by Dectron Inc. fails because of a defect in workmanship or material, Dectron Inc. will furnish a new or rebuilt part F.O.B. factory. No reimbursement will be made for expenses incurred in making field adjustments or replacements unless specifically re-approved by Dectron Inc. in writing beforehand.

Applicability

This warranty is applicable only to products that are purchased and retained in the United States and Canada. This warranty is not applicable to:

- △ Products that have become defective or damaged as a result of the use of a contaminated water circuit or operation at abnormal water temperatures and/or flow rates.
- △ Parts that wear out due to normal usage, such as air filters, belts, fuses and refrigerant.
- △ Products that have been moved from the location where they were first installed.
- △ Any portion of the system not supplied by Dectron Inc.
- △ Products on which the model and/or serial number plates have been removed or defaced.
- △ Products on which payment is in default.
- △ Products which have become defective or damaged as a result of unauthorized opening of refrigerant circuit, improper wiring, electrical supply characteristics, poor maintenance, accidents, transportation, misuse, abuse, fire, flood, alteration and/or misapplication of the product.
- △ Products operated without clean, properly installed air filters.
- △ Products not installed, operated, and maintained as per the applicable Dectron Inc. Owner's Manual.

Transportation Costs

After the initial 30-day warranty period has expired, charges covering transportation of the defective part(s) to Dectron Inc. from the customer site and replacement part(s) from Dectron Inc. to the customer site are not covered by this warranty.

Limitations

This warranty is given in lieu of all other warranties. Anything in the warranty notwithstanding, any implied warranties of fitness for particular purpose and merchantability shall be limited to the duration of this express warranty. Manufacturer expressly disclaims and excludes any liability for consequential or incidental damage for breach of any express or implied warranty.

Where a jurisdiction does not allow limitations or exclusions in a warranty, the foregoing limitations and exclusions shall not apply to the extent of legislation, however, in such case the balance of the above warranty shall remain in full force and effect.

This warranty gives specific legal rights. Other rights may vary according to local legislation.

Obtaining Warranty Service

Normally, the DECTRON INC. AUTHORIZED CONTRACTOR who installed the products will provide warranty service to the owner. Should the installing contractor be unavailable, contact your local Dectron, Inc. representative or the factory.

Force Majeure

Dectron Inc. will not be liable for delay or failure to provide warranty service due to government restrictions or restraints, war, strikes, material shortages, acts of God or other causes beyond Dectron Inc.'s control.

Warranty

Terms of Limited Warranty

DRY-O-TRON® Energy Recycling Dehumidifiers (packaged units) and Factory Supplied Accessories

Optional Third to Fifth Year Compressor Warranty

Under this warranty a new or re-built compressor will be supplied at Dectron Inc.'s expense, F.O.B. factory, provided the failed compressor is returned to the factory with transportation prepaid. This extended compressor warranty is subject to all the terms of the standard DRY-O-TRON® warranty but applied to the compressor only.¹ This extended warranty must be purchased before shipment of the unit.

¹Does not cover labor costs.

Optional Third to Fifth Year Coil Warranty

Under this warranty a new or re-built coil will be supplied at Dectron Inc.'s expense, F.O.B. factory, provided the failed coil is returned to the factory with transportation prepaid. This extended coil warranty is subject to all the terms of the standard DRY-O-TRON® warranty but applied to the coil only.² This extended warranty must be purchased before shipment of the unit.

²Does not cover labor costs.

Optional Delayed Start-Up Warranty

Under this warranty upon expiry of the initial 30-day warranty, and until completion of 34 months from date of shipment from Dectron Inc., if any part supplied by Dectron Inc. fails because of a defect in workmanship or material, Dectron Inc. will furnish a new or rebuilt part F.O.B. factory. No reimbursement will be made for expenses incurred in making field adjustments or replacements unless specifically re-approved by Dectron Inc. in writing beforehand.

The optional delayed start-up warranty is only valid if all of the following conditions are met:

- △ Water or condensation are not allowed to enter the electrical panel.
- △ Indoor units are stored in a dry and protected area.
- △ Electrical power must not be connected.
- △ Unit not tampered with or vandalized in any fashion.
- △ Start-Up Report and Warranty Registration is completed and sent to the factory within one week of initial start-up.

This optional delayed start-up warranty is subject to all the terms of the standard DRY-O-TRON® warranty. This extended warranty must be purchased before shipment of the unit.

U.S.A

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