



DRY-O-TRON®

DRY-O-TRON®

Owners Manual

FOR MODELS

DA2

- 007
- 016
- 024
- 035
- 045
- 054
- 070

For future reference, write your model number here _____

write your serial number here _____

write your ref number here _____

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 one Dectron unit only. All other rights are retained by Dectron.

USER AGREEMENT:

Where any differences exist between the named electronic file obtained directly from Dectron, Inc. and other versions, the named electronic file shall have precedence. Electronic versions are subject to validation by Dectron, Inc.

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Corresponding Electronic File Name:

DA2_2009-Nov-30.pdf

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.

DRY-O-TRON® DA2/DV2 Series Dehumidifiers for Industrial and Commercial Applications

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 fully 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.

The DA2 Series

- Δ Reduces building repair costs
- Δ Reduces ice surface maintenance
- Δ Helps eliminate fog and condensation
- Δ Contributes to space heating

The DA2 Series Features

- Δ Very simple and energy efficient operation - simply turn on the unit during active use periods.
- Δ Low maintenance operation
- Δ Automatic rapid defrost

Humidity in Ice Rinks

There are two sources of moisture in an indoor ice rink: infiltration and spectators. This moisture travels from warm areas to cold areas, since

the colder surface has a lower vapor pressure. In an ice rink, this movement is predominantly toward the ice. Some moisture will also move toward the ceiling.

If the cold surface temperature is below the dewpoint of the air, condensation will occur.

The visible effects of condensation are fog near the ice surface, and water droplets on the ceiling. In extreme case, inverted icicles may form on the ice surface.

Fog Near the Ice Surface

Fog is formed when moisture laden air at the ice surface cools to or below its dew-point temperature.

The ice surface actually acts as a dehumidifier, freezing moisture from the air onto the surface as additional ice. This process increases the load on the ice-making equipment and wastes energy.

The ice surface, the boards, and the spectator guards trap a pool of moisture-laden air on top of the ice. To remove the moisture without melting the ice, units must be properly installed in pairs. (See **Installation.**)

	Page
Product Description	4
Nameplate	5
Safety Information	6
Unloading and Lifting	8
Installation	
Unpacking & Locating	9
Mounting	10
Airflows	11
Ducts	12
Piping	14
Wiring	16
Unit-Duct Connections	21
Startup	
Pre-Startup Adjustments	18
Pre-Startup Checklist	19
Blower Speed	23
Oil Level	24
Notices	25
Enable Operation & Adjust TXV	26
Startup Report	29
Operation	
Maintenance	30
Diagnostics	33
Warranty	39

Product Description

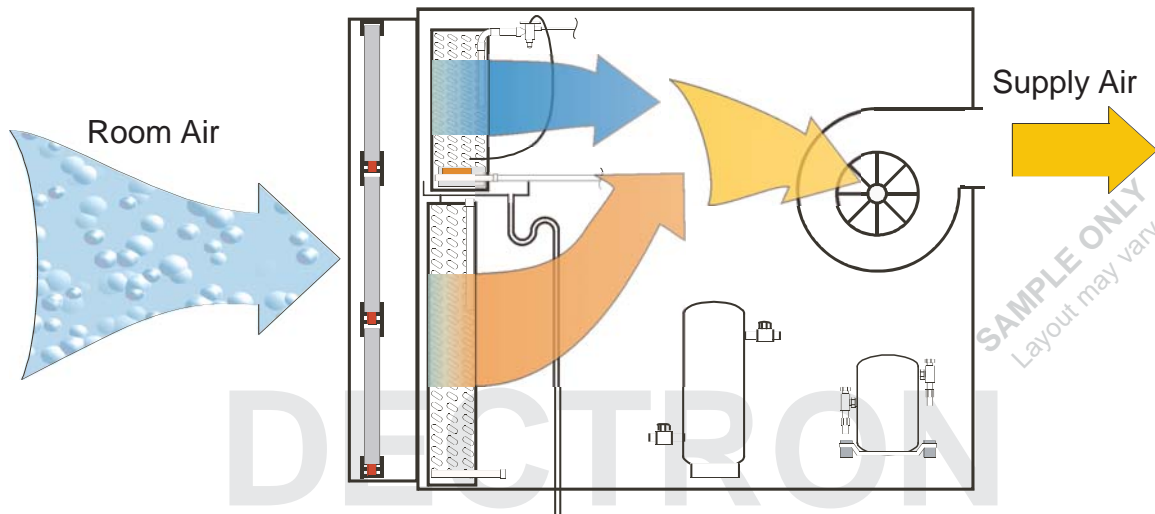
DESCRIPTION

Room air is drawn into the unit by the blower. Part of the air enters a cooling coil, where its temperature is decreased below its dew point. Water will condense from the air onto the cooling coil. In some cases, this water may drip into a collection pan and exit the unit through a pipe (by others). In other cases, the condensed water may collect on the cooling coil as frost.

The remainder of the air enters a condenser, where the refrigerant gives up its heat to the air.

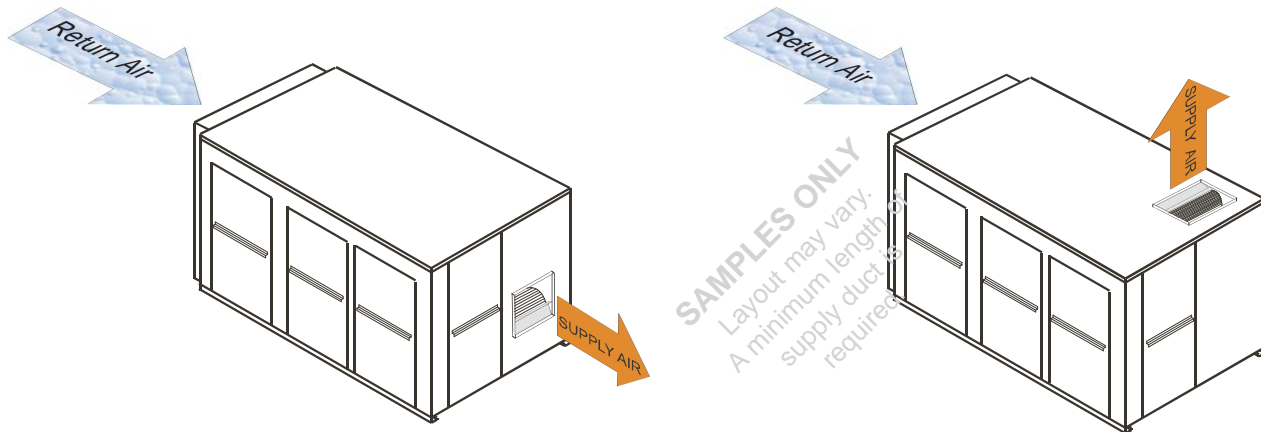
The resulting streams of warm and cold air are mixed together and the resulting supply air is delivered to the space as described elsewhere.

If frost builds up on the cooling coil, it will provoke a periodic defrost mode. During this mode, hot refrigerant enters the cooling coil, causing the frost to melt. The resulting water droplets fall into the collection pan, and flow out through the condensate pipe (by others).



SAMPLE ONLY
Layout may vary.

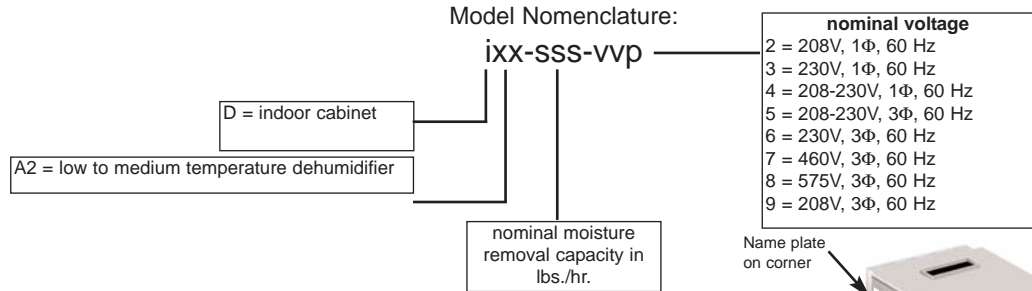
DECTRON



SAMPLES ONLY
Layout may vary.
A minimum length
supply duct
required.

Product Description

CSA and ETL Label



DRY-Q-TRON®

MODEL #: _____

SERIAL #: _____

ELECTRICAL RATING: _____

COMPRESSOR: _____

BLOWER MOTOR: _____

MCA: _____ A

MAX. FUSE/CKT. BKR.: _____ A

REFRIGERANT: _____ lbs

FACTORY CHARGE: _____

AIR VOLUME: _____ CFM

BELT SIZE: _____

WIRING DIAGRAM: _____

REFRIGERANT DESIGN PRESSURES: HIGH/LOW 300/150 PSIG

ETL 2001409

CONFORMS TO UL STD 1995
CERTIFIED TO STD CAN/CSA-
C22.2 NO. 236
FABRIQUE/AU CANADA / MADE IN CANADA

REF.: _____

POOL # 1: _____ °F

POOL # 2: _____ °F

POOL # 3: _____ °F

POOL # 4: _____ °F

AIR TEMP.: _____ °F

R.H.: _____ %

TOTAL SYSTEM CHARGE: _____ lbs

OIL TO BE ADDED AT START-UP: _____ oz

OIL TYPE: _____

MAX. LENGTH OF REF. LINES (ONE WAY) BETWEEN D.O.T. & REMOTE CONDENSER: _____ ft

AIR COOLED COND. MODEL #: _____

HOT GAS: _____ in

LIQUID: _____ in

LINE SIZE: _____ in

Replace with belt of same type and size when necessary.

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

Important branch circuit information

Ref number

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.

DESCRIPTION

Warnings, Cautions, Notices

NOTICE The information presented in this section represents Dectron's best effort as of the time of issue. This information should be considered in receiving, unloading, transporting, installing, and operating the equipment.

Dectron does not warrant that this information is complete for any particular application. Where job-specific modifications were required, those changes will be documented in addenda shipped separately.

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

Follow all applicable safety rules and regulations. Where any recommendations in this manual conflict with safety or any other legal requirements, those requirements take precedence.

Dectron, Inc. does not engage in transportation services or material-handling services, installation services, air-balancing services, or operation services. All costs, risks, and responsibilities of safety, transportation, handling, moving, damage prevention, proper installation, and proper operation are borne by others.

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 the startup process. There is a fee for this service.

WARNING



Risk of electric shock. Can cause injury or death.

Some 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 stray voltage.

Ground the unit using the grounding lug provided.

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.

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 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.

Warnings, Cautions, Notices

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 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.

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 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.

Unloading and Lifting

NOTICE Risk of damage from forklift. Can cause property damage. Follow the instructions in this manual and all applicable procedures to prevent damage to equipment when lifting with a forklift.

IMPORTANT!

Inspect your unit immediately for shipping damage. Claims for shipping damage must be made with the shipping company. Dectron is not responsible for shipping damage.

Your unit has been factory tested for proper operation. Inspect the unit carefully upon arrival.

Notify the carrier immediately if shipping damage is suspected. If internal damage is suspected, indicate "contingent on internal inspection" when signing for the shipment. Keep copies of all documents, including photographs of any damage.

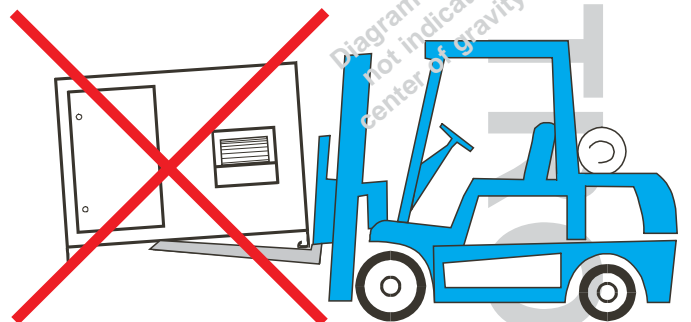
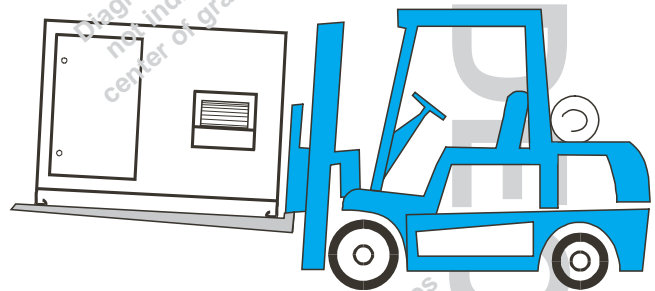
STORAGE

Request and refer to Appendix M4 - Storing Units.

It is best not to store a unit for extended periods of time. If storage is necessary, both indoor and outdoor units should be stored indoors in a space that is safe from accidental damage or vandalism. Where more than one unit are stored together, maintain proper inventory identification since each unit is designed to a particular job specification.

1. If the unit shipped on a wooden pallet, lift the unit with the pallet. Be sure the forks go all the way under the pallet.
2. If the unit did not ship on a pallet, look for fork pockets made into the unit frame. The lift forks must engage all four fork pockets, where fork pockets are present.
3. If the unit did not ship on a pallet, and there are no fork pockets, then the lift forks must engage the side rails of both sides of the unit.

Forklift, pads, restraints, etc., are by others.



NOTICE Never attempt to lift a unit with forks that do not go all the way under the side rails.

Attempting to do so will damage the base of the unit and may cause component mis-alignment, tube leaks, and other handling damage.

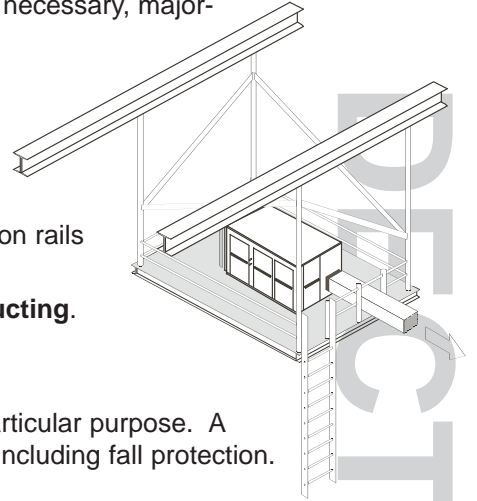
NOTICE Lift with forks at the indicated points only.

Installation

Air filters and blower belts require regular maintenance. Should it become necessary, major-component replacement may require some minimum working clearance.

If the air handler unit is located overhead, then:

1. Adequate and safe service and maintenance access must be provided.
2. A mezzanine floor must be constructed to allow the minimum service access.
3. Where the units are mounted above the floor level, adequate fall-protection rails should be provided.
4. Minimum straight lengths of duct may be required. See **Installation - Ducting**.
5. Provision must be made for disposal of condensate.



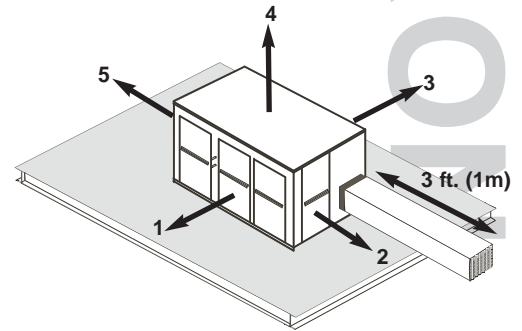
NOTICE This diagram is for illustration only, and is not suitable for any particular purpose. A qualified structural engineer should design any support system, including fall protection.

Safety switches, safety valves, fall protection, pipes, conduits, etc., are not shown here.

Minimum clearances are required. See table below.

Minimum Service Access ^a ft (m)	1	2	3	4	5
DA2-007 - DA2-024	2 (0.6)	3 ^b (1)	2 (0.6)	3 (1)	4 (1.2)
DA2-035 - DA2-070	3 (1)	3 ^b (1)	3 (1)	3 (1)	4 (1.2)

^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 exhibit 110-26, whichever is greater.



Sound and Vibration Elimination

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.

IMPORTANT!

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

Install flexible duct to all duct connections of the unit to prevent sound and vibration transmission. Use aerofoil-type turning vanes on all elbows. Elbows and acoustic insulation can be used to further reduce noise where necessary. See **Installation - Unit-Duct Connections**.

Condensate Drain Connection

Some units may have bottom condensate drains connections. In this

case allow a minimum 12-inch clearance for the bottom drain connection.

Some units may have side drains.

DA2 Series units have internal P-traps and do not require others. Do not install other P-traps without consulting Dectron. Be sure to fill the P-trap before starting the unit. Failure to fill the P-trap will result in condensate overflow.

Use schedule 40 PVC or standard ABS plastic drainage pipe and slope the condensate drain line at least 1/4 inch per foot. The drain line must discharge through an air gap to a vented open pipe.

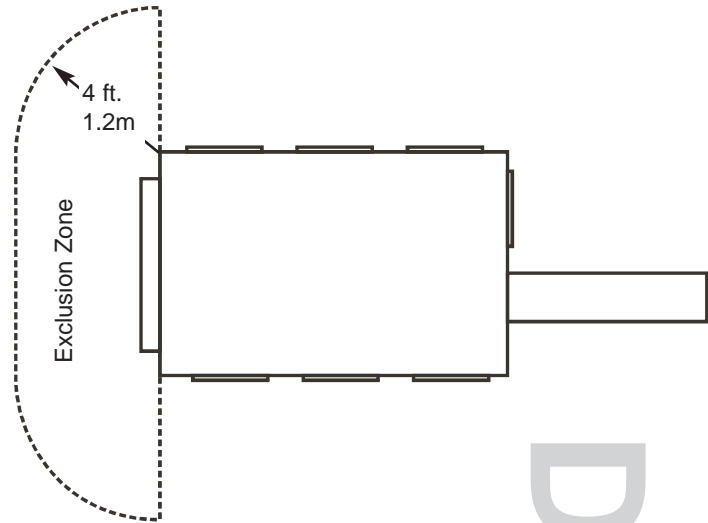
If the unit is located below the drain level a condensate pump is required (available from Dectron with rated maximum pump head of 9 feet and shut-off pressure of 13 feet -- if higher

lift is required a more powerful pump must be supplied by others). The Dectron condensate pump and tank comes complete with a high-level limit-switch which must be connected to an alarm. The alarm should notify personnel of a problem with condensate removal.

If a condensate pump is used, it must have sufficient pump head to overcome vertical lift 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 utilized 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.

Installation

Where a unit does not have a return duct, a 4 ft. (1.2m) minimum clearance is required between the air intake and any obstruction. There must be no walls, beams, posts, ducts, conduits, or anything else to interfere with smooth air flow within 4 feet of the intake filters.



All units must be supported to maintain the straightness of the frames and prevent the 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).

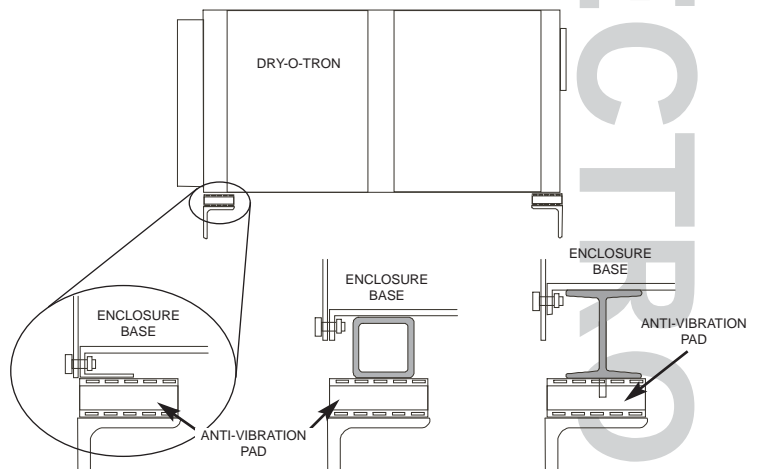
IMPORTANT!

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

IMPORTANT!

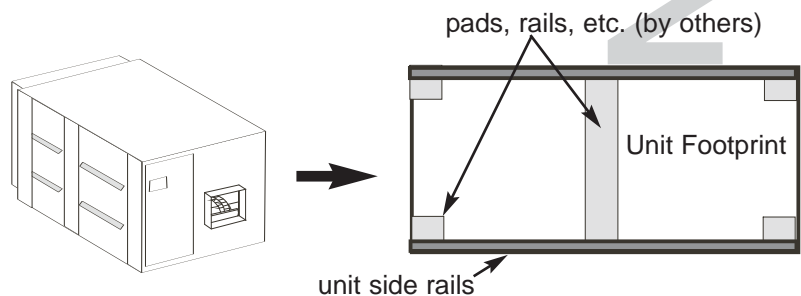
Where seismic mounts are used, care must be taken to prevent strains on conduits, refrigeration tubes, water tubes, or condensate tubes.

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



Horizontal units 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 previous page.



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. Where large units must be installed overhead, provide suitable under-base support with a service mezzanine. The support must include horizontal stabilization.

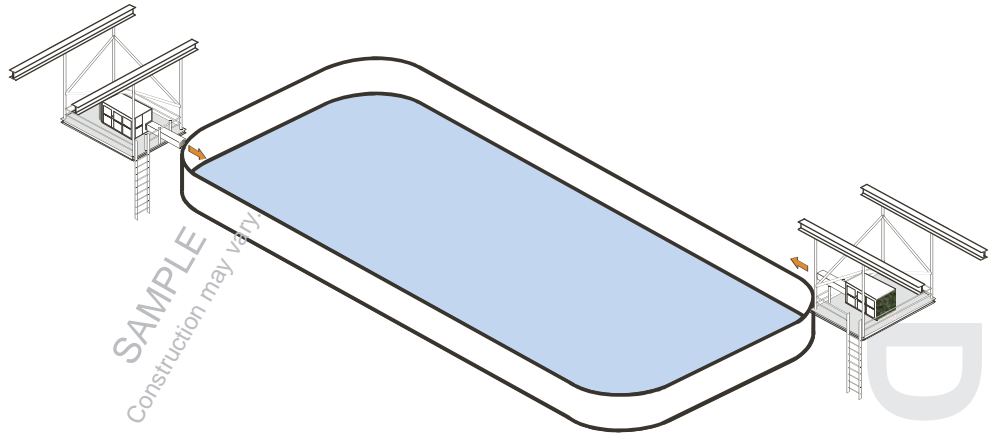
Airflows

Installation

Adequate and safe access is required.

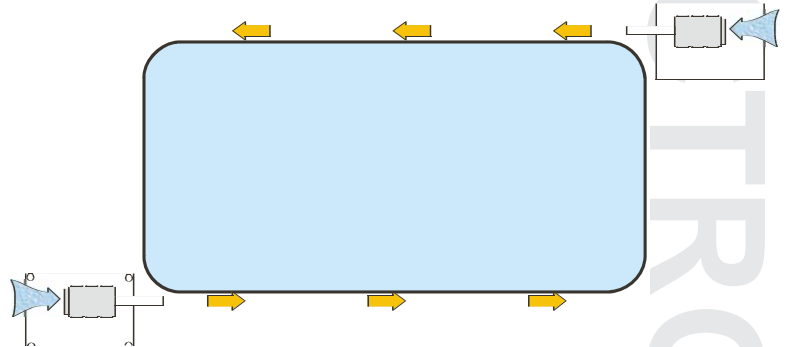
Do not install the units above the ice, since maintenance and service safety will be affected. A minimum separation of 4 feet (1.2m) is required between the air intake and any obstruction.

Do not block the view if there is a spectator area. Units can be located elsewhere, as long as the air flow and supply-air delivery point are not affected.

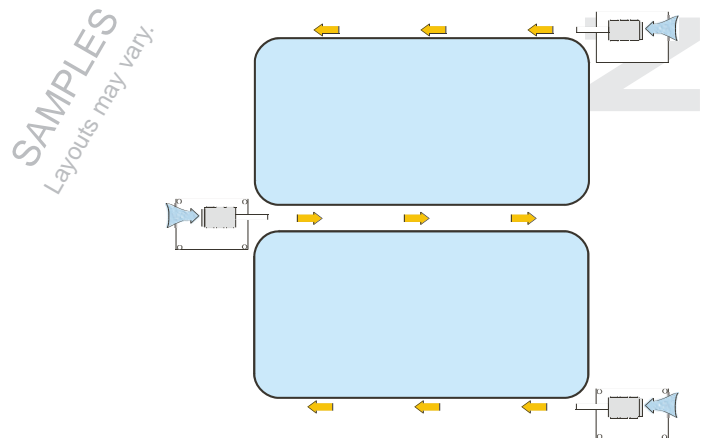


The units are to be installed in pairs anywhere in the room, as long as the external static pressure drop does not exceed the submittal maximum.

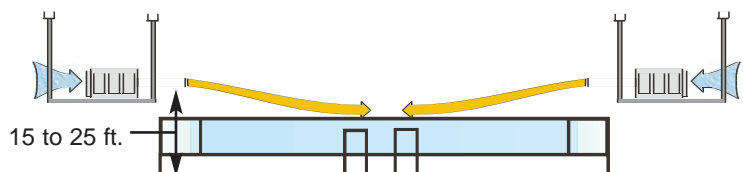
In many cases, each unit can be installed on a mezzanine above and to the side of the rink, so that the supply air follows the boards. Other arrangements are possible.



Where multiple ice rinks are next to each other, it may be possible to reduce the number of units required by arranging them as shown at right.



It is of the utmost importance that no air is blown directly onto the ice surface, since this causes the ice to melt. Units should be installed so that supply air is released 15 to 25 feet (4.6 to 7.6m) above the ice surface.



Installation

Ducts

If a unit cannot be installed in the room as shown previously, it can be installed elsewhere and the air can be ducted. The air-delivery point must remain the same as shown previously.

Important!

Poor duct design can reduce the amount of air delivered.

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 Dectron 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 air flow below the minimum acceptable value.

Select grilles, registers, and diffusers for low static pressure loss, required throw, and specified air flow.

Δ Duct material

The DRY-O-TRON® is suitable for use with any duct material, subject to the requirements of this section and standard practice. Standard galvanized steel duct is recommended.

All elbows near the unit must be equipped with aerofoil turning

vanes and acoustic insulation.

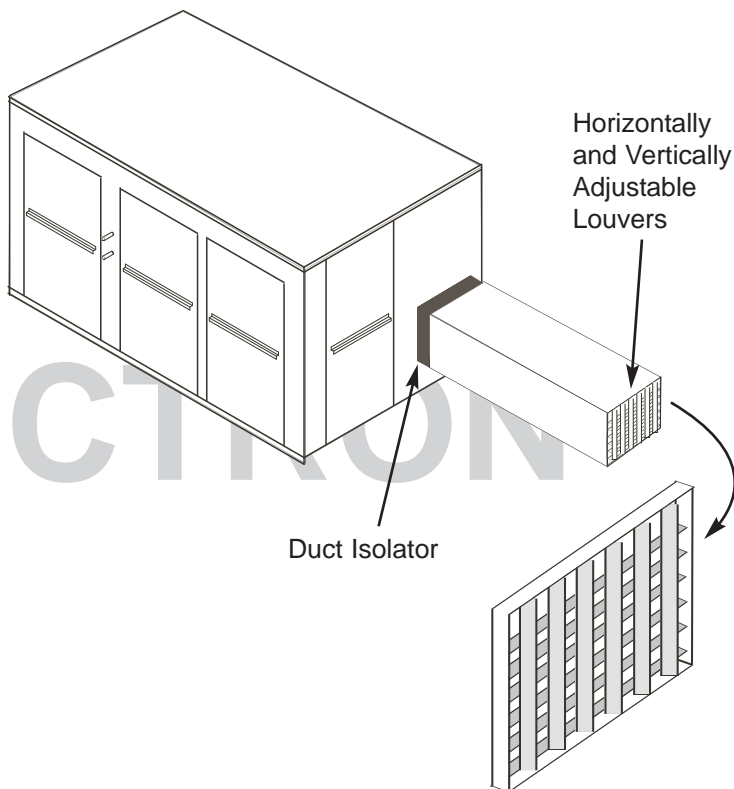
Where located in areas below room temperature, ductwork must be insulated on the outside with 2-inch fiberglass wrap with FSK facing. All ducts must be designed to be dry. All seams must be sealed. If a below-grade duct system is used, transite or PVC-coated, round metal ductwork should be used.

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.

All units must have a minimum of 3 feet of straight duct connected to the blower outlet, regardless of any other other duct required.

Regardless of the length of the duct, the end must be equipped with horizontally and vertically adjustable louvers.



Ducts

Installation

RETURN DUCT

WRONG

The air will not be evenly distributed over the evaporator.

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.

TURNING VANES

RIGHT

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

WRONG

Air cannot follow this steep angle.

RIGHT

Air can follow this transition.

SUPPLY DUCT

WRONG

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

RIGHT

Always install flexible duct connection. Sufficient straight length allows proper air flow. Flexible duct connection absorbs vibration.

Installation

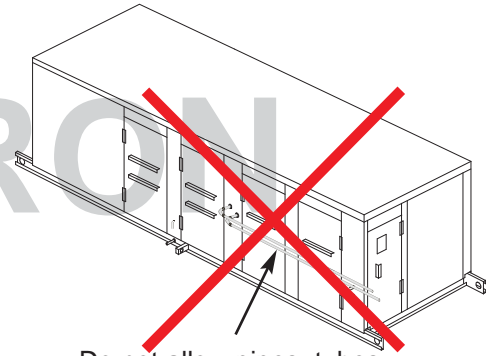
Piping

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.**)

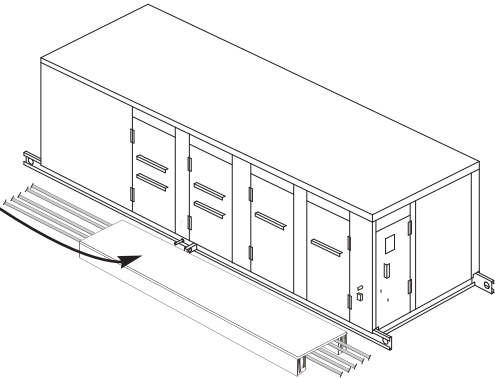
Unless specified for single-side access, there are access doors and/or panels

- a) horizontal unit - front and back sides, electrical panel
- b) vertical unit size 010 - 030 - front, left side
vertical unit size 040 and up - front, back, left side



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.



Condensate Drain

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 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.

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 units have side condensate drains while others may have condensate drains underneath. Bottom-drain arrangements may have to be made before the unit is placed.

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

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.

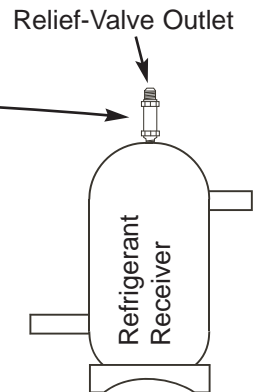
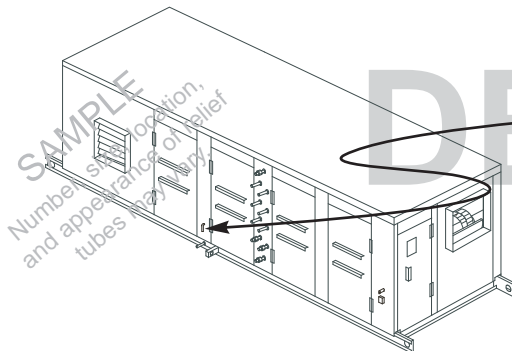
NOTICE Optional Equipment

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. Do not block any access panels or doors.

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.

DRY-CLON®	
MODEL #:	
SERIAL #:	
ELECTRICAL RATING	120 V
COMPRESSOR	1.5 HP
BLOWER MOTOR	1/2 HP
SECA	MAX. FUSE/CKT. BRKR.
REFRIGERANT TYPE	
FACTORY CHARGE	
DRY VOLUME	
REF. SIZE	
SEE DIAGRAM	DA2-W-024-001 AE Rev. 5
REFRIGERANT DESIGN PRESSURES: HIGH/LOW 300/150 PSIG	
CONFORMING TO U.L. STD 1996	
DESIGNED TO U.S. STANDARDS	
FABRIQUE AU CANADA / MADE IN CANADA	
REF.:	
POOL #1	POOL #2
E.W.T.	E.W.T.
POOL #3	POOL #4
E.W.T.	E.W.T.
AIR TEMP.	R.H.
TOTAL SYSTEM CHARGE	
OIL TO BE ADDED AT START-UP	
OIL TYPE	
MAX. LENGTH OF REF. LINES (ONE WITH BETWEEN D.O.T. & REARER CONDENSER)	
AIR COOLED COND. MODEL #	HOT GAS
	LIQUID

Installation

Wiring

Power

WARNING

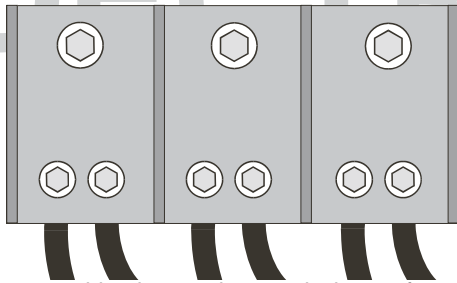


Risk of electric shock. Can cause injury or death.

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.

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.

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.

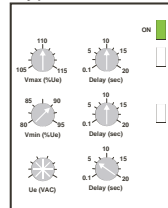
Some DRY-O-TRON® units may have voltage monitors that prevent operation in the event the branch circuit has voltage that is too high, too low, has lost a phase, or has reversed phase sequence.

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. (See **Diagnostics**.) Correct as necessary.

Type 1 monitor



Type 2 monitor



Control Signals

Wiring

Installation

! 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.

NOTICE

Risk of electric shock. Can cause injury or death.

Risk of property damage. Risk of failure to comply with electrical code.

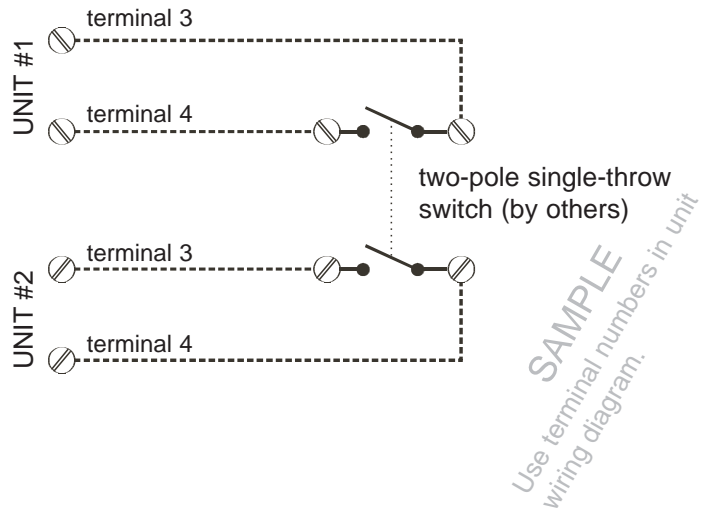
The ENABLE circuit of this unit may not be a Class 2 circuit. Refer to the unit wiring diagram.

ENABLE SWITCH (by others)

Electric power should be applied to the unit at all times, in order to keep the compressor crankcase heaters warm. Failure to keep the heaters warm will require a 12-hour minimum preparation time before starting a unit.

A double-pole enable switch (by others) connected as shown allows two units to remain powered while operation is not desired.

NOTE: Where three units work together, as shown in **Installation-Airflows**, use a three-pole enable switch (by others). For larger numbers of units, consult the factory.

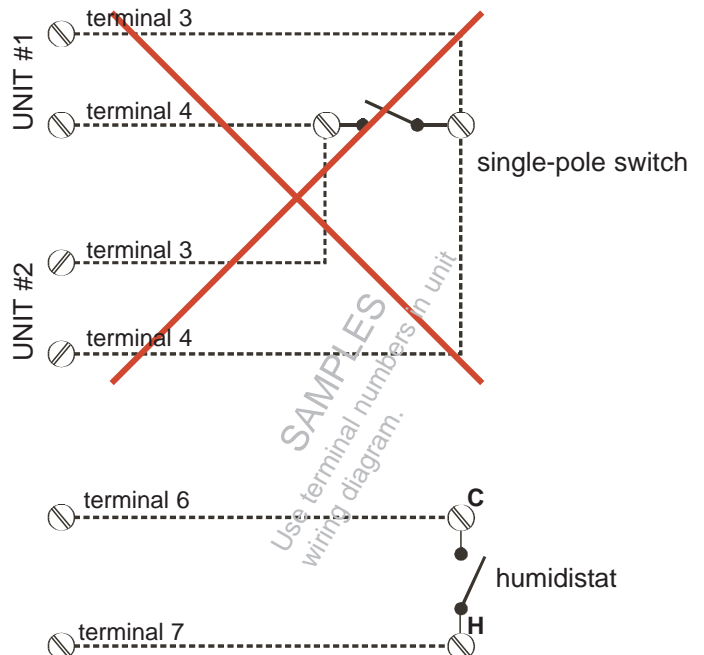


! WARNING

Risk of unit damage. Risk of property damage. Risk of injury.

Never attempt to tie the ENABLE circuits of two units together.

Never attempt to tie the ENABLE circuits of two units together.



Some units may be equipped for use with a remote humidistat, shipped loose. In this case, wire the humidistat as shown.

Refer to the mounting and wiring instructions with the humidistat.

Startup

Initial Preparations

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 blistering. Can cause injury.

Crankcase heaters may be at elevated temperatures. Wear protective clothing (gloves, sleeves, etc.) while working on these parts. Use gloves and other protective equipment to prevent injury.

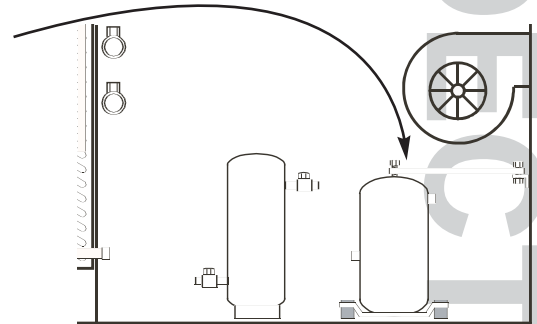
Apply electric power to the unit for at least 12 hours before attempting to start a compressor. Check the unit wiring diagram to insure that the crankcase heater is enabled. If practical and safe to do so, use a temperature probe to confirm that the crankcase heater(s) is operating.

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.

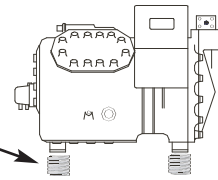
Where wire or plastic wraps are used to hold the wooden blocks in place, remove them also. Do not leave loose materials inside the unit.

NOTE: Do not remove metal 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.

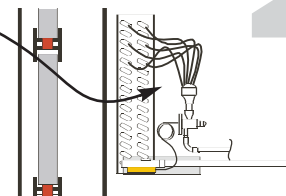


Some units may ship with compressor mounting springs compressed. Where this is the case, loosen the bolts just enough to allow the compressor(s) to float on the springs.



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, rubber pads, or silicone caulk.



Carefully test all refrigerant tubes and components for leaks, using a reliable electronic leak detector. Repair all leaks as necessary.

Pre-Startup Checklist

Startup

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 temperature can be held between 40°F (4.4°C) and 80°F (27°C) at all times when the unit might be operated.

your initials

Confirm that the walls and ceiling have been adequately insulated and have a proper vapor barrier.

your initials

Confirm that the ceiling in the vicinity of the unit has low-e construction, or is shielded by banners or other radiation blockers, or is heated, or has other methods for preventing it from going below the dew point of the room air.

your initials

Air Distribution

Confirm that the supply air is ducted for at least 3 feet (1 m) from the blower, and that the end of the supply duct is equipped with vertically and horizontally steerable vanes.

your initials

Confirm that the airflow is directed as shown in Installation - Airflow Pattern.

your initials

Where the intake air is not ducted, confirm that there is a minimum of 4 ft (1.2m) clearance around the filter box. See Installation - Placement and Precaution.

your initials

If the air is ducted with more than the specified 3ft (1m) minimum, confirm that the return duct and the supply duct have the required minimum straight lengths. (See Installation - Ducts.

your initials

If the air is ducted with more than the specified 3ft (1m) minimum, 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.

your initials

If the air is ducted with more than the specified 3ft (1m) minimum, confirm that no construction dust or other debris is in the return duct.

your initials

If the air is ducted with more than the specified 3ft (1m) minimum, confirm that no construction dust or other debris will be drawn into the return duct.

your initials

If the air is ducted with more than the specified 3ft (1m) minimum, confirm that the air-flow rate is within 10% of the nameplate value.

your initials

Unit

Confirm that any paper or plastic that was placed over the controls during installation has been removed.

your initials

Confirm that the unit has been checked for refrigerant leaks.

your initials

Confirm that any shipping blocks have been removed.

your initials

Confirm that any shipping braces have been removed or released.

your initials

Confirm that any distributor tubes have been separated and padded as necessary.

your initials

Confirm that the voltage monitor, if any, shows normal operation as shown in Installation - Wiring - Power.

your initials

Confirm that the blower rotation is correct.

your initials

Date: _____

Model No. _____

Serial No. _____

Ref. No. _____

Completed by _____ Ph. () _____ - _____

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.

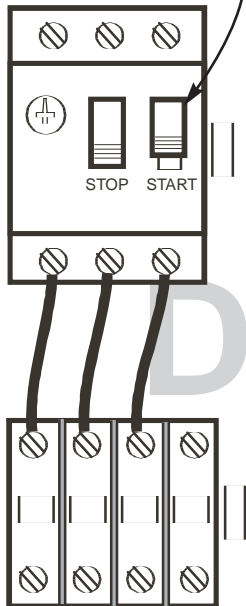
On some units, the motors have internal overload protectors. On other units, motor protection involves external overload protectors in the electrical enclosure. Using the unit wiring diagram, determine if the blowers and/or compressors have external overload protectors in the electrical enclosure.

If so, locate the overloads for each blower and for each compressor.

Where external overload protectors are present, select the type of protector below and follow the instructions for that type. Other protector types are possible.

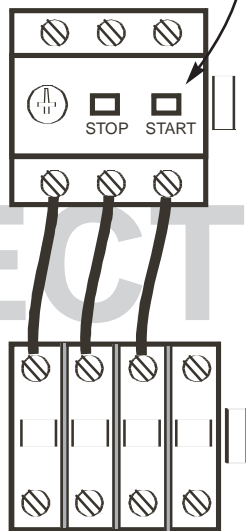
To enable the motor or to reset the overload protector, press START.

To disable a motor, press STOP.



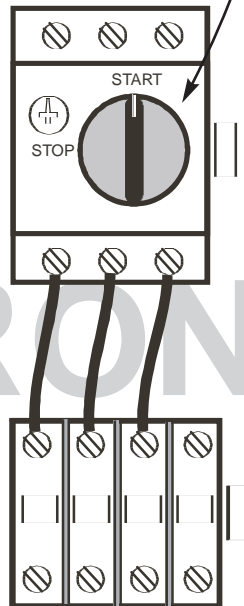
To enable the motor or to reset the overload protector, press START.

To disable a motor, press STOP.

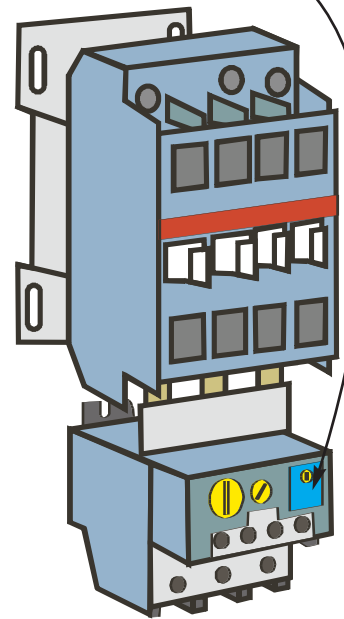


To enable the motor or to reset the overload protector, turn the knob clockwise to the START position.

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.



NOTICE Risk of unit damage.

Call Dectron before changing the trip points.

Pre-Startup Adjustments

Startup

WARNING

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

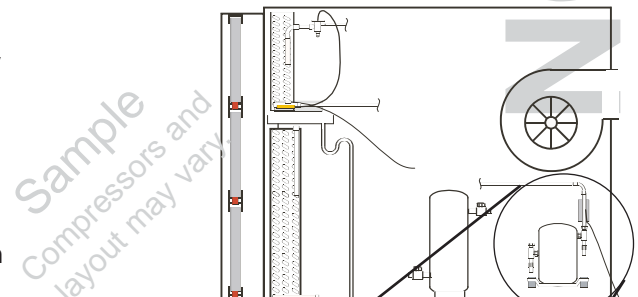
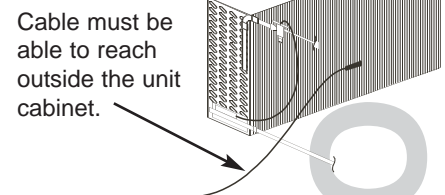
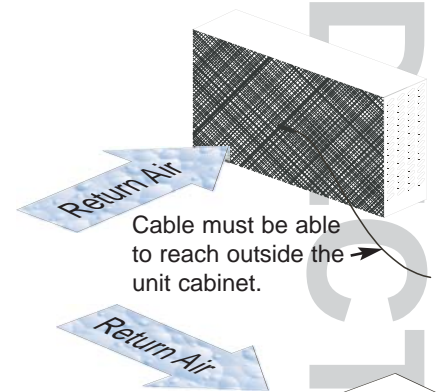
This product contains rotating parts and V-belt drives. Some installation, service, and maintenance procedures could expose personnel to the risk of injury or death from contact with these parts.

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.



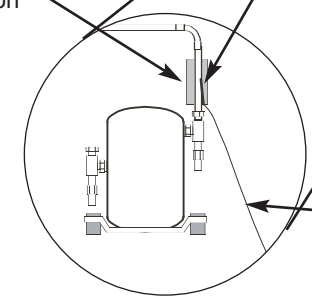
1. Attach a probe of a remote-reading electronic thermometer (by others) to the air filters, near the center of the filter assembly.
2. Attach a probe of a remote-reading electronic thermometer (by others) on the down-stream side of the cooling coil near the horizontal center of the coil, and about 1/3 of the way up. Separate the sensor from the coil fins by approximately 1 inch (2.5cm).
3. Attach a 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).
4. 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.
5. 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.

GO TO NEXT PAGE.



Foil Wrapped Around Insulation

Probe



Cable must be able to reach outside the unit cabinet.

Startup

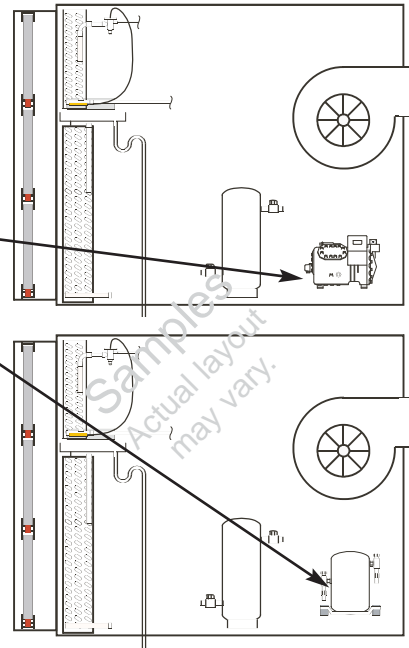
Determine Compressor & Refrigerant Types

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.

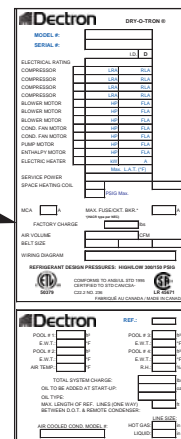
My compressor is a

Refer to the unit nameplate.

Determine the type of refrigerant.

ex: R-22, R407c, R410a, etc.

Record the type of refrigerant in the box below.



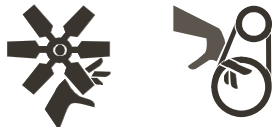
My refrigerant is

Taking care not to damage the temperature-sensor wires, close all access doors and panels.

Adjust Blower Speed

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.

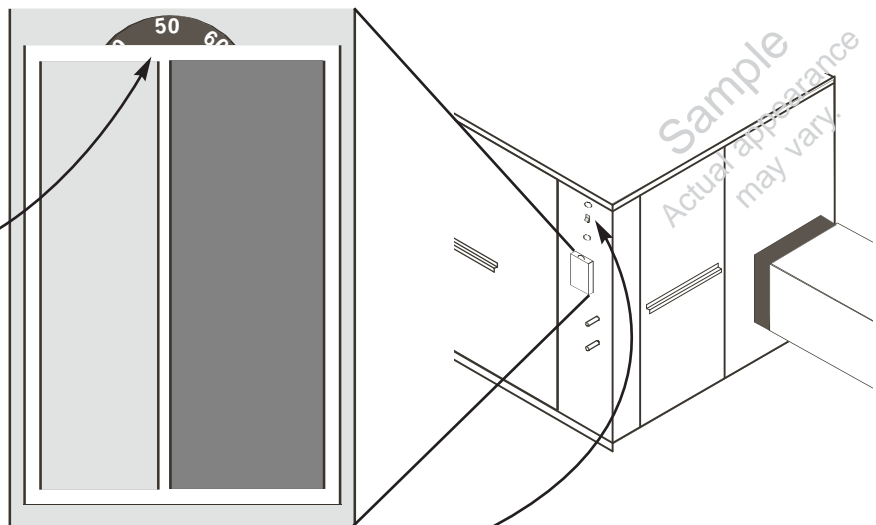
! WARNING



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.

To prevent compressor operation during blower-speed adjustment, raise the humidistat set point to some value greater than the relative humidity of the air in the space.



Some units may have an ENABLE switch built into the cabinet. Other units may have remote ENABLE switches. In either case, turn the ENABLE switch ON.

NOTE: All units must have a minimum three feet of duct connected to the blower outlet. If substantially more duct is connected to the unit, an air-balance technician must set the airflow to within $\pm 10\%$ of AIR VOLUME as shown on the unit nameplate.

If only the minimum 3 feet of duct is connected, adjust the airflow as shown below:

1. Monitor the blower-motor current with a clip-on ampmeter (by others). Do not allow the line current(s) to exceed the FLA shown on the nameplate.
2. Adjust the blower speed using the variable pulley on the blower motor, so that the motor current is at or slightly below the full-load current (FLA) of the motor, as shown on the nameplate.

NOTE: All access doors and panels must be in place for blower-motor current measurement.

If the motor is 3-phase, check the other lines to be sure that no phase current exceeds the FLA.

3. Check the return-air temperature and the temperature of the air leaving the cooling coil. Depending on the space temperature and relative humidity, there should be a temperature difference of 19°F (10.5°C) to 25°F (13.9°C) across the cooling coil.

Startup

Compressor Oil Level

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

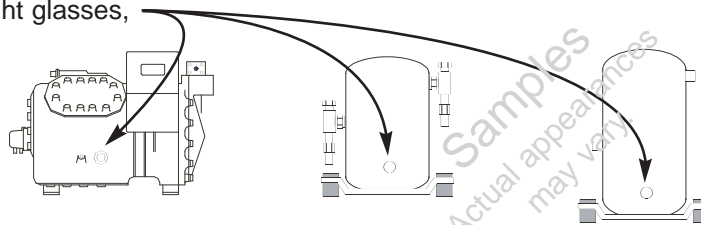


Risk of contact with moving parts. Can cause injury or death.

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.

Some units may not have oil-level sight-glasses in the side of the compressor(s). In this case, skip to the next page.

For units with oil-level sight glasses,



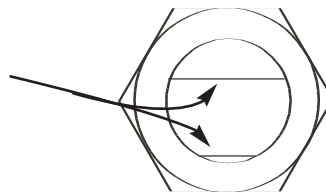
the oil level must be monitored carefully during the startup phase.

Check the oil level

1. 30 minutes after starting the compressor,
2. each hour for the four (4) hours after starting the compressor, and
3. before leaving for the day.

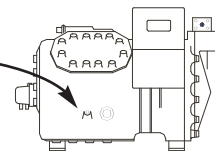
Add or remove oil to keep the level as near the middle of the sight glass as possible, and in any case between 1/8 and 3/4 full.

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.

Important Notices

Startup

IMPORTANT!

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.

IMPORTANT!

Do NOT turn on the electric power unless the branch-circuit voltage matches that specified on the unit nameplate.

IMPORTANT!

Where compressors are equipped with oil-level sight glasses, the oil level should be monitored closely.

IMPORTANT!

Heating, Cooling, or Dehumidifying Construction Sites

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 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.

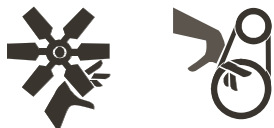
Filters will not prevent this.

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



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 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.



Risk of damage to equipment

Close all doors and/or access panels before starting the blower. Doors and panels must remain closed during operation, except briefly for adjustments.



Risk of damage to equipment

Be sure the branch-circuit disconnect has been ON and the compressor crankcase heater has been ON for at least 12 hours before attempting to start a compressor.

➔ **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.** ←

Startup

Adjust Expansion Valves

Be sure that the room temperature is between 40°F (4.4°C) and 80°F (27°C), or as shown on the unit nameplate. (See **Product Description - Unit Nameplate**).

Carefully read and understand the warnings, cautions, and notices on the preceding page.

Be sure that the blower overload device (if any) and the compressor(s) overload device(s), if any, are in the RUN position. See **Startup - Pre-Startup Adjustments**.

Be sure the ENABLE switch is ON.

Some units may have a remote enable switch (by others) installed under **Installation - Wiring**. In this case, be sure the switch is ON.

The blower should run unless
 (a) the space temperature is less than 35°F (1.7°C), or
 (b) the defrost timer is in defrost mode.

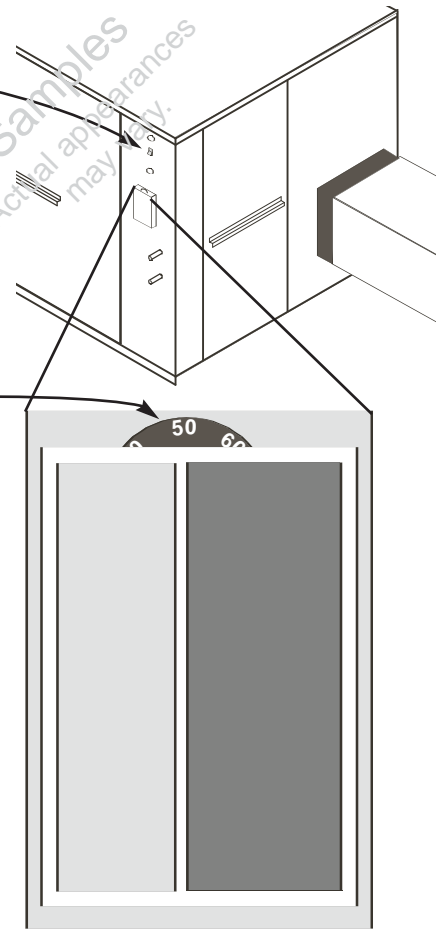
Defrost mode may last up to 10 minutes.

The compressor should run if the blower is running and if the humidistat set point is less than the relative humidity of the air in the space.

If necessary, the humidistat set point can be reduced a little to cause the compressor to run.

NOTICE Risk of damage to equipment
 The compressor should not be forced to run by reducing the humidistat set point more than 10% below the set point shown on the unit nameplate.

NOTE: In order to adjust the expansion valve correctly, the space temperature and relative humidity should be as near the normal conditions as possible.



1. Continue to operate the unit for at least 20 minutes, monitoring the compressor-discharge temperature. Stop operation if the discharge temperature exceeds 225°F (107°C).
2. After 20 minutes of compressor operation, and at least 10 minutes after the termination of any defrost cycle, check the refrigerant sight glass.
 If there are bubbles in the sight glass, slowly add the type of refrigerant shown on the unit nameplate until the bubbles clear, then add one more pound by weight. **NOTE: Do not add liquid refrigerant to a suction access valve.** If refrigerant has been added, return to step 1.
3. If the sight glass has been clear for at least 20 minutes, adjust the expansion valve(s) to cause the compressor discharge temperature to agree with the charts on the following page.

Adjust Expansion Valve(s)

Startup

		Compressor Discharge-Gas Temperatures			
	Space Air Temperature	R-22	R-134a	R-407c	R-410a
Copeland Compressor	40°F (4.4°C)	140°F to 170°F 60°C to 77°C	130°F to 150°F 54°C to 66°C	120°F to 140°F 49°C to 60°C	120°F to 140°F 49°C to 60°C
	50°F (10°C)	145°F to 180°F 63°C to 82°C	140°F to 160°F 60°C to 71°C	130°F to 150°F 54°C to 66°C	130°F to 150°F 54°C to 66°C
	60°F (15.5°C)	160°F to 190°F 71°C to 88°C	150°F to 170°F 66°C to 77°C	140°F to 160°F 60°C to 71°C	140°F to 160°F 60°C to 71°C
	70°F (21°C)	180°F to 200°F 82°C to 93°C	160°F to 180°F 71°C to 82°C	150°F to 170°F 66°C to 77°C	150°F to 170°F 66°C to 77°C
	80°F (26.7°C)	190°F to 205°F 88°C to 96°C	170°F to 190°F 77°C to 88°C	160°F to 180°F 71°C to 82°C	160°F to 180°F 71°C to 82°C
Tecumseh Compressor	40°F (4.4°C)	130°F to 150°F 54°C to 66°C	125°F to 145°F 52°C to 63°C	115°F to 140°F 46°C to 60°C	115°F to 140°F 46°C to 60°C
	50°F (10°C)	140°F to 160°F 60°C to 71°C	135°F to 155°F 57°C to 68°C	125°F to 150°F 52°C to 66°C	125°F to 150°F 52°C to 66°C
	60°F (15.5°C)	150°F to 170°F 66°C to 77°C	145°F to 165°F 63°C to 74°C	135°F to 160°F 57°C to 71°C	135°F to 160°F 57°C to 71°C
	70°F (21°C)	160°F to 180°F 71°C to 82°C	155°F to 175°F 68°C to 79°C	145°F to 170°F 63°C to 77°C	145°F to 170°F 63°C to 77°C
	80°F (26.7°C)	170°F to 190°F 77°C to 88°C	165°F to 185°F 74°C to 85°C	155°F to 180°F 68°C to 82°C	155°F to 180°F 68°C to 82°C
Trane Compressor	40°F (4.4°C)	135°F to 160°F 57°C to 71°C	125°F to 150°F 52°C to 66°C	115°F to 140°F 46°C to 60°C	115°F to 140°F 46°C to 60°C
	50°F (10°C)	145°F to 170°F 63°C to 77°C	135°F to 160°F 57°C to 71°C	125°F to 150°F 52°C to 66°C	125°F to 150°F 52°C to 66°C
	60°F (15.5°C)	155°F to 180°F 68°C to 82°C	145°F to 170°F 63°C to 77°C	135°F to 160°F 57°C to 71°C	135°F to 160°F 57°C to 71°C
	70°F (21°C)	165°F to 190°F 74°C to 88°C	155°F to 180°F 68°C to 82°C	145°F to 170°F 63°C to 77°C	145°F to 170°F 63°C to 77°C
	80°F (26.7°C)	175°F to 200°F 79°C to 93°C	165°F to 190°F 74°C to 88°C	155°F to 180°F 68°C to 82°C	155°F to 180°F 68°C to 82°C
Bitzer Compressor	40°F (4.4°C)	140°F to 165°F 60°C to 74°C	130°F to 155°F 54°C to 68°C	120°F to 145°F 49°C to 63°C	120°F to 145°F 49°C to 63°C
	50°F (10°C)	150°F to 175°F 66°C to 79°C	140°F to 165°F 60°C to 74°C	130°F to 155°F 54°C to 68°C	130°F to 155°F 54°C to 68°C
	60°F (15.5°C)	160°F to 185°F 71°C to 85°C	150°F to 175°F 66°C to 79°C	140°F to 165°F 60°C to 74°C	140°F to 165°F 60°C to 74°C
	70°F (21°C)	170°F to 195°F 77°C to 91°C	160°F to 185°F 71°C to 85°C	150°F to 175°F 66°C to 79°C	150°F to 175°F 66°C to 79°C
	80°F (26.7°C)	180°F to 205°F 82°C to 96°C	170°F to 195°F 77°C to 91°C	160°F to 185°F 71°C to 85°C	160°F to 185°F 71°C to 85°C

Data subject to change without notice.

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.

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 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 pool, 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 control wiring,
incomplete ductwork (if any).**

DRY-O-TRON® DA2 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:
Installation Address:
Dectron Representative Firm:

See unit nameplate for the following information:

Unit Model:	Unit Serial #:	Unit Ref #:
Supply Airflow: CFM	Supply Blower Belt Size (if any)	

See air-balance report for the following information:

Measured Airflow (CFM):

Personally investigate for the following information:

<p>Yes Adequate service access provided? <input type="checkbox"/></p> <p>No Air supply outlets correct? <input type="checkbox"/></p> <p>N/A Unit level and vibration isolated? <input type="checkbox"/></p> <p>For ducted units- ducts per instructions? <input type="checkbox"/></p> <p>For unducted units - minimum 4 feet (1.2m) return-air clearance? <input type="checkbox"/></p> <p>Condensate drain connected and tested? <input type="checkbox"/></p> <p>Branch-circuit disconnect installed? <input type="checkbox"/></p> <p>Remote Enable switch installed? <input type="checkbox"/></p> <p>Crankcase heater working? <input type="checkbox"/></p>	<p>Room temperature between 35°F (1.7°C) and 80°F (27°C)? <input type="checkbox"/></p> <p>Wire terminal torques checked? <input type="checkbox"/></p> <p>Compressor service valves opened? <input type="checkbox"/></p> <p>Air filters clean and in place? <input type="checkbox"/></p> <p>Air heat exchangers clean? <input type="checkbox"/></p> <p>Minimum length of supply-air duct installed? <input type="checkbox"/></p> <p>Supply-air deflecting vanes installed and aimed properly? <input type="checkbox"/></p> <p>Air flow and blower speed adjusted? <input type="checkbox"/></p> <p>Refrigerant sight glass full while compressor runs? <input type="checkbox"/></p>	<p>Actual Values</p> <p>Temperature of air entering unit (°F) <input type="checkbox"/></p> <p>Relative humidity of air entering unit (%) <input type="checkbox"/></p> <p>Temperature of air leaving cooling coil (°F) <input type="checkbox"/></p> <p>Temperature of air leaving unit (°F) <input type="checkbox"/></p> <p>Evaporator pressure (PSIG) <input type="checkbox"/></p> <p>Condenser pressure (PSIG) <input type="checkbox"/></p> <p>Compressor discharge-gas temperature (°F) <input type="checkbox"/></p>
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Comments:

Form completed by: <input style="width: 90%;" type="text"/>	Telephone: <input style="width: 90%;" type="text"/>
Company name: <input style="width: 90%;" type="text"/>	
Date: <input style="width: 90%;" type="text"/>	

Include a copy of the completed and signed four-page Warranty Registration Form.
 Attach a copy of the completed and signed air-balance report.
 Attach a copy 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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Operation

Maintenance

The following steps are important to the proper function and long life of the unit.

Every Month**Check the Air Filters**

- All units have return-air filters. The unit cannot work properly with dirty filters.
- All dirty filters should be replaced with identical new filters.
- **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 and follow the lubrication schedules (if any) for the blower and motor.

Check the belt(s) (if any)

- 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 humidity set point is near that specified on the unit nameplate.

Check that the condensate drain pan(s) is clean.

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.

Every Twelve Months

Check for blower bearing wear.

Grease any blower bearings that are equipped for lubrication.

- 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
 - Δ Clean the coils with a solution of mild soap in warm water. Do not use corrosive cleaning agents.
 - Δ 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.

Owners Manual

DA2 Series Dehumidifier

Maintenance Checklist

Operation

YEAR	<div style="text-align: center; font-size: 2em; opacity: 0.5;">DECTRON</div> <table style="width: 100%; height: 40px; border-collapse: collapse;"> <tr> <td style="width: 25px; border: 1px solid black;"></td> <td style="width: 25px; border: 1px solid black;"></td> <td style="width: 25px; border: 1px solid black;"></td> <td style="width: 25px; border: 1px solid black;"></td> <td style="width: 25px; border: 1px solid black;"></td> <td style="width: 25px; border: 1px solid black;"></td> <td style="width: 25px; border: 1px solid black;"></td> <td style="width: 25px; border: 1px solid black;"></td> <td style="width: 25px; border: 1px solid black;"></td> <td style="width: 25px; border: 1px solid black;"></td> <td style="width: 25px; border: 1px solid black;"></td> <td style="width: 25px; border: 1px solid black;"></td> <td style="width: 25px; border: 1px solid black;"></td> </tr> </table>																								
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"/>													
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"/>													
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"/>													
Refrigerant sight glass full?						<input type="checkbox"/>						<input type="checkbox"/>													
Compressor discharge temperature						Compressor #1 _____ °F	<input type="checkbox"/>						Compressor #1 _____ °F												
						Compressor #2 _____ °F	<input type="checkbox"/>						Compressor #2 _____ °F												
Electrical terminals tight?						<input type="checkbox"/>						<input type="checkbox"/>													
Electric motors lubricated?											<input type="checkbox"/>														
Blower bearings OK ?											<input type="checkbox"/>														
Air-side heat- transfer coils clean?											<input type="checkbox"/>														

Model _____ **Serial Number** _____

Operation

The unit is intended to dehumidify and de-fog ice rinks. It is intended to run when the remote enable switch is on and when the room relative humidity is above set point, and when the room temperature is between 35°F (1.7°C) and 80°F (27°C).

The unit actually freezes moisture out of the air. The coils are designed for frost buildup. An automatic defrost cycle begins after a certain amount of time with the suction-line temperature below 28°F (-2.2°C). During defrost mode the compressor will run without the blower running.

Defrost mode terminates when the suction-line temperature rises above 50°F (10°C). This allows normal operation to resume.

Electric power should be applied to the unit at all times, in order to heat the oil and prevent its dilution by refrigerant. Unit operation is enabled by turning on the remote ENABLE switch, by others. There may be a five-minute delay between enabling and the blower starting. Both units in a pair should start near the same time.

Enable the units one to two hours before the ice rink is to be used, and leave them running continuously during the active period or whenever high humidity is a problem.

Do not allow the condensate line to freeze.

Diagnostics

Operation

PROBLEM	POSSIBLE CAUSES	CHECKS & CORRECTIONS
cooling coil iced up	dirty air filters air filters with too much pressure drop return air relative humidity too low low air flow rate loose blower belt normal operation failure of defrost mode obstruction at return-air inlet (ducted units) poor return-air ductwork low refrigerant charge	<ul style="list-style-type: none"> ● Check the filters and replace them as necessary. ● Replace with same type of filters provided with unit. ● Raise humidistat set point to normal. ● Measure and adjust as specified on nameplate. ● Measure belt tension and tighten as necessary. Replace worn or damaged belts. Never open or close a sheave to adjust belt tension. Use the jack screw only. ● Frosting of the cooling coil is normal with return-air temperatures below 64°F (°). There is an automatic defrost cycle. ● Check the operation of the defrost controller and hot-gas solenoid valve. ● For un-ducted return air, there must be no obstructions within 4 ft. (1.2m) of any point of the return-air inlet. ● Return ducts (if any) must be as large as the attachment flange on the unit for a minimum length of 2.5 duct diameters before the unit. See Installation-Ducts. ● If the refrigerant sight glass is empty or has bubbles after 10 minutes of compressor operation, a qualified person should check the charge and add refrigerant as necessary.
high humidity	humidistat set too high excessive air flow obstruction at return-air inlet (ducted units) poor return-air ductwork	<ul style="list-style-type: none"> ● Adjust the humidistat to normal. ● Measure and adjust as specified on nameplate. ● For un-ducted return air, there must be no obstructions within 4 ft. (1.2m) of any point of the return-air inlet. ● Return ducts (if any) must be as large as the attachment flange on the unit for a minimum length of 2.5 duct diameters before the unit. See Installation-Ducts.

Data subject to change without notice.

Operation

Diagnostics

PROBLEM	POSSIBLE CAUSES	CHECKS & CORRECTIONS
condenser pressure too high	air flow rate too low return-air temperature too high clogged condenser restricted manual valve (if any) restricted refrigerant filter-drier non-condensable gases in refrigeration system	<ul style="list-style-type: none"> ● Measure and adjust as specified on nameplate. ● Do not operate above 80°F (27°C). ● Contact Dectron for cleaning suggestions. Do not operate for any length of time without all air filters in place. ● Fully open all manual valves. ● Replace filter-drier as necessary. ● A qualified person should examine and correct as necessary.
condenser pressure too low	relative humidity of return air too low air flow rate too low low refrigerant charge	<ul style="list-style-type: none"> ● Adjust the humidistat to normal. ● Measure and adjust as specified on nameplate. ● If the refrigerant sight glass is empty or has bubbles after 10 minutes of compressor operation, a qualified person should check the charge and add refrigerant as necessary.
unit is noisy	unit not mounted on vibration pads ducts not installed with flexible sections loose belt or pulley blower-bearing failure liquid refrigerant in compressor	<ul style="list-style-type: none"> ● Install pads as discussed in Installation. ● Install flexible duct sections as discussed in Installation. ● Check blower drive and correct necessary. ● Check and replace as necessary. ● Be sure refrigerant is not flooding back to the compressor. ● Be sure the compressor crankcase heater is working.

Data subject to change without notice.

Diagnostics

Operation

PROBLEM	POSSIBLE CAUSES	CHECKS & CORRECTIONS
blower will not start	electric power not applied defrost mode on starting time delay blower belt loose or off blower overload tripped control-circuit fuse open blower motor failure	<ul style="list-style-type: none"> ● Check voltage at the power-input lugs. Correct as necessary. ● Wait for defrost mode to terminate. If defrost does not terminate within 10 minutes, check defrost controller. ● There may be a five-minute delay between enabling the unit and the blower starting. ● Check belt tension as discussed in Operation-Maintenance. Replace belt as necessary. ● Do not operate unit with doors or access panels open. Reset overload. ● Check fuse. Replace as necessary. ● Check blower motor.
compressor will not start	electric power not applied starting time delay room humidity too low room temperature too low room temperature too high blower overload tripped compressor overload open low-refrigerant-pressure fault high-refrigerant-pressure fault control-circuit fuse open	<ul style="list-style-type: none"> ● Check voltage at the power-input lugs. Correct as necessary. ● There may be a five-minute delay between enabling the unit and the compressor starting. ● Set humidistat to 50%. ● Raise room temperature above 35°F (1.7°C). ● Reduce room temperature below 80°F (27°C). ● Do not operate unit with doors or access panels open. Reset overload. ● Internal Overload - Wait 30 minutes and try again. If this does not work, turn off the branch circuit, locate the overload protector and push the reset button. Turn the branch circuit back on. ● External Overload - Reset the overload. If problem persists, consult a qualified technician. ● Reset pressure switch. If fault re-occurs, consult a qualified technician. ● Reset pressure switch. If fault re-occurs, consult a qualified technician. ● Check fuse. Replace as necessary.

Data subject to change without notice.

UNITS WITH VOLTAGE MONITOR ONLY



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

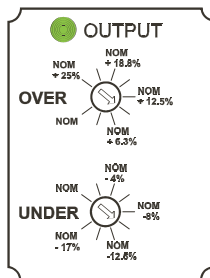
This product contains rotating parts and V-belt drives. Some installation, service, and maintenance procedures could expose personnel to the risk of injury or death from contact with these parts.

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.

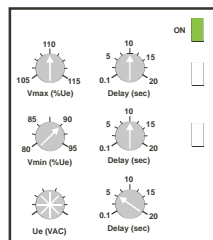


Identify the type of voltage monitor present.

TYPE 1



TYPE 2



For TYPE 2 monitors, skip to next page.

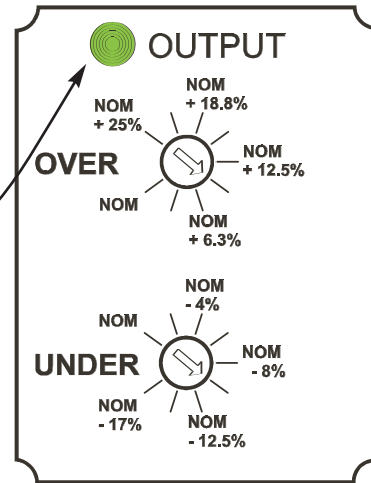
Type 1 Voltage Monitor

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%.



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.

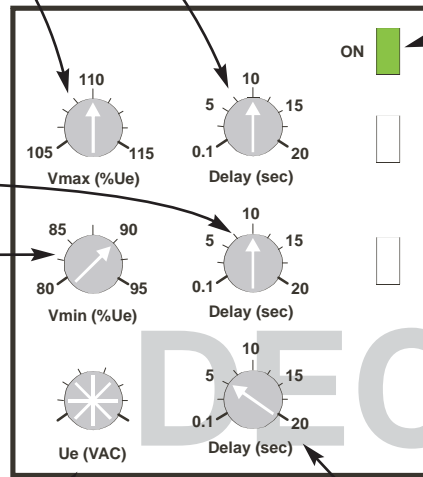
Be sure that Vmin is set to 90%. Lower values may allow overheating of internal motors.

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

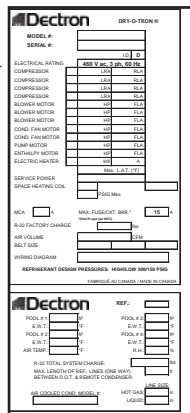
Be sure that Ue is set to the nominal voltage shown on the Dectron nameplate.

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.

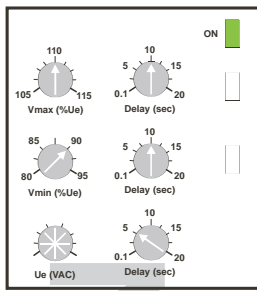


DECTRON



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

UNITS WITH TYPE 2 VOLTAGE MONITOR ONLY

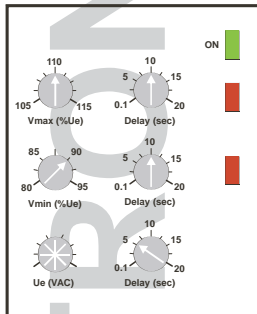


LEDs

ON
OFF
ON
OFF
OFF
ON

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.



LEDs

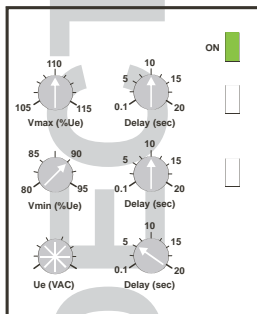
ON
OFF
ON
OFF
ON
OFF

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.



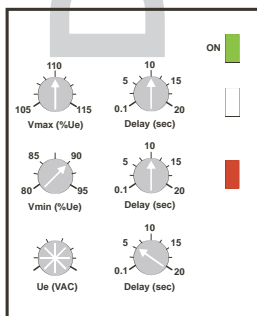
LEDs

ON
OFF
ON
OFF
ON
OFF

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.



LEDs

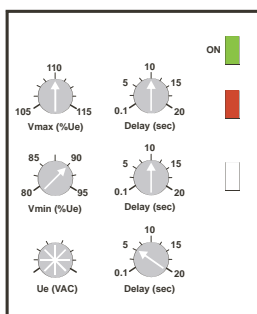
ON
OFF
ON
OFF
ON
OFF

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.



LEDs

ON
OFF
ON
OFF
ON
OFF

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.

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:

- Δ Water or condensation are not allowed to enter the electrical panel.
- Δ Indoor units are stored in a dry and protected area.
- Δ Electrical power must not be connected.
- Δ Unit not tampered with or vandalized in any fashion.
- Δ 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.

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