Installation, Operation, and Maintenance

Dehumidifier – 5DHUM098/5DHUM120

⚠ SAFETY WARNING

Only qualified personnel should install and service the equipment. The installation, starting up, and servicing of heating, ventilating, and air-conditioning equipment can be hazardous and requires specific knowledge and training. Improperly installed, adjusted or altered equipment by an unqualified person could result in death or serious injury. When working on the equipment, observe all precautions in the literature and on the tags, stickers, and labels that are attached to the equipment.

July 2025

IAQR-SVX002B-EN

Introduction

Read this manual thoroughly before operating or servicing this unit.

This document is customer property and is to remain with this unit. Return to the service information pack upon completion of work.

Warnings, Cautions, and Notices

Safety advisories appear throughout this manual as required. Your personal safety and the proper operation of this machine depend upon the strict observance of these precautions.

The three types of advisories are defined as follows:

⚠ WARNING	Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.
⚠ CAUTION	Indicates a potentially hazardous situation which, if not avoided, could result in minor or moderate injury. It could also be used to alert against unsafe practices.
NOTICE	Indicates a situation that could result in equipment or property-damage only accidents.

Important Environmental Concerns

Scientific research has shown that certain man-made chemicals can affect the earth's naturally occurring stratospheric ozone layer when released to the atmosphere. In particular, several of the identified chemicals that may affect the ozone layer are refrigerants that contain Chlorine, Fluorine and Carbon (CFCs) and those containing Hydrogen, Chlorine, Fluorine and Carbon (HCFCs). Not all refrigerants containing these compounds have the same potential impact to the environment. Trane advocates the responsible handling of all refrigerants.

Important Responsible Refrigerant Practices

Trane believes that responsible refrigerant practices are important to the environment, our customers, and the air conditioning industry. All technicians who handle refrigerants must be certified according to local rules. For the USA, the Federal Clean Air Act (Section 608) sets forth the requirements for handling, reclaiming, recovering and recycling of certain refrigerants and the equipment that is used in these service procedures. In addition, some states or municipalities may have additional requirements that must also be adhered to for responsible management of refrigerants. Know the applicable laws and follow them.

⚠ WARNING

Proper Field Wiring and Grounding Required!

Failure to follow code could result in death or serious injury.

All field wiring MUST be performed by qualified personnel. Improperly installed and grounded field wiring poses FIRE and ELECTROCUTION hazards. To avoid these hazards, you MUST follow requirements for field wiring installation and grounding as described in NEC and your local/state/national electrical codes.

⚠ WARNING

Personal Protective Equipment (PPE) Required!

Failure to wear proper PPE for the job being undertaken could result in death or serious injury.

Technicians, in order to protect themselves from potential electrical, mechanical, and chemical hazards, MUST follow precautions in this manual and on the tags, stickers, and labels, as well as the instructions below:

- **Before installing/servicing this unit, technicians MUST put on all PPE required for the work being undertaken (Examples; cut resistant gloves/ sleeves, butyl gloves, safety glasses, hard hat/ bump cap, fall protection, electrical PPE and arc flash clothing). ALWAYS refer to appropriate Safety Data Sheets (SDS) and OSHA guidelines for proper PPE.**
- **When working with or around hazardous chemicals, ALWAYS refer to the appropriate SDS and OSHA/GHS (Global Harmonized System of Classification and Labelling of Chemicals) guidelines for information on allowable personal exposure levels, proper respiratory protection and handling instructions.**
- **If there is a risk of energized electrical contact, arc, or flash, technicians MUST put on all PPE in accordance with OSHA, NFPA 70E, or other country-specific requirements for arc flash protection, PRIOR to servicing the unit. NEVER PERFORM ANY SWITCHING, DISCONNECTING, OR VOLTAGE TESTING WITHOUT PROPER ELECTRICAL PPE AND ARC FLASH CLOTHING. ENSURE ELECTRICAL METERS AND EQUIPMENT ARE PROPERLY RATED FOR INTENDED VOLTAGE.**

⚠ WARNING

Follow EHS Policies!

Failure to follow instructions below could result in death or serious injury.

- **All Trane personnel must follow the company's Environmental, Health and Safety (EHS) policies when performing work such as hot work, electrical, fall protection, lockout/tagout, refrigerant handling, etc. Where local regulations are more stringent than these policies, those regulations supersede these policies.**
- **Non-Trane personnel should always follow local regulations.**

⚠ WARNING

R-454B Flammable A2L Refrigerant!

Failure to use proper equipment or components as described below could result in equipment failure, and possibly fire, which could result in death, serious injury, or equipment damage.

The equipment described in this manual uses R-454B refrigerant which is flammable (A2L). Use ONLY R-454B rated service equipment and components. For specific handling concerns with R-454B, contact your local representative.

⚠ WARNING

Cancer and Reproductive Harm!

This product can expose you to chemicals including lead and bisphenol A (BPA), which are known to the State of California to cause cancer and birth defects or other reproductive harm. For more information go to www.P65Warnings.ca.gov.

⚠ WARNING

Electrical Shock Hazard!

Failure to follow instructions below could result in death or serious injury.

Disconnect electrical power before starting installation or servicing, and leave power disconnected until installation or service is completed.

⚠ WARNING

Safety Hazard!

Failure to follow instructions below could result in death or serious injury.

Never operate a unit with a damaged power cord. If the power cord is damaged, it must be replaced by the manufacturer, its service agent, or a similarly qualified person.

⚠ WARNING

Safety Hazard!

Failure to follow instructions below could result in death or serious injury.

If used near a water source, confirm unit does not fall in water or get splashed. The unit must be plugged into a dedicated circuit and Ground Fault Circuit Interrupter (GFCI) protected outlet.

⚠ WARNING

Safety Hazard!

Failure to follow instructions below could result in death or serious injury.

All phases of the installation must conform to NATIONAL, STATE, AND LOCAL CODES. For additional information, please contact your local distributor.

⚠ WARNING

Safety Hazard!

Failure to follow instructions below could result in death or serious injury and equipment or property damage.

- **Do not use any items other than those approved by the manufacturer for defrosting or cleaning process.**
- **Store the appliance in a room without continuously operating ignition sources(for example: open flames, an operating gas appliance, or an operating electric heater).**
- **Do not pierce or burn.**
- **Be cautious that refrigerants may be odorless.**

⚠ CAUTION

Sharp Edges!

Failure to follow instructions below could result in minor to moderate injury.

The service procedure described in this document involves working around sharp edges. To avoid being cut, technicians MUST put on all necessary Personal Protective Equipment (PPE), including gloves and arm guards.

⚠ CAUTION

Air Quality!

Failure to follow instructions below could result in minor to moderate injury or equipment damage.

Avoid directing the discharge air at people. Maintain a minimum 1ft. (.3m) clearance to avoid obstructing the air return and supply. Not intended for use at altitudes over 6500 ft (2000M).

NOTICE

Equipment Damage!

Failure to follow instructions below could result in equipment damage.

This device is designed for indoor installation only. Install in a space that is protected from rain and flooding. The device should only be used in the upright position.

NOTICE

Equipment Damage!

Failure to follow instructions below could result in equipment damage.

Do not use the dehumidifier as a bench or table.

NOTICE

Equipment Damage!

Failure to follow instructions below could result in equipment damage.

Do not place the dehumidifier directly on structures without vibration absorbers to avoid unwanted noise. Place the dehumidifier on supports to raise the base of the unit.

NOTICE

Equipment Damage!

Failure to follow instructions below could result in equipment damage.

Place a drain pan with a float switch under the dehumidifier if installed above a living area or above an area where water leakage could cause damage.

The minimum floor area of the storage room shall be 28 m^2 (301 ft^2).

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Trademarks

All trademarks referenced in this document are the trademarks of their respective owners.

Table of Contents

Features and Specifications

5DHUM098 Features

- Features a horizontal configuration with optional vertical discharge.
- Designed for quiet operation.
- Engineered for low temperature operation providing comfort year round.
- Use of DEH 3000/R digital control for outdoor air ventilation and humidity control.
- Superior MERV-13 filtration to improve indoor air quality.
- Ducting options for fresh outdoor air ventilation.
- Push button reset for transformer protection.

5DHUM098 Specifications

The 5DHUM098, the pinnacle in quiet operation, is designed to provide dedicated moisture control, fresh air mechanical ventilation, and superior air filtration.

Table 1. 5DHUM098 Specifications

Duct Connections	6 inch round inlet, 10 inch round inlet, 10 inch round outlet
Drain connection	3/4 inch threaded plug NPT
Refrigerant	R-454B, 23 ounce
Unit Dimensions	14.5 inch W x 19.5 inch H x 32.4 inch D
Unit Weight	81 pounds

Table 2. 5DHUM098 Performance

Water Removal	@ 80°F and 60% relative humidity	@ 73°F and 60% relative humidity
	100 pints / 12.5 gallons	71.4 pints / 8.9 gallons
Efficiency	6.12 pints/kWh	4.68 pints/kWh
Energy Factor	2.89 L/kWh	2.2 L/kWh

Table 2. 5DHUM098 Performance (continued)

Blower	320 CFM @ 0.0 inches WG	
	297 CFM @ 0.2 inches WG	
	215 CFM @ 0.4 inches WG	
Fan	58 watts	
Operating Temperature	49°F minimum, 95°F maximum	
Sizing	Up to 2,300 square feet / 23,000 cubic feet	

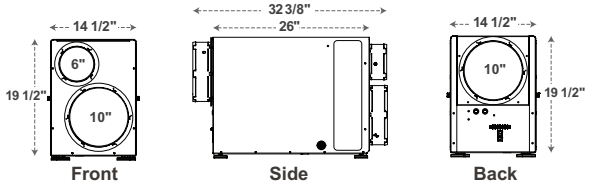
Table 3. 5DHUM098 Electrical

Power	672 watts @ 73°F and 60% relative humidity
Supply Voltage	115 volt — 1 phase — 60 Hz
Current Draw	5.6 amps @ 73°F and 60% relative humidity
Power Cord	9 feet, 115 VAC, Ground
Circuit Requirement	15 amps

Table 4. 5DHUM098 Shipping

Shipping Dimensions	23 inches W x 30 inches H x 40 inches D
Shipping Weight	95 pounds
Pallet Quantity	4 per pallet

Figure 1. 5DHUM098 dimensions



Features and Specifications

5DHUM120 Features

- Features a horizontal configuration with optional vertical discharge.
- Designed for quiet operation.
- Engineered for low temperature operation providing comfort year round.
- Use of DEH 3000/R digital control for outdoor air ventilation and humidity control.
- Superior MERV-13 filtration to improve indoor air quality.
- Ducting options for fresh outdoor air ventilation.
- Push button reset for transformer protection.

5DHUM120 Specifications

The 5DHUM120 delivers dehumidifier ventilation and features and horizontal configuration to fit any attic, basement, or crawl space installation.

Table 5. 5DHUM120 Specifications

Duct Connections	6 inch round inlet, 10 inch round inlet, 10 inch round outlet
Drain connection	3/4 inch threaded plug NPT
Refrigerant	R-454B, 22 ounce
Unit Dimensions	14.4 inch W x 21 inch H x 32.2 inch D
Unit Weight	91 pounds

Table 6. 5DHUM120 Performance

Water Removal	@ 80°F and 60% relative humidity	@ 73°F and 60% relative humidity
	118 pints / 14.75 gallons	88 pints / 11 gallons
Efficiency	5.7 pints/kWh	4.45 pints/kWh
Energy Factor	2.7 L/kWh	2.1 L/kWh

Table 6. 5DHUM120 Performance (continued)

Blower	350 CFM @ 0.0 inches WG	
	285 CFM @ 0.2 inches WG	
	210 CFM @ 0.4 inches WG	
Fan	65 watts	
Operating Temperature	45°F minimum, 95°F maximum	
Sizing	Up to 3,000 square feet / 30,000 cubic feet	

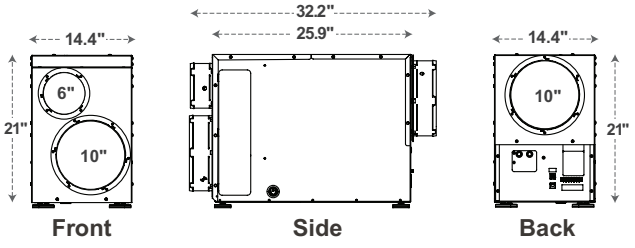
Table 7. 5DHUM0120 Electrical

Power	888 watts @ 73°F and 60% relative humidity
Supply Voltage	115 volt — 1 phase — 60 Hz
Current Draw	7.4 amps @ 73°F and 60% relative humidity
Power Cord	9 feet, 115 VAC, Ground
Circuit Requirement	15 amps

Table 8. 5DHUM120 Shipping

Shipping Dimensions	18.5 inches W x 23.5 inches H x 40 inches D
Shipping Weight	101 pounds
Pallet Quantity	4 per pallet

Figure 2. 5DHUM120 dimensions



Dehumidifier Setup

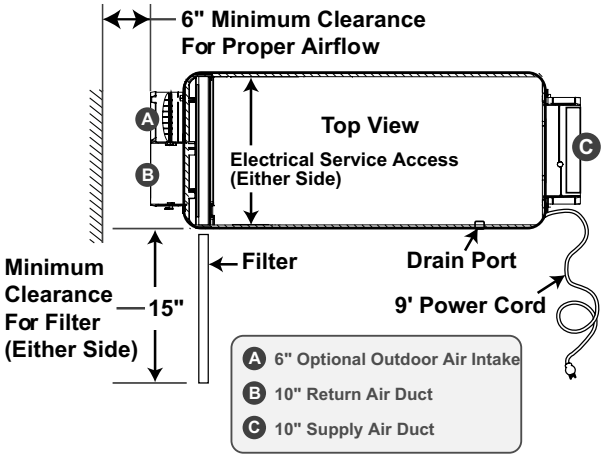
Location Considerations

- Allow sufficient clearance to handle the unit's overall dimensions as well as the necessary return and supply ductwork to the unit.
- Allow sufficient clearance for filter removal and to prevent airflow obstruction.
- Electrical service access will require the removal of the outside shell. Allow sufficient clearance around the unit.
- Locate the dehumidifier in an area where the unit's 9–foot cord can easily reach electrical outlet.
- Locate the dehumidifier in an area where field wiring the control (low voltage) to the unit will be possible.
- A back draft damper is required in the supply duct of the dehumidifier, especially when connecting to the supply ducting system. The backdraft damper prevents supply air from counter flowing through the dehumidifier when it is not operating. The dehumidifier's location should be chosen to allow installation of this accessory if necessary.
- The dehumidifier may be suspended with the hang kit or a suitable alternative from structural members, ensuring the assembly supports the dehumidifier's base in its entirety. Do not hang the dehumidifier from its' cabinet.
- Allow for proper drainage and routing of needed drain pipes.
- Place the dehumidifier on supports that raise the base of the unit 6 inches above the secondary drain pan so a P-trap can be installed.
- The dehumidifier should not hang from sides or ends.
- If installing on ground, use included plugs to cover hanging locations on top of the machine.
- If hanging machine in air, use included plugs to cover holes in base pan for leveling feet.
- Keep any required ventilation openings clear of obstruction.
- Ducts connected to the dehumidifier shall not contain a POTENTIAL IGNITION SOURCE.
- Supply and return air shall be directly ducted to the space. Open areas such as false ceilings shall not be used as a return air duct.

Unventilated Areas

- Unventilated areas where the dehumdifier is installed or stored need to be so constructed that should any refrigerant leak, it will not stagnate so as to create a fire or explosion hazard.
- The dehumidifier shall not be stored or ducted into one or multiple rooms with continuously operating open flames (for example an operating gas appliance) or other POTENTIAL IGNITION SOURCES (for example an operating electric heater, hot surfaces). A flame-producing device may be installed in the same space if the device is provided with an effective flame arrest.

Figure 3. Dehumidifier setup



NOTICE

Equipment Damage!

Failure to follow instructions could result in excess vibration to the frame and equipment damage. Remove compressor shipping tie from the unit.

Removal of Compressor Shipping Support

The Trane 5DHUM098/120 uses a compressor to power the refrigeration system. To protect the compressor and refrigeration system during shipping, a plastic tie wrap secures it to the unit's frame. Remove the tie wrap by cutting the tie wrap and pulling from the unit as shown. After removing tie wrap, insert plastic plugs provided into the holes.

Figure 4. Wrap removal

Attaching Duct Collars

Fresh Air Ventilation Duct

Fresh air ventilation is optional. A 6–inch diameter duct is attached to the unit. The 6–inch duct should be capped if fresh air is not desired. If setting up the unit to provide fresh air ventilation, see “Drain Installation,” p. 11.

Return Air Inlet

A 10–inch diameter duct collar is attached to the unit.

Supply Air Outlet

The back panel of the dehumidifier can be rotated to allow for horizontal flow through or vertical flow through of the supply air.

Horizontal Flow Through

The unit ships configured for a horizontal flow through. A 10–inch diameter duct collar is attached to the unit.

Vertical Flow Through

Remove the exhaust panel using a T25 torx bit. Rotate the panel so the exhaust collar is located on the top of the unit. Align screw holes and snap the panel onto the base. Secure the exhaust panel to the base by replacing the six screws.

Figure 5. Horizontal flow through

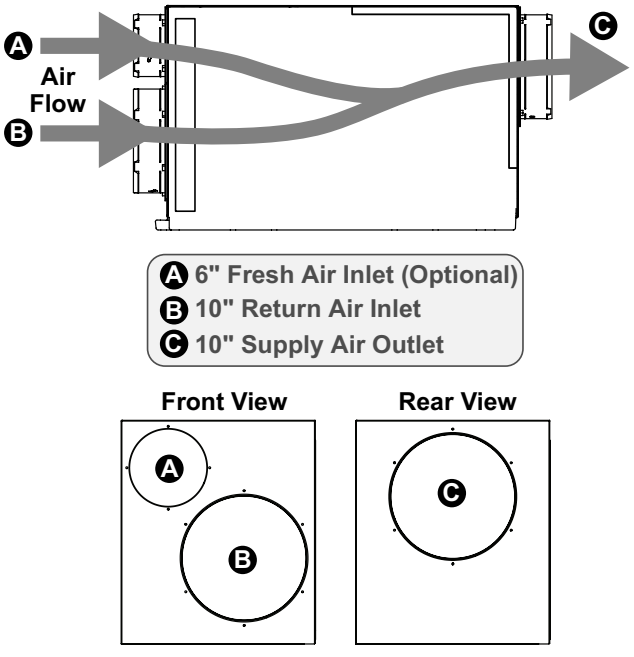
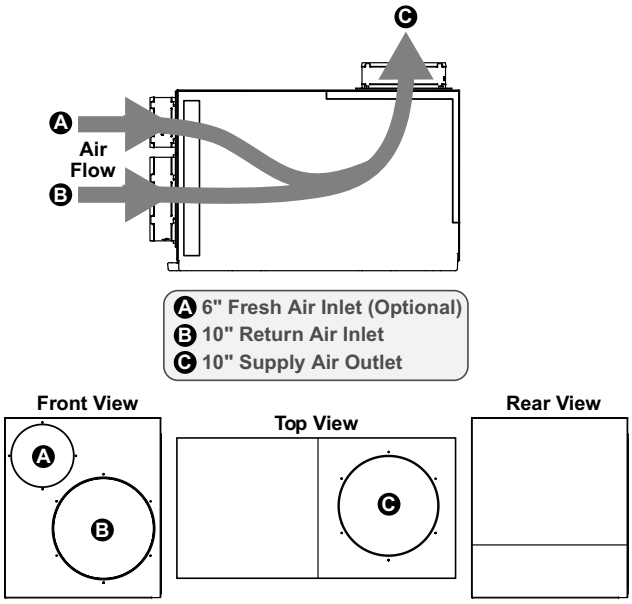


Figure 6. Vertical flow through



Electrical Requirements

The dehumidifier plugs into a common grounded 115 VAC outlet. Locate the dehumidifier in an area where the cord's length (9 feet) easily reaches a 115 VAC electrical outlet with a minimum of 15 Amp circuit capacity. If used in an area that may become wet, a GFCI protected circuit is recommended. Consult local electrical codes for further information.

A variety of control devices can be used with this dehumidifier. The control is to be located remotely from the dehumidifier and placed in the space to be conditioned. A low voltage (24 Volt) control MUST be used with the dehumidifier and MUST be connected with low voltage (18-22 gauge) thermostat wire.

⚠ WARNING

Hazardous Voltage!

Failure to follow instructions below could result in death or serious injury.

The remote controls of the device are powered by a low voltage circuit (24vac) and must never contact or be connected to a high voltage circuit.

NOTICE

Equipment Damage!

Failure to follow instructions below could result in equipment damage.

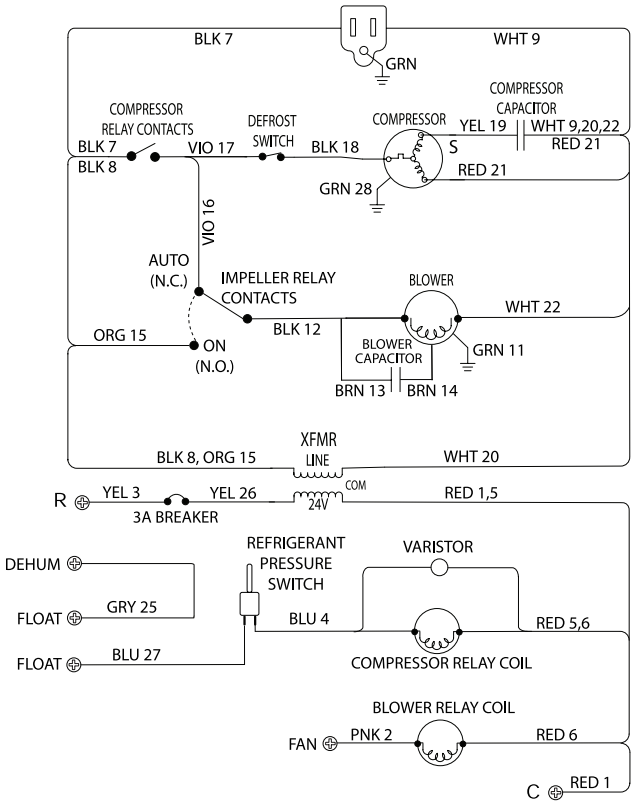
Do not allow the 24v terminal to contact the com terminals on the device to avoid damage to the transformer.

Important: *Some of the screws terminals on the device may not be used with certain controls and should be left unconnected.*

Electrical Precautions

- Do not install the control where it may not accurately sense the relative humidity such as near HVAC supply registers, near exterior doors, on an outside wall, near a window, or near a water source.
- The screw terminals on the Dehumidifier and the control are labeled to prevent confusion.
- Be sure to consult the electrical schematic in the Controls section of this manual or inside the access panel of the Dehumidifier before making control connections.

Figure 7. Wiring diagram



Drain Installation

This dehumidifier generates condensate.

Place a secondary drain pan with a float switch under the dehumidifier if it is suspended above a finished area or in an area where water leakage could cause damage.

A drain trap is required for the dehumidifier to run properly (see diagram below). Install a ¾–inch threaded prong NPT adapter to the drain pan. Install a drain pipe assembly utilizing ¾–inch PVC pipe to transport the condensate to a drain. Pitch of drain should be 1 inch per 10 feet.

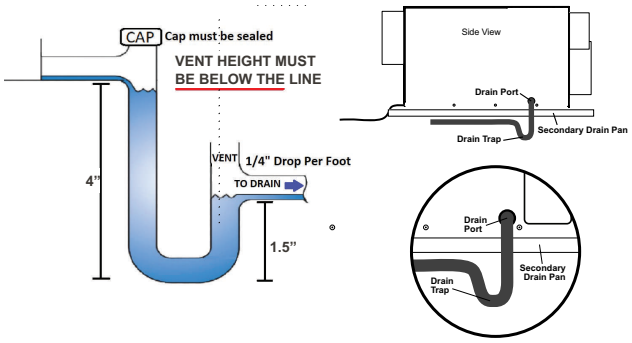
Optional condensate pump kit is available for use with the dehumidifier and may be installed if lift is required to dispose of condensate. Condensate is automatically pumped to a remote location when the water level in the pump's reservoir rises to close the float switch.

The pump also contains a safety float switch. The white leads from this switch extend from beneath the pump cover. This switch should be installed in series with the field wire that connects to the common lead from the dehumidifier to the control panel. If the pump fails, this switch opens the common control circuit and stops water production before the reservoir overflows. Contact a qualified electrician to install the safety float switch to the dehumidifier.

Dehumidifiers commonly use a negative air pressure drain pan. This causes air to flow backwards thru the drain system which can cause water to pool inside the dehumidifier and leak. A drain trap prevents this issue by trapping water in the pipe to stop air from flowing backwards.

Please see the trap diagram below. This assembly can be made with common ¾–inch PVC pipe fittings. The pipe measurements and placement of the cap and vent are critical to the function of the trap. Once trap is assembled, be sure to fill with water.

Figure 8. Drain installation



Ducting to HVAC Systems

The recommended installation creates a separate return for the Dehumidifier in a central area of the structure. Duct the supply of the unit to the air supply of the existing HVAC system. Connect an insulated duct from outside to the 6 inch collar of the Dehumidifier to provide fresh make-up air.

⚠ WARNING

Safety Hazard!

Failure to follow instructions below could result in death or serious injury.

Do not connect with a static pressure greater than or equal to +0.5 wg.

Ducting Considerations

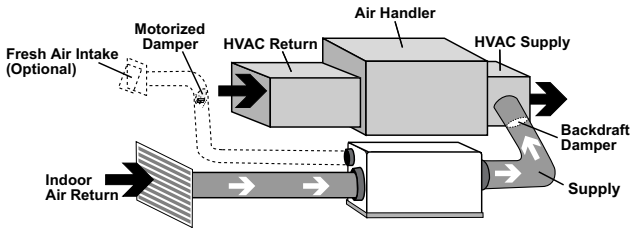
- All flexible ducting connected to the Dehumidifier should be UL listed.
- A short piece of flexible ducting on all dehumidifier duct connections is recommended to reduce noise and vibration transmitted to rigid ductwork in the structure.
- Use a minimum 10–inch diameter round or equivalent rectangular duct for total duct lengths of up to 25 feet. Use a minimum 12–inch diameter round or equivalent rectangular duct for longer lengths.
- Grills or diffusers on the duct ends must not excessively restrict airflow.
- Effective dehumidification may require that ducting be branched to isolated, stagnant air flow areas. When ducting to two or three areas, use 8–inch or larger diameter branch ducting. When ducting to four or more areas, use 6–inch or larger diameter branch ducting. Provisions must be made to provide airflow from supply locations to the central return location. Proper air distribution is important to ensure even humidity control and heat distribution throughout the structure.
- DO NOT locate the return in a bathroom or a kitchen.

Recommended HVAC System Installation

The recommended installation draws air from a dedicated indoor air return and ducts the supply of the dehumidifier to the air supply of the existing HVAC system. Utilize the optional fresh air ventilation duct to provide outside air.

- Install a dedicated 10–inch air return for the dehumidifier from a central area of the structure.
- Install an insulated duct from outside to the 6–inch collar of the dehumidifier to provide fresh air ventilation (optional).
- Duct the supply of the dehumidifier to the supply of the existing HVAC system with a backdraft damper.
- If the existing system has multiple returns, instead of installing a dedicated return to the dehumidifier, it is possible to select one to disconnect from the existing HVAC system and use it for the dedicated dehumidifier return. Select a return from a central location in the house that is always open to the rest of the structure. DO NOT use a return from a room where doors are kept closed.
- DO NOT locate return in a bathroom or kitchen.
- Control should be located remotely from the dehumidifier and placed in a central location.

Figure 9. Dedicated return to HVAC supply



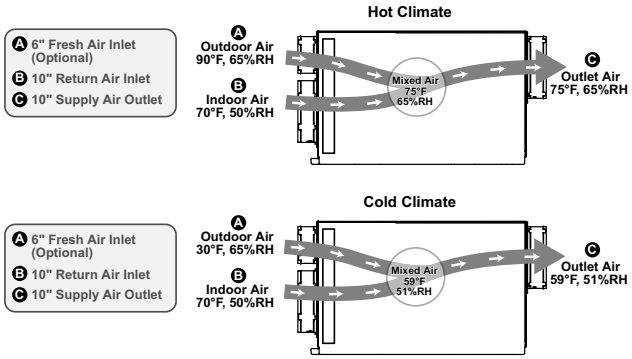
Fresh Air Ventilation

Fresh air ventilation is optional.

Fresh air may be brought into the structure by connecting an insulated duct from outside the structure to the 6–inch inlet of the Dehumidifier. A ventilation control is needed to program the time and frequency that the unit introduces outside air. The time and frequency of ventilation should be based on the size and occupancy of the residence.

- The fresh air ventilation duct should be connected to the 6–inch round collar on the front of the dehumidifier.
- An insulated 6–inch diameter duct can provide up to 75 CFM of outside air.
- If a motorized damper is not being used, fresh air is controlled by the manual damper in the 6–inch collar of the dehumidifier.
- Performance of the dehumidifier can be impacted by inside and outside air conditions.
- When a 6–inch motorized damper is used, a digital control is required.
- It may be necessary to use 8–inch duct work if additional fresh air is required.
- In cold climates or at times when the dew point is low, ventilation can be used to dehumidify the structure, making the dehumidifier capable of year-round drying.

Figure 10. Fresh air ventilation



Determine Ventilation Requirements

The MINIMUM ventilation requirement is calculated using ASHRAE 62.2-2016. Use one or both of the options below to determine your ventilation requirement. Follow all local and national building and safety codes.

Option 1: Calculating Airflow Requirement Using ASHRAE 62.2-2016 Airflow Equation

ASHRAE Airflow in CFM = [House Area in Sq.Ft. x 0.03] + [(Number of Bedrooms +1) x 7.5]

Note: *Use 'Number of Bedrooms + 1' or 'Number of Occupants', whichever is larger.*

Example 1: Number of Bedrooms + 1

1800 square foot house with 3 bedrooms, 4 occupants = [1800 X 0.03] + [(3+1) X 7.5] = 84 CFM

Example 2: Number of Occupants

1800 square foot house with 3 bedrooms, 5 occupants = [1800 X 0.03] + [5 X 7.5] = 91.5 CFM

Option 2: Calculating Airflow Requirement Using Table

Table 9. ASHRAE 62.2-2019 Ventilation Air Requirements, CFM

Floor Area (ft^2)	Number of Bedrooms				
	1	2	3	4	5
<500	30	38	45	53	60
501–1000	45	56	60	68	75
1001–1500	60	68	75	83	90
1501–2000	75	83	90	98	150
2001–2500	90	98	105	113	120
2501–3000	105	113	120	128	135
3001–3500	120	128	135	143	150
3501–4000	135	143	150	158	165
4001–4500	150	158	165	173	180
4501–5000	165	173	180	188	195

Controls

A control must be used with the dehumidifier. Trane offers the DEH 3000 proprietary control. The DEH 3000 allows homeowners to monitor and control relative humidity and proper ventilation levels in their home. This control is also available with a remote sensing option.

Note: *The DEH 3000 is sold separately and can be purchased through your local dealer or online. Other thermostats are compatible with the dehumidifier.*

Wiring Controls

NOTICE

Equipment Damage!

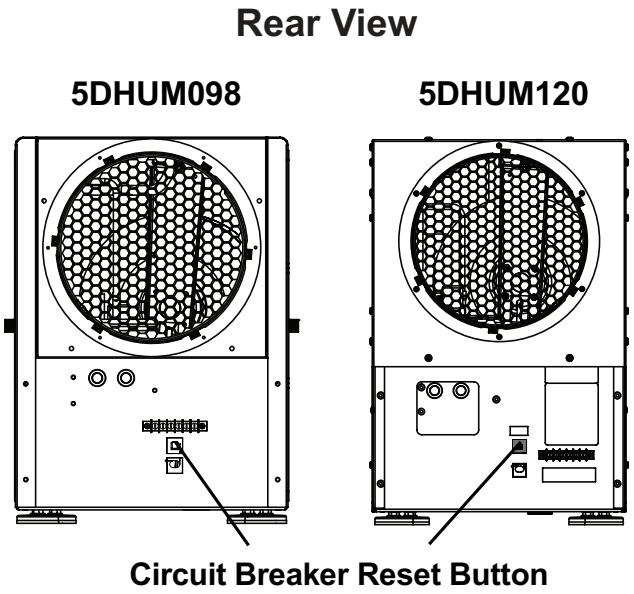
Failure to follow instructions below could result in equipment damage.

Do not allow the 24v terminal to contact the com terminals on the device to avoid damage to the transformer.

Circuit Breaker

To prevent damage to the 24 volt control transformer, the dehumidifier comes with a circuit breaker with reset capabilities. Check wiring for any electrical short and repair before resetting breaker. Resetting the circuit breaker without correcting the electrical short may result in transformer damage. Be sure to check the electrical schematic in this manual or inside the access panel of the dehumidifier before making any control connections. The reset button for the circuit breaker can be found on the back of the unit.

Figure 11. Circuit breaker



Control Connections

The control and the dehumidifier are labeled to prevent confusion. Depending on the control, some of the screw terminals on the dehumidifier may not be used. Be sure to consult the electrical schematic in this manual or inside the access panel of the dehumidifier before making control connections.

A low voltage control must be used with the dehumidifier.

Figure 12. Terminal block

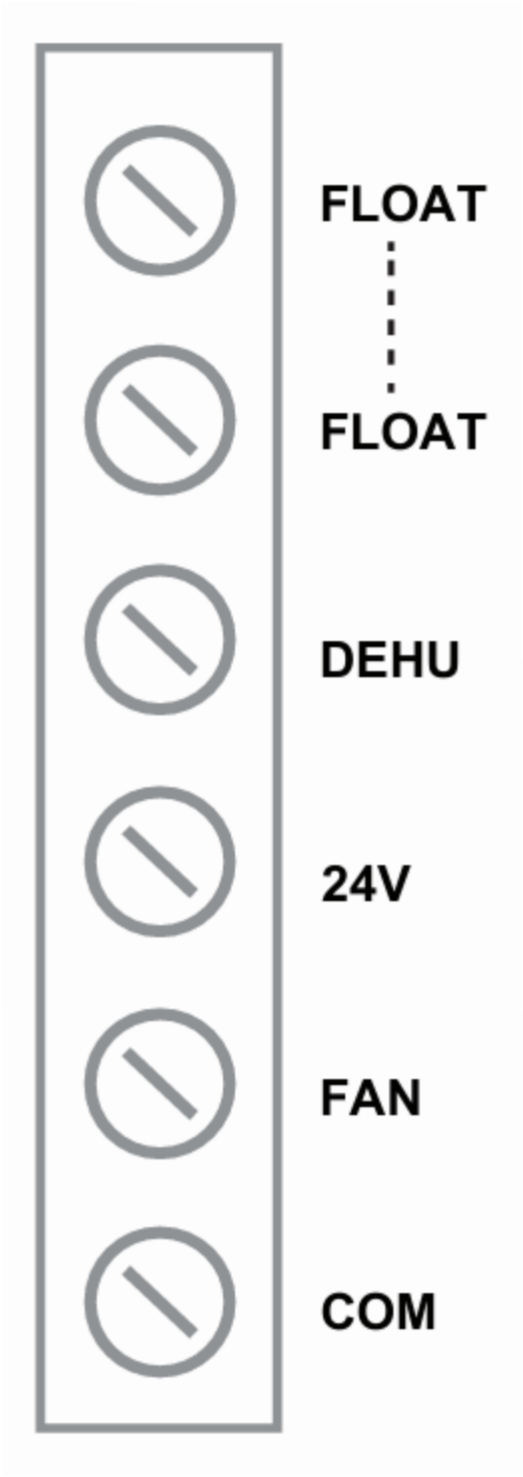


Table 10. 5DHUM098 terminal block control operation

COM	24VAC power transformer neutral side
FAN	Fan control
24V	Transformer high side
DEHU	Dehumidificiation (fan and compressor) control
DMPR	24VAC power transformer neutral side
*	Spare terminal (open)

Table 11. 5DHUM120 terminal block control operation

COM	24VAC power transformer neutral side
FAN	Fan control
24V	Transformer high side
DEHU	Dehumidificiation (fan and compressor) control
FLOAT	External low voltage float switch or water sensor (use normally closed switch)
FLOAT	External low voltage float switch or water sensor (use normally closed switch)

Table 12. Transformer information

Between the COM lead and the 24V TERMINAL is a 40VA transformer. This low voltage power source powers the relay coils which control the fan and compressors. This 24VAC transformer can also be used to power HVAC accessories external to the dehumidifier.	
Compressor ON / Fan ON	Make contact between 24V and DEHU terminals
Compressor OFF / Fan ON	Make contact between 24V and FAN terminals
Power HVAC Accessory	Connect the accessory to the DMPR (or COM) and 24V terminals

Note: *18 gauge wire needed between the Dehumidifier and the external control.*

Air Filtration

The dehumidifier is equipped with a MERV-13 (Dimensions: 1.75 inches x 14.00 inches x 17.50 inches) filter. The filter should be checked and replaced every three to six months. Operating the unit with a dirty filter will reduce dehumidifier capacity and efficiency.

DO NOT operate the unit without the recommended filter. Filter non-compliance voids the product warranty.

⚠ WARNING

Safety Hazard!

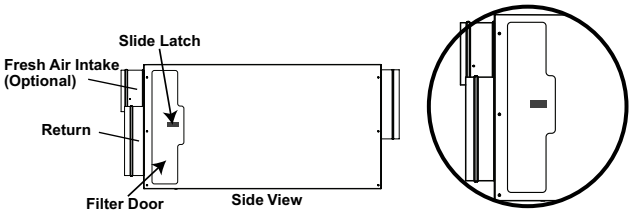
Failure to follow instructions below could result in death or serious injury or equipment failure. Confirm the unit is off before changing the filter.

Filter Changes

For greatest filtration and efficiency of the dehumidifier, it is recommended the air filter be replaced every three to six months with a MERV 13 rated filter.

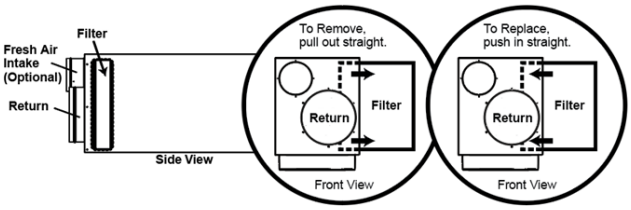
Step 1: Remove the magnetized filter door by pulling it off of the dehumidifier. You can remove it on either side to gain access to the filter.

Figure 13. Filter door removal



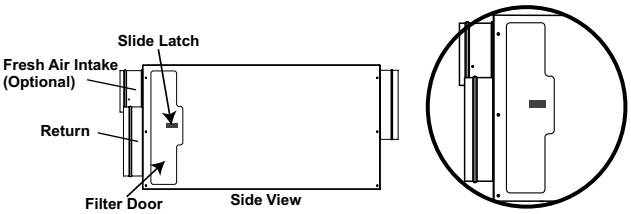
Step 2: Remove the filter by gently pulling straight out of the unit. Insert new filter by gently pushing it straight into the unit. Make sure the AIR FLOW arrow on the filter is pointing into the unit.

Figure 14. Filter removal and replacement



Step 3: Attach the magnetized filter door back into place, ensuring it covers the filter compartment completely.

Figure 15. Filter door replacement



Accessories

See the table below for 5DHUM98 / 5DHUM120 accessories.

Part Number	Description
4024375	10 inch gravity damper
4036695	Hang Kit, Small
4037722	Merv-13 Filter, air, 1.75 inches x 14.00 inches x 17.50 inches
4022220	Condensate pump kit
4028407	Kit, UA DEH3000 remote

Service

⚠ WARNING

Safety Hazard!

Failure to follow instructions below could result in death or serious injury and/or property damage. Only qualified personnel should install and service the equipment. The installation, starting up, and servicing of heating, ventilating, and air-conditioning equipment can be hazardous and requires specific knowledge and training. Improperly installed, adjusted or altered equipment by an unqualified person could result in death or serious injury. When working on the equipment, observe all precautions in the literature and on the tags, stickers, and labels that are attached to the equipment.

Technical Description

The dehumidifier uses a refrigeration system similar to an air conditioner's to remove heat and moisture from incoming air, and add heat to the air that is discharged.

Hot, high-pressure refrigerant gas is routed from the compressor to the condenser coil. The refrigerant is cooled and condensed by giving up its heat to the air that is about to be discharged from the unit. The refrigerant liquid then passes through a filter/drier and expanion device which causes the refrigerant pressure and temperature to drop. It next enters the evaporator coil where it absorbs heat from the incoming air and evaporates. The evaporator operates in a flooded condition, which means that all the evaporator tubes contain liquid refrigerant during normal operation. A flooded evaporator should maintain nearly constant pressure and temperature across the entire coil, from inlet to outlet.

The compressor collects the cool refrigerant gas and compresses it to a high pressure and temperature to repeat the process.

Service Personnel

Only qualified HVAC or electrical contractors are allowed to conduct maintenance, service and/or repair operations on the dehumidifier. Examples include but are not limited to breaking into the refrigerating circuit, opening of sealed components, and/or opening of ventilated enclosures.

- Prior to beginning work on the dehumidifier, safety checks are necessary to ensure that the risk of ignition is minimized.
- For repair to the REFRIGERATING SYSTEM, a qualified contractor should first establish a controlled procedure so as to minimize the risk of a flammable gas or vapor being present while the work is being performed.
- All maintenance staff and others working in the local area shall be instructed on the nature of work being carried out. Work in confined spaces shall be avoided.
- The area shall be checked with an appropriate refrigerant detector prior to and during work, to ensure the technician is aware of potentially toxic or flammable atmospheres. Ensure that the leak detection equipment being used is suitable for use with all applicable refrigerants, i.e. non-sparking, adequately sealed or intrinsically safe.
- If any hot work is to be conducted on the refrigerating equipment or any associated parts, appropriate fire extinguishing equipment shall be available to hand. Have a dry powder or CO2 fire extinguisher adjacent to the charging area.
- No person carrying out work in relation to a REFRIGERATING SYSTEM which involves exposing any pipe work shall use any sources of ignition in such a manner that it may lead to the risk of fire or explosion. All possible ignition sources, including cigarette smoking, should be kept sufficiently far away from the site of installation, repairing, removing and disposal, during which refrigerant can possibly be released to the surrounding space. Prior to work taking place, the area around the equipment is to be surveyed to make sure that there are no flammable hazards or ignition risks. "No Smoking" signs shall be displayed.
- Ensure that the area is in the open or that it is adequately ventilated before breaking into the system or conducting any hot work. A degree of ventilation shall continue during the period that the work is carried out. The ventilation should safely disperse any released refrigerant and preferably expel it externally into the atmosphere.

Flammable Refrigerants

The following checks shall be applied to installations using FLAMMABLE REFRIGERANTS:

- Where electrical components are being changed, they shall be fit for the purpose and to the correct specification. At all times Therma-Stor's maintenance and service guidelines shall be followed. If in doubt, consult Therma-Stor's technical department for assistance.
- The actual REFRIGERANT CHARGE is in accordance with the room size within which the refrigerant containing parts are installed.
- The ventilation machinery and outlets are operating adequately and are not obstructed.
- Marking to the equipment continues to be visible and legible. Markings and signs that are illegible shall be corrected.
- Dehumidifiers are installed in a position where they are unlikely to be exposed to any substance which may

corrode refrigerant containing components, unless the components are constructed of materials which are inherently resistant to being corroded or are suitably protected against being so corroded.

Checks to Electrical Devices

Repair and maintenance to electrical components shall include initial safety checks and component inspection procedures. If a fault exists that could compromise safety, then no electrical supply shall be connected to the circuit until it is satisfactorily dealt with. If the fault cannot be corrected immediately but it is necessary to continue operation, an adequate temporary solution shall be used. This shall be reported to the owner of the equipment so all parties are advised.

Initial safety checks shall include:

- That capacitors are discharged: this shall be done in a safe manner to avoid possibility of sparking.
- That no live electrical components and wiring are exposed while charging, recovering or purging the system.
- That there is continuity of earth bonding.

Sealed Electrical Components Shall Be Replaced

- During repairs to sealed components, all electrical supplies shall be disconnected from the equipment being worked upon prior to any removal of sealed covers, etc. If it is absolutely necessary to have an electrical supply to equipment during servicing, then a permanently operating form of leak detection shall be located at the most critical point to warn of a potentially hazardous situation.
- Particular attention shall be paid to the following to ensure that by working on electrical components, the casing is not altered in such a way that the level of protection is affected. This shall include damage to cables, excessive number of connections, terminals not made to original specification, damage to seals, incorrect fitting of glands, etc.
- Ensure that the equipment is mounted securely.
- Ensure that seals or sealing materials have not degraded to the point that they no longer serve the purpose of preventing the ingress of flammable atmospheres.
- Replacement parts shall be in accordance with Therma-Stor specifications.

Intrinsically Safe Components Must Be Replaced

- Do not apply any permanent inductive or capacitance loads to the circuit without ensuring that this will not exceed the permissible voltage and current permitted for the equipment in use.
- Intrinsically safe components are the only types that can be worked on while live in the presence of a flammable atmosphere. The test apparatus shall be at the correct rating.
- Replace components only with parts specified by Therma-Stor. Other parts may result in the ignition of refrigerant in the atmosphere from a leak.

Note: *The use of silicon sealant can inhibit the effectiveness of some types of leak detection equipment. Intrinsically safe components do not have to be isolated prior to working on them.*

Check that cabling will not be subject to wear, corrosion, excessive pressure, vibration, sharp edges or any other adverse environmental effects. The check shall also take into account the effects of aging or continual vibration from sources such as compressors or fans.

Detection of Flammable Refrigerants

Under no circumstances shall potential sources of ignition be used in the searching for or detection of refrigerant leaks. A halide torch (or any other detector using a naked flame) shall not be used.

The following leak detection methods are deemed acceptable for all refrigerant systems:

- Electronic leak detectors may be used to detect refrigerant leaks but, in the case of FLAMMABLE REFRIGERANTS, the sensitivity may not be adequate, or may need re-calibration. (Detection equipment shall be calibrated in a refrigerant-free area.) Ensure that the detector is not a potential source of ignition and is suitable for the refrigerant used. Leak detection equipment shall be set at 25% LFL of the refrigerant and shall be calibrated to 454B.
- Leak detection fluids are also suitable for use with most refrigerants but the use of detergents containing chlorine shall be avoided as the chlorine may react with the refrigerant and corrode the copper pipe.

Note: *Examples of leak detection fluids are bubble method, and fluorescent method agents.*

- If a leak is suspected, all open flames shall be removed/extinguished.

If a leakage of refrigerant is found which requires brazing, all of the refrigerant shall be recovered from the system, or isolated (by means of shut off valves) in a part of the system remote from the leak. Removal of refrigerant shall be according to Clause DD.9 of 60335-2-40.

Refrigerant Removal and Evacuation

When breaking into the refrigerant circuit to make repairs – or for any other purpose – conventional procedures shall be used. However, for FLAMMABLE REFRIGERANTS it is important that best practice is followed since flammability is a consideration. The following procedure shall be adhered to:

- Safely remove refrigerant following local and national regulations.
- The REFRIGERANT CHARGE shall be recovered into the correct recovery cylinders if venting is not allowed by local and national codes.
- For appliances containing flammable refrigerants, the system shall be purged with oxygen-free nitrogen to render the appliance safe for flammable refrigerants.
- This process might need to be repeated several times. Compressed air or oxygen shall not be used for purging refrigerant systems.
- When the final oxygen-free nitrogen charge is used, the system shall be vented down to atmospheric pressure to enable work to take place.
- Open the circuit by cutting or brazing.
- Ensure that the outlet for the vacuum pump is not close to any POTENTIAL IGNITION SOURCES and that ventilation is available.

Charging Procedures

In addition to conventional charging procedures, the following requirements shall be followed:

- Ensure that contamination of different refrigerants does not occur when using charging equipment. Hoses or lines shall be as short as possible to minimize the amount of refrigerant contained in them.
- Cylinders shall be kept in an appropriate position according to the instructions.
- Ensure that the REFRIGERATING SYSTEM is grounded prior to charging the system with refrigerant.
- Label the system when charging is complete (if not already).
- Extreme care shall be taken not to overfill the REFRIGERATING SYSTEM.
- Prior to recharging the system, it shall be pressure-tested with the appropriate purging gas. The system shall be leak-tested on completion of charging but prior to commissioning. A follow up leak test shall be carried out prior to leaving the site.

Decommissioning

Before carrying out this procedure, it is essential that the technician is completely familiar with the equipment and all its details. It is recommended good practice that all refrigerants are recovered safely. Prior to the task being carried out, an oil and refrigerant sample shall be taken in case analysis is required prior to re-use of recovered refrigerant. It is essential that electrical power is available before the task commences.

- • Become familiar with the equipment and its operation.
- • Isolate system electrically.

Before attempting the procedure, ensure that:

- mechanical handling equipment is available, if required, for handling refrigerant cylinders;
- all personal protective equipment is available and being used correctly;
- the recovery process is supervised at all times by a competent person;
- recovery equipment and cylinders conform to the appropriate standards.
- Pump down refrigerant system, if possible.
- If a vacuum is not possible, make a manifold so that refrigerant can be removed from various parts of the system.
- Make sure that cylinder is situated on the scales before recovery takes place.
- Start the recovery machine and operate in accordance with instructions.
- Do not overfill cylinders (no more than 80 % volume liquid charge).
- Do not exceed the maximum working pressure of the cylinder, even temporarily.
- When the cylinders have been filled correctly and the process completed, make sure that the cylinders and the equipment are removed from site promptly and all isolation valves on the equipment are closed off.
- Recovered refrigerant shall not be charged into another REFRIGERATING SYSTEM unless it has been cleaned and checked.

Labeling Decommission Machines

Equipment shall be labelled stating that it has been de-commissioned and emptied of refrigerant. The label shall be dated and signed. For appliances containing FLAMMABLE REFRIGERANTS, ensure that there are labels on the equipment stating the equipment contains FLAMMABLE REFRIGERANT.

Refrigerant Recovery

- When removing refrigerant from a system, either for servicing or decommissioning, it is recommended good practice that all refrigerants are removed safely.
- When transferring refrigerant into cylinders, ensure that only appropriate refrigerant recovery cylinders are employed. Ensure that the correct number of cylinders

for holding the total system charge is available. All cylinders to be used are designated for the recovered refrigerant and labelled for that refrigerant (i.e. special cylinders for the recovery of refrigerant). Cylinders shall be complete with pressure-relief valve and associated shut-off valves in good working order. Empty recovery cylinders are evacuated and, if possible, cooled before recovery occurs.

- The recovery equipment shall be in good working order with a set of instructions concerning the equipment that is at hand and shall be suitable for the recovery of all appropriate refrigerants including, when applicable, FLAMMABLE REFRIGERANTS. In addition, a set of calibrated weighing scales shall be available and in good working order. Hoses shall be complete with leak-free disconnect couplings and in good condition. Before using the recovery machine, check that it is in satisfactory working order, has been properly maintained and that any associated electrical components are sealed to prevent ignition in the event of a refrigerant release. Consult manufacturer if in doubt.
- The recovered refrigerant shall be returned to the refrigerant supplier in the correct recovery cylinder, and the relevant waste transfer note arranged. Do not mix refrigerants in recovery units and especially not in cylinders.
- If compressors or compressor oils are to be removed, ensure that they have been evacuated to an acceptable level to make certain that FLAMMABLE REFRIGERANT does not remain within the lubricant. The evacuation process shall be carried out prior to returning the compressor to the suppliers. Only electric heating to the compressor body shall be employed to accelerate this process. When oil is drained from a system, it shall be carried out safely.

Troubleshooting

Symptom	Possible Reason	Troubleshooting Procedure
Neither fan nor compressor running. Dehumidification is being called for.	1. Dehumidifier unplugged or no power to outlet. 2. Humidity control set too high. 3. Loose connection in internal or control wiring. 4. Defective compressor relay. 5. Defective control transformer.	This method of diagnosis will test the 3 main components of the control circuit individually to indicate any potential problems. This is to be used when the control will not activate the main unit. 1. Detach field control wiring connections from the terminals on the main unit. 2. Connect the 24V and FAN terminals together; only the fan should run. Disconnect the terminals. 3. Connect the 24V and DEHU terminals together; fan and compressor should run. Disconnect the terminals. 4. If this test works, the main unit is working correctly from a control standpoint. 5. Reconnect field control wiring to the terminals on the main unit. 6. Remove the control panel cover and detach the field wiring from the control connections. 7. Connect the 24V and FAN terminals together; only the fan should run. Disconnect the terminals. 8. Connect the 24V and DEHU terminals together; fan and compressor should run. Disconnect the terminals. 9. If this test works, then the field control wiring is ok. 10. If the problem persists, then the control is most likely faulty.
Compressor is not running. Dehumidification is being called for. Fan is running.	1. Defective compressor run capacitor. 2. Loose connection in compressor circuit. 3. Defective compressor overload. 4. Defective compressor. 5. Defrost thermostat open.	
Compressor cycles on and off. Dehumidification is being called for.	1. Low ambient temperature and/or humidity causing unit to cycle through defrost mode. 2. Defective compressor overload. 3. Defective compressor. 4. Defrost thermostat defective. 5. Dirty air filter(s) or air flow restricted. 6. Defective fan or relay.	
Fan is not running. Dehumidification or fan is being called for.	1. Loose connection in fan circuit. 2. Obstruction prevents fan impeller rotation. 3. Defective fan. 4. Defective fan relay.	
Low dehumidification capacity (evaporator is frosted continuously). Dehumidification is being called for.	1. Defrost thermostat loose or defective. 2. Low refrigerant charge. 3. Dirty air filter(s) or air flow restricted. 4. Excessively restrictive ducting connected to unit.	This method of diagnosis is used to function check the internal components in the dehumidifier. This is to be used when a performance issue is suspected. 1. Set the humidity controller all the way to the most humid setting or off position – Did the unit shut off? 2. If yes, turn the fan setting to the ON position – does the fan start? 3. If fan starts, leave in the fan ON position and set the humidity all the way to driest setting. May have to wait 5 minutes for the compressor to start. 4. Listen for a distinct buzzing/humming sound of a compressor starting up – do you hear this noise? 5. If compressor is running and continues to run, after about 15 minutes you should feel a slight increase in air temperature being discharged out of the discharge air side of the unit. 6. If so, depending on your environmental conditions (temp/Rh%), you should see some water production out of the hose within 30 minutes or so. (*Note:* If the room temperature is 55 degrees or below and/ or in area of low relative humidity, the dehumidifier will produce little to no water.) 7. Collecting the water removed in a 24 hour period will give a measurement of performance.
No ventilation. Ventilation is being called for.	1. Loose connection in ventilation control circuit. 2. Loose connection in damper power circuit. 3. Defective outdoor air damper.	
Dehumidifier removes some water, but not as much as expected.	1. Air temperature and/or humidity have dropped. 2. Humidity meter and or thermometer used are out of calibration. 3. Unit has entered defrost cycle. 4. Dirty air filter(s) or air flow is restricted. 5. Defective defrost thermostat. 6. Low refrigerant charge. 7. Air leak such as loose cover or ducting leaks. 8. Defective compressor. 9. Restrictive ducting.	

Refrigerant Charging

⚠ WARNING

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If the refrigerant charge is lost due to service or a leak, the leak should be repaired and a new charge must be accurately weighed in. If any of the old charge is left in the system, it must be recovered before weighing in the new charge. Refer to the unit nameplate for the correct charge weight and refrigerant type.

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