

# INSTALLATION & OPERATION INSTRUCTIONS



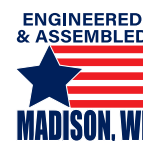
The **B70DHV** is a ventilating dehumidifier that is integrated into the heating and cooling system to provide the ultimate in comfort, health and property protection through:

- + Dehumidification
- + Fresh Air Ventilation (Optional)
- + Air Filtration

Serial Number \_\_\_\_\_

Install Date \_\_\_\_\_

Sold By \_\_\_\_\_



# TABLE OF CONTENTS

Safety Instructions.....	3
Dehumidifier Set Up.....	4
Attaching Duct Collars.....	5
Electrical Requirements.....	6
Drain Installation.....	7
Ducting to HVAC Systems.....	8
Fresh Air Ventilation.....	10
Controls.....	12
Air Filtration.....	13
Service.....	15
Warranty.....	21



This Broan dehumidifier conforms to unified standard UL 60335-2-40 and CSA Standard C22.2.60335-2-40.

Brand Name	Individual Model Number	Basic Model Number	Rating Conditions	Integrated Energy Factor (L/kWh)	Capacity (Pint/Day)
Broan B70DHV	4044150	70.1-W	73F/60%	2.04	52.45

**FOR REPAIR & TECH SUPPORT: 1-800-558-1711 (follow prompts)**

Broan is committed to manufacturing quality products.  
To maintain our standards, product specifications may change without notice.



926 West State Street, Hartford, WI 53027

[www.Broan-Nutone.com](http://www.Broan-Nutone.com) 800-558-1711

# SAFETY INSTRUCTIONS

## **WARNING!**

THIS SYMBOL MEANS IMPORTANT INSTRUCTIONS. FAILURE TO HEED THEM CAN RESULT IN SERIOUS INJURY OR DEATH.

## **CAUTION!**

THIS SYMBOL MEANS IMPORTANT INSTRUCTIONS. FAILURE TO HEED THEM CAN RESULT IN INJURY OR MATERIAL PROPERTY DAMAGE.

Read the installation, operation and maintenance instructions carefully before installing and operating this device. Proper adherence to these instructions is essential to obtain maximum benefit from the Broan Whole House Ventilating Dehumidifier.

## **WARNING!**

120 VOLTS MAY CAUSE SERIOUS INJURY FROM ELECTRIC SHOCK. DISCONNECT ELECTRICAL POWER BEFORE STARTING INSTALLATION OR SERVICING, AND LEAVE POWER DISCONNECTED UNTIL INSTALLATION OR SERVICE IS COMPLETED.

## **CAUTION!**

- Always use caution and wear CUT RESISTANT gloves when handling sheet metal.
- Improper installation may cause property damage or injury. Installation, service, and maintenance must be performed by a qualified service technician.
- The dehumidifier is heavy. Handle with care and follow installation instructions.
- 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 in order to avoid a hazard.
- This appliance is not intended for use by persons (including children) with reduced physical, sensory or mental capabilities, or lack of experience or knowledge, unless they have been given supervision or instruction concerning the use of the appliance by a person responsible for their safety. Children should be supervised to ensure that they do not play with the appliance.
- The device is designed to be installed indoors in a space that is protected from rain and flooding.
- Install the unit with enough space to access all sides for maintenance and service. The entire shell needs to be removed in order to do repairs.
- Avoid directing the discharge air at people. The dehumidifier should be used in the upright position.
- If used near a water source; be certain there is no chance the unit could fall into the water or get splashed and that it is plugged into a dedicated circuit and Ground Fault Circuit Interrupter (GFCI) protected outlet.
- DO NOT use the dehumidifier as a bench or table.
- Do not place the dehumidifier directly on structural building members without vibration absorbers or unwanted noise may result. Place the Broan dehumidifier on supports to raise the base of the unit.
- A drain pan with a float switch must be placed under the dehumidifier if installed above a living area or above an area where water leakage could cause damage.
- Make all electrical connections in accordance with the current edition of the NEC ANSI/NFPA 70 and any national and local codes or ordinances that may apply.
- Maintain a minimum 1ft. (.3m) clearance to avoid obstructing the air return and supply.
- Not intended for use at altitudes over 6500 ft (2000M).
- The minimum floor area of the storage room shall be 28 m<sup>2</sup> (square meters).



**REFRIGERANT  
SAFETY GROUP  
A2L**

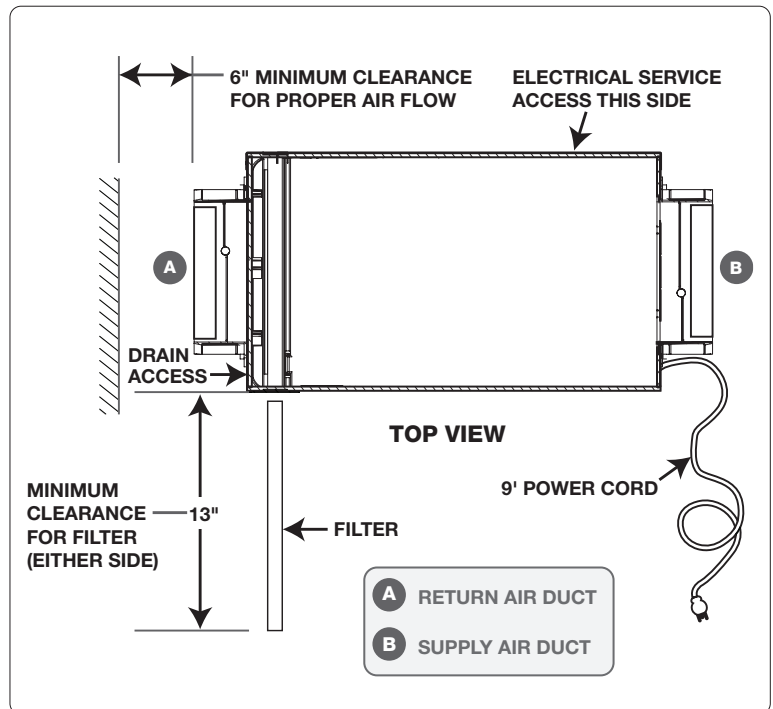
## **WARNING!**

DO NOT USE MEANS TO ACCELERATE THE DEFROSTING PROCESS OR TO CLEAN, OTHER THAN THOSE RECOMMENDED BY THE MANUFACTURER. THE APPLIANCE SHALL BE STORED 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 AWARE THAT REFRIGERANTS MAY NOT CONTAIN AN ODOR.

# DEHUMIDIFIER SET UP

## 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 ft. 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" 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 dehumidifier 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.

# ATTACHING DUCT COLLARS

## Fresh Air Ventilation Duct

Fresh air ventilation is optional. If setting up the unit to provide fresh air ventilation, see page 10.

## Return Air Inlet

An 8" diameter duct collar is attached to the unit.

## Supply Air Outlet

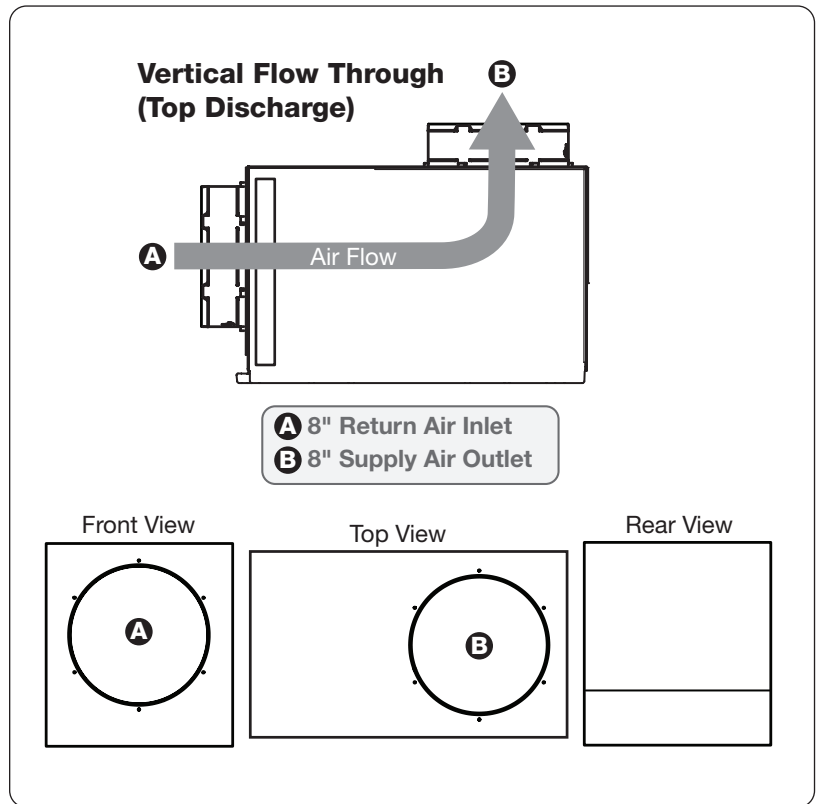
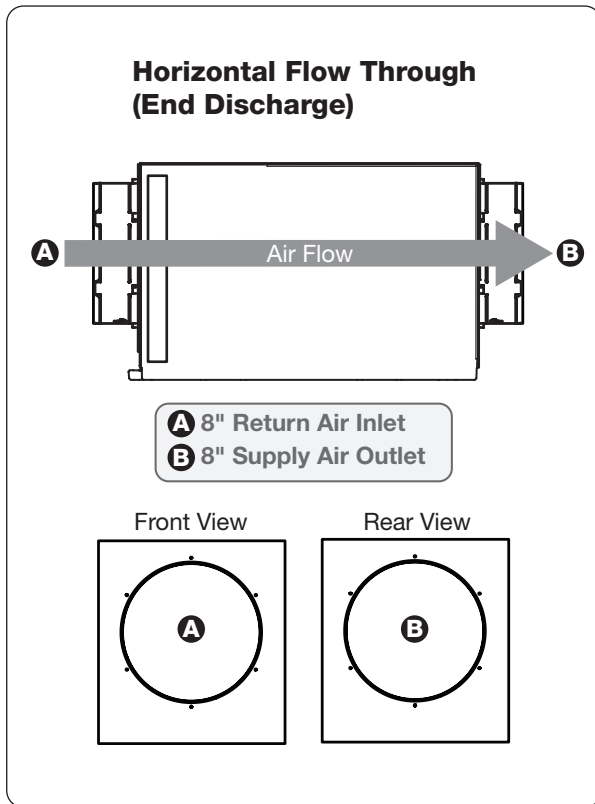
The back panel of the dehumidifier can be rotated to allow for horizontal flow through or vertical flow through of the supply air.

- **Horizontal Flow Through**

The unit ships configured for a horizontal flow through. An 8" diameter duct collar is attached to the unit.

- **Vertical Flow Through**

Remove the exhaust panel using a T20 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.



# ELECTRICAL REQUIREMENTS

The B70DHV plugs into a common grounded 115VAC outlet and draws 5.4 Amps. Locate the dehumidifier in an area where the cord's length (9') 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 any further information.

There are multiple control devices that can be used with B70DHV. The controls are to be located remotely from the dehumidifier and placed in the space to be conditioned. Low voltage (24 Volt) controls can be used with the B70DHV and MUST be connected with low voltage (18-22 gauge) thermostat wire.

## ⚠ WARNING!

**THE REMOTE CONTROLS OF THE B70DHV ARE POWERED BY A LOW VOLTAGE CIRCUIT (24VAC) AND MUST NEVER CONTACT OR BE CONNECTED TO A HIGH VOLTAGE CIRCUIT.**

## ⚠ CAUTION!

**DO NOT ALLOW THE 24V TERMINAL TO CONTACT THE COM/DMPR TERMINALS ON THE B70DHV OR DAMAGE TO THE TRANSFORMER WILL RESULT.**

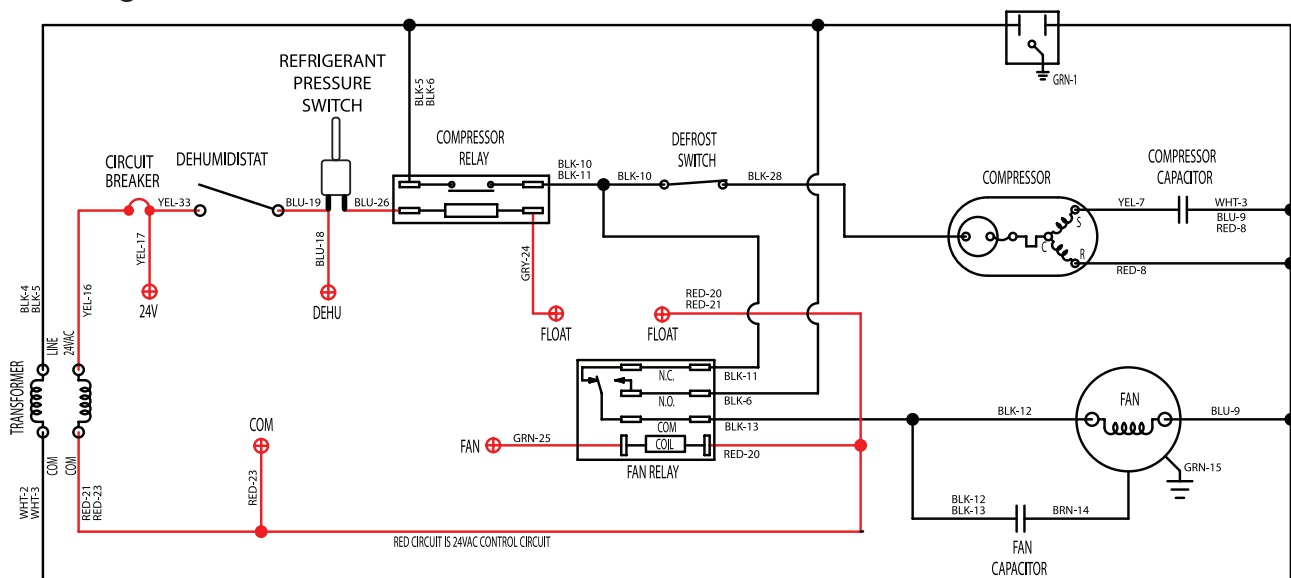
## ⚠ CAUTION!

**SOME OF THE SCREWS TERMINALS ON THE B70DHV 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 B70DHV and the control are labeled to prevent confusion.
- Be sure to consult the electrical schematic in the CONTROLS Section (page 12) of this manual or inside the access panel of the B70DHV before making control connections.

### Wiring Schematic



4043985 REV A

# DRAIN INSTALLATION

The B70DHV generates condensate.

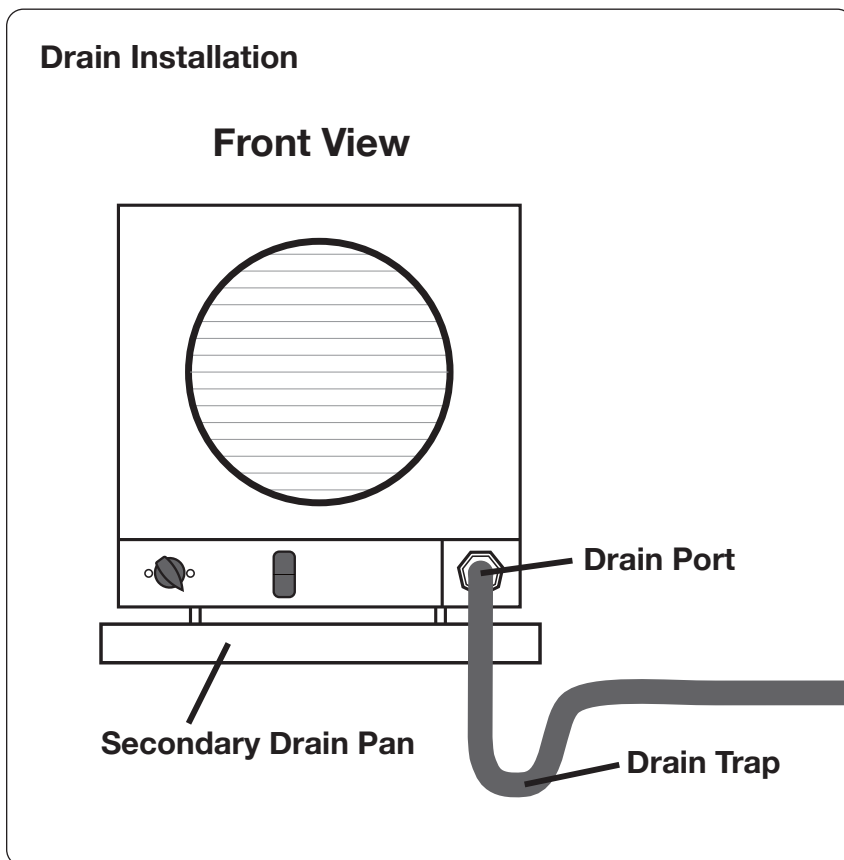
Place a secondary drain pan with a float switch under the dehumidifier if it is suspended above a finished area or above an area where water leakage could cause damage.

A drain trap is required for the dehumidifier to run properly. Install a 3/4" threaded male NPT adapter to the drain pan. Install a drain pipe assembly utilizing 3/4" PVC pipe to transport the condensate to a drain. Pitch of drain should be 1" per 10'.

An optional condensate pump kit is available for use with the B70DHV 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 B70DHV 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 B70DHV dehumidifier.

**Note:** An optional condensate pump kit can be purchased from a local dealer or online.



# DUCTING TO HVAC SYSTEMS

The recommended installation creates a separate return for the B70DHV 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 provide fresh make-up air (optional).

## **⚠ CAUTION!**

**DO NOT CONNECT WITH A STATIC PRESSURE GREATER THAN OR EQUAL TO +0.5 WG. CONTACT TECHNICAL SUPPORT AT (800) 558-1711 FOR ADDITIONAL DETAILS.**

### Ducting Considerations:

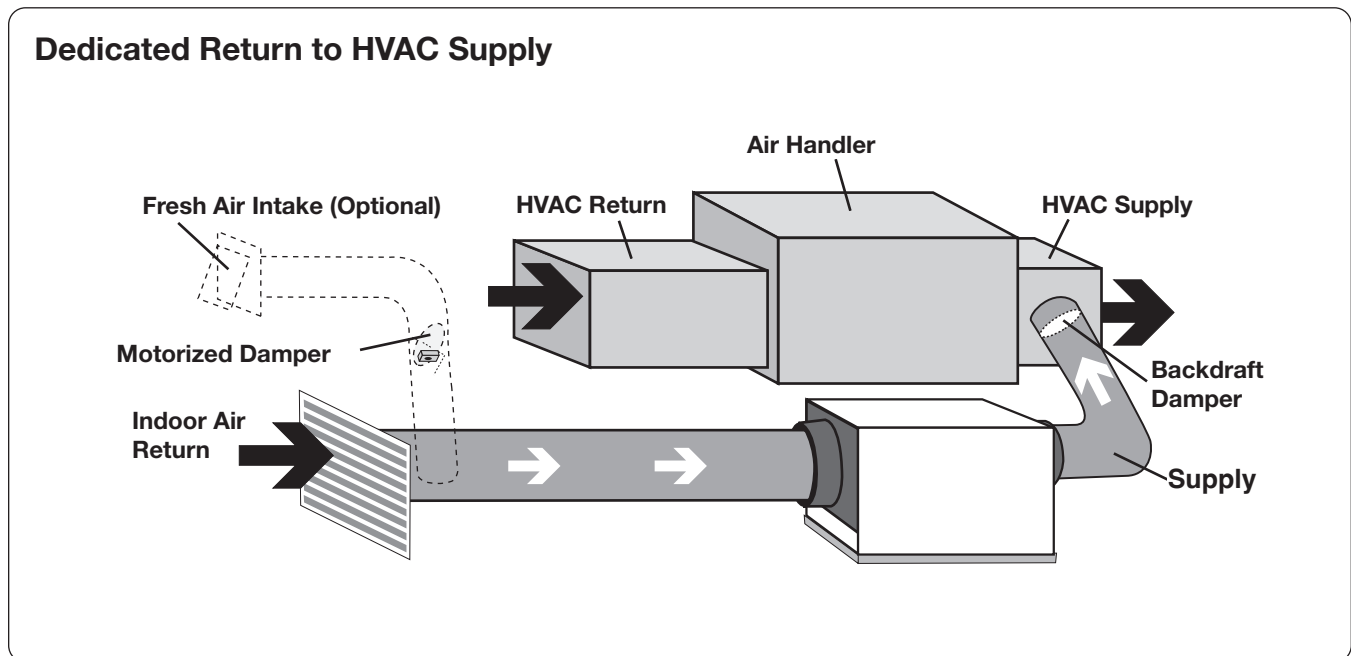
- All flexible ducting connected to the B70DHV should be UL listed.
- A short piece of flexible ducting on all B70DHV duct connections is recommended to reduce noise and vibration transmitted to rigid ductwork in the structure.
- Use a minimum 8" diameter round or equivalent rectangular duct for total duct lengths of up to 25'. Use a minimum 10" diameter or equivalent for longer lengths.
- Grills or diffusers on the duct ends must not excessively restrict airflow.
- A length of 8" or more of insulated flex duct or any other vibration isolating material on the outlet of the B70DHV will reduce air noise from the blower.
- Effective dehumidification may require that ducting be branched to isolated, stagnant air flow areas. When ducting to two or three areas, use 6" or larger diameter branch ducting. When ducting to four or more areas, use 4"-6" 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.

# DUCTING TO HVAC SYSTEMS

## 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 8" air return for the B70DHV from a central area of the structure.
- Duct the supply of the B70DHV 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 B70DHV, it is possible to select one to disconnect from the existing HVAC system and use it for the dedicated B70DHV 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.
- Please visit our website at [www.Boran-NuTone.com](http://www.Boran-NuTone.com) for more installation options.



# FRESH AIR VENTILATION

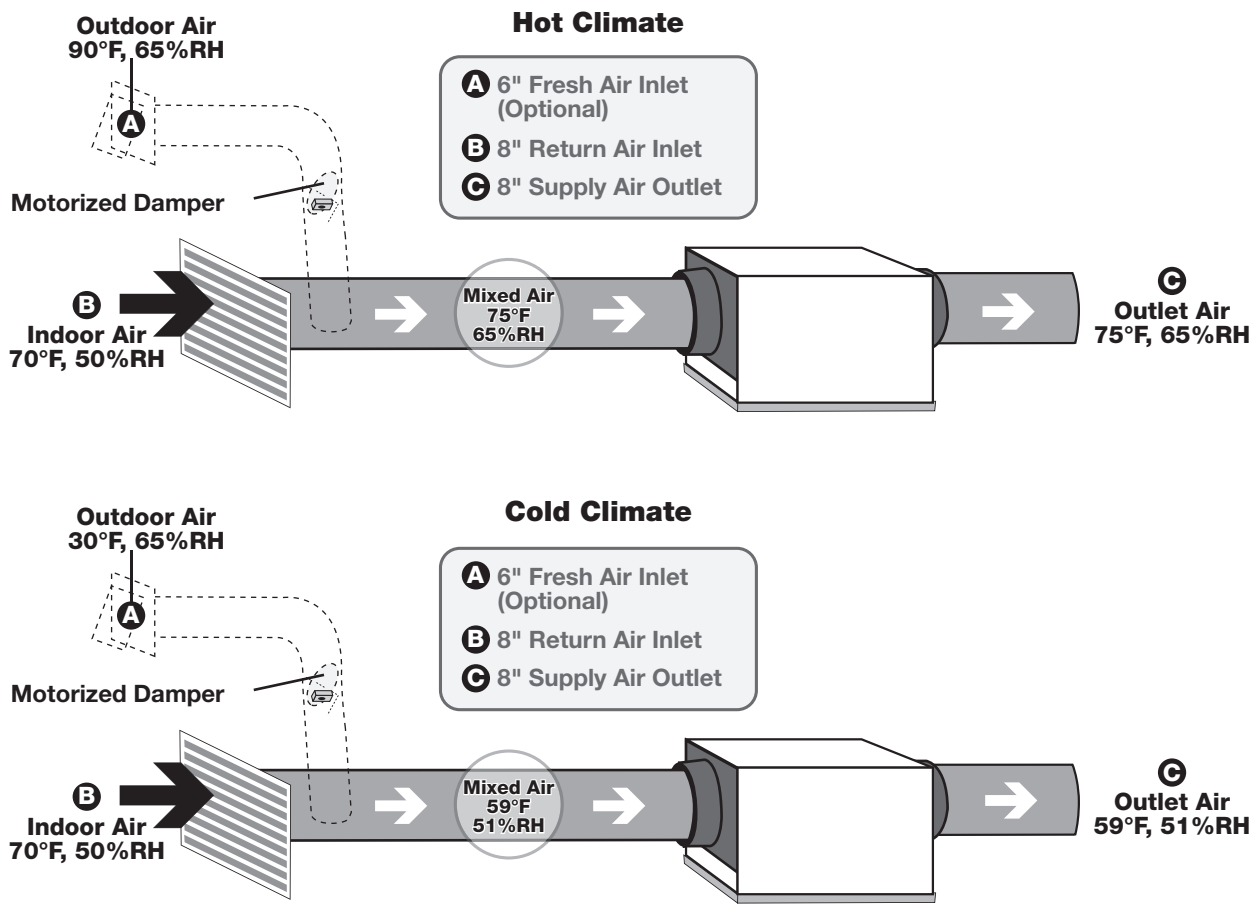
Fresh air ventilation is optional.

Fresh air may be brought into the structure by connecting an insulated duct from outside the structure to a tee located in the inlet duct of the B70DHV. 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 6" fresh air ventilation duct should tee into the 8" round collar on the front of the B70DHV.
- An insulated 6" diameter duct can provide up to 55 CFM of outside air.
- Performance of the B70DHV can be impacted by inside and outside air conditions.
- When a 6" motorized damper is used, a digital control is required.
- It may be necessary to use 8" 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 B70DHV capable of year-round drying.

## Fresh Air Ventilation With Dehumidifier Off and Fan Only Operation

Outside air mixes with return air prior to beginning the dehumidification process. Outside and inside temperature and relative humidity will impact the combined outlet air conditions.



# 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

Record the required CFM \_\_\_\_\_

### Option 2: Calculating Airflow Requirement Using Table 4.1 from ASHRAE 62.2-2016

#### Ventilation Air Requirements, CFM

Floor Area (ft <sup>2</sup> )	Number of Bedrooms				
	1	2	3	4	5
< 500	30	38	45	53	60
501 - 1000	45	53	60	68	75
1001 - 1500	60	68	75	83	90
1501 - 2000	75	83	90	98	105
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

Table 4.1 from ASHRAE 62.2-2016

Record the required CFM \_\_\_\_\_

# CONTROLS

A control can be used with the B70DHV. Broan offers the DEH 3000R proprietary control. The DEH 3000R monitors and controls relative humidity and proper ventilation levels in their home. The B70DHV features a built-in dehumidistat control as well as the ability to wire an external control to the unit. If the B70DHV is located outside of the area where humidity control is desired, consider using a remote wired humidity controller that is located in the area where humidity control is desired. If using the built-in dehumidistat to control the unit, locate the control in an area where it can accurately sense the humidity of the area where humidity control is desired. If the B70DHV is located in the area where humidity control is desired, consider using the built-in control. Adjust the humidity control so that the unit maintains the desired level of humidity.

**Note:** The DEH 3000R is sold separately. Other controls are compatible with the B70DHV.

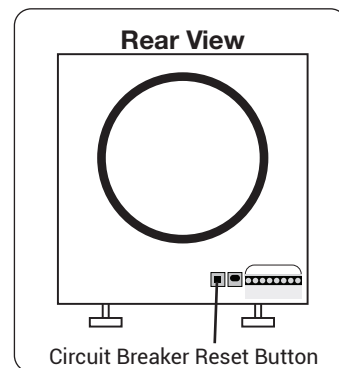
## Wiring Controls

### ⚠ CAUTION!

**DO NOT ALLOW THE 24V TERMINAL FROM THE B70DHV TO CONTACT THE COM TERMINAL ON THE B70DHV OR DAMAGE TO THE TRANSFORMERS WILL RESULT.**

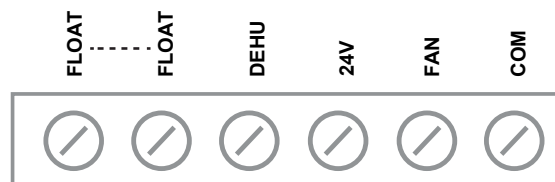
### Circuit Breaker

To prevent damage to the 24 volt control transformer, the B70DHV comes with a resettable circuit breaker. 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 B70DHV before making any control connections. The reset button for the circuit breaker can be found on the back of the unit.



### Control Connections

The control and the B70DHV are labeled to prevent confusion. Depending on the control, some of the screw terminals on the B70DHV may not be used. Be sure to consult the electrical schematic in this manual or inside the access panel of the B70DHV before making control connections.



A low voltage control must be used with the B70DHV.

Terminal Block Control Operation:	
<b>COM</b>	<b>24VAC Power Transformer Neutral Side</b>
<b>FAN</b>	<b>Fan Control</b>
<b>24V</b>	<b>Transformer High Side</b>
<b>DEHU</b>	<b>Dehumidification (Fan and Compressor) Control</b>
<b>FLOAT</b>	<b>External low voltage float switch or water sensor (two terminals). Use normally closed switch.</b>

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.	
<b>Compressor ON / Fan ON</b>	<b>Make contact between 24V and DEHU terminals</b>
<b>Compressor OFF / Fan ON</b>	<b>Make contact between 24V and FAN terminals</b>
<b>Power HVAC Accessory</b>	<b>Connect the accessory to the COM and 24V terminals</b>

NOTE: 18 gauge wire needed between the B70DHV dehumidifier and the external control.

# AIR FILTRATION

The B70DHV is equipped with a MERV-13 (Dimensions: 0.75" x 9.00" x 11.38") air 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.

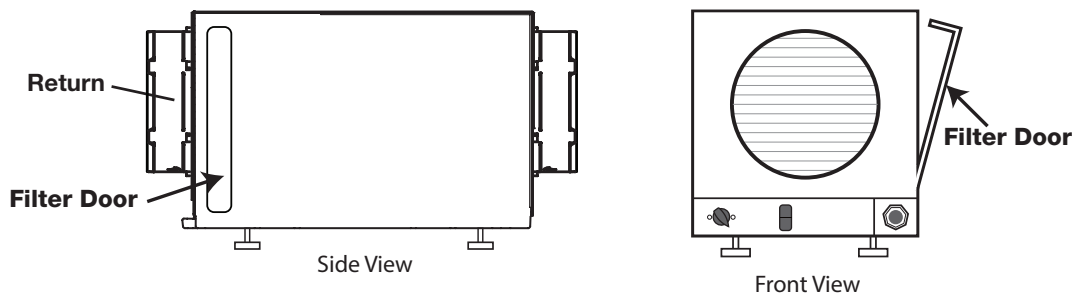
## ⚠ CAUTION!

**MAKE SURE UNIT IS OFF BEFORE CHANGING THE FILTER.**

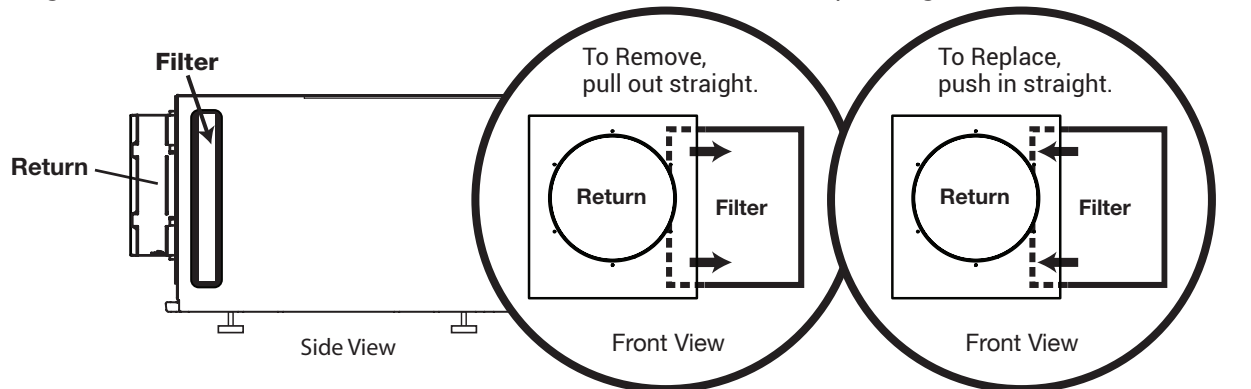
### Changing the Filter

For greatest filtration and efficiency of the B70DHV, it is recommended the air filter be replaced every three to six months with a MERV-13 rated filter.

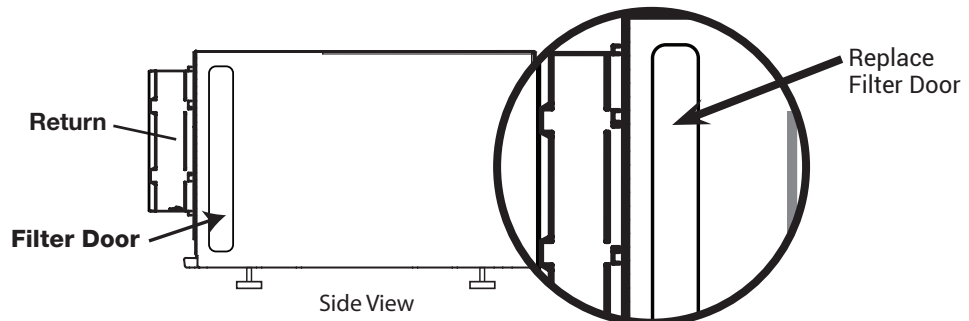
Step 1: Remove the filter door from one side of the B70DHV by pushing the snap button in and gently pulling the door away from the unit. Then pull up to disengage the door from the slot.



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.



Step 3: Replace filter door ensuring the opening is fully covered.



# AIR FILTRATION

## MERV Rating Chart

Standard 52.5 Minimum Efficiency Reporting Value	Dust Spot Efficiency	Arrestance	Typical Controlled Contaminant	Typical Applications and Limitations	Typical Air Filter/Cleaner Type
20	n/a	n/a	< 0.30 pm Particle Size	Cleanrooms	>99.999% eff. On .10-.20 pm Particles
19	n/a	n/a	Virus (unattached)	Radioactive Materials	Particles
18	n/a	n/a	Carbon Dust	Pharmaceutical Man.	Particulates
17	n/a	n/a	All Combustion Smoke	Carcinogenetic Materials	>99.97% eff. On .30 pm Particles
16	n/a	n/a	.30-1.0 pm Particle Size	General Surgery	Bag Filter - Nonsupported
15	>95%	n/a	All Bacteria	Hospital Inpatient Care	microfine fiberglass or synthetic media, 12-36 in. deep, 6-12 pockets.
14	90-95%	>98%	Most Tobacco Smoke	Smoking Lounges	Box Filter - Rigid Style Cartridge Filters 6 to 12" deep may use lofted or paper media.
13	89-90%	>98%	Proplet Nuceli (Sneeze)	Superior Commercial Buildings	
12	70-75%	>95%	1.0-3.0 pm Particle Size Legionella	Superior Residential	Bag Filter - Nonsupported microfine fiberglass or synthetic media, 12-36 in. deep, 6-12 pockets.
11	60-65%	>95%	Humidifier Dust Lead Dust	Better Commercial Buildings	
10	50-55%	>95%	Milled Flour Auto Emissions	Hospital Laboratories	Box Filter - Rigid Style Cartridge Filters 6 to 12" deep may use lofted or paper media.
9	40-45%	>90%	Welding Fumes		
8	30-35%	>90%	3.0-10.0 pm Particle Size	Commercial Buildings	Pleated Filters - Disposable, extended surface area, thick with cotton-polyester blend media, cardboard frame.
7	25-30%	>90%	Mold Spores Hair Spray	Better Residential	
6	<20%	85-90%	Fabric Protector Dusting Aids	Industrial Workplace	Cartridge Filters - Graded density viscous coated cube or pocket filters, synthetic media.
5	<20%	80-85%	Cement Dust Pudding Mix	Paint Booth Inlet	Throwaway - Disposable synthetic panel filter.
4	<20%	75-80%	>10.0 pm Particle Size	Minimal Filtration	Throwaway - Disposable fiberglass or synthetic panel filter.
3	<20%	70-75%	Pollen Dust Mites	Residential	Washable - Aluminum Mesh.
2	<20%	65-70%	Sanding Dust Spray Paint Dust		
1	<20%	<65%	Textile Fibers Carpet Fibers	Window A/C Units	Electrostatic - Self charging woven panel filter.

Table Data Source: United States Environmental Protection Agency

# SERVICE

## **WARNING!**

**SERVICING THE DEHUMIDIFIER WITH ITS HIGH PRESSURE REFRIGERANT SYSTEM AND HIGH VOLTAGE CIRCUITRY PRESENTS A HEALTH HAZARD WHICH COULD RESULT IN DEATH, SERIOUS BODILY INJURY, AND/OR PROPERTY DAMAGE. ONLY QUALIFIED SERVICE PEOPLE SHOULD SERVICE THIS UNIT.**

## Warranty

A warranty certificate has been enclosed in this manual; read it before any repair is initiated. If a warranty repair is required, call the factory first at 1-877-420-1330 for warranty claim authorization and technical assistance.

## 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 expansion 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.

# SERVICE

## 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 BROAN's maintenance and service guidelines shall be followed. If in doubt, consult BROAN'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 BROAN 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 BROAN. 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.

# SERVICE

## 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
- 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.

# SERVICE

## 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.

## Labelling 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.

# SERVICE

## Troubleshooting

### ⚠ CAUTION!

**TROUBLESHOOTING SHOULD BE PERFORMED BY A QUALIFIED HVAC TECHNICIAN.**

Symptom	Possible Reason	Troubleshooting Procedure
Neither fan nor compressor running. Dehumidification is being called for.	<ol style="list-style-type: none"> <li>1. Dehumidifier unplugged or no power to outlet.</li> <li>2. Humidity control set too high.</li> <li>3. Loose connection in internal or control wiring.</li> <li>4. Defective compressor relay.</li> <li>5. Defective control transformer.</li> </ol>	<div style="border: 1px solid black; padding: 5px; margin-bottom: 10px;"> <p><b>⚠ WARNING!</b></p> <p><b>ELECTRICAL SHOCK HAZARD: ELECTRICAL POWER MUST BE PRESENT TO PERFORM SOME TESTS. THESE TESTS SHOULD BE PERFORMED BY A QUALIFIED SERVICE PERSON.</b></p> </div> <p><b>Troubleshooting Procedure for Control Related Issues</b></p> <p>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.</p> <ol style="list-style-type: none"> <li>1. Detach field control wiring connections from the terminals on the main unit.</li> <li>2. Connect the 24V and FAN terminals together; only the fan should run. Disconnect the terminals.</li> <li>3. Connect the 24V and DEHU terminals together; fan and compressor should run. Disconnect the terminals.</li> <li>4. If this test works, the main unit is working correctly from a control standpoint.</li> <li>5. Reconnect field control wiring to the terminals on the main unit.</li> <li>6. Remove the control panel cover and detach the field wiring from the control connections.</li> <li>7. Connect the 24V and FAN terminals together; only the fan should run. Disconnect the terminals.</li> <li>8. Connect the 24V and DEHU terminals together; fan and compressor should run. Disconnect the terminals.</li> <li>9. If this test works, then the field control wiring is ok.</li> <li>10. If the problem persists, then the control is most likely faulty.</li> </ol>
Compressor is not running. Dehumidification is being called for. Fan is running.	<ol style="list-style-type: none"> <li>1. Defective compressor run capacitor.</li> <li>2. Loose connection in compressor circuit.</li> <li>3. Defective compressor overload.</li> <li>4. Defective compressor.</li> <li>5. Defrost thermostat open.</li> </ol>	
Compressor cycles on and off. Dehumidification is being called for.	<ol style="list-style-type: none"> <li>1. Low ambient temperature and/or humidity causing unit to cycle through defrost mode.</li> <li>2. Defective compressor overload.</li> <li>3. Defective compressor.</li> <li>4. Defrost thermostat defective.</li> <li>5. Dirty air filter(s) or air flow restricted.</li> <li>6. Defective fan or relay.</li> </ol>	
Fan is not running. Dehumidification or fan is being called for.	<ol style="list-style-type: none"> <li>1. Loose connection in fan circuit.</li> <li>2. Obstruction prevents fan impeller rotation.</li> <li>3. Defective fan.</li> <li>4. Defective fan relay.</li> </ol>	

# SERVICE

## Troubleshooting (Continued)

Symptom	Possible Reason	Troubleshooting Procedure
Low dehumidification capacity (evaporator is frosted continuously). Dehumidification is being called for.	<ol style="list-style-type: none"> <li>1. Defrost thermostat loose or defective.</li> <li>2. Low refrigerant charge.</li> <li>3. Dirty air filter(s) or air flow restricted.</li> <li>4. Excessively restrictive ducting connected to unit.</li> </ol>	<div style="background-color: #333; color: white; padding: 5px; margin-bottom: 10px;"> <p><b>⚠ WARNING!</b></p> </div> <p><b>ELECTRICAL SHOCK HAZARD: ELECTRICAL POWER MUST BE PRESENT TO PERFORM SOME TESTS. THESE TESTS SHOULD BE PERFORMED BY A QUALIFIED SERVICE PERSON.</b></p> <p><b>Troubleshooting Procedure for Performance Related Issues</b>            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.</p> <ol style="list-style-type: none"> <li>1. Set the humidity controller all the way to the most humid setting or off position – Did the unit shut off?</li> <li>2. If yes, turn the fan setting to the ON position – does the fan start?</li> <li>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.</li> <li>4. Listen for a distinct buzzing/humming sound of a compressor starting up – do you hear this noise?</li> <li>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.</li> <li>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. <i>(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.)</i></li> <li>7. Collecting the water removed in a 24 hour period will give a measurement of performance.</li> </ol>
No ventilation. Ventilation is being called for.	<ol style="list-style-type: none"> <li>1. Loose connection in ventilation control circuit.</li> <li>2. Loose connection in damper power circuit.</li> <li>3. Defective fresh air damper.</li> </ol>	
Dehumidifier removes some water, but not as much as expected.	<ol style="list-style-type: none"> <li>1. Air temperature and/or humidity have dropped.</li> <li>2. Humidity meter and or thermometer used are out of calibration.</li> <li>3. Unit has entered defrost cycle.</li> <li>4. Dirty air filter(s) or air flow is restricted.</li> <li>5. Defective defrost thermostat.</li> <li>6. Low refrigerant charge.</li> <li>7. Air leak such as loose cover or ducting leaks.</li> <li>8. Defective compressor.</li> <li>9. Restrictive ducting.</li> </ol>	

## Refrigerant Charging

### ⚠ WARNING!

**SERVICING THE B70DHV WITH ITS HIGH PRESSURE REFRIGERANT SYSTEM AND HIGH VOLTAGE CIRCUITRY PRESENTS A HEALTH HAZARD WHICH COULD RESULT IN DEATH, SERIOUS BODILY INJURY, AND/OR PROPERTY DAMAGE. SERVICE MUST BE PERFORMED BY A QUALIFIED SERVICE TECHNICIAN.**

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.

# WARRANTY

Effective January 1, 2024

**Limited Warranty.** Broan, LLC ("Broan") warrants as follows: (i) the Broan Dehumidifier ("Product") will be free of material defects in workmanship or materials for a period of 5 years ("Five-Year Warranty") following the date of initial purchase of such Product by an original customer purchasing from Broan or an authorized reseller ("Customer"); and (ii) the Product's components will be free of material defects in workmanship or materials for a period of six (6) years following the date of initial purchase of such Product by a Customer.

**Limitation of Remedies.** CUSTOMER'S SOLE AND EXCLUSIVE REMEDY UNDER THE ABOVE LIMITED WARRANTY AND BROAN'S ENTIRE LIABILITY THEREUNDER, SHALL BE, AT THE SOLE OPTION OF BROAN, REPLACEMENT OR REPAIR OF SUCH PRODUCT OR ITS COMPONENTS ("COMPONENTS") BY BROAN OR BROAN'S AGENTS ONLY. REFRIGERANT, PIPING, SUPPLIES, TRANSPORTATION COSTS, LABOR COSTS INCURRED IN REPAIR OR REPLACEMENT OF SUCH COMPONENTS ARE NOT INCLUDED. THIS DISCLAIMER AND EXCLUSION SHALL APPLY EVEN IF THE EXPRESS WARRANTY AND LIMITED REMEDY SET FORTH HEREIN FAILS OF ITS ESSENTIAL PURPOSE. CUSTOMER ACKNOWLEDGES THAT NO REPRESENTATIVE OF BROAN OR OF ITS AFFILIATES OR RESELLERS IS AUTHORIZED TO MAKE ANY REPRESENTATION OR WARRANTY ON BEHALF OF BROAN OR ANY OF ITS AFFILIATES OR RESELLERS THAT IS NOT IN THIS AGREEMENT.

**Disclaimer of Warranties.** EXCEPT FOR ABOVE LIMITED WARRANTY, WHICH IS THE SOLE AND EXCLUSIVE WARRANTY PROVIDED WITH RESPECT TO THE PRODUCT AND ITS COMPONENTS, BROAN HEREBY DISCLAIMS ALL EXPRESS AND IMPLIED WARRANTIES, INCLUDING, WITHOUT LIMITATION, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE.

**Warranty Limitations.** The foregoing limited warranty extends only to a Customer and shall be null and void upon attempted assignment or transfer. A "defect" under the terms of the limited warranty shall not include problems resulting from Customer's or Customer's employees', agents', invitees' or a third party's misuse, improper installation, improper design of any system in which the Product is included, abuse, lack of normal care, failure to follow written instructions, tampering, improper repair, or freezing, corrosion, acts of nature or other causes not arising out of defects in BROAN's workmanship or material. If a Product or Component is replaced while under warranty, the applicable limited warranty period shall not be extended beyond the original warranty time period. The limited warranty does not cover any costs related to changes to a Product or Component that may be required by any codes, laws, or regulations that may become effective after initial purchase of the Product by Customer.

**Customer Responsibilities.** As a further condition to obtaining warranty coverage hereunder, the Customer must send a valid warranty claim to BROAN such that BROAN receives such claim prior to the end of the applicable warranty period. BROAN shall have no obligation hereunder with respect to any claim received by BROAN after the expiration of the applicable warranty period. As a further condition to obtaining warranty coverage hereunder, the Customer must present forms of invoices evidencing proof of purchase of a Product. If such invoices do not clearly indicate the date of initial purchase by a Customer, the applicable Product's date of manufacture will be used instead of the date of initial purchase for the purpose of calculating the commencement of the applicable warranty period. Warranty service must be performed by BROAN or a servicer authorized by BROAN. In order to obtain warranty service, the Customer should call BROAN at 1-800-558-1711 and ask for the BROAN Products Service Department, which will then arrange for applicable warranty service. Warranty service will be performed during customary, daytime working hours. If the Product must be shipped for service, Customer shall be solely responsible for properly packaging the Product, for all freight charges, and for all risk of loss associated with shipment.

**Limitation of Liability.** IN NO EVENT SHALL BROAN, IN CONNECTION WITH THE DESIGN, SALE, INSTALLATION, USE, REPAIR, REPLACEMENT OR PERFORMANCE OF ANY PRODUCT, COMPONENT, PART THEREOF OR WRITTEN MATERIAL PROVIDED THEREWITH, BE LIABLE, TO THE EXTENT ALLOWED UNDER APPLICABLE LAW, UNDER ANY LEGAL THEORY FOR ANY SPECIAL, DIRECT, INDIRECT, COLLATERAL OR CONSEQUENTIAL DAMAGES OF ANY KIND. NOTWITHSTANDING THE ABOVE LIMITATIONS AND WARRANTIES, THE SOLE AND EXCLUSIVE LIABILITY OF BROAN, REGARDLESS OF THE NATURE OR THEORY OF THE CLAIM, SHALL UNDER NO CIRCUMSTANCES EXCEED THE PURCHASE PRICE OF THE PRODUCT, COMPONENT OR PART UPON WHICH THE CLAIM IS PREMISED.

**Applicable Law and Venue.** ANY ARBITRATION, ENFORCEMENT OF AN ARBITRATION OR LITIGATION RELATED TO THE PRODUCT WILL BE BROUGHT EXCLUSIVELY IN DANE COUNTY, WISCONSIN, AND CUSTOMER CONSENTS TO THE JURISDICTION OF THE FEDERAL AND STATE COURTS LOCATED THEREIN, SUBMITS TO THE JURISDICTION THEREOF AND WAIVES THE RIGHT TO CHANGE VENUE. CUSTOMER FURTHER CONSENTS TO THE EXERCISE OF PERSONAL JURISDICTION BY ANY SUCH COURT WITH RESPECT TO ANY SUCH PROCEEDING.

**Miscellaneous.** If any term or condition of this Limited Warranty is found by a court of competent jurisdiction to be invalid, illegal or otherwise unenforceable, the same shall not affect the other terms or conditions hereof or thereof or the whole of this Limited Warranty. Any delay or failure by BROAN to exercise any right or remedy will not constitute a waiver of BROAN to thereafter enforce such rights.





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