

Santa Fe HC Dehumidifier

The Santa Fe HC dehumidifier performs multiple functions in a compact enclosure, including high-capacity dehumidification and air filtration.

True Performance

Off-the shelf, appliance grade dehumidifiers rate their dehumidification capacities at 80 °F, 60% relative humidity (RH). The performance of these devices drops significantly at cooler temperatures typically found in basements and crawlspaces. That means you may have to purchase multiple off-the-shelf units to meet the performance of a single Santa Fe HC.



Figure 1: Santa Fe HC
P/N 4025081

- The Santa Fe HC is controlled by a dehumidistat with positive “ON” and “OFF” settings with a variable humidity setpoint range of “20%” to “80%.” Humidity control is automatic and accurate.
- Low-temperature operation. The Santa Fe HC can continue to remove humidity down to 55 °F and will not freeze-up in normal basement conditions.
- 115 VAC operation. A factory installed six foot power cord which plugs into a standard 15 amp grounded outlet. The Santa Fe HC draws less than 12 amps.
- Gravity water drain.
- The Santa Fe HC removes 135 pints of water per day, which is many times the water removal of other dehumidifiers.
- Optional ductability promotes air distribution or allows remote location.

Features and Benefits

<p>Dehumidification</p> <p>Integrated Filtration</p> <p>Ducted or Free-Standing</p> <p>Compact</p>	<p>The Santa Fe HC dehumidifier is designed to provide uncompromised indoor air quality. The Santa Fe HC provides particulate filtration and humidity control in a single compact free-standing or ducted (optional) enclosure. At the heart of the HC is a high capacity, energy efficient dehumidifier capable of removing over 16.8 gallons of water per day (at 80 °F, 60% relative humidity) while using less than 13 amps of electricity (120V). The unit maintains indoor humidity levels below 50%, the level widely recognized as critical for controlling mold, mildew and dust mite populations.</p>
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Figure 2: Features and Benefits

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1 Intended Application for Santa Fe HC

For the ideal installation, draw air from the central part of the home and return it to isolated areas of the home like the bedrooms, den, utility room, or family room. The ductwork of the existing forced air system can be used to supply air to the home.

2 Registrations

The Santa Fe HC conforms to UL STD 1995.

3 Specifications

Model:	Santa Fe HC (P/N 4025081)
Electrical:	110-120 VAC, 12 Amps, 60 Hz, grounded
Capacity:	135 pints/day @ 80 °F, 60% RH
Operating Temp:	55 °F min., 100 °F max.
Air Flow:	355 CFM without external ducting 335 CFM @ .20 IWG external static 315 CFM @ .40 IWG external static
Refrigerant Charge:	1 lb., 12 oz. R22
Duct Connections:	Round 10" inlet, 10" outlet
Filter Size:	2" X 16" X 20"

Unit Size: 33"L x 21"W x 18.65"H

Shipping Size: 39"L x 25"W x 28.5"H

Unit Weight: 100 lb.

Shipping Weight: 138 lb.

4 Installation

4.1 Location

The Santa Fe HC can be installed in a variety of locations to meet the owner's needs; other considerations include:

- 1) Providing access to a 115 VAC power outlet (7' power cord is provided).
- 2) Locating near a floor or other suitable drain (4' drain hose included).
- 3) Do not install the Santa Fe HC with the exhaust of the unit within 1' of a wall or obstruction. Do not place the unit near open water.



Figure 3: Installation requires a minimum 1' exhaust clearance.

Read the installation, operation and maintenance instructions carefully before installing and using this unit. Proper adherence to these instructions is essential to obtain maximum benefit from your Santa Fe HC dehumidifier.

READ AND SAVE THESE INSTRUCTIONS

WARNING

The Santa Fe HC is designed to be installed indoors only.

- **4.1A in Humid Area, No Ducting (Fig. 4)**
The simplest installation is to place the Santa Fe HC in the humid area with no ducting. To ensure optimal performance the air inlet and the outlet of the unit must be at least 1' from walls and other obstructions to air flow.

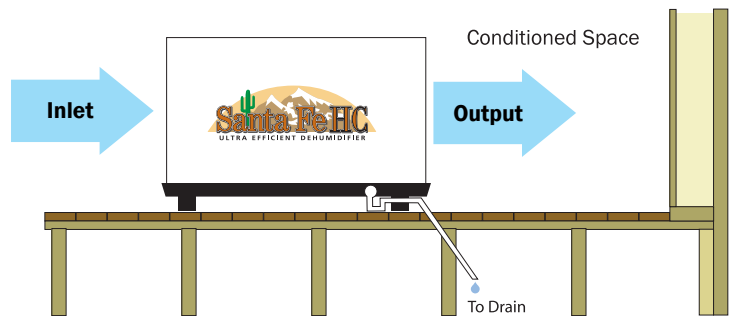


Figure 4: Installation in humid area with no ducting.

- **4.1B In The Humid Area, Duct Inlet and/or Outlet (Fig. 5)**
If the humid area is large or has high ceilings, dehumidification can be improved by adding an inlet and/or outlet duct to circulate and destratify stagnant areas. For a large area, add inlet or outlet ducting to create flow across the area's greatest length.

For areas with ceilings higher than 12', use an inlet duct to draw warm, moist air from near the ceiling. See section 5 for attaching duct collars & ducting.

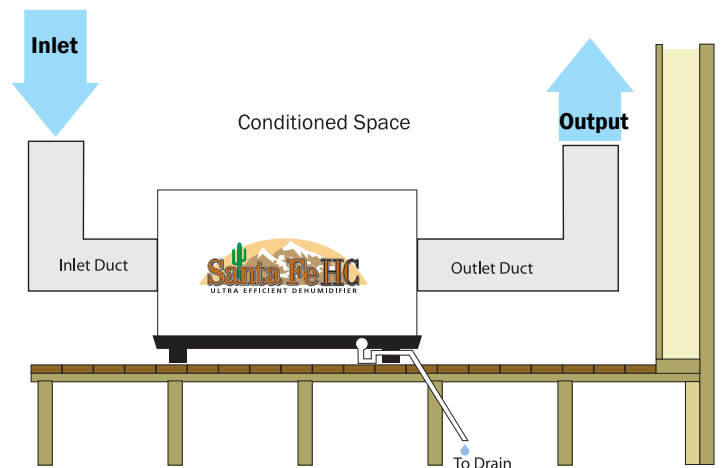


Figure 5: Installation in humid area with inlet and outlet ducting.

- **4.1C In A Remote Area, Duct Inlet & Outlet (Fig. 6)**
It is often desirable, especially in recreational rooms and finished areas, to install the Santa Fe HC in an adjacent equipment room or unfinished area. Air is transferred between the humid room and the unit via ducting. The factory mounted humidity control on the Santa Fe HC cabinet may not sense the humidity in the humid room accurately enough with this installation method. If so, a remote humidity control can be mounted in the humid room and wired to the Santa Fe HC. Refer to the optional equipment table in this document. Local electrical codes must be followed when wiring the control.

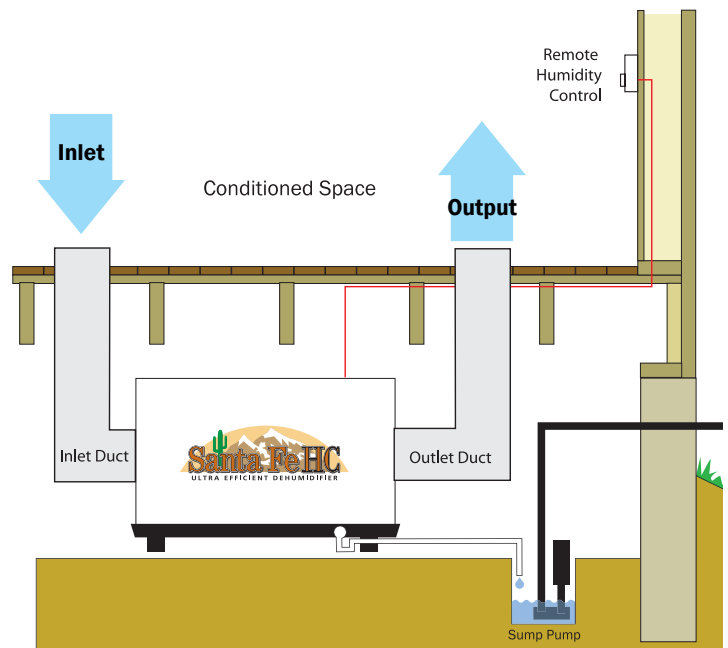


Figure 6: Installation in a remote area with ducted inlet and outlet.

□ **4.1D In A Remote Area, Duct Outlet Only (Fig. 7)**

A simplified remote installation method than above uses ducting between the Santa Fe HC discharge and the humid room; the Santa Fe HC inlet draws air from the room in which it's located. This works well if there is an adequate air flow path between the two rooms; e.g. high door undercut, louvered door or wall grill. This eliminates the need to remote mount the humidity control.

⚠ WARNING

Before installing the dehumidifier in the manner described in section 4.1D (Fig. 7), call the factory for specific instruction if backdraft devices (i.e. hot water heaters) are present in the space to be dehumidified.

□ **4.1E In A Remote Area, Duct Inlet Only (Fig. 8)**

When the Santa Fe HC is located in a room separate from the main area to be dehumidified, it may be desirable to dehumidify and/or slightly pressurize that room. Pressurization assures that open combustion devices do not back draft. This can be prevented by installing a duct from the humid room to the Santa Fe HC inlet and by allowing the Santa Fe HC to discharge dehumidified air into the room in which it's located. An adequate air flow path must exist between the two rooms for this method to work well.

A remote humidity control may need to be mounted in the humid area and wired to the Santa Fe HC to accurately maintain the desired humidity. Local electrical codes must be followed when wiring the control.

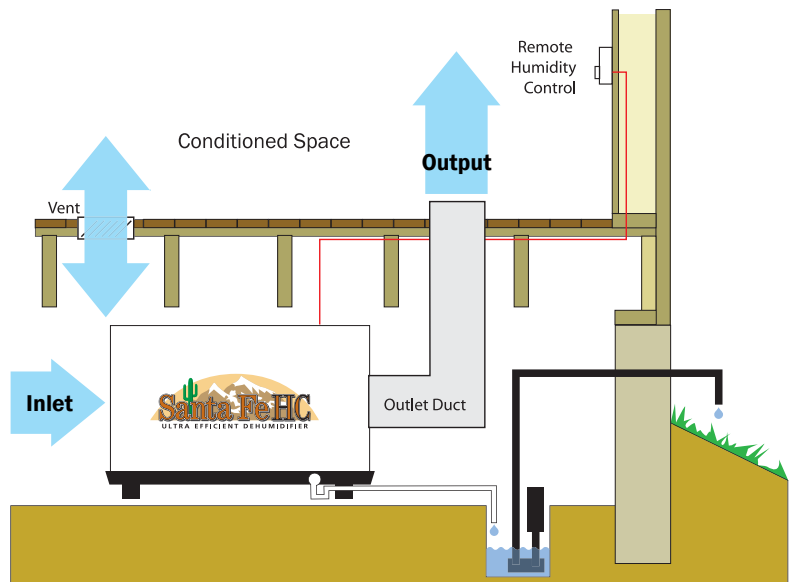


Figure 7: Installation in a remote area with ducted outlet only.

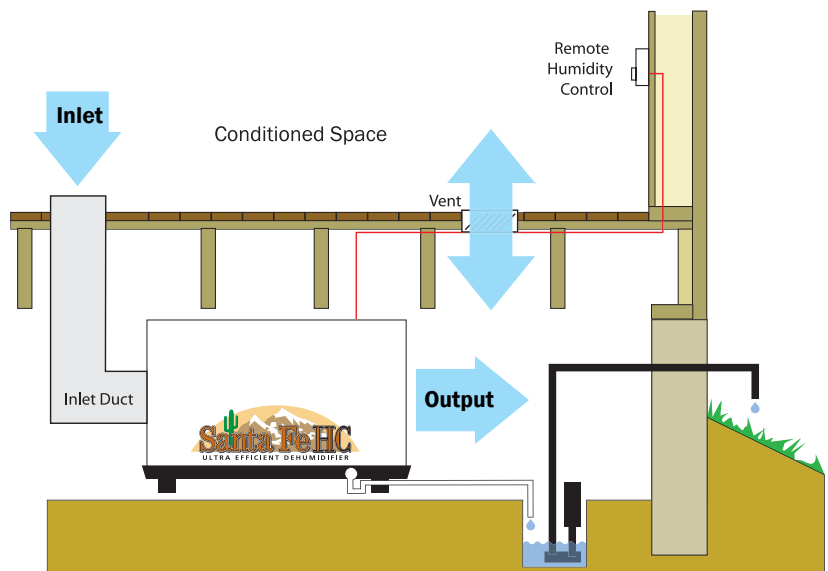


Figure 8: Installation in a remote area with a ducted inlet only.

4.2 Remote Humidity Controls

All remote humidity controls should be mounted in a central area of the the space to be dehumidified where it can accurately sense the humidity of the air in the living space and be accessed. All controls require field wiring from the unit location to the panel mount location.

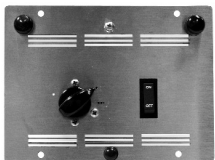


Figure 9:
Humidity/Fan
Control Panel
P/N 4024155

4.3 Electrical Requirements

The Santa Fe HC plugs into a common grounded outlet on a 15 Amp circuit. It draws between 12 and 13 Amps under normal operating conditions. If used in a wet area (pool, spa room, or basement prone to flooding), a ground fault interrupter protected circuit is recommended.

4.4 Condensate (Water) Removal

Condensate drains by gravity via the clear hose extending from the unit. Use care to keep the hose as flat to the floor as possible. Excessive humps or kinks will prevent proper drainage. If the Santa Fe HC is located too far from a floor drain for the attached hose to reach, 1/2" PVC pipe can be used to extend it. It is commonly available in 10' lengths from building supply, plumbing and hardware stores. It will slide tightly inside the end of the drain hose. Space and location requirements should be taken into account when incorporating a trap for the assembly as shown in Figure 12.

⚠ IMPORTANT

For proper drainage, the unit must be mounted so the drain outlet is at least 4" above the floor drain, and must be fully supported under the base.

4.5 Drainage and Trap

The Santa Fe HC requires a trap. Unit should be located in an area where the unit's condensate (water) may be easily routed to a suitable drain.

Thread the PVC barb fitting into the drain outlet on the front of the unit. Push the hose onto the barb fitting past two barbs minimum to ensure a good fit.



Figure 10: PVC barb fitting.



Figure 11: Drain outlet

Route the drain hose through the trap as shown in Figure 12. Position the trap on the hose approximately 12" away from the unit.

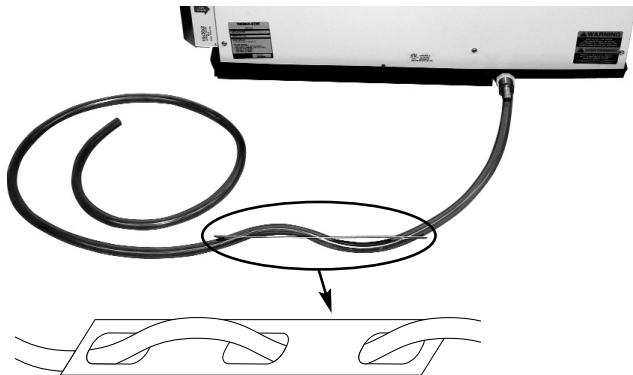


Figure 12: Trap Diagram

5 Ducting

5.1 Optional Ducting Kit

An inlet shroud with a 10" round collar and an 10" round exhaust collar are available from the factory that will allow round ducting to be attached to the inlet and/or outlet of the Santa Fe HC. Refer to the optional equipment table in this document.

5.2 Ducting for Dehumidification

Ducting the Santa Fe HC requires consideration of the following points:

Duct Sizing: For total duct lengths up to 50 feet, use a minimum 8" diameter round or equivalent rectangular. For longer lengths, use a minimum 10" diameter or equivalent. Grills or diffusers on the duct ends must not excessively restrict air flow.

Isolated Areas: Effective dehumidification may require that ducting be branched to isolated, stagnant areas. Use 6" diameter branch ducting to each of two or three areas, use 4" to each of four or more areas.

6 Operation

6.1 Humidity Control Adjustment



Figure 13: Humidity control dial.

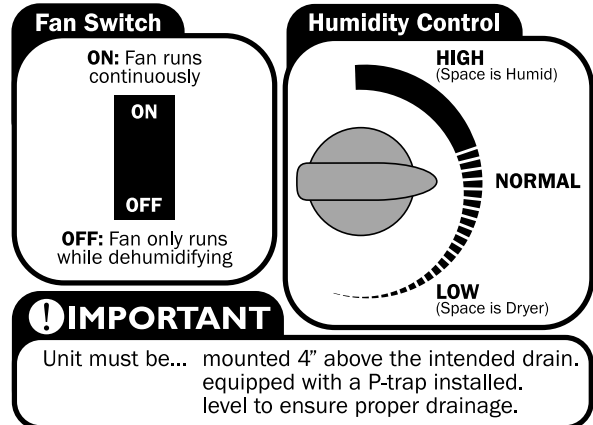


Figure 14: Humidity control label on unit.

The humidity control is an adjustable switch that closes when the relative humidity of the air in which it is located rises to the dial set point. It opens when the RH drops 4 to 6% below the set point.

Approximate Humidity Levels Per Setting

"Low"	35% to 45% Relative Humidity
"Normal"	45% to 55% Relative Humidity (Recommended)
"High"	55% to 65% Relative Humidity

The dehumidifier will run continuously until the relative humidity (RH) is reduced to the humidity control dial setting. The Santa Fe HC unit (and refrigerant based dehumidifiers in general) will reduce a warm space's RH to a lower level than that of a cool space. Therefore there is no benefit to set the humidity control to excessively low levels in cool rooms. Doing so will result in long periods of ineffective dehumidifier run time.

Quality humidity meters are available from the factory and are recommended to accurately monitor humidity levels. Refer to the options and accessories table in this document.

6.2 Blower (Fan) Switch

Turning "ON" the fan switch will cause the unit's internal blower to run continuously, whether the unit is dehumidifying or not. This function is desirable if the unit is used for air circulation.

Turning "OFF" the fan switch will cause the unit's internal blower to run only while the unit is dehumidifying.



Figure 15: Blower fan switch.

7 Maintenance

! WARNING

NOTE: Do not operate the unit without the filter or with a less effective filter. The heat exchange coils inside the unit could become clogged and require disassembly to clean.

7.1 Air Filter

The Santa Fe HC ships with a pleated fabric filter standard. This should be checked monthly. Operating the unit with a dirty filter will reduce dehumidifier capacity and efficiency and may cause the compressor to cycle on and off unnecessarily.

The pleated fabric filter can generally be vacuumed clean several times before needing replacement. Replacement filters can be ordered from the factory. To order a replacement filter, refer to the options and accessories table in this document.

7.2 Blower Oiling

The blower motor has been lubricated at the factory for many years of normal operation.

8 Service

! IMPORTANT

WARNING: Servicing the Santa Fe HC 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.

8.1 Technical Description

The Santa Fe HC 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 capillary tubing which cause

the refrigerant pressure and temperature to drop. It next enters the evaporator coil where it absorbs heat from the incoming air and evaporates.

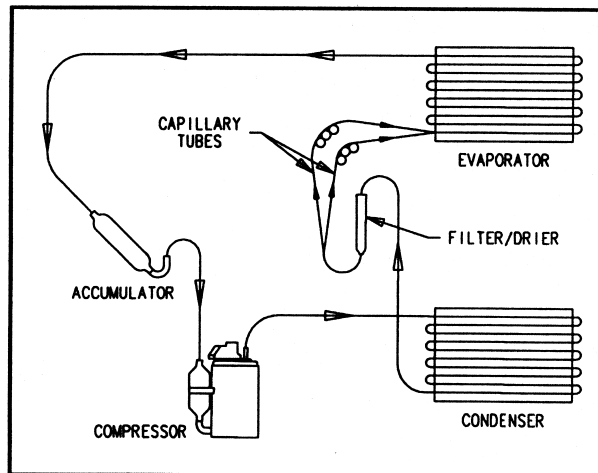


Figure 16: Santa Fe HC refrigeration system.

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 constant pressure and temperature across the entire coil, from inlet to outlet. The mixture of gas and liquid refrigerant enter the accumulator after leaving the evaporator coil. The accumulator prevents any liquid refrigerant from reaching the compressor. The compressor evacuates the cool refrigerant gas from the accumulator and compresses it to a high pressure and temperature gas to repeat the process.

8.2 Troubleshooting

No dehumidification, neither blower nor compressor run with fan switch OFF.

1. Unit unplugged or no power to outlet.
2. Humidity control set too high or defective.
3. Loose connection in internal wiring.

No dehumidification, compressor does not run but blower runs with fan switch OFF and humidity control turned to ON.

1. Defective compressor or compressor run capacitor.
2. Loose connection in compressor circuit.
3. Defective compressor overload.
4. Defrost thermostat open.

Blower runs with fan switch OFF, but compressor cycles on & off.

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.

Blower does not run with fan switch in either position. Compressor runs briefly but cycles on & off.

1. Loose connection in blower circuit.
2. Obstruction prevents impeller rotation.
3. Defective blower.
4. Defective blower switch.

Evaporator coil frosted continuously, low dehumidifying capacity.

1. Defrost thermostat loose or defective.
2. Low refrigerant charge
3. Dirty air filter or air flow restricted.

8.3 Defrost Thermostat

The defrost thermostat is attached to the refrigerant suction tube between the accumulator and compressor. It will automatically shut the compressor off if the low side refrigerant temperature drops due to excessive frost formation on the evaporator coil. The blower will continue to run, causing air to flow through the evaporator coil and melt the ice. When the ice has melted, the evaporator temperature will rise and the thermostat will restart the compressor.

9 Service Parts List

PART NO.	DESCRIPTION
4021395	Coil, Evaporator
4021396	Coil, Condenser
4021470	Thermostat, Defrost Control
4021589	Tube, CU, CPLRY
4025087	Filter, Drier
4021469	Controller, Humidity, Face Mount
4025075	Compressor
4025076	Fan, Motorized Impeller
4025224	Capacitor, Impeller
4025244	Capacitor, Run
4025298	Overload, Compressor
4020554	Switch, Rocker, On-Off

10 Accessory/Replacement Parts

4021475	Filter, Air
4021626	Hose, Vinyl
4025264	Trap, Drain
4021495	Knob, Plastic, Black
4025463	Stand
4025466	Duct Collar Kit

To order, contact your reseller or call 1-800-533-7533.

11 Wiring Diagram

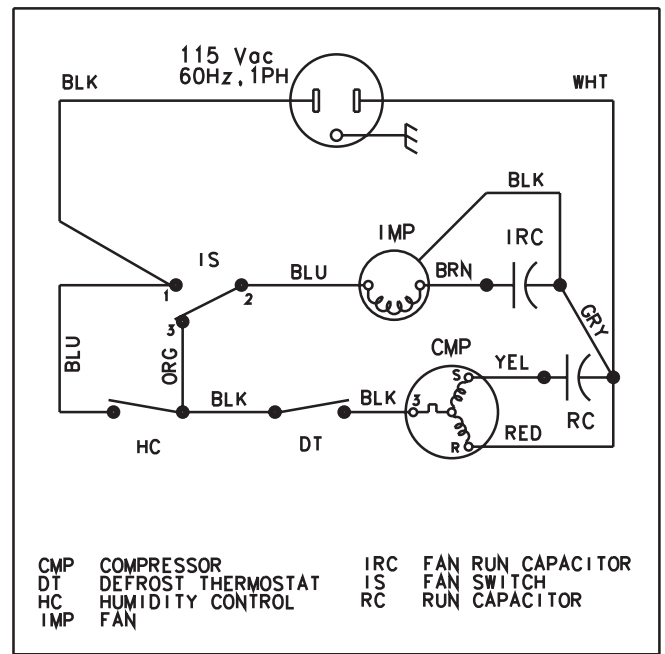


Figure 17: Santa Fe HC Wiring Diagram

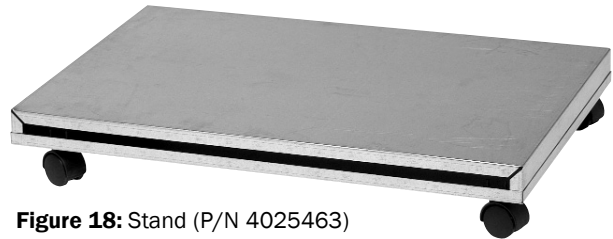


Figure 18: Stand (P/N 4025463)



Figure 19: Duct Collar Kit (P/N 4025466)

Santa Fe HC Dehumidifier Limited Warranty

WARRANTOR:

Therma-Stor LLC
PO Box 8050
Madison, WI 53708

Telephone: 1-800-533-7533

WHO IS COVERED: This warranty extends only to the original residential end-user of the SANTA FE HC dehumidifier, and may not be assigned or transferred.

FIRST YEAR WARRANTY: Therma-Stor LLC warrants that, for one (1) year the SANTA FE HC dehumidifier will operate free from any defects in materials and workmanship, or Therma-Stor LLC will, at its option, repair or replace the defective part(s), free of any charge.

SECOND THROUGH FIFTH YEAR WARRANTY: Therma-Stor Products further warrants that for a period of five (5) years, the condenser, evaporator, and compressor of the SANTA FE HC dehumidifier will operate free of any defects in material or workmanship, or Therma-Stor LLC, at its option, will repair or replace the defective part(s), provided that all labor and transportation charges for the part(s) shall be borne by the end-user.

END-USER RESPONSIBILITIES: Warranty service must be performed by a Servicer authorized by Therma-Stor LLC. If the End-user is unable to locate or obtain warranty service from an authorized Servicer, he should call Therma-Stor LLC at the above number and ask for the Therma-Stor LLC Service Department., which will then arrange for covered warranty service. Warranty service will be performed during normal working hours.

The End-user must present proof of purchase (lease) upon request, by use of the warranty card or other reasonable and reliable means. The end-user is responsible for normal care. This warranty only applies to residential applications,

and does not cover any defect, malfunction, etc. resulting from misuse, abuse, lack of normal care, corrosion, freezing, tampering, modification, unauthorized or improper repair or installation, accident, acts of nature or any other cause beyond Therma-Stor LLCs reasonable control.

LIMITATIONS AND EXCLUSIONS: If any SANTA FE HC Dehumidifier part is repaired or replaced, the new part shall be warranted for only the remainder of the original warranty period applicable thereto (but all warranty periods will be extended by the period of time, if any, that the SANTA FE HC Dehumidifier is out of service while awaiting covered warranty service).

UPON THE EXPIRATION OF THE WRITTEN WARRANTY APPLICABLE TO THE SANTA FE HC DEHUMIDIFIER OR ANY PART THEREOF, ALL OTHER WARRANTIES IMPLIED BY LAW, INCLUDING MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, SHALL ALSO EXPIRE. ALL WARRANTIES MADE BY THERMA-STOR LLC ARE SET FORTH HEREIN, AND NO CLAIM MAY BE MADE AGAINST THERMA-STOR PRODUCTS BASED ON ANY ORAL WARRANTY. IN NO EVENT SHALL THERMA-STOR PRODUCTS, IN CONNECTION WITH THE SALE, INSTALLATION, USE, REPAIR OR REPLACEMENT OF ANY SANTA FE HC DEHUMIDIFIER OR PART THEREOF BE LIABLE UNDER ANY LEGAL THEORY FOR ANY SPECIAL, INDIRECT OR CONSEQUENTIAL DAMAGES INCLUDING WITHOUT LIMITATION WATER DAMAGE (THE END-USER SHOULD TAKE PRECAUTIONS AGAINST SAME), LOST PROFITS, DELAY, OR LOSS OF USE OR DAMAGE TO ANY REAL OR PERSONAL PROPERTY.

Some states do not allow limitations on how long an implied warranty lasts, and some do not allow the exclusion or limitation of incidental or consequential damages, so one or both of these limitation may not apply to you.

LEGAL RIGHTS: This warranty gives you specific legal rights, and you may also have other rights which vary from state to state.





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