

# R250 | LGR Dehumidifier Electro-Mechanical Controls



## Installation, Operation & Service Instructions

- READ AND SAVE THESE INSTRUCTIONS -

This manual is provided to acquaint you with the R250 dehumidifier so that installation, operation and maintenance can proceed successfully. Ultimate satisfaction depends on the quality of installation and a thorough understanding of this equipment. The R250 dehumidifier is built around tested engineering principles and has passed a thorough inspection for quality of workmanship and function.

### R250 LGR DEHUMIDIFIER

- Coated Coils
- The Phoenix R250 removes 135 pints per day at AHAM, (80° F/60%RH).
- 310 CFM, 8.3 amps
- Operating Temperatures - up to 110° F
- Heavy-Duty Condensate Pump
- Compact Design
- Telescoping Handle
- Patented ByPass™ Technology



PHOENIX R250  
PN 4043400



Patent: [thermastor.com/patents](http://thermastor.com/patents)



Specifications subject to change without notice.

TS-1250

1/23 Rev. A

**Table of Contents**

**1 Specifications**

**2 Important Safety Instructions**

**3 Operation**

- 3.1 Transporting the Phoenix R250.....**
- 3.2 Location.....**
- 3.3 Electrical Requirements.....**
- 3.4 Condensate Removal.....**
- 3.5 Ducting.....**
- 3.6 Defrost Cycle.....**
- 3.7 Power Switch.....**
- 3.8 Pump Purge Switch.....**
- 3.9 Hour Meter.....**
- 3.10 Bypass Control.....**

**4 Maintenance**

- 4.1 Air Filter.....**
- 4.2 Storage and Freeze Protection.....**
- 4.3 Service.....**

**5 Service**

- 5.1 Technical Description.....**
- 5.2 Troubleshooting.....**
- 5.3 Air Mover.....**
- 5.4 Condensate Pump.....**
- 5.5 Float Safety Switch.....**

**6 Option & Accessories**

**7 Wiring Diagram**

**8 Service Parts**

**9 Warranty**

**Serial No.** \_\_\_\_\_

**Purchase Date** \_\_\_\_\_

**Dealer's Name** \_\_\_\_\_

Read the operation and maintenance instructions carefully before using this unit. Proper adherence to these instructions is essential to obtain maximum benefit from your Phoenix R250 dehumidifier.

**! WARNING**

- It is designed to be used INDOORS ONLY.
- If used in a wet area, plug it into a GROUND FAULT INTERRUPTER.
- DO NOT use the Phoenix R250 as a bench or table.
- It must always be used in the upright position.



## 1 SAFETY CERTIFICATIONS

The Phoenix R250 conforms to unified standard UL 60335-2-40.

## 2 SPECIFICATIONS

Part No.	4043400
Power	8.3 amps, 120 VAC, Grounded
Water Removal	135 pints/day @ AHAM (80 °F, 60%)
Blower	310 CFM without external ducting
Cord Length	25ft
Refrigerant Charge	2 lb, 0 oz. R-410A
Operating Range	51 °F to 110 °F
Filters	12" x 12" x 1" Pleated Media MERV-11
Duct Options	Inlet - 12" Flex-Duct Outlet - 10" Lay-Flat
Warranty	Five years; 1st year 100% of Parts and Labor 2nd-3rd 100% pump part only 2nd-5th year 100% of sealed refrigeration system parts
Dimensions	Width            20" Height           33.5" Depth            20" Weight            109 lbs.



### 3 OPERATION

Place dehumidifier inside structure, place condensate hose into a drain, or a large water tight container, and turn on. To decrease drying times, make sure all windows and doors are closed to the outside and seal off the affected wet areas from unaffected areas.

Optimum performance will be observed between the temperatures of 70°F and 95°F.

#### 3.1 TRANSPORTING

The Phoenix R250 must always be upright when transported by vehicle. It may be tipped on to its handle and back for loading and moving by hand.

If the unit is transported on its side, let it sit upright at least 30 minutes before use.

#### 3.2 LOCATION

Note the following precautions when locating the Phoenix R250:

- It is designed to be used INDOORS ONLY.
- If used in a wet area, plug it into a GROUND FAULT INTERRUPTER.
- DO NOT use the Phoenix R250 as a bench or table.
- It must always be used in the upright position.

#### 3.3 ELECTRICAL REQUIREMENTS

The Phoenix R250 plugs into a common grounded outlet on a 15 amp circuit. It draws 8.3 amps at 80°F, 60% RH. If used in a wet area, a ground fault interrupter (GFI) is required. If an extension cord is required, it must have a minimum of 14 gauge conductors if 25 feet long or less and 12 gauge conductors if greater than 25 feet long.

#### 3.4 CONDENSATE REMOVAL

The Phoenix R250 is equipped with an internal condensate pump to remove the water that is condensed during dehumidification. This pump allows the condensate to be pumped 23 feet above the unit with the attached hose. If the condensate must be pumped more than 23 feet above the unit, a relay pump must be added. Use the PURGE button to empty reservoir prior to transport and storage. If the water in the reservoir fails to be evacuated, the float safety switch will turn off the compressor.



Figure 1: Stacked Phoenix R250



### 3.5 DUCTING

A wire duct collar is supplied to allow 10" lay-flat duct to be attached to the Phoenix R250 outlet. Lay-flat plastic ducting is available (see accessories in section 6). Attach ducting to the wire duct collar by inserting the plastic duct end through the collar center and rolling the duct end outward to overlap the outside of the collar. The duct and collar may then be quickly attached to the Phoenix R250 by snapping the collar over the four plastic exhaust tabs.

If the R250 is located in the unaffected area, the intake can be ducted with 12" flex duct (see accessories in section 6). Attach the flex duct to the top cover by hooking the spiral wire under the four tabs. Tape the duct to the top cover for a complete seal.



Figure 2: Phoenix R250 with lay-flat duct.

### 3.6 DEFROST CYCLE

When the Phoenix R250 is used in a cool area, or the dewpoint is below 50°, frost will form on the cooling coil as it dehumidifies. When enough frost forms, the defrost thermostat will initiate the defrost cycle. The cycle periodically turns off the compressor while allowing the blower to run. The frost is melted by the air that the blower draws through the cooling coil.



### 3.7 POWER SWITCH

The power switch (right of hour meter) lights up when the unit is turned on. The unit will continue to run in all conditions until the switch is turned off; there is no dehumidistat.



### 3.8 PUMP PURGE SWITCH

This switch (left of hour meter) minimizes the water left in the condensate pump reservoir for moving or storage. Pressing and holding the pump purge switch will cause the condensate pump to run. Hold the switch in until the flow from the condensate hose stops.

Always manually purge the water reservoir before transport or storage. Turn off the power and allow the plugged in dehumidifier to rest 15 minutes before the final purge.

### 3.9 HOUR METER

The digital hour meter measures the cumulative time that the unit is turned on to tenths of an hour. It stores its total when the unit is unplugged; the previous total will be displayed when the unit is next turned on. It resets to zero after 99,999.9 hours of operation.



### 3.10 BYPASS CONTROL

Below 90° F - When the Phoenix R250 is used in normal dehumidifier operating temperatures (below 90° F), the bypass cover must close the bypass openings, figure 4. This maximizes performance by increasing the amount of air that is dehumidified across the evaporator. This temperature range is often found during the first 24 hours of a drying job.

Above 90° F - When the Phoenix R250 is used in high temperature conditions above 90° F, reposition the bypass cover to open the bypass holes, figure 5. This improves dehumidifier efficiency by increasing the amount of airflow over the condenser and lowering the refrigerant pressure. Simultaneously, this slows the airflow across the evaporator allowing the air temperature to be lowered to the dew point and increases dehumidifier capacity. These higher temperatures are often found after the first 24 hours.

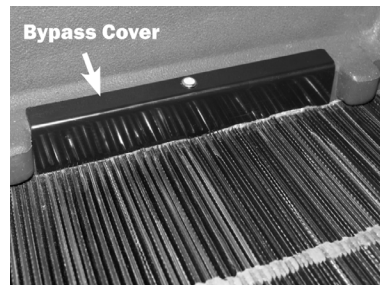


Figure 4: Below 90° (Normal)

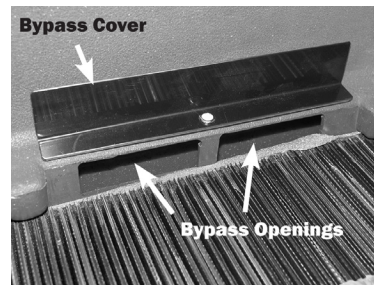


Figure 5: At or above 90°

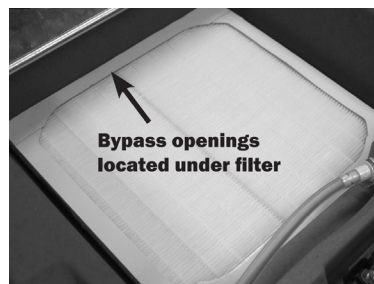


Figure 6: Remove filter, snap Bypass cover into position shown, and replace filter.

## 4 MAINTENANCE

### 4.1 AIR FILTER

The Phoenix R250 is equipped with a pleated media air filter that must be checked regularly. The standard filter is a MERV-11 high efficiency filter. Operating the unit with a dirty filter will reduce the dehumidifier's capacity and efficiency and may force the unit into defrost causing the compressor to cycle "off" and "on" unnecessarily. The filter can generally be vacuumed clean several times before needing replacement. Replacement filters can be ordered from the distributor or purchased locally if available.



**! IMPORTANT**

IMPORTANT: DO NOT operate the unit without the filter or with a less effective filter as the heat exchanger and coils inside the unit could become clogged and require disassembly to clean.

**4.2 STORAGE AND FREEZE PROTECTION**

There are two issues to consider when the Phoenix R250 is stored between uses and both pertain to water trapped in the unit. The first is biological growth and the second is damage caused by freezing. The effects of the trapped water can be greatly reduced if precautions are taken to remove as much as possible before storage.

1. Use the pump PURGE button to reduce the water level in the reservoir.
2. Stretch the hose flat to drain it completely. Raise one end above your head and spool hose while draining water out the other end.
3. To reduce biological growth flush the unit with a bio-fungicide that is approved for use with copper, aluminum and polyethylene. To flush:
  - a. Run the hose to a drain.
  - b. Plug in the unit but do not turn it on.
  - c. Remove the air filter. Slowly pour a quart of the antimicrobial through the heat exchanger.
  - d. Hold in the pump purge switch to reduce the water level in the reservoir.
  - e. Flush with water.
4. If the unit will be exposed to freezing temperatures, after purging, pull back the filter and pour 1 cup (8oz) of an alcohol based windshield washer fluid through the heat exchanger. It will flow down into the pump reservoir. Do NOT purge the solution out of the unit.
5. Dirty filters should be changed prior to long term storage to prevent biological growth on the filter.

**5 SERVICE****! WARNING**

WARNING: Servicing the Phoenix R250 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.

**! CAUTION**

CAUTION: Do not operate unit without the front housing in place.





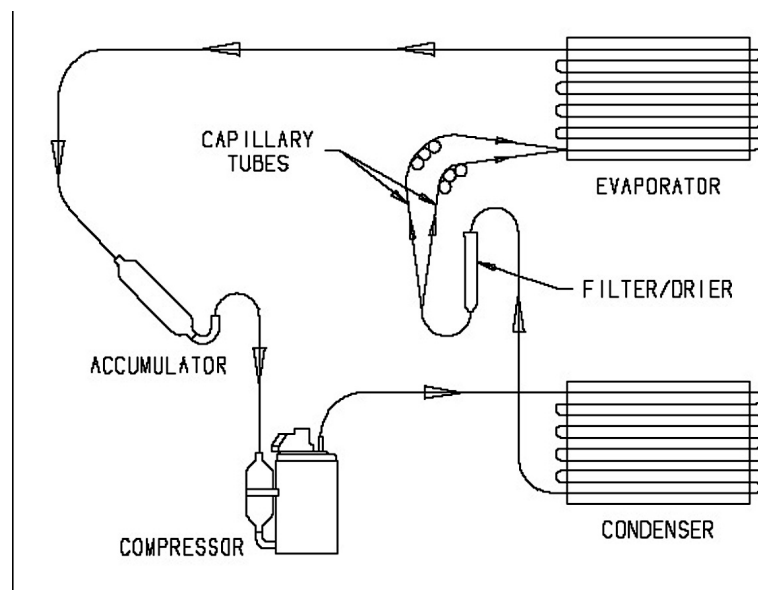


Figure 7:  
Refrigeration  
system

### 5.1 TECHNICAL DESCRIPTION

The Phoenix R250 uses a refrigeration system similar to an air conditioner's to remove heat and moisture from incoming air and to 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.

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 to repeat the process.



## 5.2 TROUBLESHOOTING

**No dehumidification, neither air mover or compressor run and power switch does not light when ON.**

1. Unit unplugged or no power to outlet.
2. Power switch defective.
3. Loose connection in internal wiring.

**No dehumidification, neither air mover nor compressor run with power switch ON & lit.**

1. Power switch defective.
2. Loose connection in interanal wiring

**Some dehumidification, air mover runs continuously but compressor only runs sporadically.**

1. Unit is in defrost cycle.
2. Defrost thermostat defective.
3. Loose connection in compressor circuit.
4. Defective compressor overload.
5. Defective compressor.
6. Defective relay.
7. Low refrigerant charge.

**No dehumidification, air mover runs but compressor does not.**

1. Bad connection in compressor circuit.
2. Pump safety switch open.
3. Defective compressor capacitor.
4. Defective compressor overload.
5. Defective compressor.
6. Defective relay.
7. Low refrigerant charge.
8. Open high pressure switch.

**Air mover does not run. Compressor runs briefly but cycles on & off.**

1. Loose connection in air mover circuit.
2. Obstruction prevents impeller rotation.
3. Defective air mover.



**Unit 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. Air filter dirty.
5. Defective defrost thermostat
6. Low refrigerant charge.
7. Air leak such as loose front cover.
8. Defective compressor.
9. Restrictive exhaust ducting.
10. Faulty defrost thermostat

**Unit runs but does not pump water.**

1. Hose kinked or plugged.
2. Pump defective.
3. Bad connection in pump circuit.
4. Hose disconnected internally.

**Unit pumps water automatically but not when purge switch is pushed.**

1. Bad connection in purge switch circuit.
2. Defective purge 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.

**Compressor runs with power switch OFF.**

1. Defective relay.
2. Defective power switch.

**5.3 AIR MOVER**

The motorized impeller has a PSC motor and internal thermal overload protection. If defective, the complete assembly must be replaced.

1. Unplug power cord
2. Remove the four screws attaching the bottom plate to the lower housing
3. Disconnect the impeller leads
4. Remove the four screws holding the impeller to the bottom plate
5. Reassemble the new impeller using the above procedure in reverse



#### 5.4 CONDENSATE PUMP

The internal condensate pump removes water that collects in the reservoir.

To replace the condensate pump:

1. Unplug the unit
2. Remove the front housing
3. Unplug the pump wires from the wire harness
4. Remove the condensate hose and the two nuts attaching the pump to the bracket
5. Replace the pump, hose, wiring, bolts, and housing in the reverse order

#### 5.5 FLOAT SAFETY SWITCH

The float safety switch activates when the water rises too high in the condensate reservoir. The float safety switch turns off the compressor until the water level lowers and disengages the switch.

To replace the float safety switch

1. Unplug the dehumidifier
2. Remove the front housing
3. Unplug the float safety switch wires from the wire harness
4. Slide out the float switch from under the compressor support
5. Remove the one screw attaching the float switch bracket to the compressor support
6. Replace the float, pump, wiring, bolts and housing in the reverse order

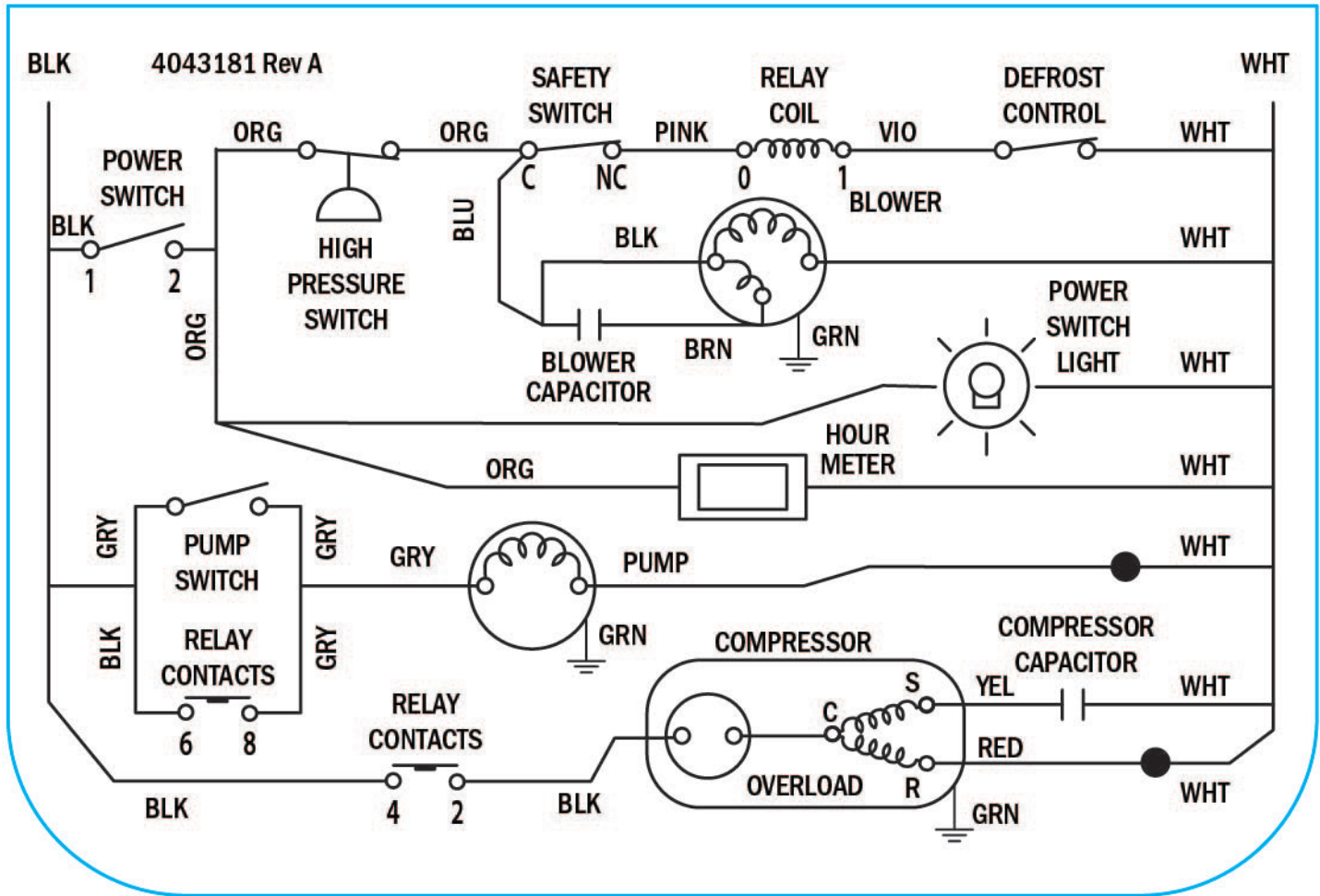
#### 6 OPTIONS & ACCESSORIES

- 4025568 Air Filter, Pleated 12" x 12" x 1" MERV-11
- 4024750 Inlet Flex Duct 12" x 25" Metallize Polyester
- 4024935 Lay-Flat Duct 10" Round x 250' Roll
- 4026309-02 10" Duct Ring

To order, contact your local distributor.



### 7 WIRING DIAGRAM



**8 SERVICE PARTS**

Part No.	Description
4039458	Top Cover
4026979	Top Cover Catch
4026978	Top Cover Hinge
1154019	Hex Bolts, 1/4" - 20 x 4" 4
1154014	Hex Bolts, 1/4" - 20 x 1.75"
4026344	Handle Weldment
4026851	Wheel, 12"
1284404	Cotter Pin
4025568	Filter, 12" x 12" x 1"
4024916	Hose (1/4" ID x 33' long)
4043208	Coupling Body, 1/4" Tube
4043234	Coupling Insert, 1/4" Tube
4037038	Cord
4028795	Hour Meter
4021822	Power Switch
4021796	Purge Switch
4033032-07	Capacitor, Compressor, 55 $\mu$ F
4038235-07	Capacitor, Impeller, 15 $\mu$ F
4026350	Handle Lever
40399981	Compressor
4033995-02	Evaporator Coil
4033996	Condenser Coil
4039769-01	Condensate Pump
4043186	Float Safety Switch
4026657	Impeller, Air Mover
4026308	Exhaust Grill
4026309-02	Wire Duct Collar
1154006	Impeller Plate Bolt
4041848	Defrost Thermostat
4043187	Compressor Relay



## LIMITED WARRANTY

### 9 WARRANTY

Warrantor:

Therma-Stor LLC

4201 Lien Rd

Madison, WI 53704

Telephone: 1-800-533-7533

**Who Is Covered:** This warranty extends only to the original end-user of the Phoenix R250 dehumidifier and may not be assigned or transferred.

**Year One:** Therma-Stor LLC warrants that, for one (1) year the Phoenix R250 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.

**Condensate pump:** Units manufactured with the rotary style condensate pump have a three-year warranty on this pump. Therma-Stor LLC warrants that, for three (3) years the condensate pump will operate

free from any defects in materials and workmanship, 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.

**Year(s) Two Through Five:** Therma-Stor LLC further warrants that for a period of five (5) years, the condenser, evaporator, and compressor of the Phoenix R250 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.

**Year(s) One Through Seven:** Materials and workmanship of the housing are covered.

**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 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 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 LLC's reasonable control.

**Limitations and Exclusions:** If any Phoenix R250 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 Phoenix R250 Dehumidifier is out of service while awaiting covered warranty service).

UPON THE EXPIRATION OF THE WRITTEN WARRANTY APPLICABLE TO THE PHOENIX R250 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 LLC BASED ON ANY ORAL WARRANTY. IN NO EVENT SHALL THERMA-STOR LLC, IN CONNECTION WITH THE SALE, INSTALLATION, USE, REPAIR OR REPLACEMENT OF ANY PHOENIX R250 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 limitations 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.

