

AG Series Electric Heaters

Installation, Operation and Maintenance Instructions



Internal Auxiliary Electric Heat

97B0005N03
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Overview

The AG Series Auxiliary Electric Heat mounts internally in upflow (Figure 1) or downflow units and mounts directly on the blower outlet of horizontal units (Figure 6). Note the model compatibility Table1. Horizontal units are rated for zero clearance at the unit and 1" clearance for first three feet of duct, vertical units rated for zero clearance for both unit and duct. Downflow units can not be located directly over a discharge register. The discharge plenum must be constructed from non combustible material. The AG electric heat contains a four stage relay control board which activates the elements directly via an internally wired low voltage harness. Low voltage signals (W1 and W2) are staged from the CXM or DXM control of the unit.

Vertical Upflow or Downflow Installation

1. Disconnect power to the unit.
 2. Remove blower access panel(s) from the unit and control box cover from the electric heater.
 3. Remove blower mounting bolts and drop blower assembly as shown in figure 2. Removal of electrical wiring should not be necessary.
 4. Position the electric heater as illustrated in figure 3 with its control box facing the front access panel of the unit. Attach heater to unit using the support pins on the back and bolts on the front.
- The electric heater air inlet dimensions should match the unit blower outlet, installer should stop and refer to the unit/heater compatibility chart later in this instruction or consult factory if they do not match.*
5. Re-install blower assembly on to electric heater using pins and bolts as before. Check blower electrical wiring for proper connection and remedy any pinched wire(s) or contact with sharp edges.
 6. Route the low voltage control harness through one of the 'pie' bushings in the heater control box and plug on to the P2 connector. See figure 4.
 7. Install power conduit through the unit corner post as shown in figure 5 and attach directly to the electric heater control box. See figures 7a-c.
 8. Replace all covers and panels, heater installation is complete. Proceed to wiring and setup.

Figure 1: Typical vertical unit installation

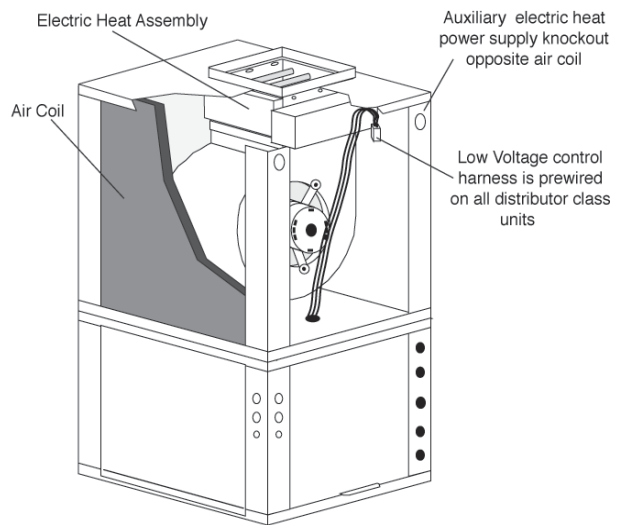


Figure 2: Blower removal

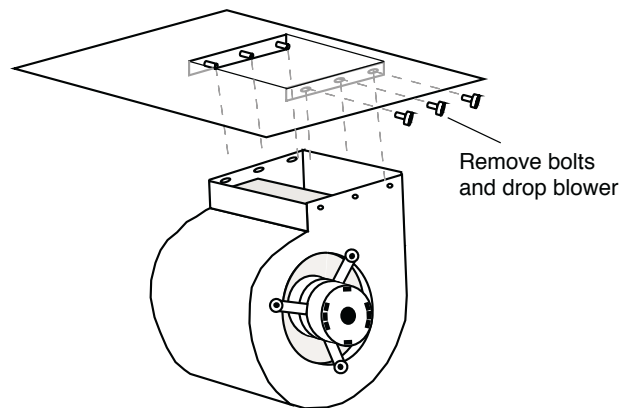
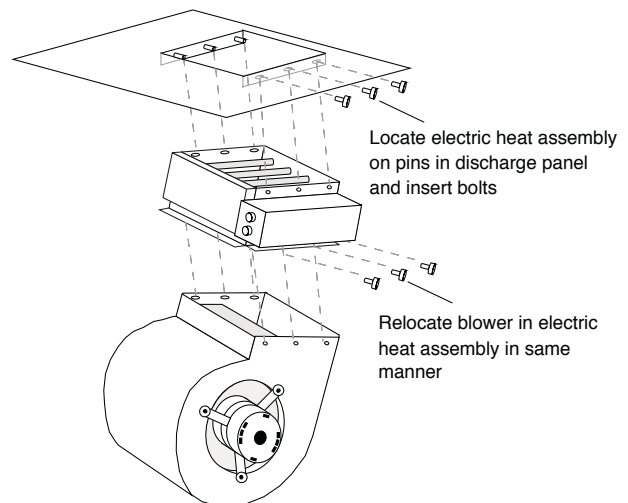


Figure 3: AG electric heat mounting and blower re-installation



Horizontal Installation

Horizontal Installation

1. Disconnect power to the unit.
2. Remove blower access panel from the unit and control box and element covers from the electric heater.
3. Remove and discard blower discharge flanges from the unit but save the screws.
4. Position the electric heater as illustrated herein. Notice that the discharge air opening is off centered in the blower panel. The electric heater must be positioned so that its control box is located vertically over the wide side of this panel.

The electric heater air inlet dimensions should match the unit air outlet, installer should stop and refer to the unit/heater compatibility chart later in this instruction or consult factory if they do not match.

5. Use the saved blower flange screws to attach the heater by its flanges to the unit panel except do not fasten flange on control box side.
6. Use aluminum tape (not provided) to seal all four heater flanges to the blower panel.
7. Locate and route the low voltage control harness through one of the unit corner post or blower panel knockout(s). Seal the penetration 'air tight'. This harness is factory installed and wire-tied to the fan housing.
8. Route the control harness through one of the 'pie' bushings in the heater control box and plug on to the P2 connector. See figure 4.
9. Install power conduit and attach directly to the electric heater control box. See figures 7a-c.
10. Replace all covers and panels, heater installation is complete. Proceed to wiring and setup.

Figure 4: Low Voltage Harness Connection

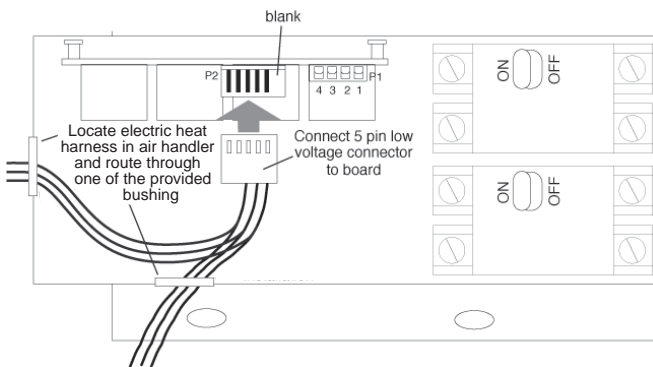


Figure 5: Power Conduit And Wire Routing

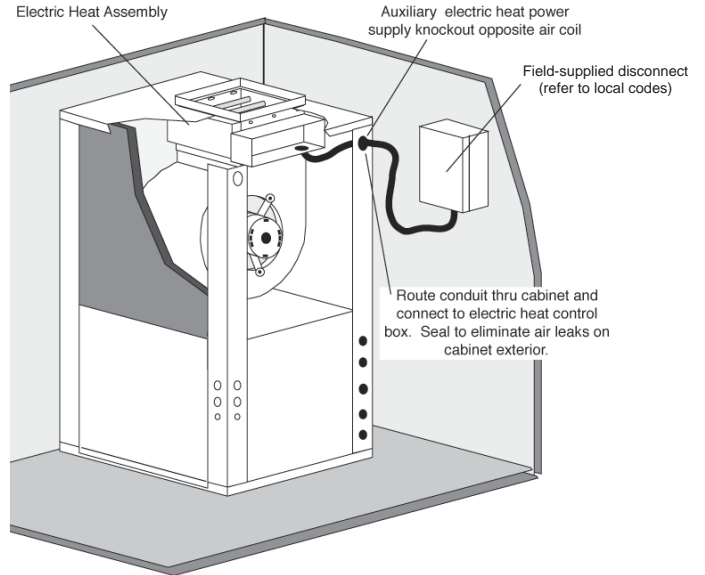


Figure 6. Typical Horizontal Installation

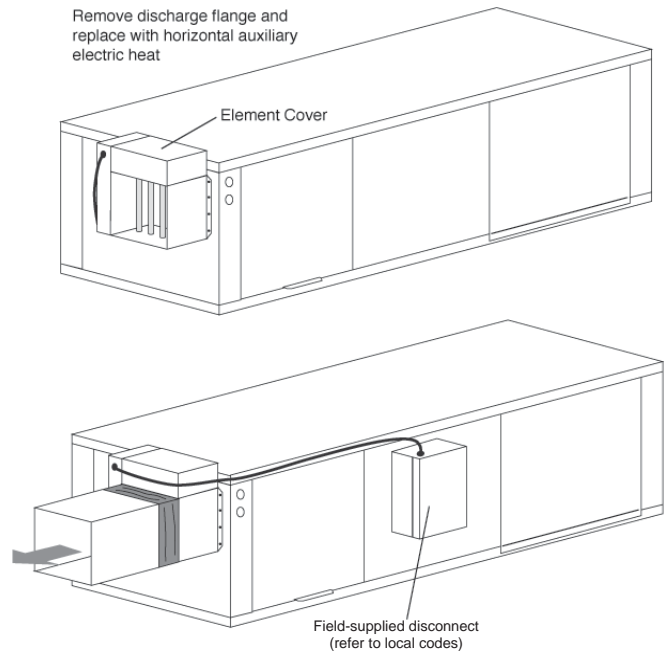


Figure 7a: Power Wiring, Dual Circuits 15, 20kw

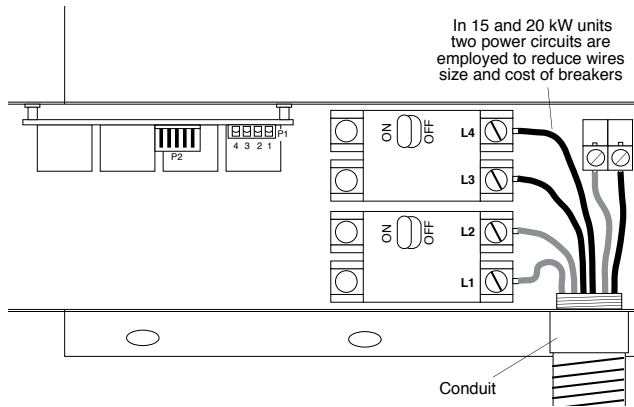
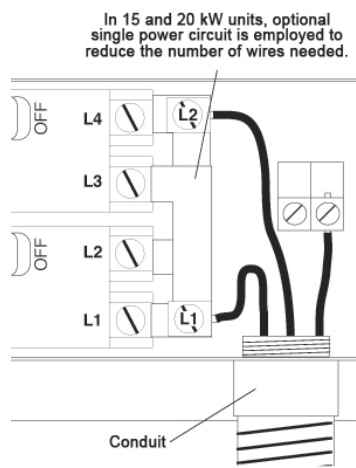


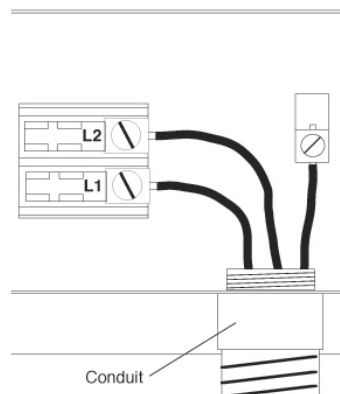
Figure 7b: Power Wiring, Single Circuit 15, 20kw



Wiring and Setup (all models)

1. Install power wiring and connect to power block or circuit breakers. In 15 or 20kW models two power circuits may be used to reduce wiring and breaker costs as in Figure 7a. If a single circuit supply is desired, install the optional single circuit accessory kit (P/N 16B0002N02), as shown in Figure 7b, that can be obtained from your distributor.
2. Ensure unit airflow setting is above minimum airflow rating for the electric heat model from Table 1. Low speed blower not allowed with electric heat.
3. Check staging jumpers for the application. Typically only 5 kW (factory setting on all models except 10kW on 20kW models) is needed for first stage electric (W1) to minimize electric demand. This staging can be adjusted by moving the staging jumpers as shown in Figure 8. Whatever is jumped to P1 pin 1 will be energized on 1st stage of electric heat, and P1-2 will be energized as stage 2 electric heat. See Table 3 for staging options.
4. Mark the appropriate box of the electric heat model installed on the additional serial plate on the exterior of the unit.
5. Turn on the power to the unit and the auxiliary electric heat.

Figure 7c: Power Wiring, 4, 5, 8, and 10kw

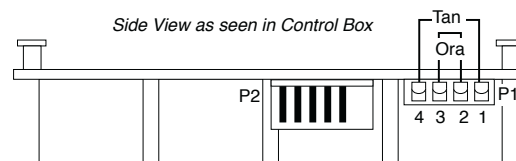
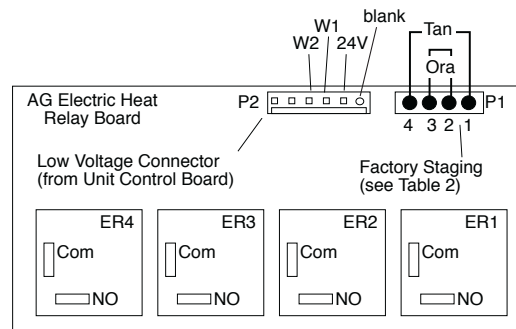


Auxiliary Electric Heat Start-up

Put thermostat in emergency heat mode (or jumper t-stat input R to W and R to G) and setpoint to high setting. 'Touch-jumper' the test pins of the CXM or DXM into test mode to reduce time delays. Unit will require 15-20 seconds before engaging emergency heat mode stage 1 (W1) and then another 15-20 seconds to engage stage 2 (W2) when in 'Test mode'. Verify proper electric heat operation.

Figure 8: Staging Jumpers

Staging Example on a 15kW unit W1 (first stage) has 5kW ('ER1' 5kW & 'ER4' 0kW) and W2 (second stage) will have 10kW ('ER2 & 3' 5kW each)



Staging Options

Table 1: AG Electric Heat Ratings

Auxiliary Electric Heat Model	50YD, 50YE Models				kW Rating		Btuh Rating		Minimum CFM Required
	018	024-030	036-038	042-072	230V	208V	230V	208V	
AGM4A					3.8	2.9	13000	9900	500
AGM5A					4.8	3.6	16300	12300	500
AGM8A					7.6	5.7	25900	19400	650
AGM10A					9.6	7.2	32700	24600	650
AGL4A					3.8	2.9	13000	9900	500
AGL10A					9.6	7.2	32700	24600	1300
AGL15A					14.4	10.8	49100	36900	1350
AGL20A					19.2	14.4	65500	49200	1350

Black area denotes compatibility

Note: Horizontal units rated for zero clearance unit and 1" clearance for the first three feet of duct, Vertical units rated for zero clearance for both unit and duct.

Table 2: AG Electric Heat Electrical Data

Auxiliary Electric Heat Model	Supply Circuit	Heater Amps		Minimum Circuit Amps		Maximum Fuse		Supply Wire	
		230V	208V	230V	208V	230V	208V	Min AWG	Max Ft
AGM4A	Single	15.8	14.0	19.8	17.1	20	20	12	130
AGM5A	Single	20.0	17.3	25.0	21.6	25	25	10	70
AGM8A	Single	31.7	27.5	39.6	34.4	40	35	8	70
AGM10A	Single	40.0	34.7	50.0	43.4	50	45	60	90
AGL4A	Single	15.8	14.0	19.8	17.1	20	20	12	130
AGL10A	Single	40.0	34.7	50.0	43.4	50	45	6	80
AGL15A	Single	60.0	52.0	75.0	65.0	80	70	6	50
	Dual - L1/L3	40.0	34.7	50.0	43.4	50	45	6	80
	Dual - L2/L4	20.0	17.3	25.0	21.6	25	25	10	70
AGL20A	Single	80.0	69.3	100.0	86.6	100	90	2	100
	Dual - L1/L3	40.0	34.7	50.0	43.4	50	45	6	80
	Dual - L2/L4	40.0	34.7	50.0	43.4	50	45	6	80

All heaters rated single phase 208-230V 60Hz
 Wire size based on 60°C (90°C) copper conductor
 All models 15kW or larger feature internal circuit breakers

Wire length based on one way measurement with 2% voltage drop
 All Fuses UL Class K general purpose

Table 3: AG Electric Heat Staging Options

Auxiliary Electric Heat Model	Staging Options	Factory Settings Stage 1	Staging in kW					
			Jumper 1-4, 2-3†		Jumper 1-3, 2-4†		Jumper 1-2-3	
			Stage 1	Stage 2	Stage 1	Stage 2	Stage 1	Stage 2
AGM4A	4	4	4	0	4	0	4	0
AGM5A	5	5	5	0	5	0	5	0
AGM8A	4 or 8	4	4	4	4	4	8	0
AGM10A	5 or 10	5	5	5	5	5	10	0
AGL4A	4	4	4	0	4	0	4	0
AGL10A	5 or 10	5	5	5	5	5	10	0
AGL15A	5, 10 or 15	5	5	10	10	5	15	0
AGL20A	5, 10, 15 or 20	10	10	10	10	10	15	5

† Factory jumper setting

Warranty



CARRIER CORPORATION LIMITED EXPRESS WARRANTY/LIMITATION OF REMEDIES AND LIABILITY FOR RESIDENTIAL GEOTHERMAL PRODUCTS WITH LABOR ALLOWANCE

It is expressly understood that unless a statement is specifically identified as a warranty, statements made by Carrier Corporation, a Delaware corporation, ("Carrier") or its representatives, relating to Carrier's products, whether oral, written or contained in any sales literature, catalog or agreement, are not express warranties and do not form part of the basis of the bargain, but are merely Carrier's opinion or commendation of Carrier's products. EXCEPT AS SPECIFICALLY SET FORTH HEREIN, THERE IS NO EXPRESS WARRANTY AS TO ANY OF CARRIER'S PRODUCTS. CARRIER MAKES NO WARRANTY AGAINST LATENT DEFECTS. CARRIER MAKES NO WARRANTY OF MERCHANTABILITY OF THE GOODS OR OF THE FITNESS OF THE GOODS FOR ANY PARTICULAR PURPOSE.

GRANT OF LIMITED EXPRESS WARRANTY

Carrier warrants its residential geothermal products purchased and retained in the United States of America and Canada, to be free from defects in material and workmanship under normal use and maintenance as follows: (1) Residential geothermal air conditioning, heating and/or heat pumps with model numbers beginning with 50Y that are built or sold by Carrier ("Carrier Geothermal Units") for ten (10) years from the Warranty Inception Date (as defined below); (2) Auxiliary electric heaters and geothermal pumping modules built or sold by Carrier, when installed with Carrier Geothermal Units, for ten (10) years from the Warranty Inception Date (as defined below); (3) Sealed refrigerant circuit components of Carrier Geothermal Units (which components only include the compressor, refrigerant to air/water heat exchangers, reversing valve body and refrigerant metering device) for ten (10) years from the Warranty Inception Date (as defined below); and (4) Other accessories and parts built or sold by Carrier, when installed with Carrier Geothermal Units, for one (1) year from the date of shipment from Carrier. The "Warranty Inception Date" shall be the date of original unit installation, or six (6) months from date of unit shipment from Carrier, whichever comes first.

To make a claim under this warranty, parts must be returned to Carrier in Oklahoma City, Oklahoma, freight prepaid, no later than ninety (90) days after the date of the failure of the part; if Carrier determines the part to be defective and within Carrier's Limited Express Warranty, Carrier shall, when such part has been either replaced or repaired, return such to a factory recognized distributor, dealer or service organization, F.O.B. Carrier, Oklahoma City, Oklahoma, freight prepaid. The warranty on any part repaired or replaced under warranty expires at the end of the original warranty period.

This Limited Express Warranty shall cover the labor incurred by Carrier authorized service personnel in connection with the installation of a new or repaired warranty part that is covered by this Limited Express Warranty only to the extent specifically set forth in the then existing labor allowance schedule provided by Carrier's Warranty Department and only as follows: (1) Carrier Geothermal Units for two (2) years from the Warranty Inception Date; (2) Auxiliary electric heaters and geothermal pumping modules built or sold by Carrier, when installed with Carrier Geothermal Units, for two (2) years from the Warranty Inception Date; and (3) Sealed refrigerant circuit components of Carrier Geothermal Units (which components only include the compressor, refrigerant to air/water heat exchangers, reversing valve body and refrigerant metering device) for five (5) years from the Warranty Inception Date. Actual labor costs are not covered by this Limited Express Warranty to the extent they exceed the amount allowed under said allowance schedule. They are not specifically provided for in said allowance schedule; they are not the result of work performed by Carrier authorized service personnel; they are incurred in connection with a part not covered by this Limited Express Warranty; or they are incurred more than the time periods set forth in this paragraph after the Warranty Inception Date.

This warranty does not cover and does not apply to: (1) Air filters, fuses, refrigerant, fluids, oil; (2) Products relocated after initial installation; (3) Any portion or component of any system that is not supplied by Carrier, regardless of the cause of the failure of such portion or component; (4) Products on which the unit identification tag or labels have been removed or defaced; (5) Products on which payment to Carrier, or to the owner's seller or installing contractor, is in default; (6) Products subjected to improper or inadequate installation, maintenance, repair, wiring or voltage conditions; (7) Products subjected to accident, misuse, negligence, abuse, fire, flood, lightning, unauthorized alteration, misapplication, contamination or corrosive air or liquid supply, operation at abnormal air or liquid temperatures, flow rates, or opening of the refrigerant circuit by unqualified personnel; (8) Mold, fungus or bacteria damages; (9) Corrosion or abrasion of the product; (10) Products supplied by others; (11) Products which have been operated in a manner contrary to Carrier's printed instructions; (12) Products which have insufficient performance as a result of improper system design or improper application, installation, or use of Carrier's products; or (13) Electricity or fuel costs, or any increases or unrealized savings in same, for any reason whatsoever.

This Limited Express Warranty provides the limited labor allowance coverage set forth above. Otherwise, Carrier is not responsible for: (1) The costs of any fluids, refrigerant or system components supplied by others, or associated labor to repair or replace the same, which is incurred as a result of a defective part covered by Carrier's Limited Express Warranty; (2) The cost of labor, refrigerant, materials or service incurred in diagnosis and removal of the defective part, or in obtaining and replacing the new or repaired part; (3) Transportation costs of the defective part from the installation site to Carrier, or of the return of that part if not covered by Carrier's Limited Express Warranty; or (4) The costs of normal maintenance.

This Limited Express Warranty applies to Carrier residential geothermal products ordered from Carrier on or after July 1, 2010 (This would generally include Carrier Geothermal Units with serial numbers beginning with "2710V" and later), and is not retroactive to any products ordered from Carrier prior to July 1, 2010 (this would generally include Carrier Geothermal Units with serial numbers beginning with "2610V" and earlier). If you are unsure if this Limited Express Warranty applies to the product you have purchased, contact Carrier at the phone number or address below.

Limitation: This Limited Express Warranty is given in lieu of all other warranties. If, notwithstanding the disclaimers contained herein, it is determined that other warranties exist, any such express warranty, including without limitation any express warranties or any implied warranties of fitness for particular purpose and merchantability, shall be limited to the duration of the Limited Express Warranty.

LIMITATION OF REMEDIES

In the event of a breach of the Limited Express Warranty, Carrier will only be obligated at Carrier's option to repair the failed part or unit, or to furnish a new or rebuilt part or unit in exchange for the part or unit which has failed. If after written notice to Carrier's factory in Oklahoma City, Oklahoma of each defect, malfunction or other failure, and a reasonable number of attempts by Carrier to correct the defect, malfunction or other failure, and the remedy fails of its essential purpose, Carrier shall refund the purchase price paid to Carrier in exchange for the return of the sold goods. Said refund shall be the maximum liability of Carrier. THIS REMEDY IS THE SOLE AND EXCLUSIVE REMEDY OF THE BUYER OR PURCHASER AGAINST CARRIER FOR BREACH OF CONTRACT, FOR THE BREACH OF ANY WARRANTY OR FOR CARRIER'S NEGLIGENCE OR IN STRICT LIABILITY.

LIMITATION OF LIABILITY

Carrier shall have no liability for any damages if Carrier's performance is delayed for any reason or is prevented to any extent by any event such as, but not limited to, any war, civil unrest, government restrictions or restraints, strikes or work stoppages, fire, flood, accident, shortages of transportation, fuel, material, or labor, acts of God or any other reason beyond the sole control of Carrier. CARRIER EXPRESSLY DISCLAIMS AND EXCLUDES ANY LIABILITY FOR CONSEQUENTIAL OR INCIDENTAL DAMAGE IN CONTRACT, FOR BREACH OF ANY EXPRESS OR IMPLIED WARRANTY, OR IN TORT, WHETHER FOR CARRIER'S NEGLIGENCE OR AS STRICT LIABILITY.

OBTAINING WARRANTY PERFORMANCE

Normally, the dealer or service organization who installed the products will provide warranty performance for the owner. Should the installer be unavailable, contact any Carrier recognized distributor, dealer or service organization. If assistance is required in obtaining warranty performance, write or call:

Customer Service • 7300 SW 44th Street • Oklahoma City, Oklahoma 73179 • (405) 745-2920

NOTE: Some states or Canadian provinces do not allow limitations on how long an implied warranty lasts, or the limitation or exclusions of consequential or incidental damages, so the foregoing exclusions and limitations may not apply to you. This warranty gives you specific legal rights, and you may also have other rights which vary from state to state and from Canadian province to Canadian province.

Please refer to the Carrier Installation, Operation and Maintenance Manual for operating and maintenance instructions.

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