WARREN ELECTRIC HEATER MODEL WGO SERIES	INSTALLATION INSTRUCTIONS Date: 06-11-2014	GOODMAN MANUFACTURING Co. AIR HANDLERS / PACKAGE UNITS AR 18-61; AER 24-61:ASPF 18-48;ADPF 18-42 GPH/C13-24-60; ARUF 18-61 MBE/MBR/MBVC 018-060 ARPF/T 024-061; AEPT 024-060; AEPF 018-060

GENERAL

This electric heater series is engineered, designed, and approved to be installed in the (AR,AER,ASPF, ADPF, ARUF, ARPF, ARPT, AEPT, AEPF Series) air handlers, GPH/C13 package units, and MBE, MBR, and MBVC modular air blowers. Before proceeding, check the heater label for the correct voltage and KW requirements.

Installation and servicing of this equipment should only be performed by trained and qualified personnel. Before proceeding with the heater installation, inspect thoroughly for shipping damage. Notify the shipper immediately if any damage is found. Check all porcelain insulators for breakage and inspect heater element wire to see that none have been deformed. Clean all dirt, dust and moisture from equipment. **Check for proper clearances of live parts, between phases, and to ground.** Make sure that all required barriers are in place. Check conductors run in multiple to insure that they are properly wired. Refer to base installation instructions for complete unit installation details. **Verify that all elements are properly secure in their ceramic holders.**

WARNING ⚠

Before performing service or maintenance operations on system, turn off all main power switches. There may be more than one disconnect. Turn off accessory heater power switch if applicable. Electrical shock can cause personal injury. ***TAG DISCONNECT SWITCH(ES) WITH A SUITABLE WARNING LABEL.*** When installed in a garage, heater elements should have a clearance of 18" from the floor, insure that the area is ventilated.

HEATER INSTALLATION

1. Refer to the base unit installation instructions as required
   Affix Warren Installer label to the equipment access panel.
2. Remove blower section access panel of the air handler or package unit.
3. Remove cover plate in front of blower assembly.
4. Slide heater assembly into blower section through the access opening (mounting position is important, check the label for correct position).
   Secure heater into place with screws from cover plate.
5. Remove the conduit knockout in unit cabinet for electrical connections. Install the appropriate size conduit connector.
6. **480V models with single point transformer -** This part can be externally mounted or internally mounted inside the air handler cabinet (see fig. 2). Autoformer wiring is color coded (see schematic for color coding) and is to be used on 480V heaters being wired into 208/240 Volt, single phase Air Handlers

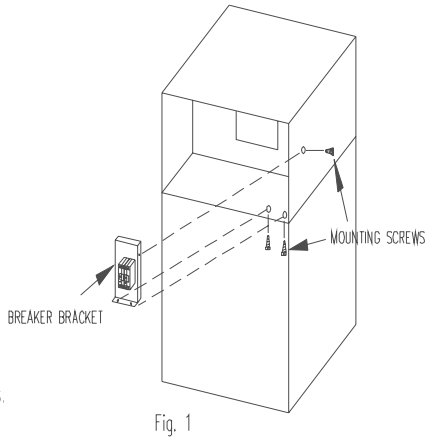

Fig. 1

HEATERS WITH CIRCUIT BREAKERS:

A BREAKER FILLER PLATE IS INCLUDED WITH ALL HEATER UNITS, PLEASE DO NOT DISCARD.

7. Break out the appropiate area of the plastic circuit breaker cover on the Air Handler door.
8. Remove breaker bracket from heater plate. For units with SQD breakers **install the filler plate** provided **(see filler plate installation instructions)**
9. **AIR HANDLERS:** Mount the circuit breaker mounting bracket in the upper right side corner of the cabinet. Insert the mounting screws through the blower deck from the blower side and from the side panel of the cabinet (see fig 1).
10. **PACKAGE UNITS:** Attach circuit breaker mounting bracket inside the top left corner of electric heat kit box.
11. The breaker must be inserted with the "OFF" position down. When installing in the horizontal position the orientation of the breaker is not important.

NOTE: FOR HEATERS USING SQD TYPE BREAKERS A BREAKER FILLER PLATE MUST BE USED TO SEAL TIGHT THE BREAKER OPENING. CIRCUIT BREAKERS MUST BE COVERED AND SEALED TIGHT TO AVOID ELECTRICAL SHOCK.

12. Apply the wiring diagram to the cabinet for future reference.
13. Remove circuit breaker knockout(s) in unit access panel as required and cut insulation in opening (air handlers only).

FILLER PLATE INSTALLATION INSTRUCTIONS (see fig. 2):

- ***A. Align breaker filler plate cut-out with the upper edge section of the breaker.***
- ***B. Press the filler plate firmly around the upper edge of the breaker(s). Apply even pressure to all sides of the filler plate. Check that the filler plate is wrapped around the top edge of the breaker(s)***

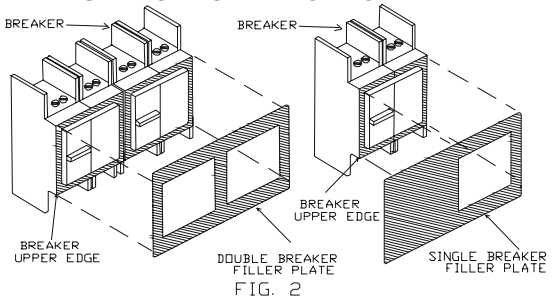

FIG. 2

Important notice for Package Units: Use flexible connectors between ductwork and unit to prevent transmission of vibration. Use suitable gaskets to ensure weather tight and airtight seal. If flexible duct is used, insert a sheet metal sleeve inside the duct. Heat resistant duct connector (or sheet metal sleeve) must extend 24-in. from the unit connection flanges into the duct work.

ELECTRICAL CONNECTIONS

WARNING FOR HEAT KITS WITH PACKAGE UNITS

Separate and properly polarized incoming L1 and L2 connections must be made at both the unit contactor **and** the electric heater when electric heat is used with package units.

1. All electrical connections, wire sizes and type and conduit sizes shall meet the National Electric Code, State and Local Codes. Main power supply, minimum wire sizes, circuits, fusing, etc. is shown on schematic wiring diagrams.
   NOTE: Use copper wire only.
2. Refer to base unit instructions for recommended wiring procedures.
3. Remove the multi-pin connector with the jumper wire and discard. Connect the heater multi-pin plug to the corresponding plug in the air handler or package unit.
4. Separate all wires from incoming power leads.
5. **3-PHASE HEAT KIT INSTALLATION FOR AIR HANDLERS:**
   a) Dual power connections are required to operate heat kit (3-phase for heat kit, 1-phase for air handler).
   b) Mount 2-pole terminal block provided with heater on the right hand side of the heater panel (use screws provided).
   c) Wire leads from the 2-pole terminal block to the transformer (see wiring diagram).
6. **Be sure that all electrical terminal connections, clamps, screws, etc. are tight before proceeding. Verify that there are no possible shorts to ground.**
7. Check wiring diagram supplied with heater for specific connections and information .
8. Check operation as described in start-up section.

START-UP AND CHECK-OUT

CAUTION: Before proceeding, verify that all wiring is correct per factory approved schematic. Notify factory immediately of any discrepancies.

1. Refer to base unit installation instructions as required.
2. **Check for loose terminal connections.**
3. Check that all fuse and circuit breaker short circuit interrupting ratings are adequate.
4. Turn on unit and heater power.
5. Set thermostat to call for heat.
6. Check operation of heater.
7. **Check that air flow across heater is at or above minimum recommended fan speed.**

CAUTION: When commissioning any AHU with electric heat, **ALWAYS** check to see if the heater is cycling on its automatic reset high temperature limit when the system is producing the highest temperature leaving the AHU coil (Heat pump on, etc.). **If** the heater is cycling, increase the air flow by increasing the fan speed or lowering the ductwork static pressure until cycling stops.

8. Any modification or repairs to this equipment without written permission from the factory will be done at the installer's own risk and expense.

USER CAUTION: The use of improperly selected air filters/ and or operation with dirty filters may result in insufficient airflow which may result in abnormal operation of electric heaters and tripping of temperature safety limits. Also, insufficient airflow will degrade the efficiency of the system (SEER rating) and excessive wear and premature failure of the system compressor may result. Other conditions, such as undersized or obstructed ductwork, may also cause insufficient airflow. It is recommended that a qualified technician be consulted to ensure proper airflow and air filtration selection and application. See (**www.lowairflow.com**) for more information.

MAXIMUM KW . vs. UNIT SIZE	
UNIT SIZE	MAXIMUM Kw. MODEL
A18	WGO0802(B), WGO0504
A24	WGO1002(B), WGO1004
A30,A32	WGO1502, WGO1504
A36	WGO2002, WGO2004
A42	WGO2002, WGO2004
A48, A49	WGO2002, WGO2004
A60, A61	WGO2002, WGO2004

Maximum Duct Static Pressure (In. H_2O)							
UNIT	Maximum Static Pressure Unit Size						
	018	024	*030	*036	*042	048	060
HEAT PUMP	0.50	0.50	0.50	0.50	0.50	0.50	0.50
ELECTRIC COOLING	0.50	0.50	0.50	0.50	0.50	0.50	0.50

* 208& 240 volt 1 phase, 208 & 240 volt 3 phase heat pump must be used at high speed.
See unit / electric heat compatibility chart for maximum Kw. vs.unit size.

HEATER KIT CONTENTS

1. Heater assembly
2. Installation Instructions
3. Installer label
4. Wiring diagram
5. Mounting screw
6. Breaker filler plate (breaker units only)
7. Terminal block kit (3-phase models only)