

AHP SERIES

INSTALLATION INSTRUCTIONS

ELECTRIC FURNACES / AIR HANDLERS

Manufactured by FREEDOM AIR for ICP

A. Introduction

These Air Handlers come in a variety of models and sizes for upflow, or horizontal use and come from the factory with cooling coils and a horizontal drain pan already supplied for air conditioning and heat pump applications.

These instructions are primarily to assist qualified individuals trained and experienced in the proper installation of this type of equipment. Refer to authorities having jurisdiction for additional guidance. Remember that the Clean Air Act of 1990 requires technician certification for handling refrigerant.

B. Rules for Safe Installation and Operation

1. Read these rules and the instructions carefully. Failure to follow the rules and the instructions could cause a malfunction of the unit, and a possible safety hazard. Keep these instructions nearby the unit for future reference.

2. While this unit has been designed and manufactured to comply with National Codes, it is the installer's responsibility to install this unit to comply with National Codes and/or prevailing local codes and regulations. The manufacturer assumes no responsibility for units installed in violation of any code or regulation.

3. Before servicing, allow unit to cool. **ALWAYS SHUT OFF ELECTRICITY WHEN WORKING ON UNIT.** This will prevent any electrical shocks or burns.

4. Ground the unit to prevent electric shock. All electrical wiring should be in accordance with the National Electrical Code.

5. Duct work must be installed in accordance with the standards of the National Fire Protection Association (NFPA) for the installation of Air Conditioning, Warm Air Heating and Ventilating Systems (NFPA 90A and 90B). The air distribution duct system should be sized for 0.2 inches of static pressure. See National Environmental Systems Contractors Association Manual K for duct sizing recommendations. Ductwork in non-conditioned spaces must be insulated to prevent formation of condensate and for maximum operating efficiency.

6. The safety testing agency label appearing on these units covers the unit and factory installed coil (if provided) only. It does not cover any other equipment.

7. Exterior surface of cabinet may sweat when unit is installed in non-conditioned space such as attic or garage. Installer must provide protection such as full size auxiliary drain pan on all units installed in non-

conditioned space such as attic or garage type installations to prevent damage from condensation runoff. It is recommended that units installed in non-conditioned space be insulated with 1" thick fiberglass with the vapor barrier on the outside.

8. While designed to operate quietly when properly installed, several steps should be taken to insure this. Use of isolation pads when mounting unit, flexible duct collars for discharge, and use of acoustical duct liners are all good installation practices that promote quiet operation.

9. Cabinet insulation is rated for R=4.2 (standard). Nameplate on unit shows what is installed. Some jurisdictions require R=6.0 on installations in non-conditioned space. Add insulation 1" thick to exterior of furnace to comply in these jurisdictions, putting the vapor barrier on the outside.

C. Unpacking the Unit

The unit should be unpacked on receipt and if damage is found, a claim should be made immediately by the receiver to the shipping carrier. Your electric air handler is completely assembled. Only electric power, thermostat wiring, duct connections, refrigerant and drain connections are needed for installation. Check the rating plate for unit size, voltage, phase etc. to make sure unit meets your requirements.

D. Physical Installation

MINIMUM CLEARANCES

These units have a 0" minimum clearance to combustible materials rating from all cabinet surfaces. The unit should be installed with serviceability clearance of 30" from the front of the unit. The unit can be serviced entirely from the front, including replacing the filter. **Be sure and route primary and secondary drain connections so as not to obstruct replacement of filter.**

ARRANGEMENT

Unit is shipped from the factory arranged to be installed in a vertical upflow or horizontal right to left airflow position (standard) or field convertible to a horizontal left to right airflow position.

Upflow Application

In an upflow installation the discharge outlet is at the top. Care should be taken to insure unit is level to permit proper condensate drainage. Normal upflow installation will be in a basement or closet. If installed in a closet, the closet should have a platform framed in, with an opening on top of the platform centered in the closet. Connect the supply air outlet to a warm air plenum. Install return air grilles from

outside the closet to space below the platform. Platform must be at least 10" above the floor. If installed in a basement, run supply and return ductwork in accordance with local codes.

Caution!! A "P" trap must be installed in the coil drain line! Cap unused drain fittings.

Horizontal application

Horizontal application will normally be used in an attic or crawl space. This type installation requires a return air duct be attached to the furnace inlet. The opposite end of the return air duct is attached to a return air filter grill through the ceiling or wall. Remove filter from unit if filter grill is used. The unit is shipped in right to left configuration. For left to right applications (**Before connecting drains and refrigerant lines**).

1. **Remove and set aside front panels.**
2. **Remove the coil support bracket (4 screws).**
3. **Remove horizontal drain pan retaining clip (1 screw).**
4. **Carefully remove coil assembly and bottom drain pan.**
5. **Move Horiz. Drain pan from left hand side of coil to right.**
6. **Install modified coil assembly back into unit.**
7. **Reinstall coil support bracket and horizontal drain pan retaining clip.**
8. **Determine drain holes being used and reposition knockout caps.**
9. **Reinstall doors.**

CAUTION: IT IS MANDATORY TO USE AN EMERGENCY AUXILIARY DRAIN PAN WITH ANY COIL OR AIR HANDLER INSTALLED IN AN ATTIC OR ABOVE A FINISHED CEILING!

E. ELECTRIC FURNACE

Optional electric heating packages are available, see Table A and unit label for various sizes. Make appropriate power wiring considerations.

F. ELECTRICAL WIRING

Refer to the unit's nameplate for specific electrical data.

CAUTION: DISCONNECT POWER AT MAIN FUSE OR CIRCUIT BREAKER DISTRIBUTION PANEL BEFORE WIRING FURNACE TO PREVENT SHOCK OR FIRE HAZARD.

POWER WIRING

Unit is suitable for use with copper conductors.

Tighten all wire connectors. Take care not to damage heater ceramic insulators. For correct field wire size, see unit nameplate and field wiring table inside electrical compartment door. Use 75 degrees C minimum wire in unit wiring compartment. Units

larger than 10KW will require multiple sets of power conductors.

NOTE: SEE UNIT FOR COMPLETE WIRING DIAGRAM LOCATED ON BLOWER HOUSING.

CONTROL WIRING

Field connections are made to the low voltage terminal strip. Consult installation instructions provided with accessory items for specific information on control wiring. Use 18 AWG minimum copper control conductors or control wiring up to 50' between units. 16 AWG control conductors are recommended for lengths between 50' and 100'. Class 2 wiring is acceptable. Take care not to short control leads, transformer burn-out could result. Set thermostat heat anticipator at 0.15 amps for furnaces 12KW or smaller, set at .3 for 15KW and larger. See heat pump installation instructions for correct wiring.

BLOWER MOTOR

Units are equipped with a three speed blower motor. Two factory selected motor speed leads are connected to the blower relay to provide automatic speed change for heating and cooling airflow volumes. The pre-selected motor speeds would normally not have to be changed in the field. All models contain a blower time delay relay (TDR 10-30 seconds) that delays the blower turning on and off when the thermostat calls for "Fan Only" or Cooling. The TDR improves energy efficiency.

G. REFRIGERANT COIL

To make sure the coil in the air handler you have received has the correct flow device for the condensing unit you are matching it with refer to the outdoor unit instructions.

H. REFRIGERANT PIPING

Air handlers with cooling coils require liquid and suction piping sized in accordance with condensing unit recommendations. Refrigerant lines should be soldered with silver solder or other high temperature brazing alloy. The manufacturer recommends that dry nitrogen be flowed through the refrigerant lines during the brazing operation. Liquid line is capped. Copper stub is shipped in the electrical control box or taped to the blower door.

I. CONDENSATE DRAIN

The air handler A coil drain pan has two 3/4" NPT female primary and two secondary connections (left or right hand). Horizontal pan has two 3/4" NPT female, one primary and one secondary. Piping from each fitting used is to have a 1 1/2" minimum trap and each run in such a manner as to provide enough slope for adequate drainage to a visible area. Do not pipe these two fittings together into a common drain. Cap unused connection.

J. AIR FILTER

Air handlers are factory equipped with an air filter

If the return grille has its own filter remove filter installed in the air handler.

K. DUCT WORK

Ductwork should be fabricated and installed in accordance with all applicable local and/or national codes. This includes the standards of the National Fire Protection Association for installation of Air-Conditioning and Ventilating systems, NFPA No. 90B. The vast majority of problems encountered with cooling and heating systems can be attributed to improperly designed or installed duct systems.

L. CHECK TEST AND START

The unit should be tested after the system has been completely installed to determine proper operation. Unit heat modules are equipped with heater time delay controls. All heating elements should turn on within one minute.

NOTE: CIRCUIT BREAKERS ARE EQUIPPED WITH A VISUAL “VISI-TRIP” RED FLAG INDICATOR. IF RED INDICATOR SHOWS THAT CIRCUIT BREAKER HAS TRIPPED, THIS INDICATES THAT A PROBLEM EXISTS IN YOUR SYSTEM, WHICH SHOULD BE CORRECTED BEFORE RESETTING BREAKER.

M. PERIODIC MAINTENANCE

The filter must be changed at least twice a year to permit proper airflow for safe and efficient operation. Disconnect power before removing access doors!

N. WARNING!!!!!!

1. Do not store combustible materials or use gasoline or other flammable liquids or vapors in the vicinity of this air handler.
2. Do not operate this equipment with the doors removed.
3. Identify all cut-off devices that serve your comfort conditioning equipment.

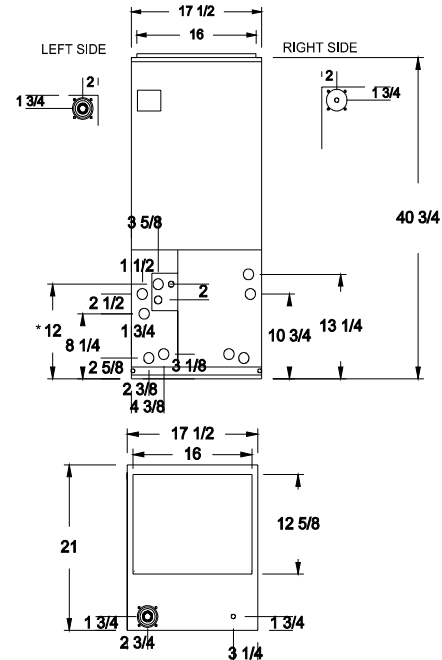
O. CONTACT US FOR HELP OR FOR ANY COMMENTS ON OUR PRODUCTS

As we strive to better serve our customers like you, we are always ready to help you. Please contact your nearest distributor with any comments concerning quality and improvements that could be made to our products.

Thank you for the purchase of our product.

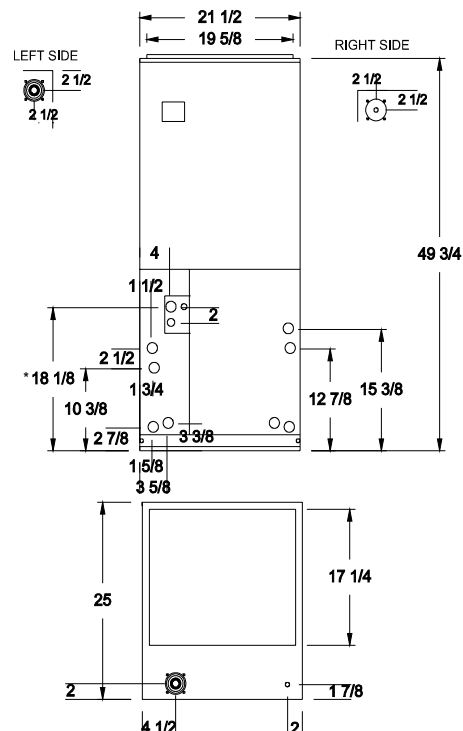
AHP Dimensions 24-60

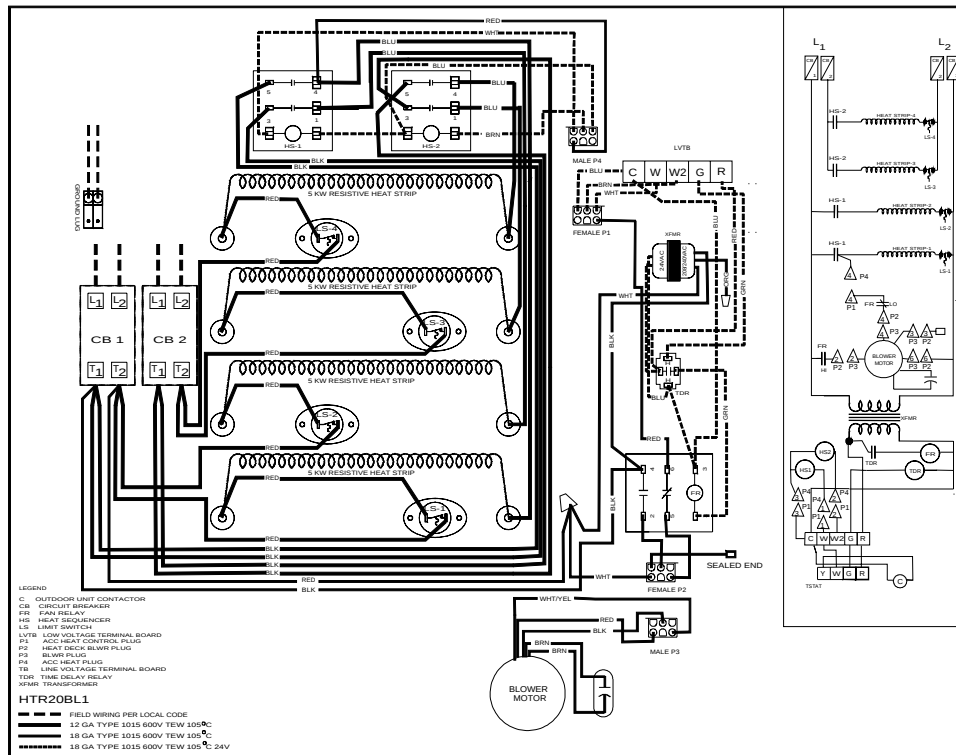
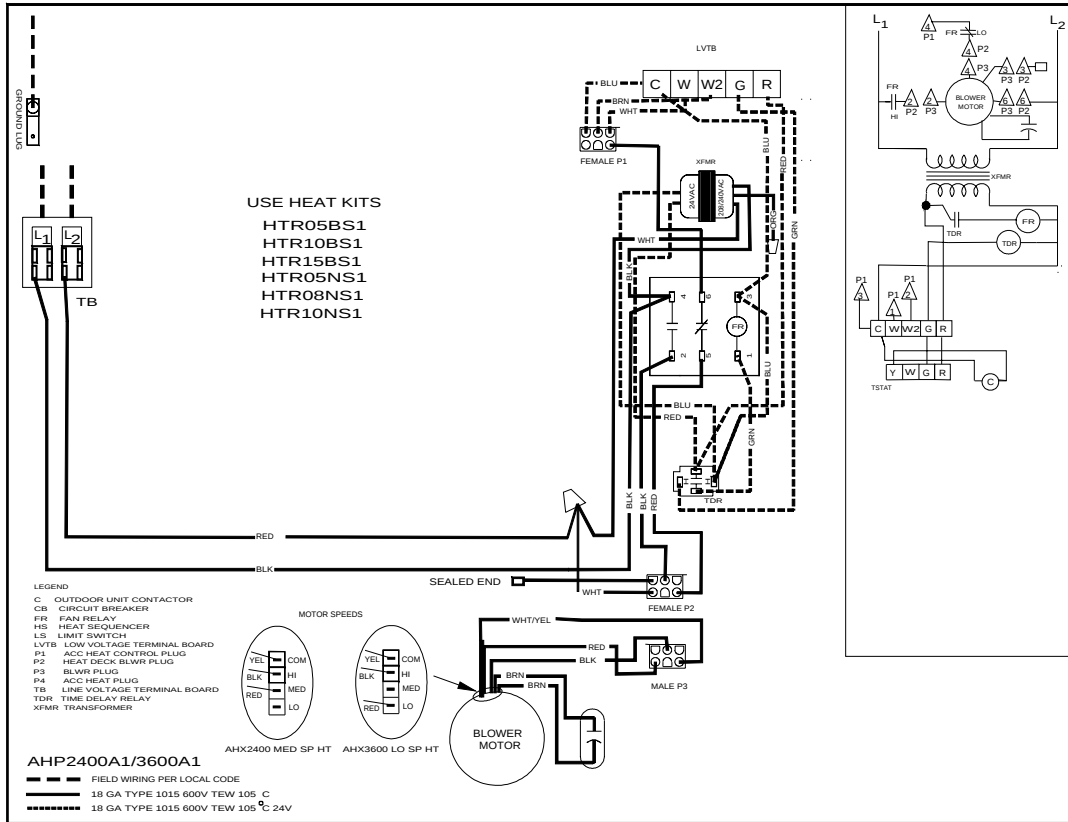
AHP 2400A1, 3000A1, 3600A1



* REFRIGERANT LINES VARIOUS HEIGHTS
DEPENDING ON COIL ORDERED

AHP4200A1, 4800A1, 6000A1





AHP SERIES

INSTALLATION INSTRUCTIONS

AIR CONDITIONING & HEAT PUMP A/H COIL

FACTORY INSTALLED PISTON

INTRODUCTION

These Air Handler Coils are designed specifically for use with electric heating units (contact distributor for system matches).

EFFICIENCY AND CAPACITY RATINGS ARE LISTED IN CURRENT ARI DIRECTORY FOR COILS MIX-MATCHED WITH MANY BRANDS OF OUTDOOR CONDENSING OR HEAT PUMP UNITS. AIR CONDITIONING COIL MIX-MATCHES ARE LISTED IN INDOOR COIL MANUFACTURER AIR CONDITIONING SECTION. CONTACT DISTRIBUTOR FOR RATINGS AND PROPER MATCHING UNITS.

CAUTION! ALL COILS ARE SHIPPED FROM OUR FACTORY PRESSURIZED WITH NITROGEN. THEY DO NOT CONTAIN ANY HCFC22.

CAUTION! Carefully loosen the nut on the liquid line connection and check for pressure. IF THERE IS NO NITROGEN PRESSURE PRESENT, THE COIL MAY HAVE DEVELOPED A LEAK DURING SHIPMENT AND SHOULD BE RETURNED TO THE POINT OF PURCHASE (IF THE CAUSE FOR LEAK CAN NOT BE DETERMINED AND FIELD REPAIRED) FOR EXCHANGE. If pressure is present, then go ahead and relieve the pressure in the coil through the liquid line connection or by piercing the suction line cap. **CAUTION!** When there is NO pressure in coil unsweat cap over the swaged fitting on suction line. Liquid line stub is attached with a nylon tie next to the liquid line connection. Remove cover behind nut on liquid line distributor and replace with stub. **Torque from 10 to 30 inch lbs. DO NOT OVER TIGHTEN.**

Piston installed at factory is sized according to tonnage ordered. If piston needs to be changed contact distributor. For optimum performance and efficiency of air conditioning or heat pump coils, adjust system charge and/or superheat as recommended by outdoor unit instructions.

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AIR CONDITIONING & HEAT PUMP A/H COIL

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