FREEDOM AIR

INSTALLATION INSTRUCTIONS
HYDRONIC AIR HANDLER MODELS
AHXW SERIES

A. Introduction

Air Handlers come in a variety of models and sizes for up flow and horizontal use and when combined with cooling coils, are ready 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 only (if provided) . 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 which 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.

10. **WARNING**

HOT WATER CAN SCALD: WATER HEATED TO A TEMPERATURE WHICH WILL SATISFY SPACE HEATING, CLOTHES WASHING, DISH WASHING, AND OTHER SANITIZING NEEDS CAN SCALD AND PERMANENTLY INJURE A PERSON UPON CONTACT. SOME PEOPLE ARE MORE LIKELY TO BE PERMANENTLY INJURED BY HOT WATER THAN OTHERS. THESE INCLUDE THE ELDERLY, CHILDREN, THE INFIRM, OR PHYSICALLY HANDICAPPED.

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 upon the shipping carrier. Your water heat air handler is completely assembled. Only electric power, thermostat wiring, water piping, and duct connections are needed for installation. If provided with air conditioning coil or if coil is being field installed, refrigerant and drain connections will also be needed**.**

D. Physical Installation

MINIMUM CLEARANCES

These units have a 0" minimum clearance to combustible materials rating from all cabinet surfaces. The discharge air plenum and duct also carry a 0" safety clearance rating eliminating the need for a special combustible sub-base. 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 on models that include a filter rack. These units are designed to be installed in a closet or flush mounted in a wall in an up flow vertical position.

CLOSET APPLICATIONS
Unit may be installed on a platform or other level surface.

E. PIPING
Piping should be installed to assure proper water flow between air handler and hot water source. Air handler must be located indoors and not subject to freezing temperature.

WARNING
AIR HANDLER MUST BE LOCATED SO THAT IF ANY CONNECTIONS SHOULD LEAK, WATER WILL NOT CAUSE DAMAGE TO THE ADJACENT AREA. WHEN SUCH LOCATIONS CAN'T BE AVOIDED, A SUITABLE DRAIN PAN SHOULD BE INSTALLED UNDER THE AIR HANDLER, NOT OVER 1½ INCHES DEEP, WITH MINIMUM LENGTH AND WIDTH AT LEAST TWO INCHES GREATER THAN THE AIR HANDLER DIMENSIONS AND CONNECTED TO AN ADEQUATE DRAIN. UNDER NO CIRCUMSTANCES IS THE MANUFACTURER TO BE HELD LIABLE FOR ANY WATER DAMAGE IN CONNECTION WITH THIS AIR HANDLER.

All piping should be ¾" copper or approved materials. It is recommended that there be a water shut off valve for the hot water source. Flush water coil bnefore installing piping. Isolation valves are recommended also. See diagram above.
It is recommended that any devices installed, which could create a closed system, have a by-pass and/or the system have an expansion tank to relieve the pressure built by thermal expansion in the water system. Contact the local water supplier and/or plumbing contractor for assistance in controlling these situations.
This air handler is designed to be used with a potable water system.

WARNING
TOXIC CHEMICALS SUCH AS USED FOR TREATMENT OF BOILERS OR NONPOTABLE WATER HEATING APPLIANCES SHALL NEVER BE INTRODUCED INTO A POTABLE WATER SPACE HEATING SYSTEM.

After piping has been installed, allow the system to fill with water and check connections for leaks. To insure complete filling of the system follow start-up procedure section.

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. 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. A single power supply may be connected directly to terminal block provided in the unit.
NOTE: SEE UNIT FOR COMPLETE WIRING DIAGRAM LOCATED ON BLOWER HOUSING.
Field connections to the low voltage leads are made using appropriate field supplied wiring connectors. 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. Some competitive outdoor units are equipped with a 24 volt control transformer. If this type of outdoor unit is used with this furnace/air handler, use a thermostat with isolating contacts to prevent inter-connection of two separate class 2 circuits.

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) that delays the blower on and off improving energy efficiency.

G. REFRIGERANT PIPING
Air handlers with cooling coils require liquid and suction piping sized in accordance with condensing unit manufacturer's recommendations. The evaporator coils have sweat copper connections. 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 soldering operation. If coil is supplied with a Thermostatic Expansion Valve secure bulb to suction line after connections are made.

H. CONDENSATE DRAIN

The air handler drain pan has ¾" MPT primary and secondary connections. Piping from each stub is to have a 1½" 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.

I. AIR FILTER

Air handlers are factory equipped with an air filter. If the return grille has its own filter, a filter installed in the air handler is not recommended.

J. CHECK TEST AND START UP

The unit should be tested after the system has been completely installed to determine proper operation.

NOTE: HEATING SYSTEM SHOULD NOT BE SWITCHED ON UNTIL SYSTEM IS FILLED AND HOT WATER COIL VENTED.

1. Fill and pressurize the water heater and air handler.
2. The water heater should be started.
3. Vent air from the water coil.
5. Energize the unit by switching on the line voltage source and the thermostat. The water coil should become warm after a few minutes of operation

UNITS ARE RATED AT TEMPERATURES OF 130°-180° F. SET WATER SOURCE TEMPERATURE AT DESIGN TEMPERATURE AND TAKE PROPER SAFEGUARDS FOR WATER USAGE AT SUPPLY POINTS AS PER LOCAL CODES AND SAFETY CONSIDERATIONS.

K. SYSTEM SHUTDOWN

For short periods of time during freezing temperatures if the system is to be left unused, to prevent freezing of the air handler and piping, do the following. Do not turn the system off. Leave the gas control valve at its lowest setting and the air handler's thermostat left on heat setting. If the water heater and air handler must be shut down for extended periods, a qualified service agent needs to be used to insure the air handler and piping are drained of all water.

L. PERIODIC MAINTENANCE

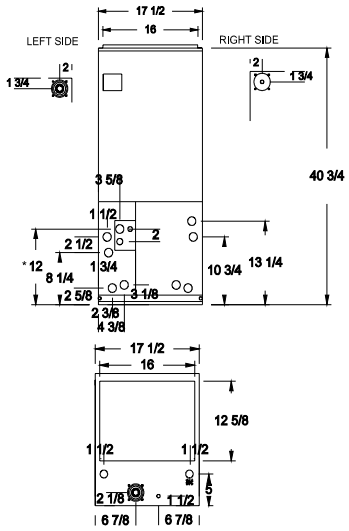
The filter must be changed at least twice a year to permit proper airflow for safe and efficient operation. Disconnect power before removing access doors!

M. CONTACT YOUR INSTALLER OR LOCAL DISTRIBUTOR 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. We also welcome any comments from our customers concerning quality and improvements that could be made to our products.

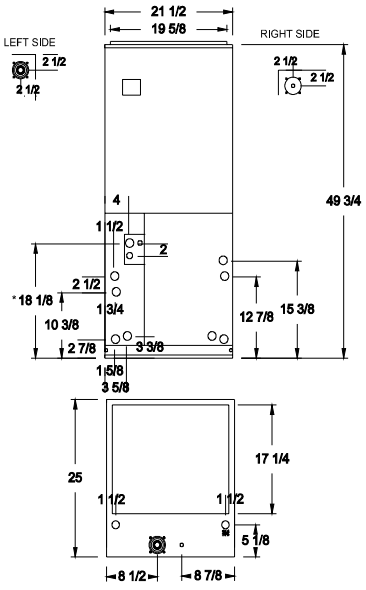
AHXW Dimensions 24-60

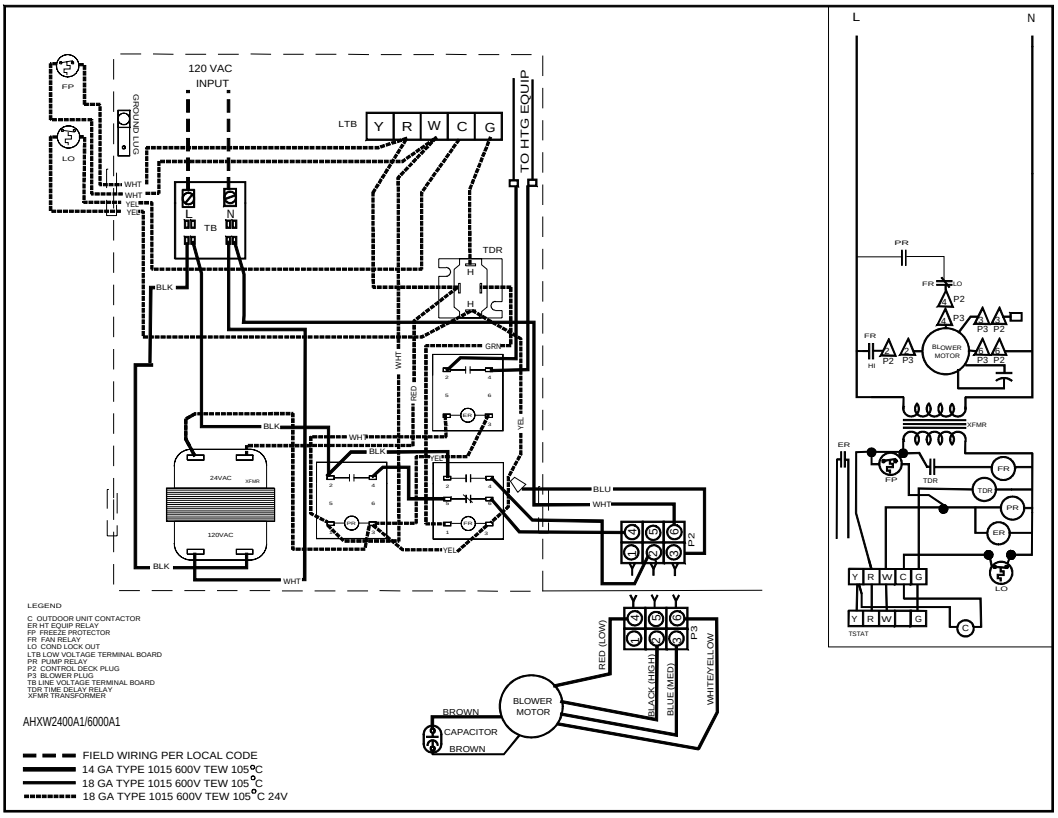
AHXW2400A



* REFRIGERANT LINES VARIOUS HEIGHTS DEPENDING ON COIL ORDERED

AHXW3600A/6000A




120 VAC
INPUT
LTB
Y R W C G
TO HTG EQUIP
FP
LO
GROUND LUG
WHT
WHT
YEL
YEL
TB
L
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BLK
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H
H
GRN
WHT
RED
YEL
BLK
WHT
BLK
ER
24VAC
XFMR
120VAC
BLK
WHT
BLU
WHT
YEL
P2
P3
RED (LOW)
BLACK (HIGH)
BLUE (MED)
WHT/YELLOW
BLOWER MOTOR
BROWN
CAPACITOR
BROWN
L
N
PR
FR
P2
P3
BLOWER MOTOR
HI
XFMR
ER
FP
TDR
FR
TDR
PR
ER
LO
Y R W C G
Y R W G
C
TSTAT
LEGEND
C OUTDOOR UNIT CONTACTOR
ER HT EQUIP RELAY
FP FREEZE PROTECTOR
FR FAN RELAY
LO COND LOCK OUT
LTB LOW VOLTAGE TERMINAL BOARD
PR PUMP RELAY
P2 CONTROL DECK PLUG
P3 BLOWER PLUG
TB LINE VOLTAGE TERMINAL BOARD
TDR TIME DELAY RELAY
XFMR TRANSFORMER
AHXW2400A1/6000A1
FIELD WIRING PER LOCAL CODE
14 GA TYPE 1015 600V TEW 105°C
18 GA TYPE 1015 600V TEW 105°C
18 GA TYPE 1015 600V TEW 105°C 24V