



BHV

INSTALLATION INSTRUCTIONS

OPERATION AND MAINTENANCE

FOREWORD

The following information is to be used by the installer as a guide. Since each installation is unique unto itself, only general topics are covered. The order in which topics may be presented may not be those required by the actual installation.

This guide does NOT supersede or circumvent any applicable national, state or local code.

The installation is to be performed only by individuals whose experience meets or exceeds the requirements of the work involved.

The installer MUST read the entire contents of this guide and develop a thorough understanding before beginning.

Due to a continuing program of product research, ICP reserves the right to discontinue or change without notice, any or all specifications or designs without incurring obligations.

SAFETY

The installation and/or servicing of comfort conditioning equipment can be hazardous due to system pressures and electrical devices.

**ONLY TRAINED/QUALIFIED PERSONNEL
SHOULD PERFORM SERVICE AND/OR
INSTALLATION**

**OBSERVE ALL PRECAUTIONS AND WARNINGS
IN PRODUCT DATA OR ATTACHED TO UNIT.**

Follow all safety codes. Wear eye protection and gloves. Have a fire extinguisher readily available.

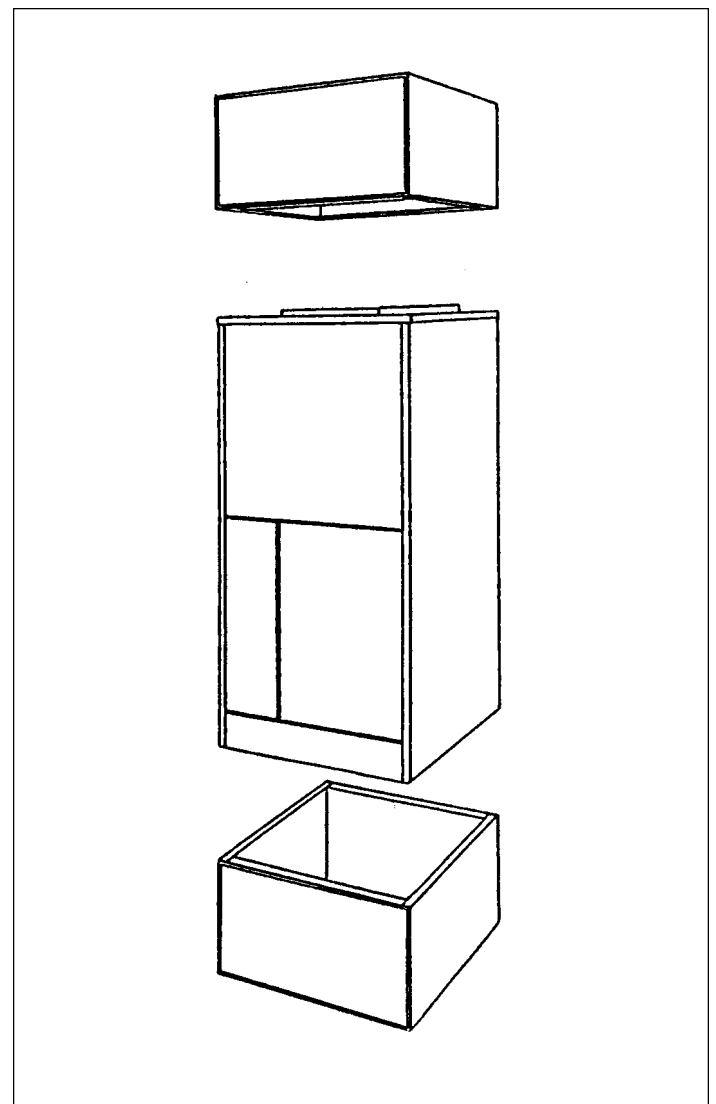
**DISCONNECT ALL POWER SUPPLIES BEFORE
ACCESSING EQUIPMENT.**

**DISCONNECTING MORE THAN ONE POWER
SUPPLY MAY BE REQUIRED TO DE-ENERGIZE
SOME EQUIPMENT.**

ELECTRIC SHOCK CAN CAUSE DEATH

INSPECTION

Thoroughly inspect all packages upon receipt. Ensure carton(s) have not been dropped, crushed or punctured. Inspect all contents for damage. If damage is found, immediately file a claim with the delivering carrier.



INSTALLATION

OPTIONAL EQUIPMENT

1. Discharge plenum
2. Return air plenum
3. Two row hot water heating coil (reheat or preheat location)
4. Electric heat
5. Heat pump kit

STEP 1 – DUCTWORK

Use accepted industry practices and design guidelines of the ASHRAE FUNDAMENTALS HANDBOOK. Ductwork must comply with all building codes and the NATIONAL FIRE PROTECTION ASSOCIATION's pamphlet 90A and 90B.

Carefully inspect any previously installed ductwork to determine suitability.

NOTE: Ductwork should be of a size meeting requirements of the installation. Ductwork should transition gradually from a smaller size blower outlet to required duct run size to avoid excessive loss of air velocity.

STEP 2 – CHECK DUCT INSULATION AND VAPOR PROOFING

Previously installed heating supply ductwork may already have adequate insulation against excessive heat loss. This insulation may be satisfactory for protection against heat gain from summer cooling. Depending upon application, it may be required to add more insulation.

Externally insulated ductwork must have adequate vapor seal for summer operation, particularly where duct is exposed to high humidity conditions such as in attic, vented crawl space, unconditioned basement or utility room.

STEP 3 – DUCTWORK

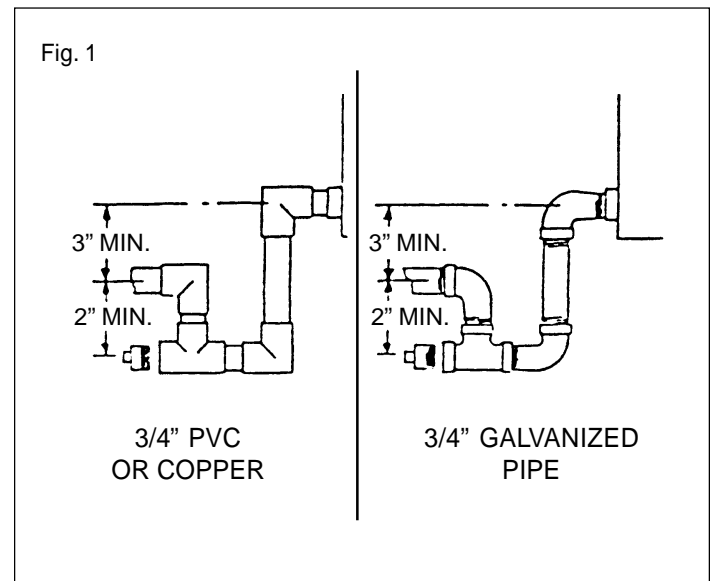
1. When return air duct connection is smaller than coil inlet opening, construct the transition piece so that vertical and horizontal dimensions of transition do not increase more than one inch for every 7 inches of length.
2. Allow a minimum of 3 feet of straight ductwork preceding equipment inlet.
3. Install unit with 1/8 inch pitch toward condensate drain opening.

STEP 4 – SOUND ATTENUATION

Flexible duct connections should be used between the unit and both the supply and return ducts.

STEP 5 – INSTALLATION OF CONDENSATE DRAIN

Condensate drain must consist of a minimum of 3/4 in. copper tubing or 3/4 in. galvanized iron pipe or PVC-type plastic pipe (Fig. 1). The condensate drain trap must be properly designed to ensure the removal of condensate (incorrect trapping can hold water in pan causing overflow). Be sure drain pitches downward at a slope of one inch every 10 feet.



NOTE: Consult local codes for additional procedures before installing condensate drain.

STEP 6 – DIRECT EXPANSION REFRIGERANT PIPING

Always use the condensing unit manufacturer's recommended line sizes. The suction line must be insulated for satisfactory operation. Observe all condensing unit manufacturer's recommendation or requirements. Use refrigerant grade copper only. If unit is to be used when installed as the indoor coil of a heatpump, a bypass check valve must be used. (See Page 4.)

NOTE: It is recommended that a freeze-stat (by other) be installed when a hot water coil is used and is mounted in the reheat position.

STEP 7 – WATER PIPING

All piping must be supported independent of coils. Swing joints or flexible fittings must be provided to absorb expansion and contraction strains. Rigid piping reduces the effectiveness of vibration isolators. The water supply should always be connected so that the entering water is on the leaving air side of the coil. Coils must be adequately vented in order to prevent air binding. Freeze-ups due to low air temperatures are not covered under the ICP Warranty.

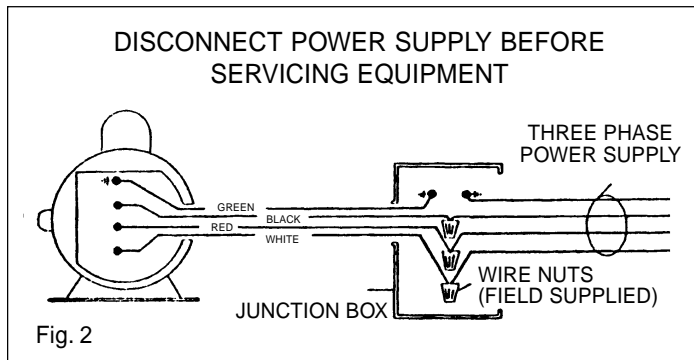
STEP 8 – MOTORS AND DRIVES

When mounting a motor on the adjustable base in the field, extreme care should be taken to ensure proper alignment and belt tension.

STEP 9 – ELECTRICAL CONNECTIONS

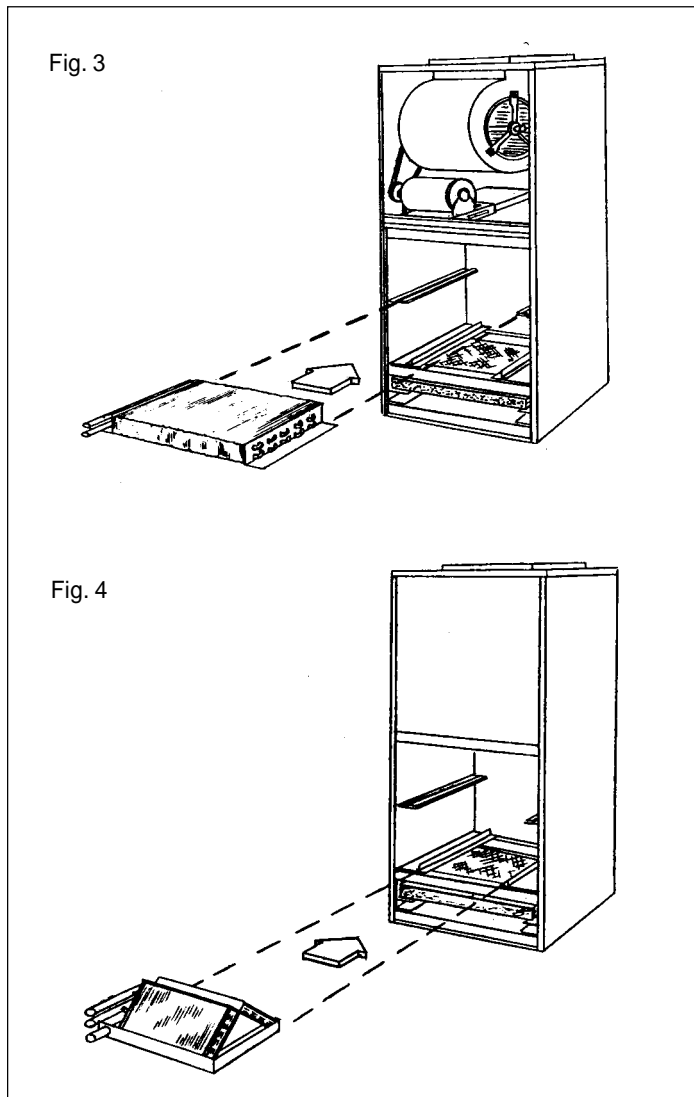
A control box is mounted on each unit and the motor is to be wired to this box.

NOTE: Unit must be permanently grounded in accordance with NEC and local codes and ordinances. See typical wiring diagram (Fig. 2).



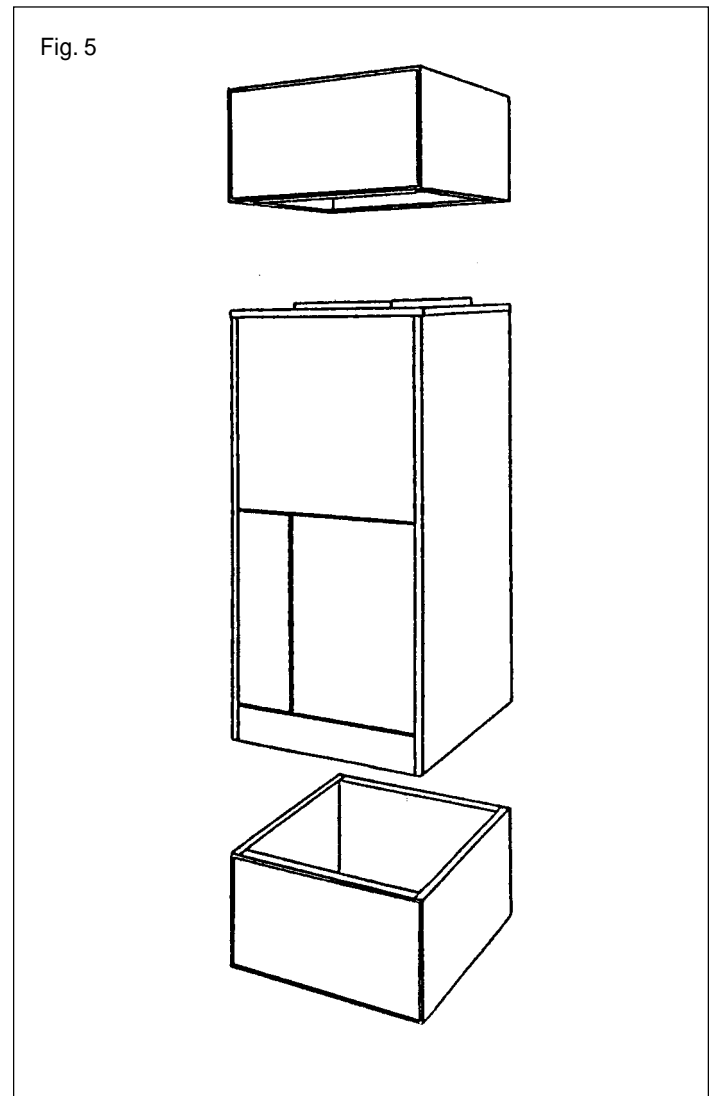
INSTALLATION OF COILS

The hot water coil is shipped separate from unit cabinet. In order to install, remove both the manifold and coil access panel. Slide heating coil (Fig. 3) in appropriate tracks. Slide cooling coil (Fig. 4) in appropriate track. Replace the manifold panel and then the coil access panel.

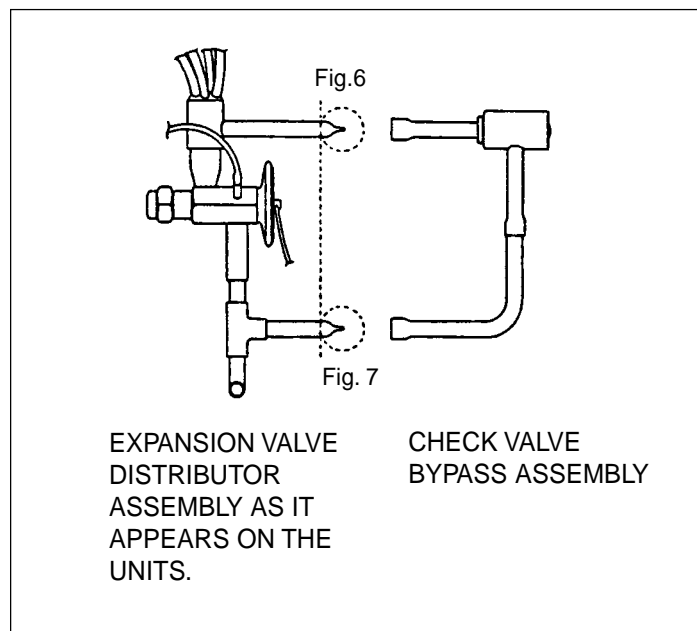


INSTALLATION OF DISCHARGE RETURN AIR PLENUM

One plenum serves a dual purpose (Fig. 5). Once the location is determined, either on top of unit or underneath, remove the side panel. Square up the cabinets and secure with sheet metal screws (not provided). The size and location of the openings are to be determined by contractor and then field cut. If the side panel is not be used, then it should be placed back on the plenum.



OPTIONAL HEAT PUMP BYPASS ASSEMBLY



INSTALLATION PROCEDURE

1. Cut off the ends of the stub-out tubes near the location of the dotted line (See Fig.6 and 7).
2. Slip the swaged ends of the bypass kit over the open tube ends where the ends were cut off.
3. Make sure the bypass assembly is in the same position as shown above.
4. Braze the two joints and then check to be sure there are no leaks in the welded joints.

START-UP

Ensure all shipping bolts/screws are removed and all other bolts and screws are tight. Never assume the voltage and phase on the unit name plate is the same as the motor is wired. Check the sheaves to see if they are in alignment and ensure the set screws are tight. Check for proper rotation of the blower pulley. Three phase motor rotation can be reversed by exchanging two of the three leads at the unit box. Ensure all filters are installed. Do this with all doors, panels, etc. in place. Check the amperage draw of the motor. This should not exceed the name-plate amps shown on the motor serial plate.

OPERATION & MAINTENANCE

WARNING:

Disconnect electrical power to all circuits before servicing unit. Failure to do so may result in personal injury from electrical shock or moving parts.

RETURN AIR FILTERS

Filter access is from either side of unit. Inspect on a regular basis (at least monthly) and clean or replace.

CAUTION:

Never operate unit without a filter or with filter access door removed. Damage to blower motor may result.

WATER PIPING – ALL DRAIN

Coil is easily cleaned when dry. To check or clean, remove the unit access panel, filter access door and filters. Use accepted industry methods for cleaning. Remove all foreign matter from pan and condensate drain line. Check for rust and holes.

BELT AND PULLEY

Proper pulley alignment and belt tension must be maintained at all times. Speed is reduced by adjusting pulley faces so they are farther apart. Speed is increased with faces closer together. Check pulley setscrews and bolts.

MOTOR

Use electric motor oil or SAE20 nondetergent oil. Tighten motor mount bracket and base bolts as required. **DO NOT OVER-OIL!**

BLOWER

Check bearing for wear. Replace as required. Check wheel for accumulation of dirt and clean as required.