

Installer's Guide

Condensing Units

2TTA0030,040,050 & 060AD000A

ALL phases of this installation must comply with NATIONAL, STATE AND LOCAL CODES

IMPORTANT — This Document is **customer property** and is to remain with this unit. Please return to service information pack upon completion of work.

These instructions do not cover all variations in systems nor provide for every possible contingency to be met in connection with installation. All phases of this installation must comply with NATIONAL, STATE AND LOCAL CODES. Should further information be desired or should particular problems arise which are not covered sufficiently for the purchaser's purposes, the matter should be referred to your installing dealer or local distributor.

A. GENERAL

The following instructions cover 2TTA0030,040,050 & 060AD Condensing Units.

NOTE:

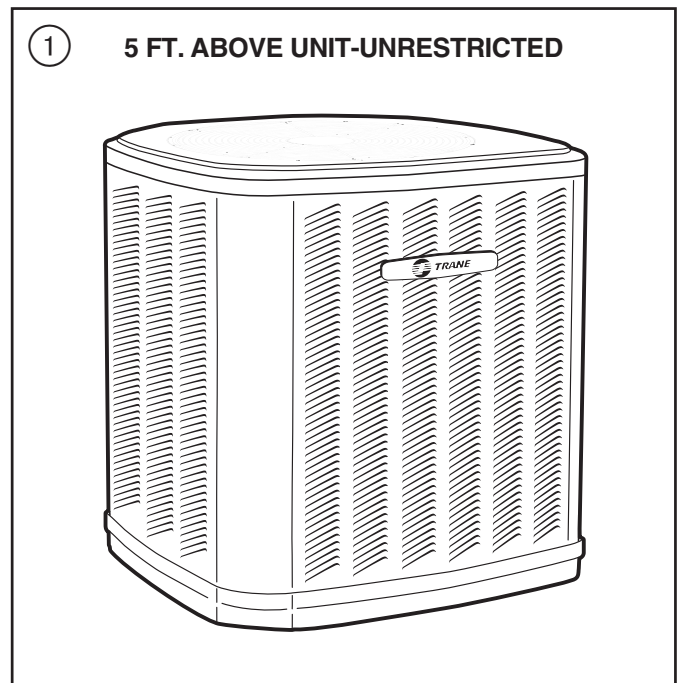
These outdoor units may be used with indoor units equipped with Thermostatic Expansion Valve or Accutron™ Flow Control Check Valve (F.C.C.V.) assembly for refrigerant flow control only.

Check for transportation damage after unit is uncrated. Report promptly, to the carrier, any damage found to the unit.

To determine the electrical power requirements of the unit, refer to the nameplate of the unit. The electrical power available must agree with that listed on the nameplate.

B. LOCATION & PREPARATION OF THE UNIT

1. When removing unit from the pallet, notice the tabs on the basepan. Remove tabs by cutting with a sharp tool as shown in Figure 2 (see page 2).
2. The unit should be set on a level support pad at least as large as the unit base pan, such as a concrete slab. If this is not the application used please refer to application bulletin *SSC-APG002-EN*.
3. The support pad must NOT be in direct contact with any structure. Unit must be positioned a minimum of 12" from any wall or surrounding shrubbery to insure adequate airflow. Clearance must be provided in front of control box (access panels) & any other side requiring service access to meet National Electrical Code. Also, the unit location must be far enough away from any structure to prevent excess roof run-off water from pouring directly on the unit. Do not locate unit(s) close to bedroom(s).
4. The top discharge area must be unrestricted for at least five (5) feet above the unit.



5. When the outdoor unit is mounted on a roof, be sure the roof will support the unit's weight. Properly selected isolation is recommended to prevent sound or vibration transmission to the building structure.
6. The maximum length of refrigerant lines from outdoor to indoor unit should NOT exceed sixty (60) feet.
7. If outdoor unit is mounted above the air handler, maximum lift should not exceed sixty (60) feet (suction line). If air handler is mounted above condensing unit, maximum lift should not exceed sixty (60) feet (liquid line).

NOTE:

Refer to "Refrigerant Piping Software" Pub. No. 32-3312-02.

8. Locate and install indoor coil or air handler in accordance with instruction included with that unit.

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C. ACCUTRON™ FLOW CONTROL VALVE

If the indoor unit System Refrigerant Flow control is an Accutron™ orifice and check valve assembly, an orifice size change may be necessary. See Figure 3.

The outdoor model determines the required orifice size. Check the listed orifice size on nameplate of the selected outdoor model. If the indoor unit is factory shipped with a different orifice size, the orifice must be changed to obtain system rated performance.

IMPORTANT:

The outdoor unit is shipped with the proper size orifice and a stick-on orifice size label in an envelope attached to the outdoor unit. Outdoor unit nameplate will have correct orifice size specified as BAYFCCV---A for rated performance.

D. INSTALLING REFRIGERANT LINES

⚠ CAUTION

If using existing refrigerant lines make certain that all joints are brazed, not soldered.

Condensing units have provisions for braze connections.

Pressure taps are provided on the service valves of outdoor unit for compressor suction and liquid pressures.

The indoor end of the recommended refrigerant line sets may be straight or with a 90 degree bend, depending upon situation requirements. This should be thoroughly checked out before ordering refrigerant line sets.

The gas line must always be insulated.

⚠ CAUTION

In scroll compressor applications, dome temperatures may be hot. Do not touch top of compressor, may cause minor to severe burning.

IMPORTANT:

The unit has a NITROGEN holding charge which will need to be evacuated before charging per local system application requirement.

Refrigerant charge adjustment is necessary. Use the Charging Charts in the outdoor unit Service Facts.

1. Determine the most practical way to run the lines.
2. Consider types of bends to be made and space limitations.

NOTE:

Large diameter tubing will be very difficult to rebend once it has been shaped.

3. Determine the best starting point for routing the refrigerant tubing — INSIDE OR OUTSIDE THE STRUCTURE.
4. Provide a pull-thru hole of sufficient size to allow both liquid and gas lines.
5. Be sure the tubing is of sufficient length.
6. Uncoil the tubing — do not kink or dent.
7. Route the tubing making all required bends and properly secure the tubing before making connections.
8. To prevent a noise within the building structure due to vibration transmission from the refrigerant lines, the following precautions should be taken:
 - a. When the refrigerant lines have to be fastened to floor joists or other framing in a structure, use isolation type hangers.
 - b. Isolation hangers should also be used when refrigerant lines are run in stud spaces or enclosed ceilings.
 - c. Where the refrigerant lines run through a wall or sill, they should be insulated and isolated.
 - d. Isolate the lines from all ductwork.

E. SERVICE VALVE OPERATION

BRASS LIQUID AND GAS LINE SERVICE VALVES

The Brass Liquid and Gas Line Service Valves are factory shipped in the seated position to hold factory charge. The pressure tap service port (when depressed) opens only to the field brazing side of the valve when the valve is in the seated position. The liquid line valve is **not** a back seating valve (see **WARNING** below).

⚠ WARNING

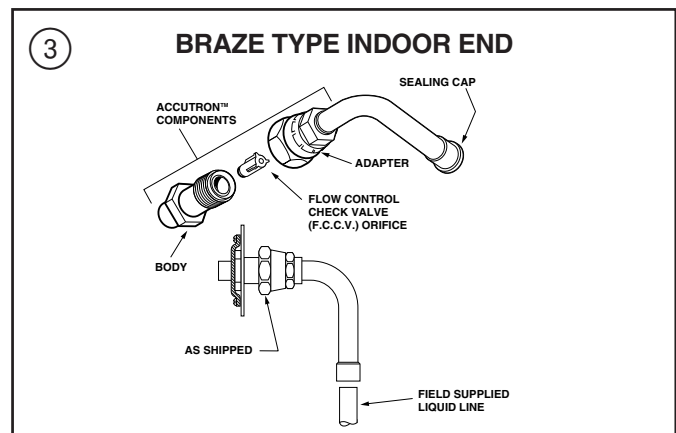
Extreme caution should be exercised when opening the Liquid Line Service Valve. Turn valve stem counterclockwise only until the stem contacts the rolled edge. (See Figure 4) No torque is required.

BRASS GAS LINE BALL SERVICE VALVE

The Brass Gas Line Ball Service Valve is shipped in the closed position to hold the factory refrigerant charge. The pressure tap service port (when depressed) opens only to the field brazing side when the valve is in the closed position. The Gas Line Ball Service Valve is full open with a 1/4 turn. See Figure 5.

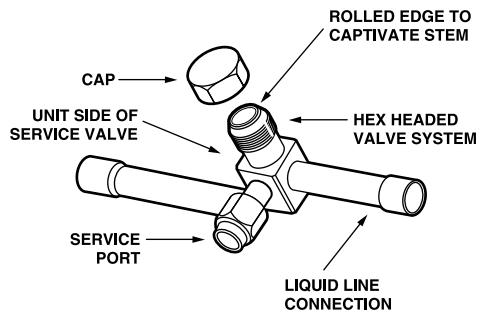
BRAZING REFRIGERANT LINES

1. Remove lower access cover to access service valves.
2. Before brazing, remove plugs from external copper stub tubes. Clean internal and external surfaces of stub tubes prior to brazing.

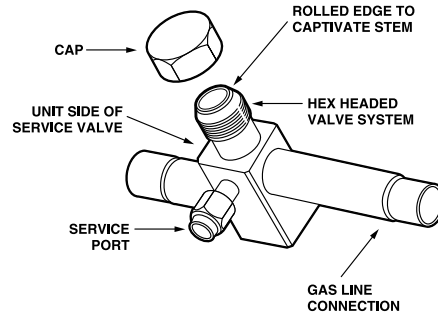


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LIQUID LINE SERVICE VALVE



GAS LINE SERVICE VALVE



- Cut and fit tubing, minimizing the use of sharp 90° bends.
- Insulate the entire gas line and its fittings.
- Do **NOT** allow uninsulated liquid line to come in direct contact with bare gas line.
- Precautions should be taken to avoid heat damage to the pressure tap valve core during brazing. It is recommended that the pressure tap port valve core be removed and a wet rag wrapped around the valve body.**

NOTE:

Use care to make sure that no moisture enters pressure tap port, while wet rag is being used.

NOTE:

Precautions should be taken to avoid heat damage to basepan during brazing. It is recommended to keep the flame directly off of the basepan.

- Use a Dry Nitrogen Purge and Brazing Alloy without flux when brazing the field line to the copper factory connection. Flow dry nitrogen into either valve pressure tap port, thru the tubing and out the other port while brazing.
- Braze using accepted good brazing techniques.

LEAK CHECK

IMPORTANT:

Replace pressure tap port valve core before attaching hoses for evacuation.

After the brazing operation of refrigerant lines to both the outdoor and indoor unit is completed, the field brazed connections must be checked for leaks. Pressurize through the service valve ports, the indoor unit and field refrigerant lines with dry nitrogen to 350-400 psi. Use soap bubbles or other leak-checking methods to see that all field joints are leak-free! If not, **release pressure**; then repair!

SYSTEM EVACUATION

NOTE:

Since the outdoor unit has a refrigerant charge, the gas and liquid line valves must remain closed.

- Upon completion of leak check, evacuate the refrigerant lines and indoor coil before opening the gas and liquid line valves.
- Attach appropriate hoses from manifold gauge to gas and liquid line pressure taps.

NOTE:

Unnecessary switching of hoses can be avoided and complete evacuation of all lines leading to sealed system can be accomplished with manifold center hose and

connecting branch hose to a cylinder of HCFC-22 and vacuum pump.

- Attach center hose of manifold gauges to vacuum pump.
- Evacuate until the micron gauge reads no higher than 350 microns.
- Close off valve to vacuum pump and observe the micron gauge. If gauge pressure rises above 500 microns in one (1) minute, then evacuation is incomplete or system has a leak.
- If vacuum gauge does not rise above 500 microns in one (1) minute, the evacuation should be complete.
- With vacuum pump and micron gauge blanked off, open valve on HCFC-22 cylinder and charge refrigerant lines and indoor coil with vapor to tank pressure of HCFC-22 supply.

NOTE:

DO NOT VENT REFRIGERANT INTO THE ATMOSPHERE.

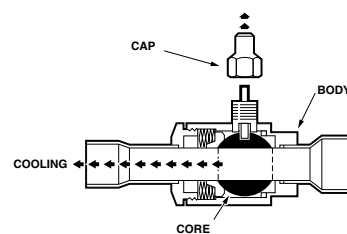
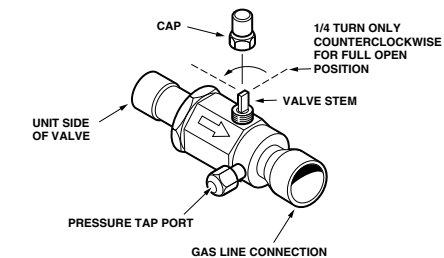
- Close valve on HCFC-22 supply cylinder. Close valves on manifold gauge set and remove refrigerant charging hoses from liquid and gas pressure tap ports.

NOTE:

A 3/16" Allen wrench is required to open liquid line service valve. A 1/4" Open End or Adjustable wrench is required to open gas line valve. A 3/4" Open End wrench is required to take off the valve stem cap.

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GAS LINE BALL SERVICE VALVE



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9. The liquid line shut-off valve can now be opened. Remove shut-off valve cap. Fully insert hex wrench into the stem and backout counterclockwise until valve stem just touches rolled edge (approximately five [5] turns) observing **WARNING** statement on page 2. See Figure 4.
10. Replace liquid service pressure tap port cap and valve stem cap. These caps **MUST BE REPLACED** to prevent leaks. Replace valve stem cap and pressure tap cap finger tight, then tighten an additional 1/6 turn.
11. The gas valve can now be opened. For a ball type gas valve, open the gas valve by removing the shut-off valve cap and turning the valve stem 1/4 turn counterclockwise, using 1/4" Open End or Adjustable wrench. See Figure 5. For brass gas line service valve opening, follow 9 and 10 above. See Figure 4.
12. The gas valve is now open for refrigerant flow. Replace valve stem cap to prevent leaks. Again, these caps **MUST BE REPLACED** to prevent leaks. Replace valve stem cap and pressure tap cap finger tight, then tighten an additional 1/6 turn. See Figure 5.

If refrigerant lines are longer than 15 feet and/or a different size than recommended, it will be necessary to adjust system refrigerant charge upon completion of installation. See unit Service Facts.

F. ELECTRICAL CONNECTIONS

⚠ CAUTION

Three phase scroll compressors will run in reverse if powered up with improper phasing. If the compressor is running backwards there will be little or no difference in suction and discharge pressure and it will make a distinct louder sound. Reversing any two of the field installed power leads will correct the compressor rotation. **Failure to change the power leads to correct compressor rotation may result in compressor damage during operation.**

⚠ WARNING

When installing or servicing this equipment, **ALWAYS** exercise basic safety precautions to avoid the possibility of electric shock.

1. If factory leads are attached to the line side of the terminal block, please remove and discard before attaching the field power supply connections.
2. Power wiring and grounding of equipment must comply with local codes.
3. Power supply must agree with equipment nameplate.
4. Install a separate disconnect switch at the outdoor unit.
5. Ground the outdoor unit per local code requirements.
6. Provide flexible electrical conduit whenever vibration transmission may create a noise problem within the structure.

G. COMPRESSOR START UP

After all electrical wiring is complete, SET THE THERMOSTAT SYSTEM SWITCH IN THE OFF POSITION SO COMPRESSOR WILL NOT RUN, and apply power by closing the system main disconnect switch. This will activate the compressor sump heat (where used). Do not change the Thermostat System Switch until power has been applied for one (1) hour. Following this procedure will prevent potential compressor overload trip at the initial start-up.

H. OPERATIONAL AND CHECKOUT PROCEDURES

Final phases of this installation are the unit Operational and Checkout Procedures which are found in this instruction (see page 8). To obtain proper performance, all units must be operated and charge adjustments made in accordance with procedures found in the Service Facts.

I. SEACOAST SHIELD

Units installed within one mile of salt water, including seacoasts and inland waterways, require the addition of BAYSEAC001 (Seacoast Kit) at the time of installation.

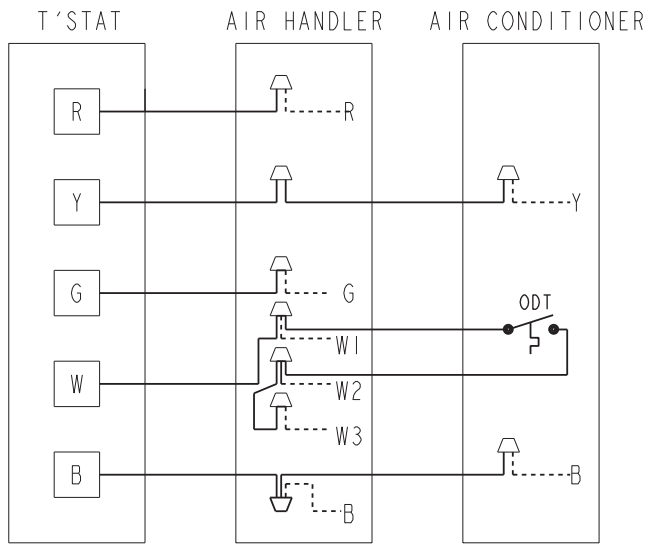
J. TROUBLESHOOTING

TROUBLESHOOTING CHART — WHAT TO CHECK

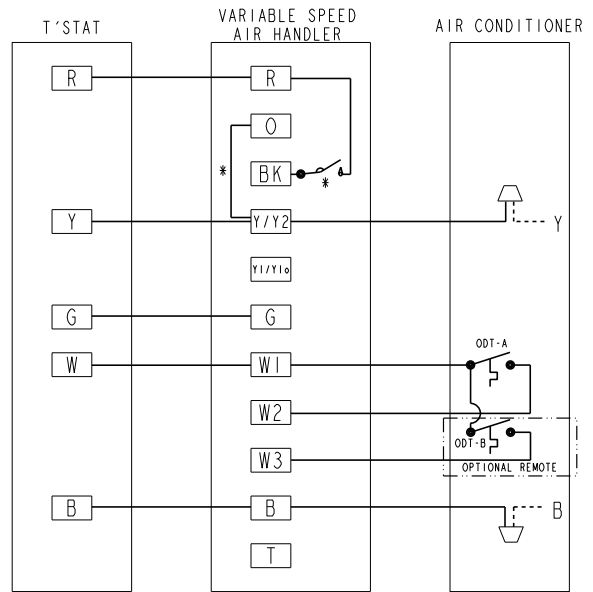
SYSTEM FAULTS	HIGH VOLTAGE WIRING POWER SUPPLY	LOW VOLTAGE WIRING CUMR. IOL	BLU. CAP. MOTOR START CAPACITOR	START CAPACITOR START FREELY	CONTROL TRANSFORMER LOW VOLT. TAP WIRING	CONTROL TRANSFORMER CONTACTOR CONTACTS	LOW VOLT. TAP WIRING CONTACTOR COIL	LOW VOLT. TAP WIRING CONTACTOR COIL	STUCK COMPRESSOR REFRIGERANT COMPRESSOR	REFRIGERANT COMPRESSOR REFRIGERANT COMPRESSOR	REFRIGERANT COMPRESSOR REFRIGERANT COMPRESSOR	EXCESSIVE DISCHARGE REFRIGERANT COMPRESSOR	RESTRICTED O.D. AIR FLOW N.W.C. DISCHARGE	O.D. AIR REPLICATION RESTRICTED O.D. AIR FLOW	TXV (S) MOUNTING RESTRICTED O.D. AIR FLOW	REF. CIRCUIT RESTRICTIONS RESTRICTED O.D. AIR FLOW	O.D. FAN SPEED SERVICE RESTRICTED O.D. AIR FLOW	
REFRIGERANT CIRCUIT																		
Liquid Pressure Too High														P	P	S	S	S
Liquid Pressure Too Low										S	P					S	S	S
Suction Pressure Too High										S	P	P				S	P	S
Suction Pressure Too Low												S				S	P	S
Liquid Refrig. Floodback TXV System																S	S	
Liquid Refrig. Floodback Capillary Tube System													P		S	S	S	P
I.D. Coil Frosting													P					P
Compressor Runs Inadequate or No Cooling												S	P	P	S		S	P
ELECTRICAL																		
Compressor & O.D. Fan Do Not Start	P	P							S	P	P	P						
Compressor Will Not Start But O.D. Fan Runs	P	S	P	P	P								S					
O.D. Fan Won't Start	P		P															
Compressor Hums But Won't Start	P		P	P	P	S						S						
Compressor Cycles on IOL	P	S	P	P	P	S						P	S	P	S	S	S	S
I.D. Blower Won't Start	P	S										S	P					

P - Primary Causes S - Secondary Causes

TYPICAL FIELD HOOK-UP DIAGRAMS FOR 2TTA0030-060AD

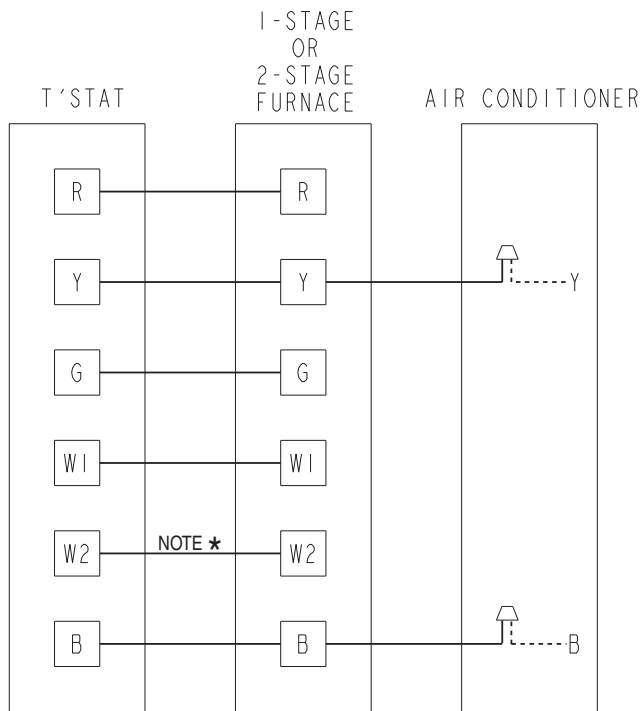


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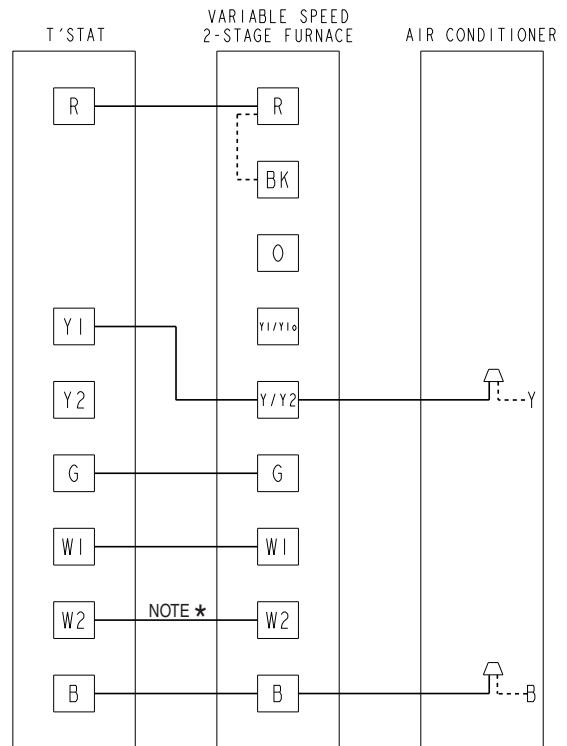
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* CONNECTIONS TO BE MADE FOR OPERATION OF BLOWER WITH HUMIDISTAT IN COOLING



PRINTED FROM B152903 P02

*W2 present only on 2 stage thermostat and furnace



PRINTED FROM B152907 P04

*W2 present only on 2 stage thermostat and furnace

Notes:

1. Be sure power supply agrees with equipment nameplate.
2. Power wiring and grounding of equipment must comply with local codes.
3. Low voltage wiring to be No. 18 AWG minimum conductor.
4. ODT-B must be set lower than ODT-A.
5. If outdoor thermostats (ODT) are not used, connect W1 to W2 and W3.

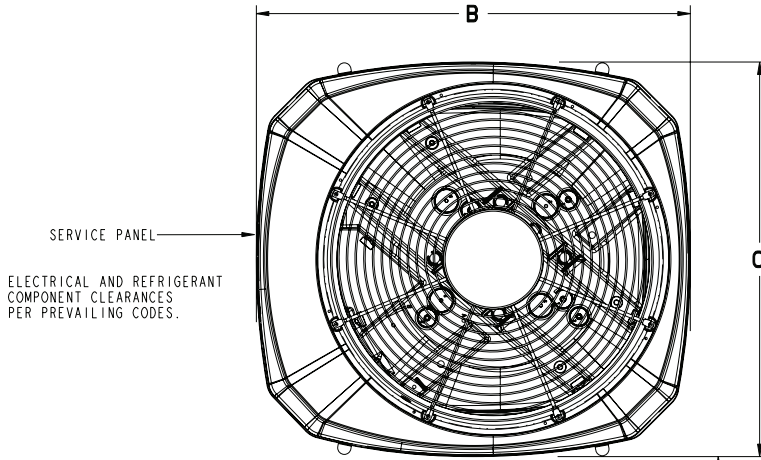
LEGEND

- FACTORY WIRING
- FIELD WIRING

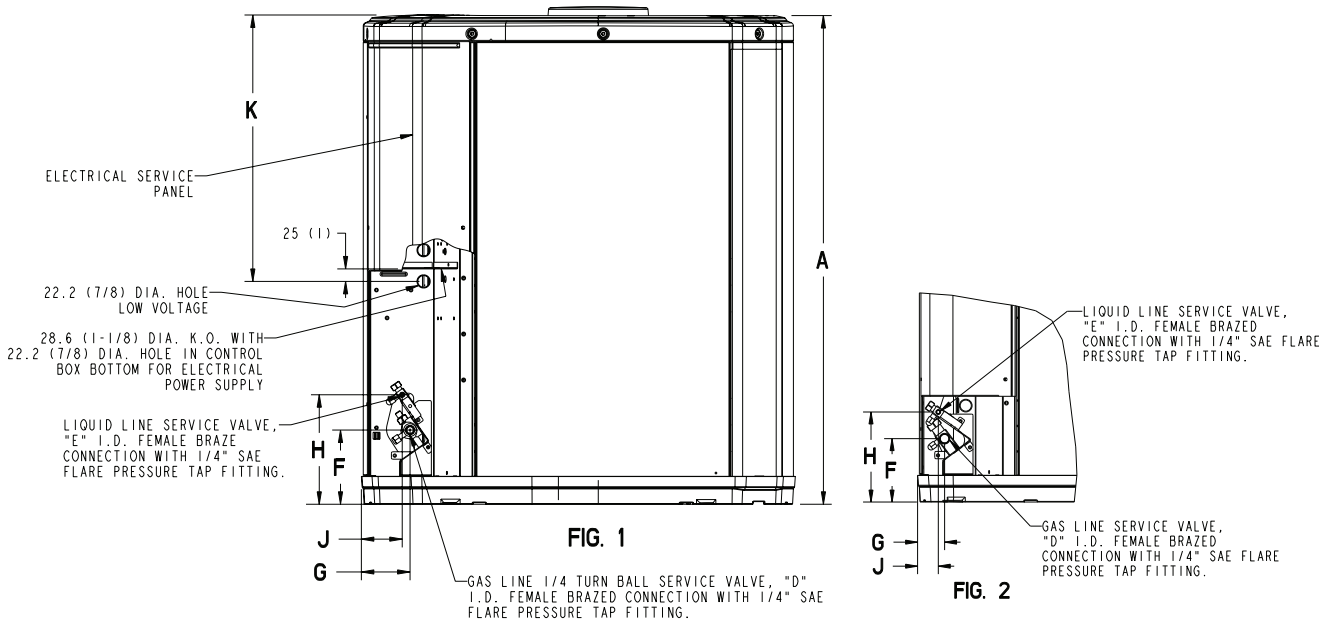
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2TTA030,040,050 & 060AD OUTLINE DRAWING

Note: All dimensions are in MM (Inches).



TOP DISCHARGE AREA SHOULD BE UNRESTRICTED FOR AT LEAST 1524 (5 FEET) ABOVE UNIT. UNIT SHOULD BE PLACED SO ROOF RUN-OFF WATER DOES NOT POUR DIRECTLY ON UNIT, AND SHOULD BE AT LEAST 305 (12") FROM WALL AND ALL SURROUNDING SHRUBBERY ON TWO SIDES. OTHER TWO SIDES UNRESTRICTED.

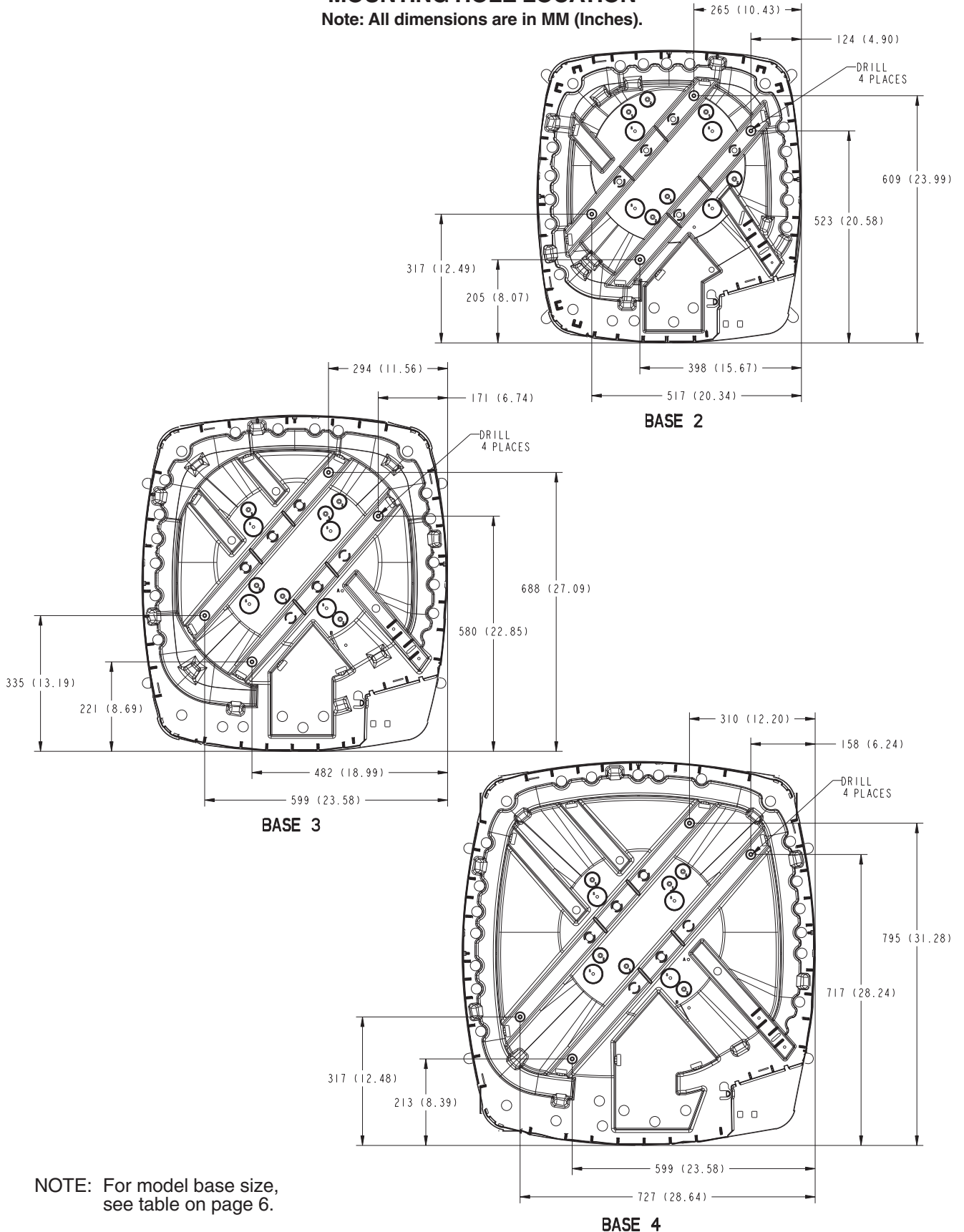


MODELS	BASE	FIG.	A	B	C	D	E	F	G	H	J	K
2TTA0030AD	2	2	730 (28-3/4)	724 (28-1/2)	651(25-5/8)	7/8	3/8	137 (5-3/8)	65 (2-5/8)	210 (8-1/4)	57 (2-1/4)	457 (18)
2TTA0040AD	2	2	730 (28-3/4)	724 (28-1/2)	651(25-5/8)	1-1/8	3/8	137 (5-3/8)	65 (2-5/8)	210 (8-1/4)	57 (2-1/4)	457 (18)
2TTA0050AD	3	1	832 (32-3/4)	829 (32-5/8)	756 (29-3/4)	1-1/8	3/8	143 (5-5/8)	92 (3-5/8)	210 (8-1/4)	79 (3-1/8)	508 (20)
2TTA0060AD	4	1	1045 (41-1/8)	946 (37-1/4)	870 (34-1/4)	1-1/8	3/8	152 (6)	98 (3-7/8)	219 (8-5/8)	86 (3-3/8)	508 (20)

From Dwg. 21D153074 Rev. 5

MOUNTING HOLE LOCATION

Note: All dimensions are in MM (Inches).



NOTE: For model base size, see table on page 6.

From Dwg. 21D152989 Rev. 0

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CHECKOUT PROCEDURE

After installation has been completed, it is recommended that the entire system be checked against the following list:

1. Refrigerant Line, Leak checked []
2. Suction Lines and Fittings properly insulated []
3. Have all Refrigerant Lines been secured and isolated properly? []
4. Have passages through masonry been sealed? If mortar is used, prevent mortar from coming into direct contact with copper tubing []
5. Verify tightness of all electrical connects []
6. Observe outdoor fan during on cycle for clearance and smooth operation []
7. Indoor coil drain line drains freely. Pour water into drain pan []
8. Supply registers and return grilles open and unobstructed []
9. Return air filter installed []
10. Thermostat thermometer is accurate. Check against a reliable thermometer. Adjust per instructions with thermostat []
11. Is correct speed tap being used? (Indoor blower motor) []
12. Operate complete system in each mode to insure safe operation. []

CHECKOUT PROCEDURE WITH MAIN POWER DISCONNECTS CLOSED (ON)

Step No.	TO CHECK	INDOOR THERMOSTAT SWITCH SETTING					COMPONENT OPERATION				
		Off	① Cool	① Heat	Fan Switch		Indoor Blower Runs	Outdoor Fan Runs	Compressor Runs	③ Comp. Sump Heater	Furnace Heat Comes On
					Auto	On					
1	Sump Heat	X			X					X	
2	Indoor Fan Operation	X				X	X			X	
3	Cooling Operation		X		X		X	X	X	X	
4	Checking Performance & Charge		X		X		X	X	X	X	
← USE CHARTS ATTACHED TO O.D. UNIT →											
5	Heating ②			X	X		X			X	X
6	Inform owner on how to operate system and what to expect of it. At the same time deliver Owner's Use and Care Booklet.										

- ① Also set thermostat dial to call for cooling or heating as necessary.
- ② Check only necessary if heating unit is used for indoor section and wiring has been disturbed during installation of cooling equipment.
- ③ When applicable.



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