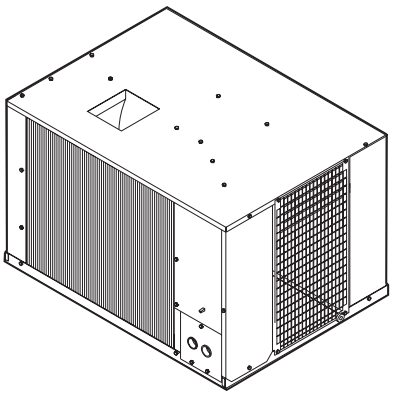
DUO-THERM®
by Dometic

RECORD THIS INFORMATION FOR FUTURE REFERENCE
BEFORE INSTALLING THE UNIT:

Model Number _____
Serial Number _____
Date Purchased _____
Place of Purchase _____

SELF-CONTAINED HEAT PUMP FOR BASEMENT PARK MODEL



ROTARY COMPRESSOR SYSTEM MODELS 39325.502

THIS UNIT IS DESIGNED FOR OEM INSTALLATION
ALL INITIAL INSTALLATIONS MUST BE APPROVED BY THE SALES DEPT.

USA
SERVICE OFFICE
The Dometic Corp.
509 So. Poplar St.
LaGrange, IN 46761

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WARNING

Improper installation, adjustment, alteration, service or maintenance can cause injury or property damage. Refer to this manual. For assistance or additional information consult a qualified installer or service agency.

AVERTISSEMENT

Une mauvaise installation, de mauvais réglages, modifications ou opérations d'entretien peuvent endommager les biens ou même blesser. Se reporter à la notice. Pour obtenir de l'aide ou des reseignements complémentaires, consulter un installateur qualifié ou une agence de service après-vente.

INSTALLATION & OPERATING INSTRUCTIONS

SYSTEM MODELS 39325.502

UNDERWRITERS LABORATORIES INC. LISTED

Form No. 3105532.018 8/94

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1. SPECIFICATIONS, GENERAL INFORMATION & LOCATION

SPECIFICATIONS

System Model	39325.502		
Nominal BTU Capacity (Cool/Heat)	15,000/14,000		
Volts/Phase/Hertz	115 / 1 / 60		
Run Amps Comp/Motor	12.9 / 4.0		
LRA Compressor	71		
Wire Size	Up to 24 ft. - Use No. 12 AWG Copper Conductors		
Circuit Protection	20 Amp Time Delay Fuse or 20Amp HACR Circuit Breaker		
Refrigerant	R-22		
System Refrigerant Charge	38.0		
Size (In Inches)	Width	Height	Depth
	26.25	16.25	19.25
Installed Weight	102 Pounds		
Duct Size Supply	42 sq. in. minimum / 60 sq. in. maximum		

GENERAL INFORMATION

The Basement/Park Model heat pump was designed to operate in a **MILD GEOGRAPHICAL AREA** for heating where the heat loss is minimum. The 39325.502 will operate down to an outside ambient temperature of 40 degrees. At 40 degrees, the outdoor thermostat will turn off the heat pump circuit and start up the coach's main furnace. As long as the temperature remains below 40 degrees, the main furnace will heat your home.

As the outside temperature increases to 45 degrees, the outdoor thermostat switches back to the heat pump circuit.

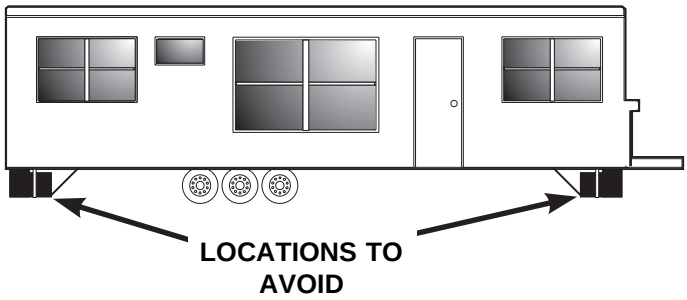
The advantages of the 39325 Heat Pump Central Air Conditioner are:

1. User friendly; only one unit for both heating and air cooling.
2. Heat pump heating uses the campsite electrical hookup and you save on trips to refill LP tanks.
3. When used in mild climates where the outdoor temperature range is 40 degrees or higher, an LP furnace is not needed.

NOTE: Geographical location usage should be determined before omitting a central furnace.

4. The unit is not exposed to the elements.

FIG. 1



LOCATION

The system is intended for installation in a Park Model RV where the interior is essentially one undivided space. When locating the unit, avoid any area where the unit could be damaged when transporting. An area to avoid during mounting is the extreme front and rear of the unit.

2. OUTDOOR SECTION

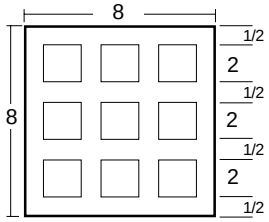
The condenser coil is designed to have a fresh supply of air. If skirting is installed, allow a 15" x 22" opening (330 square inches) for supply air and a 15" x 22" opening (330 square inches) for discharge air. Use the cross flow method for good air circulation.

! CAUTION

DO NOT TOTALLY ENCLOSE THE UNDERSIDE OF THE UNIT. AIR CIRCULATION PREVENTS HEAT FROM BUILDING UNDER UNIT AND YOUR SYSTEM WILL PERFORM AS DESIGNED.

The condenser section is a "blow-through" type. When the face of the coil is positioned behind a louvered or other type of restrictive opening, the FREE AREA of the opening must be **at least 260 square inches**.

A. FREE AREA — is the opening that remains in a grill or louvered panel after the restrictions are taken away. For example, an opening of 10 x 20 inches has 200 square inches. When this opening is covered with a grill that is 56 percent open, the FREE AREA is (200 x .56), 112 square inches.



EXAMPLE OF HOW TO DETERMINE FREE AREA OR % OPEN AREA:

TOTAL AREA = 8 X 8 = 64

FREE AREA = 2 X 2 X 9 openings
= 36

% OPEN AREA = $\frac{36}{64}$ = 56%

Expanded and perforated metal grills in general vary from 30 percent to 60 percent open. Be certain that **260 square inches** of FREE AREA is available to the face of the condenser.

NOTE: Service access must always be supplied either as clearance or as a defined access panel.

B. MOUNTING

Vibration eliminators are supplied to prevent the transmittance of vibration into the living area.

The air conditioning unit may be attached to rails beneath the vehicle, attached to the frame, or mounted directly to the floor of some vehicles.

Unit should be mounted with a tilt toward the rear (condenser) a half-bubble using a level. Unit rear should be 1/4" lower than the front.

C. SERVICE ACCESS

Be sure **NOT** to block the inlet or discharge air, or service access, when mounting.

3. INDOOR SECTION

A. CLEARANCES

The minimum clearances to the evaporator are zero inches to the bottom, top, left and right sides. Access to the electrical connections and drain connection must be provided when making the installation.

! CAUTION

Be sure to allow sufficient room to service the electrical components.

B. INLET AIR

The evaporator section must have free access to room air. **A minimum of 180 square inches** of FREE AREA opening is required. Where the return air must be provided through louvers or mesh screen, the FREE AREA percentage of the material used shall be taken into consideration when making this determination. An example of how to determine FREE AREA is included under **"2. OUTDOOR SECTION"**.

GRILLS AND REGISTERS:

NOTE: The return air grill must have the same square surface as the coil face (15"H x 17"L).

For each air conditioning system, there must be a return grill to bring cabin air back into the unit. There must also be at least four discharge grills per unit.

If floor duct system is used, a minimum duct size of 3" x 14" (with 2" x 10" floor registers) is recommended for good air conditioning performance.

Each return air grille must be filtered and accessible for cleaning or replacement.

C. OUTLET AIR:

The 39325 central air conditioning unit is designed to use a 3" x 14" discharge air duct at a static pressure of .10 to .25 inches water column. This duct size is necessary to maintain proper air flow without loss of static pressure and provide good air circulation.

All air handling ducts must be properly insulated to prevent condensation forming on their surface during operation. A vapor barrier must also be supplied on the outer surface of the insulation to prevent moisture from traveling through the insulation and condensing on the cold ductwork.

NOTE: If the air conditioning unit is attached to the central furnace, a damper must be installed at the furnace outlet to prevent cold air from circulating through the furnace heat exchanger.

4. ELECTRICAL WIRING

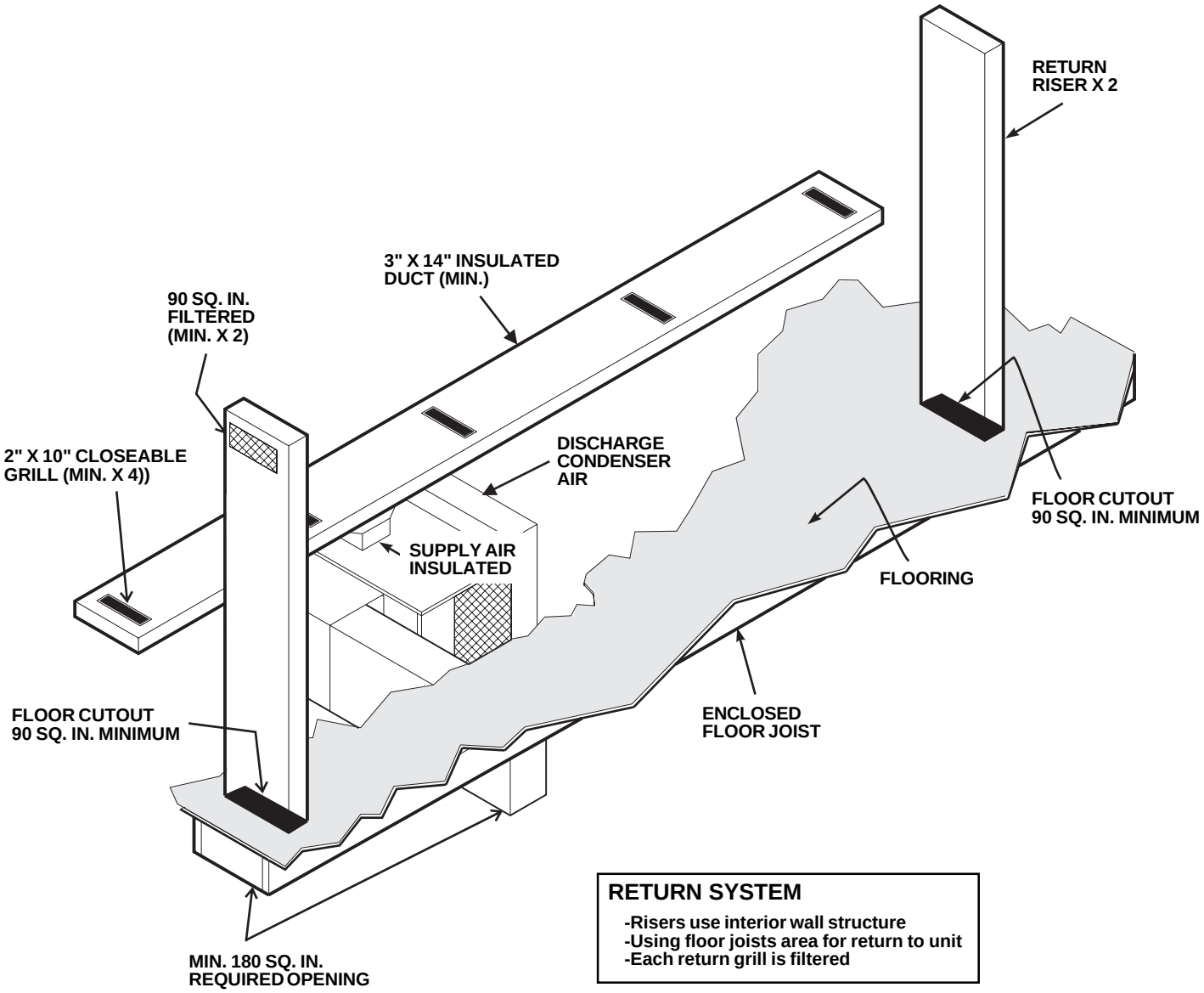
NOTE: All wiring must comply with the National Electrical Code or CSA Standard C22.1, Canadian Electric Code, Part 1; and all local codes.

A. GENERAL

1. All wiring must be at least 12 AWG.
2. Two conductors plus a ground must be provided from a supply circuit protected by a 20 AMP slow-blow fuse or a 20 AMP HACR type circuit breaker to the second opening at the right of the evaporator section electrical box.

B. EVAPORATOR SECTION-Line Voltage

1. Remove electrical box cover.
2. Route supply wires through one of the bushings.
3. Route supply wire through the connector and tighten lock nut to ensure against twisting of the wires.
4. Connect the white wire in the junction box and the white (neutral) wire from the supply line using an appropriate wire connector.
5. Connect the black wire in the junction box to black (hot) wire from the supply line using an appropriate wire connector.
6. Connect the ground wire from the supply line to the unit ground screw.



RETURN SYSTEM

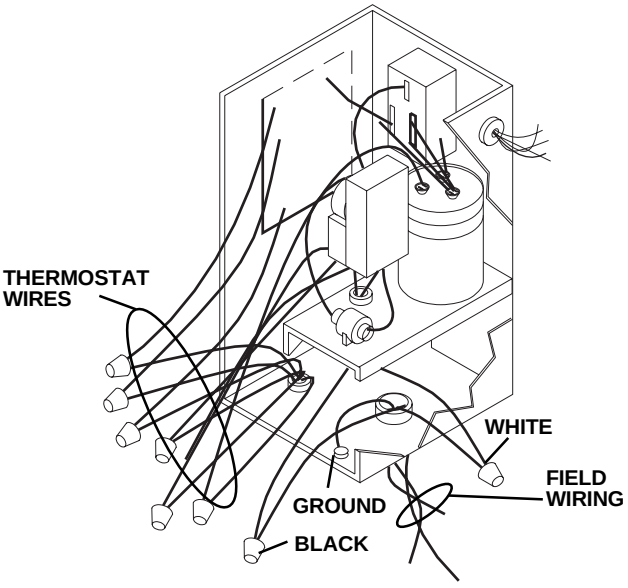
- -Risers use interior wall structure
- -Using floor joists area for return to unit
- -Each return grill is filtered

! WARNING

FAILURE TO CORRECTLY WIRE THE UNIT WILL CAUSE PRODUCT DAMAGE AND MAY CAUSE PERSONAL INJURY.

C. A 25 ft. thermostat cable is supplied with the heat pump air conditioner. To connect the the thermostat cable to the heat pump low voltage wires. Follow the Table below. Secure each connection using a wire nut.

THERMOSTAT CABLE	HEAT PUMP
RED	RED
BLUE	BLUE
BLACK	BLACK
YELLOW	YELLOW
BROWN	BROWN
WHITE	WHITE
VIOLET	VIOLET



5. THERMOSTAT MOUNTING

Contact The Dometic Corporation for the proper thermostat kit. The proper location of the thermostat is very important to ensure that it will provide a comfortable temperature. Observe the following general rules when selecting a location.

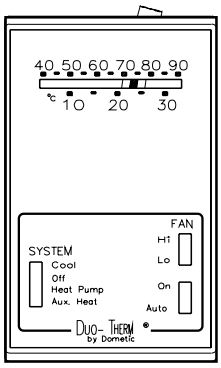
A. Locate thermostat about 5 feet above the floor;
B. Install thermostat on a partition, not on an outside wall;
C. NEVER expose it to direct heat from lamps, sun or other heat producing items;
D. Avoid locations close to doors that lead outside, windows or adjoining outside walls;
E. Avoid locations close to supply registers and the air from them;
F. Never locate thermostat in a room that is warmer or cooler than the rest of the coach — such as the kitchen;
F. The major living area is normally a good location.

6. THERMOSTAT WIRING

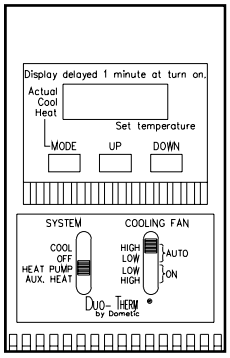
A. THERMOSTAT WIRING

Thermostat wiring for Dometic Bimetal thermostat: Route the (10) conductor cable from the heat pump to the thermostat location. Leave enough cable within the electrical box to connect to the low voltage cable. At the thermostat location, leave about six (6") inches of cable extending through the wall. Plug the thermostat cable into the thermostat connector cable.

When an auxiliary furnace is used with the heat pump, a two conductor cable must be routed from the furnace to the thermostat location. Connect one wire from the furnace to the violet wires with a wire nut. Connect the other wire from the furnace to the green wire in the thermostat cable and secure with a wire nut. Tuck the excess wire back into the wall and fill opening with insulation to prevent drafts that could affect the thermostat operation. Secure the thermostat to the wall using the two screws supplied.



BIMETAL



DIGITAL

B. BIMETAL THERMOSTAT OPERATION

Cooling:

1) Set the SYSTEM SWITCH to COOL.
2) Set the temperature LEVER to your comfort level.
3. Set the FAN switch to:
   a) AUTO: The fan cycles off and on with the compressor.
   b) ON: The fan will run continuously. The compressor will turn off when the room temperature is cool enough to satisfy the thermostat setting.

Heating:

1) Set the system switch to HEAT:
2) Set the temperature LEVER to your comfort level.
3) Set the FAN switch to:
   a) AUTO: The fan will cycle off and on with the compressor.
   b) ON: The fan will run continuously. The compressor will cycle off and on with thermostat demand.

Auxiliary Heat:

1) Set the system switch to AUX.HEAT.
2) Set the fan switch to AUTO.

NOTE: The auxiliary heat position is only used if:

1) You have a factory installed furnace operating from the heat pump system thermostat.
2) The outside temperature is above 40 degrees and you wish to operate your furnace.
3. For quick interior warm up.
4. There is no 115 volt AC power available to operate your heat pump and you must operate the furnace for your comfort.

Fan:

To circulate air without heating or cooling:

1) Set the SYSTEM SWITCH to OFF.
2) Set the FAN SWITCH to ON.

Hi/Low:

HIGH: Fan speed position
LOW: Fan speed position

C. THERMOSTAT WIRING

Thermostat wiring for DIGITAL thermostat: Route the (10) conductor cable from the heat pump to the thermostat location. Route a two conductor cable from the coach's 12 volt DC power source to the thermostat location. Connect 12 volt positive lead to the green wire on the thermostat cable.

Connect the 12 DC volt negative lead to the brown lead. Secure both connections using wire nuts.

At the thermostat location, leave about six (6") inches of cable extending through the wall. Plug the thermostat cable into the thermostat connector cable.

When an auxiliary furnace is used with the heat pump, a single wire conductor must be routed from the furnace to the thermostat location. Connect this wire from the furnace to the violet pigtail at the thermostat and secure with wire nut. Tuck the excess wire back into the wall and fill opening with insulation to prevent drafts that could affect the thermostat operation. Using the two screws provided, secure the thermostat to the wall

NOTE: The furnace has two wires for thermostat connections. One wire should be marked 12V DC or (+) and the other wire may be unmarked, or labeled "thermostat". The wire marked 12V DC or (+) should be capped and not used with the heat pump setup. The wire marked "thermostat" or the unmarked wire is the wire to connect to the violet thermostat pigtail. See Wiring Diagram on Page 8.

D. DIGITAL THERMOSTAT OPERATION

Your air conditioner is operated from the control panel of the electronic wall thermostat. When the furnace is connected to this thermostat, it will operate from the same control panel.

Identification and operational descriptions for all control panel switches and display are listed below:

1) **Liquid Crystal Display**: This display will be illuminated any time the system is in operation.

The display shows the operator both the mode of the display (indicated by the arrow at the left side of the display), and the temperature for that mode.

There are three display modes: ACTUAL, COOL and HEAT.

The operator may choose the mode he desires to view by depressing the "MODE" switch. Each time the MODE switch is depressed, the display advances to the next mode. If the display is left in either COOL or HEAT, the thermostat will automatically return the display to ACTUAL in approximately three minutes.

A description of the three modes is:

ACTUAL: When in actual mode, the display is indicating current room temperature.

COOL SET: When in COOL mode, the display is indicating the current cooling set-point temperature. At this time the cooling system set-point temperature may be adjusted up or down to meet the individual's comfort level. See "Adjusting Set-point" for further instructions.

HEAT SET: When in the HEAT mode, the display is indicating the current heating system set-point temperature. At this time, the heating system set-point temperature may be adjusted up or down to meet the operator's comfort level. See "Adjusting Set-Point" for further instructions.

All three display modes can be accessed without affecting the operation of the system. The system operation will remain normal unless a change is made to the set-point to force a change in the system operation.

2) **System Switch**: The system switch has four positions to control the operation of the heating and cooling systems. They are as follows:

COOL: When in the COOL position, the compressor will cycle from the cooling system set-point. Blower operation will be controlled by the position of the Cooling Fan Switch.

HEAT: When in the heat position, the heating system will cycle from the heating system set-point. The heating blower will operate per the heating system manufacturer specifications.

OFF: When in the OFF position, no thermostat or system operation will occur. The liquid crystal will indicate room temperature until backup power is depleted (approximately 2 minutes).

AUXILIARY HEAT:

1) Set the system switch to AUX. HEAT.
2) Set the FAN switch to AUTO.

NOTE: The AUXILIARY HEAT position is only used if:

1) You have a factory installed furnace operating from the heat pump system thermostat.
2) The outside temperature is above 40 degrees and you wish to operate your furnace.
3) For quick interior warm-ups.
4) There is no 115 volt AC power available to operate your heat pump and you must operate the furnace for your comfort.

FAN SWITCH: The Fan Switch has four positions from which to control the operation of the heat pump blower. The fan switch controls operation of the blower only after the system switch is place into the COOL or HEAT PUMP position.

HIGH AUTO: When in the high auto position, the heat pump blower operates at high speed and cycles off and on with the compressor.

LOW AUTO: When in low auto position, the heat pump blower operates at low speed and cycles off and on with the compressor.

HIGH and LOW ON: When in the high or low position, the heat pump blower operates continuously. The compressor cycles off and on as needed.

MOMENTARY SWITCHES: There are three momentary switches. Momentary switches are activated by depressing the center of the switch. A description of these three switches follows:

MODE: Depressing this switch advances the display mode from ACTUAL to COOL, HEAT and back to ACTUAL. When using this switch, you are indicating your desire to check or adjust the set-point temperatures for cooling or heating. The cool setting determines the temperature at which the air conditioner will start to operate. The heat setting determines the temperature at which the heating system will start to operate.

UP: Depressing this switch increases the temperature set-point.

DOWN: Depressing this switch decreases the temperature set-point.

To adjust the set-point for heating or cooling, press the MODE button until the arrow on the display indicates the desired set-point you wish to change: COOL or HEAT. The display will indicate the current set-point of the thermostat. Press UP or DOWN to change the set-point. Once the new desired set-point is displayed, press the MODE button until the arrow is pointing to ACTUAL. If the thermostat is left in the COOL or the HEAT mode the display will return to ACTUAL in about three minutes. After the display returns to ACTUAL, it takes 15 to 30 seconds for the thermostat to recognized the changes made to the set-point.

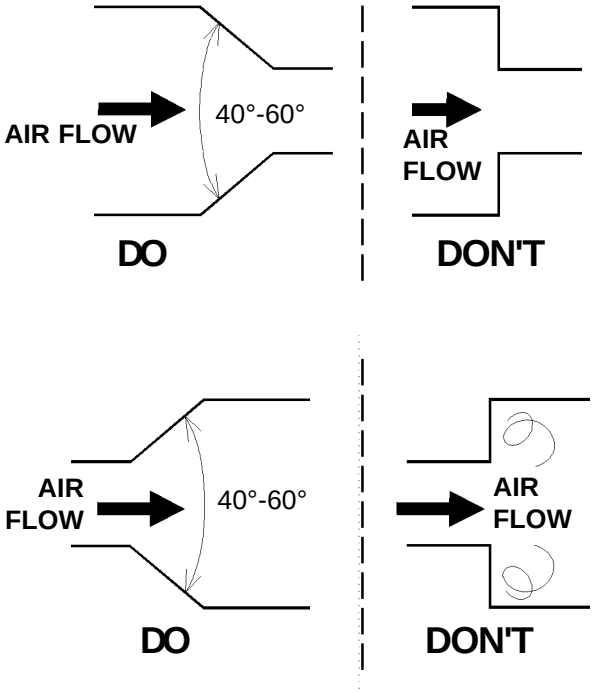
7. DUCTS

NOTE: Streamlining of the air duct system means less resistance to air flow. Sharp angles and turns are to be avoided.

A. Pressure losses increase as the diameter of the duct is reduced. When installing your ductwork on long runs, increase the duct diameter avoid sharp turns.

B. The final evaluation of air distribution in a space is determined by the occupants' comfort.

C. When building around duct runs or placement of duct material, **DO NOT** kink or crush tubing. If turns are required, maintain largest radii possible to decrease pressure loss.



8. MAINTENANCE

A. AIR FILTER: Your air conditioner will operate more efficiently with a clean filter. Replace the filter with a new one every three months.

B. To maintain efficient operation, the exposed CONDENSER COIL should be cleaned as often as necessary to keep it free of dirt and debris. Be careful not to damage the coil fins when cleaning.

9. SERVICING

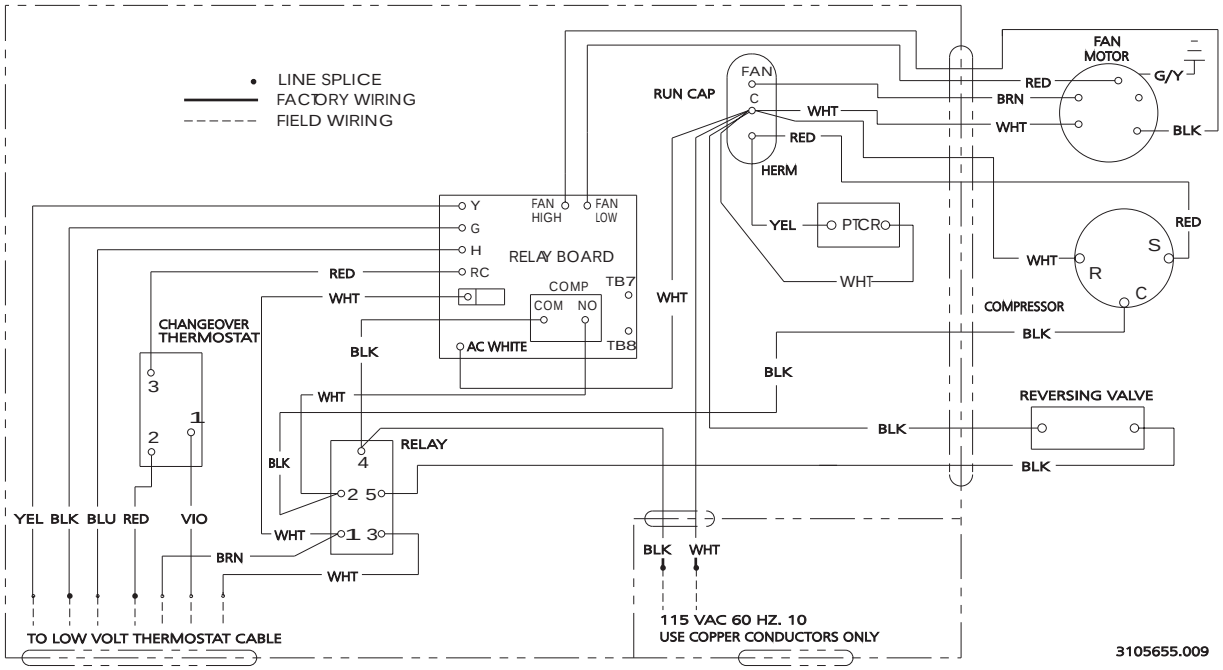
If service work is needed, contact your dealer or the nearest authorized service center. When requesting service, always give complete model and serial numbers. These numbers are located on the left side of the condenser bulkhead.

BEFORE YOU CONTACT A SERVICEMAN

There are several built-in features that may automatically shut off the unit under abnormal operating conditions. If your unit should shut off, here are some things you should check before you contact a service center.

A. Wait a 15 to 30 minutes — to see if unit will resume operation.
B. Check thermostat to see if it is properly set.
C. Check fuses on electrical supply in the vehicle.
D. Check the filter (indoor section) to see if it is clean.
E. Check the condenser coil to be sure it is clean.

WIRING DIAGRAM



FURNACE TO THERMOSTAT CONNECTION