TR25-14, TRH25-14
PRESSURE TEMPERATURE CHART

Evaporator @ High Speed 80°DB, 67° WB Entering Evaporator

Outside Ambient °F	Suct. Press. P.S.I.	Evap. Air-Off °F	Total Watts Input at 115 V	*Compressor Amps. at 115 V	at 105 V	at 110 V	at 120 V
65	53	57	1520	10.3	11.5	10.7	10.2
75	60.5	55.5	1645	11.3	12.5	11.7	11.2
85	66	56	1745	12.3	13.5	12.7	12.2
95	71.5	58	1870	13.3	14.5	13.7	13.2
105	76.5	60	1980	14.3	15.5	14.7	14.2
115	80	61	2080	15.3	16.5	15.7	15.2

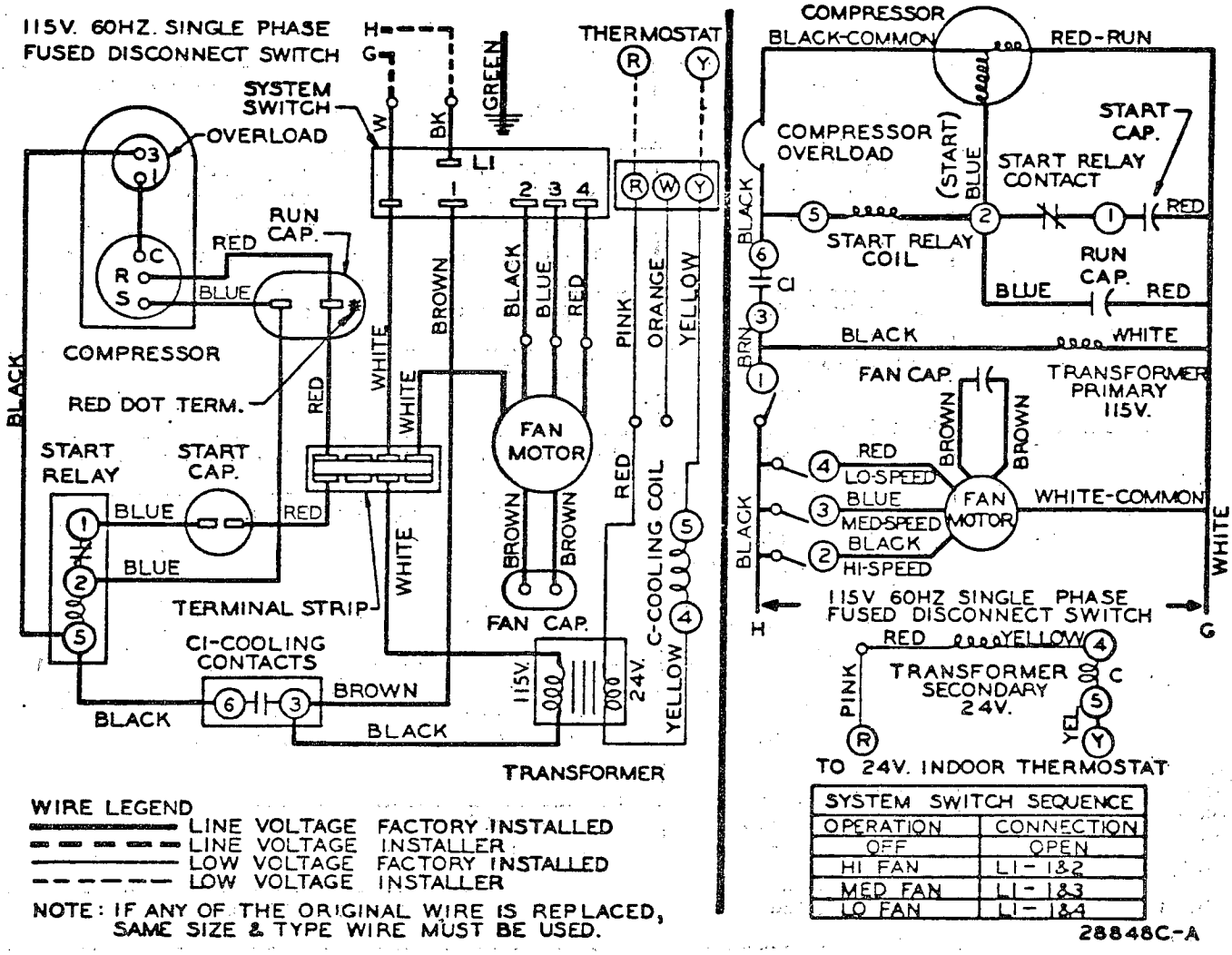
* If Compressor Amps. increase more than 0.2 Amps. after shroud is installed, refer to SERVICE GUIDE section of these instructions.

TR25-12, TRH25-12
PRESSURE TEMPERATURE CHART

Evaporator @ High Speed 80°DB, 67° WB Entering Evaporator

Outside Ambient °F	Suct. Press. P.S.I.	Evap. Air-Off °F	Total Watts Input at 115 V	*Compressor Amps. at 115 V	at 105 V	at 110 V	at 120 V
65	63	55	1345	10.3	11.3	10.8	9.8
75	67	57	1495	10.9	11.9	11.4	10.4
85	71	59	1595	11.5	12.5	12.0	11.0
95	74	60.5	1745	12.0	13.0	12.5	11.5
105	77	62	1845	12.6	13.6	13.1	12.1
115	80	63.5	1945	13.6	14.6	14.1	13.1

* If Compressor Amps. increase more than 0.2 Amps. after shroud is installed, refer to SERVICE GUIDE section of these instructions.



SYSTEM SWITCH SEQUENCE	
OPERATION	CONNECTION
OFF	OPEN
HI FAN	L1 - 1&2
MED FAN	L1 - 1&3
LO FAN	L1 - 1&4

28848C-A

SERVICE GUIDE

Symptoms	Caused by	Checks and Corrections
Low Back Pressure	Dirty Filters	Observation - Clean
	Shortage of refrigerant due to undercharge or leak	Check for proper refrigerant charge. Warm suction and liquid lines, with partially warm evaporator, indicates undercharge. Add refrigerant in vapor form through the low side and check for leak. If leak found, repaid, evacuate and recharge in vapor form into low side.
	Air Leak through ceiling	Observation - Seal Leak
	Insufficient air flow over evaporator	Check for dirty filters. Check blower for cleanliness and speed.
	Evaporator Coil obstructed	Clean fins or remove obstruction.
	Return air too cold	Room temperature thermostat setting too low.
	Restriction in liquid line	Check liquid line for possible kinks. Check at tubing connection fittings to determine if properly pierced diaphragm.
	Blocked Drier or strainer	Blocked drier is determined if drier is cold when unit is running. To correct - replace with new drier, evacuate and weight correct charge in low side.
	Air bypassing discharge to intake	Seal leak. Check extension duct to make sure it is against base. Tape if necessary.
Very Low Back Pressure	Plugged Refrigerant System	Isolate by purging.
High Back Pressure	Insufficient condenser air	Dirt clogging coil. Obstructions on either inlet or outlet to condenser. Damaged condenser coil. Fan loose on motor shaft. Check fan speed.
	Overcharge	Sweating back to compressor. Remove excess charge.
	Operating at Low Fan Speed	Check Pressures at Hi-Fan Operation.
	Compressor not pumping	Check for rapid equalization of pressures, if so replace compressor
	High return air temperature	Insufficient time allowed for pull down. Allow one or two hours longer then check again.
	Excessive Evaporator air Flow	Filter not installed - Replace.
	Air leaking in from outside	Seal leak.

necessary to remove the blower housing.

13. REPLACING FAN BLADE

It is not necessary to remove motor to replace blade. Remove top cover. Loosen fan set screw and pull blade off shaft. Remove one screw that fastens venturi to base angle. (Screw is located at capacitor box side). Rotate vanturi out approximately 2 inches at side where screw was just removed. The Condenser coil is still attached to venturi so be careful not to kink tubing. Slip blade out between motor shaft and venturi opening.

14. REPLACING MOTOR

a. Follow procedure Step 10 REPLACING BLOWER WHEEL

b. Loosen fan set screw and pull blade off shaft. It is not necessary to completely remove blade.

c. Disconnect motor leads.

d. Remove the three bolts that holds motor support bracket to division panel.

e. Pull motor up so that support leg of motor bracket disengages from angle on base.

f. Continue to pull motor up and towards condenser coil until shaft of motor is out of opening in division panel.

g. Remove motor from support bracket and insert new motor in place, keeping motor centered in bracket and motor leads at same location. See Figure 1.

h. Using reverse method install new motor and bracket.

Helpful Hint It will be easier when inserting support leg through grommet on base angle to remove the top grommet from motor support leg. (This is one of the 3 grommets that is fastened to the division panel). When the grommet is removed, it will facilitate raising the support leg that is inserted into base angle. The grommet can then be put back in place.

Note: In order to position the Franklin motor correctly, a 1/16" thick band is placed around the shell of the motor for spacing. The G.E. and Marathon motors do not require this band. See Figure 1.

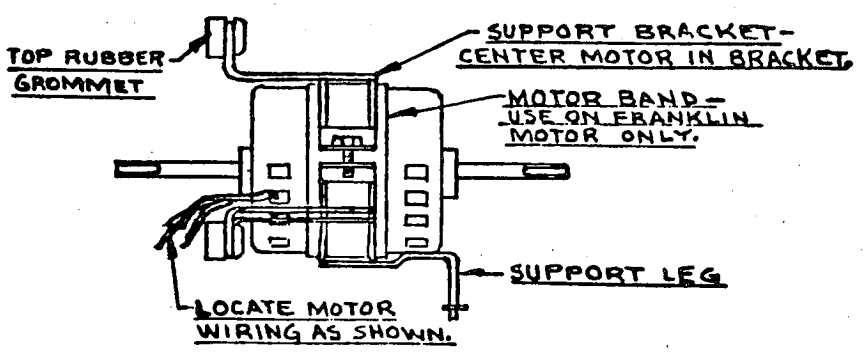


FIGURE 1

b. To Flush Evaporator Coil

Flushing out the evaporator coil is very similar to Steps 3 and 4 when cleaning the condenser coil. Pour 1/2 pint of R-11 into the suction line leading to evaporator coil. Force solvent through coil as was done when the condenser coil was flushed out. The flushing operation through the evaporator coil is completed through the capillary tube. Since the capillary tube is of a very small diameter it will retard the flushing operation. On very severe burnouts, flushing will be almost impossible, therefore, it will be necessary to remove the cap tube and replace with a new one when cleaning is complete.

c. Putting System Back in Operation Brazing Tubing.

Braze discharge line to new compressor and bolt compressor back in place. Make sure the four (4) compressor mounting sleeves are in place before bolting. Braze discharge line to condenser coil. Add strainer shipped with new compressor.

Braze suction line to compressor.

9. EVACUATION - FIELD CHARGING

a. This unit has been provided with a suction service gauge port which extends out to the rear of the unit. Connect gauge manifold on suction gauge port. The service hose must be equipped with a valve depressor to open the valve when service hose is attached to gauge port. Before the system is evacuated, it must be pressurized to a minimum of 75 psig. with R-22 and leak checked with a Halide Torch, or preferably an electronic leak detector.

1. Carefully and slowly leak check all braze joints. Include gauge lines during the leak test.

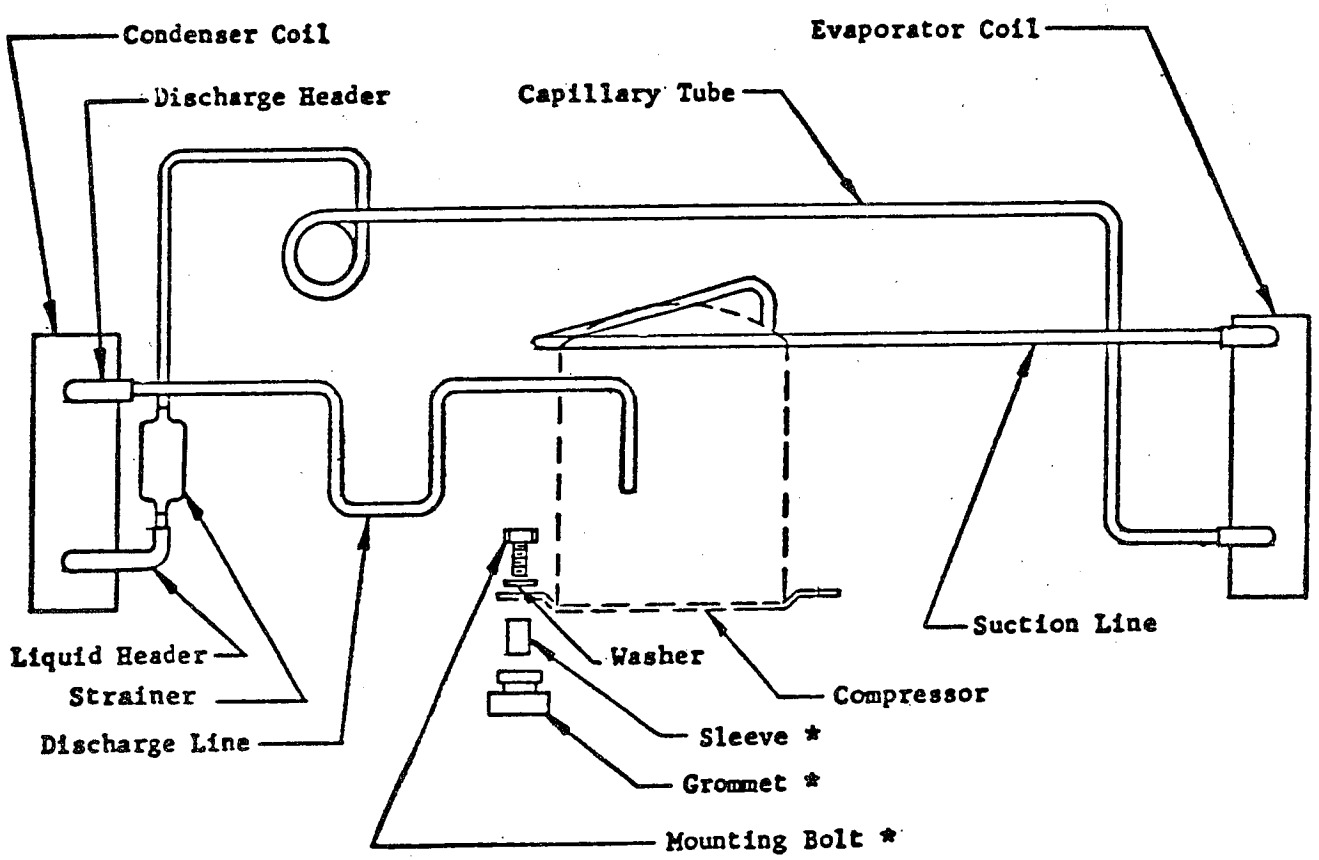
b. Allow refrigerant in system to slowly bleed off through suction side of gauge manifold so as not to lose any oil. After pressure on system has reached zero, attach vacuum pump and draw a deep vacuum of 28" Hg and maintain for ten minutes. Break vacuum with R-22 and purge again. Repeat procedure three times (Triple evacuation method).

c. After achieving final vacuum, the system should be charged with refrigerant #22 by weighing in charge with scale having at least one (1) ounce graduations.

d. Be sure service cylinder of R-22 has enough refrigerant for more than complete charge. Install service cylinder on gauge manifold, making sure the service hose from cylinder to gauge manifold has been purged with refrigerant and valve on cylinder is open. Place service cylinder on scales in charging position (service hose free to move in all directions) and weigh cylinder to nearest half ounce. Subtract the weight of the unit charge shown on rating plate from weight at the beginning and this will be the scale reading at end of charge. Set scales 2 ozs. above the end reading to break the vacuum until scales are balanced. Remember the unit has been under a vacuum and will take charge very fast. Now reset scales to correct end reading and slowly allow the last 2 ozs. of refrigerant into system until scales are at correct reading. It may be necessary to complete the charge by running the compressor.

8. PROCEDURE FOR FLUSHING SYSTEM

CAUTION: Use Safety Goggles to Protect Eyes

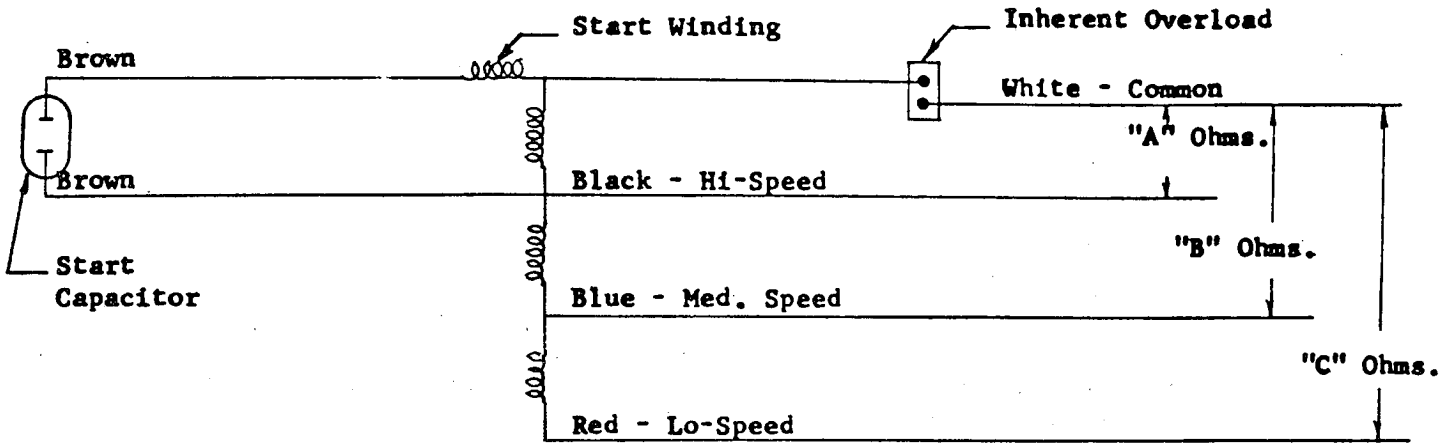


* Make sure all compressor mounting hardware is used when installing new compressor

c. Check Rotary Selector Switch - Follow same procedure, Paragraph d under Section 1, UNIT WILL NOT RUN - NEITHER FAN NOR COMPRESSOR.

d. Check for voltage at motor.

e. Check Continuity of Motor Windings - With ohmmeter set on R X 1 scale, disconnect motor leads and measure across windings as shown below:



Motor Mfgr.	"A"	"B"	"C"
Marathon	5.2	7.6	10.0
G. E.	7.0	9.5	12.0
Franklin	5.4	8.4	10.0

f. Check motor for ground - Connect ohmmeter between motor leads and shell of motor. If reading is evident, motor is grounded and should be replaced.

5. COMPRESSOR RUNS FOR A LONG INTERVAL

a. The system may be low on refrigerant charge. Measure system pressure and compare reading against Pressure Temperature Chart.

b. The thermostat may be affected by the heat given off of television set, range or refrigerator vent.

6. COMPRESSOR SHORT CYCLES ON THERMOSTAT

a. If cycling continues, then check thermostat differential by moving thermostat dial slowly to the right until compressor cuts out. Then slowly move the dial to the left. If compressor comes on before dial is moved less than 2°F then thermostat differential is too low and the thermostat should be replaced.

7. COMPRESSOR REMOVAL AND REPLACEMENT

a. Remove defective compressor from system by first removing wiring and hold down nuts. Allow refrigerant charge to escape through service port by depressing valve core. See Section 8 under EVACUATION-FIELD CHARGING. Sweat loose the

g. Check Run Capacitor - Use a screw driver or jumper wire to discharge the capacitor by shorting between posts. Disconnect lines. Set ohmmeter at R X 10,000 scale, connect between same two posts. The meter pointer should move rapidly over almost to zero, then slowly fall back to its original position. If repeating checks, short out capacitor each time, since the ohmmeter will build-up charge in capacitor and prevent repetition of readings. Replace capacitor if no reading or continuity is shown. Check continuity between each post and care of capacitor. If continuity is shown, capacitor is grounded and should be replaced. If capacitor is okay, replace in unit. Make sure all wires are connected as designated on the wiring diagram.

h. Check Start Capacitor - Using ohmmeter set on R X 10,000 scale, disconnect wiring from both terminals and check continuity across terminals. The capacitor has a 12,000 ohm resistor across the two posts to prevent arcing at the relay contacts. When making checks, the meter pointer will deflect all the way to zero then settle out at 12,000 ohms. If complete continuity or an open circuit is shown, replace capacitor. Normally, it is quicker to replace start capacitor with a new one when making the check. If compressor does not start, leave the new capacitor in place until problem is corrected; then place old one back in place and repeat check. If the compressor starts, the original start capacitor is good and can be left in the unit.

i. Check Start Relay - Remove wires from start relay. Check continuity across terminals 1 and 2 with ohmmeter. Points should be closed and show continuity. If points are open showing no continuity, replace start relay. If points are closed, check continuity across coil terminals 2 and 5. The resistance reading should be approximately 5800 Ohms. If complete continuity or no reading is obtained, replace start relay.

j. Check to determine if relay contacts are welded together by removing screw(s) from in back of relay. Pull control from case to expose contacts and coil. Push lever down against coil. If contacts do not open or if they are burned, replace relay.

To determine if relay is operating place amprobe around blue wire from #1 terminal of relay to start capacitor. If current reading is measured with compressor running, the start relay is not opening the circuit to the start capacitor and the relay should be replaced.

The relay contacts can be bypassed in order to determine if the compressor will start with the relay out of the circuit. Remove the wire from the #1 terminal and hold against the #2 terminal with insulated pliers. Start unit and immediately remove wire from #2 terminal. If compressor starts and operates normally, replace relay.

Important The position and electrical rating of the relay is designed specifically for the compressor in service. Do not replace with one of different rating.

k. If frequent tripping of circuit breakers occurs when all electrical components have been checked and found to be good - check for low voltage. Low voltage will cause high amperage. Minimum voltage is 103 when unit is in operation. To eliminate possible faulty circuit breaker, connect

a. Run Capacitor - Its function is to start and maintain the operation of the compressor at peak efficiency.

b. Start Capacitor - The start capacitor is only in the circuit momentarily. Its function is to give assistance to the run capacitor when starting at lower voltages or higher pressures.

c. Start Relay - The function of the start relay is to disconnect the start capacitor from the circuit within a second after power is applied. When the thermostat breaks the electrical circuit, the start relay coil becomes de-energized, allowing the start relay contacts to close again in preparation for the next start.

SERVICE HINTS, DIAGNOSIS AND CORRECTIVE MEASURES

1. UNIT WILL NOT RUN - NEITHER FAN NOR COMPRESSOR.

a. Check that supply voltage is 115 volts (103 volts is absolute minimum).

b. Check main circuit breaker and circuit breaker for air conditioner and make sure they are on. Make sure system switch is on for air conditioner and the thermostat is set below room temperature.

c. Check for loose wiring connections in both the main circuit breaker and the A/C circuit breaker in the trailer.

d. Check air conditioner junction box connections: Drop the plastic cover of the air distribution grille (inside the trailer) by removing the four screws visible on the bottom. The rectangular control box now exposed can be removed by removing a screw at either end. You can now pull the control box down for inspection of the wiring connections by removing the end plate from the control box. After removing the box cover, you can also check all connections inside the control box.

e. Check Rotary System Switch. Refer to preceding paragraph SYSTEM OPERATION.
Note: The switch must be positioned to one of the fan speeds before unit will operate.
Remove wires from switch and check continuity in manner outlined below: (Use ohmmeter or suitable continuity tester for making these checks)

POSITION	CONNECTIONS
Off	All Contacts Open
Hi-Fan	L1-1 & 2
Med-Fan	L1-1 & 3
Lo-Fan	L1-1 & 4

2. FAN MOTOR RUNS, BUT COMPRESSOR WILL NOT

a. Make sure thermostat is set below room temperature.
The compressor relay should be energized. If not, short between Y and R terminals. If compressor relay closes, thermostat is defective or circuit to transformer is faulty. Make sure thermostat wires are correctly connected to terminals on control box and thermostat. Short Y and R terminals

ARMSTRONG

TRAVEL TRAILER AIR CONDITIONER

SERVICE AND TROUBLE SHOOTING GUIDE

TR25-12	TRH25-12
TR25-14	TRH25-14

TO THE DEALER -

You may be called upon to handle service on these air conditioners, both within and beyond warranty. Familiarize yourself with the warranty on the Armstrong Travel Trailer Air Conditioner.

If you do not have facilities to service these air conditioners within your own organization, we would strongly urge that you make arrangements with a reputable and qualified refrigeration and air conditioning service organization in your locality to handle this service when required for you and the trailer owner. A company that does service on window air conditioners and commercial refrigeration would probably be best equipped to handle this service.

As outlined in the Owner's Maintenance Guide Section, if you or your service agency do not have replacement parts on hand, order them from Airstream immediately. See attached Replacement Parts List. If you are in an area where there is an appreciable air conditioning need, we would urge you to keep at least a minimum inventory of parts on hand. Parts may be ordered from Airstream in accordance with the attached parts schedule.

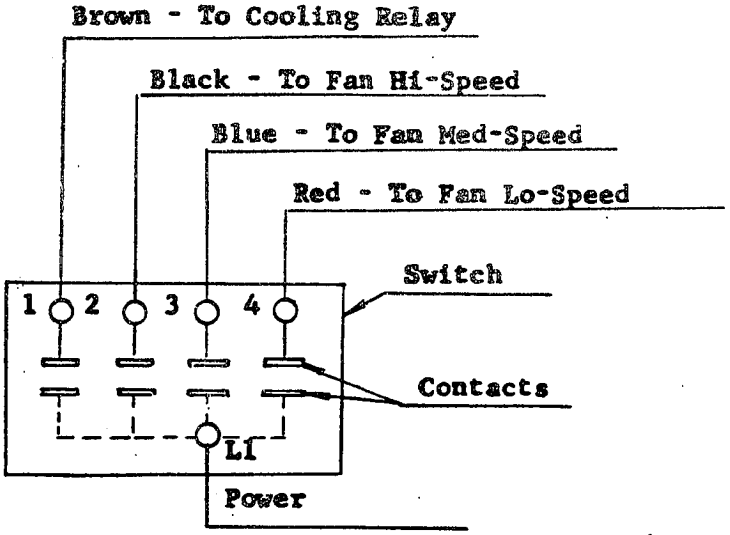
Note: In warranty replacement parts must be obtained from Airstream -- reimbursement will not be made for parts purchased from other sources.

The Travel Trailer Air Conditioner is in effect a hermetically sealed system that should not normally require service beyond that given in the Owner's Maintenance Guide Section. The following information will serve as a guide in diagnosing trouble and in making the necessary corrections, repairs, or replacement of parts.

SYSTEM OPERATION

Before undertaking corrective measures, become familiar with operation of system.

1. Rotary (System) Switch Diagram.



WATER LEAKS

3. Water Leak When Air-Conditioner is Operating

The air conditioner is equipped with two overflow drain lines that direct the water to the outside of the unit. If water is observed coming from either of these lines the following checks can be made.

a. Plugged or kinked drain line.
b. Drain line not straight and may be bowed.
c. Trailer not level.

If water is leaking inside the trailer:

a. Check for damaged fins or evaporator coil. Fins can be straightened.
b. Check corners of drain pan for leaks. A leak in this area can be repaired by drying the surface and applying a sealant.
c. Check for split in drain hose or for poor connection.

4. Keep the shroud louvers (these are the openings in the rear and sides of the cover over the outside unit) and the condenser coil inside the shroud clean at all times. Brush off any accumulation of leaves, tree seeds, etc. If, in looking through the shroud louvers, it appears that there is foreign matter on the outer coil surfaces, remove the shroud and carefully brush off the fins. If they are clogged in depth, remove the condensing unit top. The coil may be flushed by using a hose.

TROUBLE SHOOTING--The following conditions are the most likely to be encountered and can be corrected by the user.

Unit does not run--neither fan nor compressor. Check electric power to make sure the main switch is on and the 20 amp time delay fuse is all right It is sometimes difficult to determine by appearance if the fuse is good, so replacement is an easy check. Make sure the fuses are of the slow-blow type or circuit breakers.

Check thermostat--it should be on and set below room temperature.

Check system switch--the switch must be positioned to one of the fan speeds before unit will operate.

Fan runs but compressor does not run--set thermostat to temperature below the room temperature.

Fan runs, compressor does not run--but attempts to start periodically and then shuts down. Check voltage at "load" side of main switch. The compressor is intended to operate on 115 volt, 60 cycle current. If voltage is under 103 volts, it is doubtful if the unit will start and it may shorten the life of the compressor motor if it does run at reduced voltages.

Fan runs, compressor tries to start two or three times before it finally runs. Changing thermostat setting too quickly or excessive vibration in trailer will cause this and is not a malfunctioning system. The compressor amy not start until it has been off three minutes or longer. The normal thermostat cycles will provide for this. If it is started before this time, the compressor overload protector will open. It is possible, while the compressor is trying to start under the above