

H14-25CW

TR25-12A & 14A
K57

ARMSTRONG

TRAVEL TRAILER AIR CONDITIONER
OWNER'S MAINTENANCE GUIDE

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

TO THE TRAILER OWNER -

1. If service is required, go to the factory service center, to an authorized dealer or to a service organization recommended by the dealer. Do not attempt to make repairs on this equipment unless experienced in air conditioning equipment. The service section of this manual is intended for experienced servicemen.
2. Present your warranty registration form.
3. If parts are required within warranty, the new part will be installed and you will be billed only for labor and shipping charges on the part.
4. Parts not within warranty will, of course, be billed.
5. If the part is not on hand, the service organization should write, wire or call -

Parts Department
Airstream, Incorporated
Jackson Center, Ohio 45334
or
15939 Piuma Avenue
Cerritos, California 90701

giving the name and part number of the required part, the model number and series number of the air conditioner, your name, the name and address of the dealer handling the service and the shipping address. Normally the shipment will go the most economical way, but if faster shipment is desired such as Parcel Post, Special Handling, Air Parcel Post, Air Express, Air Freight or other, please advise.

The following are items for maintenance for your air conditioner that you may want to handle yourself, since they do not require special tools or specialized training knowledge. Attention to these details will help assure the best service from your air conditioner.

1. Clean air filters regularly. See procedures on operating instruction sticker. Never operate air conditioner without the air filters in place.
2. Keep evaporator coil clean. This is the inside unit cooling coil. Set system switch to "OFF" position and inspect coil by removing the air distribution panel and looking at the inside of the coil with a flashlight. For a complete inspection, it may be necessary to remove shroud and evaporator cover on the outside of the unit. If the passageways between the fins are plugged, carefully brush down the inner surface with a fiber brush or cloth to remove surface lint, taking care not to flatten or damage the fins.

conditions, to blow the main time delay fuse, particularly in hot weather. It is best, when the unit attempts to start and does not, to shut the unit off for a period of three to five minutes before restarting.

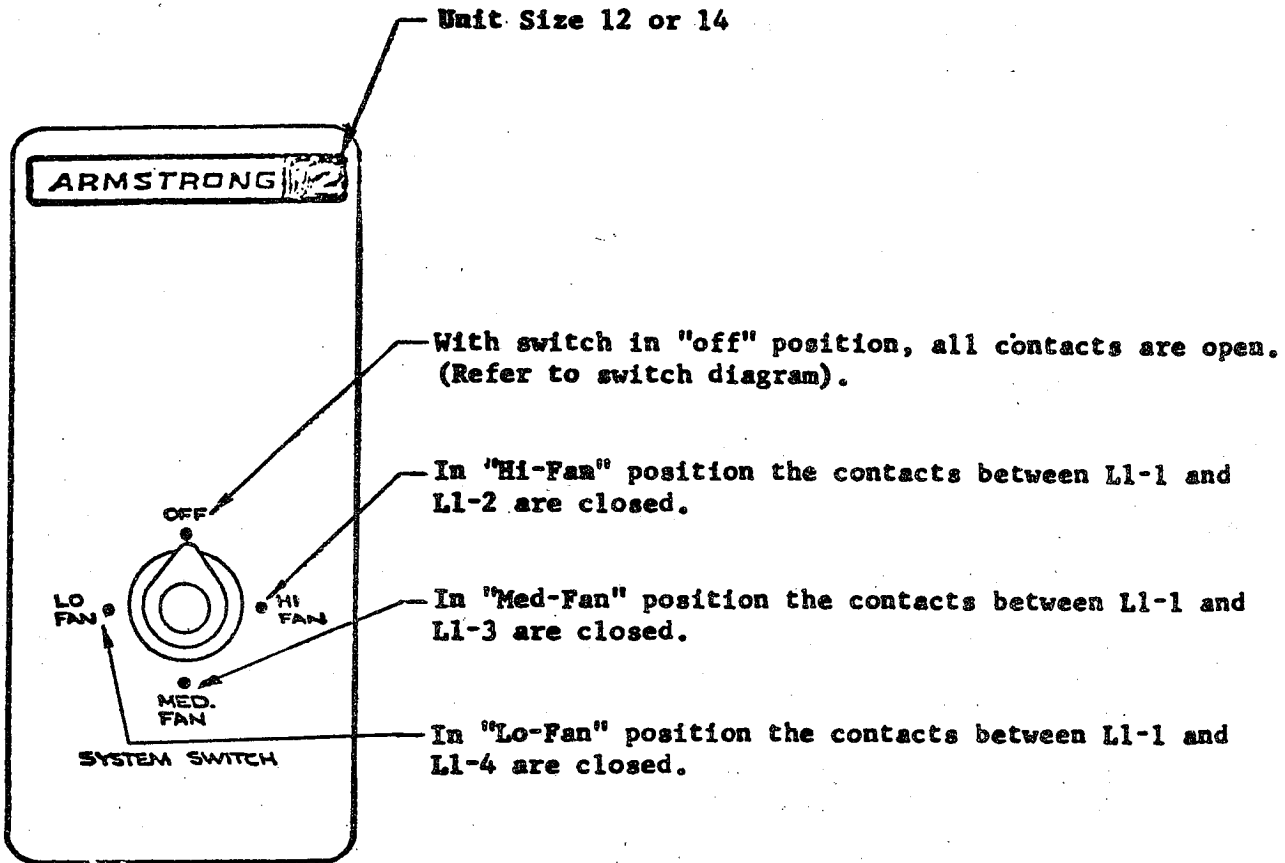
Evaporator or cooling coils collect ice. This can be caused by:

1. A dirty filter.
2. Operating with the directional louvers at the evaporator outlets closed too much.
3. Dirty evaporator coils.
4. Operating on low fan speed partically under the above conditions.
5. Maintaining too low a temperature in the trailer.

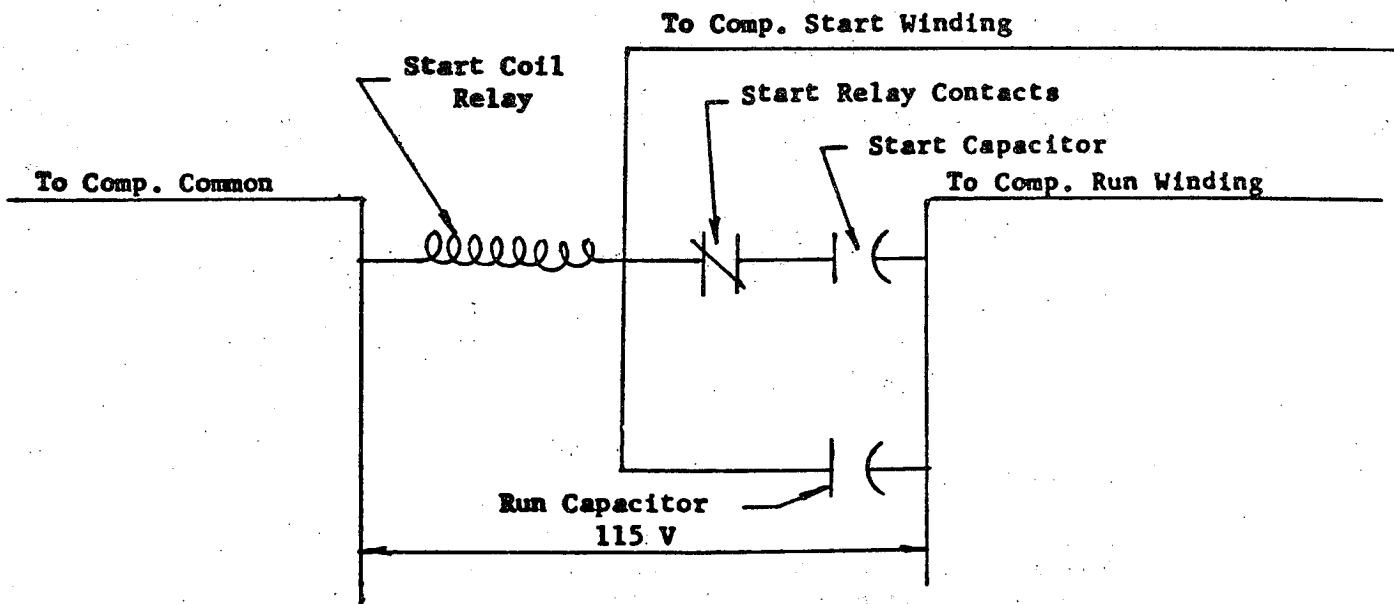
Correct conditions causing icing.

To de-ice, set thermostat to a high temperature reading, open a door or window to raise temperature and operate air conditioner fan at the "HI" setting.

For operating troubles not described above, it is suggested that the nearest factory service center or recreational vehicle dealer be contacted.



3. Run Capacitor, Start Capacitor, Start Relay



at thermostat. If relay closes, thermostat is defective. Remove cover from thermostat and see if contacts are closed.

- b. Check Rotary Selector Switch - Refer to Paragraph E. under Section 1, UNIT WILL NOT RUN - NEITHER FAN NOR COMPRESSOR. If thermostat and switch prove okay, check outside section on top of trailer. Remove top cover. Check wiring connections in capacitor box.
- c. Measure for 24V across transformer secondary.
- d. Check Cooling Relay - Check to see if there is 24 volts across terminals 4 and 5 then jumper between terminals 3 and 6. If compressor starts and operates normally, replace relay.
- e. Remove compressor terminal box cover and jumper across compressor overload with power on. If compressor runs, replace overload. If compressor hums periodically and does not start, the compressor overload is functioning properly, and the trouble may be in the start relay, the start capacitor, the run capacitor, or the compressor itself could be faulty. Be certain there is a minimum of 103 volts across compressor terminals C & R.

The following checks must be made with a good, reliable ohmmeter.

- f. Check Compressor - Disconnect power from unit and remove the three leads from the compressor terminals. Set the ohmmeter on the R X 10,000 scale and check from each terminal to the compressor tubing. If a needle deflection is noted, the compressor windings are grounded. If no grounds are evident, check the compressor for shorted or open windings. Set the ohmmeter to the R X 1 scale and adjust the zero setting carefully. Measure across terminals C-R and C-S. No needle deflection would indicate an open winding, full needle deflection to zero would indicate a shorted winding.

The cold winding (77°F) resistance readings in ohms. are tabulated below: The resistances will be greater with an increase in winding temperature.

Model	Compressor	Run Winding (C - R)	Start Winding (C - S)	Start & Run (S - R)
-12	Tecumseh	0.7	7.0	7.7
-14	Copeland	0.4	4.8	5.2
-14	Tecumseh	0.5	8.0	8.5

Note that the sum of the run winding resistance and the start winding resistance equals the start and run reading.

Any significant variation from the above readings would indicate a defective motor in which case the compressor must be replaced.

separate power supply directly to unit. If amps. are not excessive and compressor continues to run, circuit breaker should be replaced. Use the following table as a guide for compressor amperage at various voltages at 95° outside temperature and "Hi-Cool" operation. If operating at an outdoor temperature other than 95°, refer to performance curve and apply correction.

Compressor Volts	-12 Compressor Amps. (Hi-Cool)	-14 Compressor Amps. (Hi-Cool)
100	13.5	15.5
105	13.0	14.5
110	12.5	13.7
115	12.0	13.3
120	11.5	13.2
125	11.0	13.1

Measure compressor amps. on black lead to compressor. If more amps. is indicated at 115 volts, the unit may be overcharged with refrigerant. Attach pressure gauge to service port with service hose. If pressure is above that shown on the Pressure Temperature Table for the operating temperature conditions, allow refrigerant to escape slowly until pressure corresponds to that shown in the chart. Compressor could have excessive roter drag or scored bearings which will cause high amperage. If an expert refrigeration technician can confirm this condition, the compressor should be replaced.

3. COMPRESSOR AND FAN RUN AND UNIT DOES NOT COOL

- a. Unit may be low on refrigerant charge. Check pressures with service gauge and compare with Pressure Temperature Table. If low on refrigerant or no refrigerant is in evidence, pressurize system and check for leaks. (See Section 8. Evacuation-Field Charging). If 100 Psig to 150 Psig is evident when service gauges are attached and little or no change in pressure takes place when the compressor runs and is pulling low amps. the internal valves or lines in the compressor are broken and the compressor should be replaced.
- b. Check for dirty filters.
- c. Check for icing of coil.

4. FAN OR BLOWER DOES NOT RUN, COMPRESSOR DOES. If the fan motor does not run, the compressor will cut out on its overload protective device and may be off for a long period of time, giving the appearance of a compressor malfunction.

- a. Check the fan blade or blower wheel to determine if they are moving freely without mechanical interference.
- b. Check the fan capacitor - Follow same procedure used when checking run capacitor, Section 2, Paragraph f. The meter pointer will deflect to the mid-scale position, then slowly fall back to its original position. Replace capacitor if no reading or continuous continuity is shown. Check continuity between each post and case of capacitor. If continuity is shown, capacitor is grounded and should be replaced. Make sure all wires are connected as designated on the wiring diagram.

line connections at the compressor, keeping service port open. Take care not to overheat. Smell the defective compressor at the tubing openings and pour out oil sample to observe it if compressor is a "burn-out". Acid test kits are available for this purpose and are recommended in order to eliminate some of the guess work in determining compressor "burn-outs". Generally, dark dirty oil indicates possible "burn-outs", and should be checked further.

- b. If the Compressor has been analyzed as being a "burn-out", a core type suction line filter drier, either an Alco ADK-083S or Sporlan CO83S obtained from a refrigeration supply house, must be installed in the suction line during the installation of the new compressor. The purpose of the suction line filter drier is to prevent the acid oil remaining in the lines and coils from entering the new compressor and consequently causing damage.

Before adding the suction drier, purge as much contaminated oil out of the system as possible in the following manner.

1. Remove liquid line strainer.
2. Press service hose from refrigerant cylinder to end of discharge line and purge oil from outlet of condenser coil with R-22 vapor.
3. Press hose at end of suction line and purge oil out of evaporator through capillary tube. If capillary tube offers too much restriction for purging the oil, then remove it. Check capillary tube to make sure it is not restricted. If it must be replaced, order the capillary tube by part number as shown in the Replacement Parts List of these instructions. Proceed to install the new compressor and suction line drier. The suction line will have to be altered. Support drier to prevent suction line from breaking due to weight of drier.

Install the liquid line drier shipped with the replacement compressor in place of the strainer that was removed during Step 1.

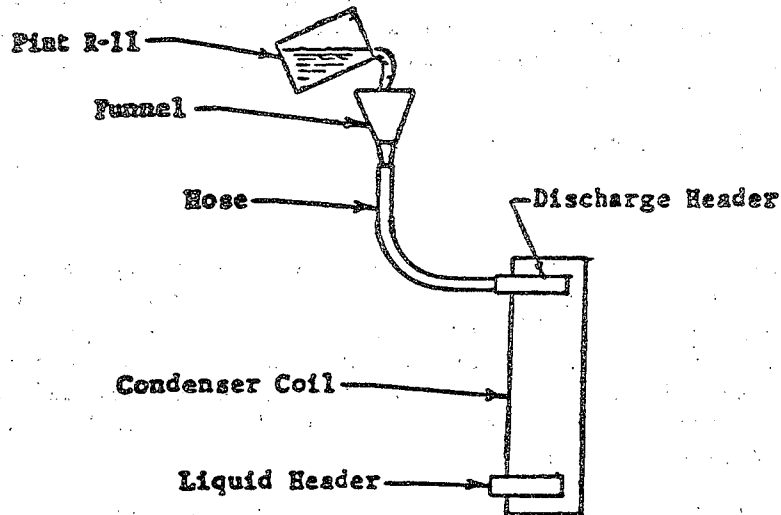
After leak testing and evacuation, weigh in the correct charge as shown on unit rating plate.

Normally the suction drier can remain in the system. If, however, after a one hour running period the suction pressure measured at the service port is more than 5 Psi below that which is shown in the Pressure-Temperature Table of these instructions; remove suction drier and replace with new one.

- c. An alternate method for cleaning the system after a "burn-out" is to flush the system with R-11 solvent. See Section 7 - Procedure For Flushing System.

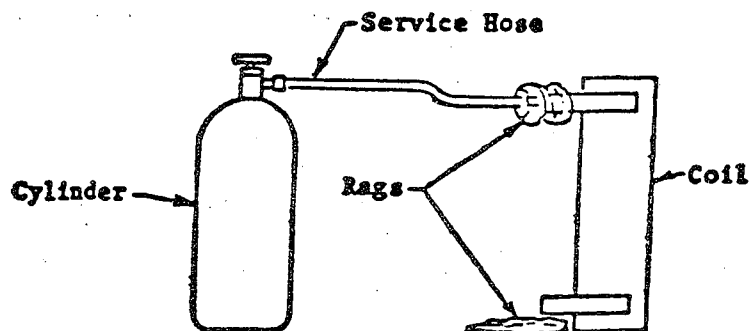
a. To Flush Out Condenser Coil

1. Unsweat discharge line from discharge header.
2. Remove Strainer by unsweating from liquid header and capillary tube. Discard strainer.
3. Insert hose, with funnel attached, in discharge header and pour in 1/2 pint of R-11.



4. Remove fill line and connect your service gauge with R-22 cylinder and press against end of discharge header. Wrap a rag around hose and header and hold steadily in place. Keep refrigerant cylinder in upright position and open cylinder valve. The refrigerant gas in cylinder will force R-11 solvent through the tubing and flush it of contaminants. Repeat Steps 3 and 4 until solvent is clean.

Note: A rag or container held at outlet of coil can be used to collect residue.



- e. After unit has been properly charged and necessary pressure readings taken, remove service hose and recap gauge port. (Be sure cap is gas tight).
- 1. After compressor is back in service follow performance test procedure where applicable. Remember, failure of original compressor may have been caused by faulty system so it is important to check system out to determine if it is operating correctly.

10. PERFORMANCE TEST PROCEDURE

- a. Check for refrigerant leaks.
- b. Be sure all electrical wiring has been completed.
- c. Attach gauge manifold to suction service port at rear of unit. Be sure to purge air out of service hose as they are attached to the unit. Service hose will have to be used with special valve depressors (Superior No. 894 or equivalent) in order to open the valve in the service port.
- d. Connect service cable for air conditioner to power source and start unit according to operating instruction.
- e. Operate until inside temperature of trailer is 75° to 80°. If temperature inside trailer is lower than 75°, operate trailer furnace until desired temperature is obtained.
- f. Compare the suction pressure and compressor amps with pressure and temperature charge against the outdoor ambient at which the unit is operating. Feel the suction line for coolness.
- g. After unit has been checked and found to be running at top efficiency, remove service hose, and cap gauge port tightly. If the system is not performing correctly, refer to Service Guide for possible causes.

11. EVAPORATOR AND CONDENSER COIL MAINTENANCE

Normally no servicing of coils is required other than keeping fins of coils clean. If a leak is detected at the braze points of coil it can in most cases be repaired. Severely damaged coils should be replaced. Just unscrew lines to coil and remove screws which hold coil in place.

Follow EVACUATION - FIELD CHARGING AND PERFORMANCE TEST PROCEDURE after repairs are made. If the fins of the coils are damaged, the fins can be straightened with a comb specially made for this purpose.

12. REPLACING BLOWER WHEEL

Normally no servicing of blower wheel is necessary. Cleaning of blades can be done from inside the coach without removing wheel. Just remove the 4 screws that hold the ceiling grille and use a bottle brush or equivalent with a rigid handle and work sideways between blades. If removing wheel is necessary remove cover from top of unit. Remove cover from evaporator housing. Remove 4 screws that hold blower venturi in place. Loosen blower set screw and remove wheel. It will not be

15. WATER LEAKS

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.

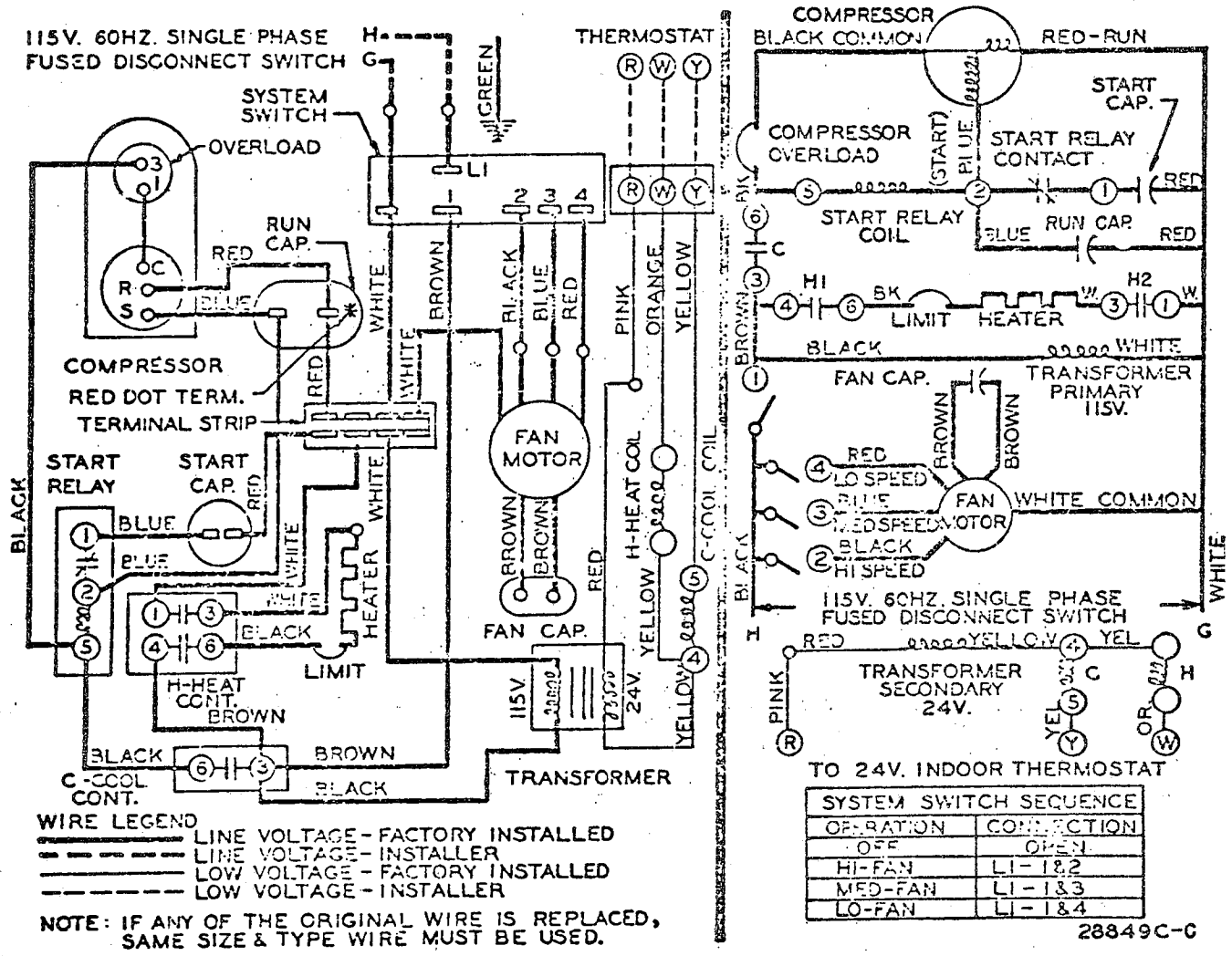
If water is leaking inside the trailer:

- 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.

Water Leak When Raining

- a. Check caulking around the base of unit. The heads of screws that fasten the base to the roof should have sealant applied to them.
- b. Water may be leaking around the collar of the blower gullet. Observation and correction can be made from the inside of the trailer by applying sealant to the base of the air-conditioner where water is observed entering.

Symptoms	Caused by	Checks and Corrections
Compressor Does not run, hums intermittently cycling on overload	Low Line Voltage	The line voltage should not be lower than 10% of rated voltage with compressor trying to start.
	Motor starting or running winding open	Disconnect power. Disconnect wiring at motor compressor terminals. Test starting and running windings for continuity. If test shows either circuit "open" motor will not start or run and compressor will have to be replaced.
	Refrigerant pressures not equalized	Allow 3 minutes for pressures to equalize. Check for restriction in refrigerant line.
	Motor winding grounded to compressor shell	If test shows continuity between metal shell of compressor and any one of the three compressor terminals, the motor winding is grounded and the compressor will have to be replaced.
	Run capacitor failure	Replace run capacitor
	Defective start relay or start capacitor	Replace
Unit operates continuously	Control does not cut-out	Check the cut-out setting on the thermostat.
	Dirty condenser	Clean with brush or vacuum cleaner
	Insufficient air through evaporator coil	Check for dirty filter.
	Ice or frost on evaporator coil	Low refrigerant charge.
Unit Blows Fuses. High Amps.	Low Line Voltage	(See low line voltage)
	Refrigerant pressures not equalized when trying to start	Restriction in refrigerant lines or evaporator. Check for plugged drier or kinked tubing.
	Fuses too small or delay fuse not used.	Check rating plate for proper fuse size. Use only delay type or slow blowing fuses.
	Unit shorted to ground	Check all wiring against wiring diagram
	Grounded.	Check compressor windings with continuity checker or ohmmeter. If grounded, replace compressor
	Run capacitor failure	Replace run capacitor
	Defective Start Relay or Start Capacitor	Replace
	Overcharge	Remove excess. See PRESS-TEMP. TABLE
	Cond. Air bypassing between unit and shroud	Seal
	Condenser Air Flow restricted	Clean condenser coil. Clean screens on shroud. Increase shroud openings if necessary



**REPLACEMENT PARTS LIST
ARMSTRONG TRAVEL TRAILER AIR CONDITIONER**

<u>DESCRIPTION</u>	<u>PART NO.</u>	
Compressor (TR25 & TRH25-14)	277C55	Tecumseh
Compressor Overload	314B42	
Compressor (TR25 & TRH25-14)	277C56	Copeland
Compressor Overload	314B43	
Compressor (TR25 & TRH25-12)	277C57	
Compressor Overload	314B44	
*Motor - Fan	26352R14	G. E.
*Motor - Fan (Alternate)	26553B13	Marathon
*Motor - Fan (Alternate)	26351B9	Franklin
*Start Relay	275B18	
*Capacitor - Run	26349B5	
*Capacitor - Fan	26349B13	
*Capacitor - Start	269A14	
Refrigerant Strainer	1775A4	
Capillary Tube	28712C	
Filter (2 Required)	28663C	
*Thermostat W/Cooling Sub-Base	96B66	
*Sub-Base (TRH25-12 & 14)	96B67	
Condenser Fan Blade	463B21	
Evaporator Blower Wheel	202A21	
Evaporator Blower Wheel (Alternate)	202A22	
Condenser Coil	179C47	
Evaporator Coil	179C46	
*Switch-Rotary	28840A	
Support Bracket-Motor	28004C	
Heater (TRH25-12 & 14)	28665C	
Limit-Heater	74B27	
Cooling Relay	237A11	
Heating Relay (TRH25-12 & 14)	7489B3	

When ordering replacement parts, always give air conditioner model number, series and serial number. For parts not listed, supply description in addition to model number, series and serial number.

*Parts recommended for Dealer's stock.