

**Table Z****Troubleshooting Chart for Air Conditioners**

<b>Type of Unit</b>	<b>Complaint</b>	<b>Cause</b>	<b>Possible Remedy</b>
With open-type compressor	Electric motor will not start	Power failure	Check circuit for power source
		Compressor stuck	Locate cause and repair
		Belt too tight	Adjust belt tension
		Manual reset in starter open	Determine cause of overload and repair. Reset overload cutout
		Thermostat setting too high	Lower thermostat setting
		Low voltage	Check with voltmeter, then call power company
		Burned-out motor	Repair or replace
		Frozen compressor caused by locked or damaged mechanism	Remove and repair compressor
	Unit cycles on and off	Intermittent power interruption	Tighten connections or replace defective power supply parts
		High-pressure cutout defective	Replace high-pressure cutout
		High-pressure cutout set too low. Overload opens after having been reset	Raise cutout pressure. Check voltage and current drawn
		Leaky liquid-line solenoid valve	Repair or replace
		Dirty or iced evaporator	Clean or defrost evaporator. Check filters and fan drive
		Overcharge or refrigerant or non-condensable gas	Remove excess refrigerant or purge non-condensable gas
		Lack of refrigerant	Repair refrigerant leak and recharge
		Restricted liquid-line strainer	Clean strainer
		Faulty motor	Repair or replace faulty motor
	Coil frosts	Filters dirty	Clean filters
		Not enough air over coil	Clean or remove restriction from supply or return ducts or grilles
		Defective expansion valve	Replace valve

**Table Z****Troubleshooting Chart for Air Conditioners (Continued)**

<b>Type of Unit</b>	<b>Complaint</b>	<b>Cause</b>	<b>Possible Remedy</b>	
With open-type compressor (continued)	Unit runs but will not cool	Unit not fully charged	Recharge slightly, then check for leaks in the refrigerant circuit, then fully charge	
		Leaky suction valve	Remove compressor cylinder head and clean or replace valve plate	
		Expansion valve not set correctly	Adjust expansion valve	
		Strainer clogged	Remove, clean, and replace valve	
		Air in refrigerant circuit. Moisture in expansion-valve orifice	Purge unit of air. Clean orifice and install silica gel dryer	
		Flash gas in liquid line	Add refrigerant	
		No air blows from supply grille	Ice or dirt on evaporator	Clean coil or defrost
		Blower belt broken or loose	Adjust belt tension, or replace belt	
		Blower bearing frozen	Repair or replace bearing and lubricate as directed	
		Discharge pressure too high	Improper operation of condenser	Correct airflow. Clean coil surface
			Air in system	Purge
			Overcharge of refrigerant	Remove excess or purge
		Discharge pressure too low	Lack of refrigerant	Repair leak and charge
			Broken or leaky compressor discharge valves	Remove head, examine valves and replace those found to be operating improperly
	Suction pressure too high	Overfeeding of expansion valve	Regulate superheat setting expansion valve and check to see that remove bulb is properly attached to suction line	
		Expansion valve stuck in open position	Repair or replace valve	
		Broken suction valves in compressor	Remove head, examine valves and replace those found to be inoperative	
		Suction pressure too low	Lack of refrigerant	Repair leak and charge
			Clogged liquid line strainer	Clean strainer
			Expansion-valve power assembly has lost charge	Replace expansion-valve power assembly
			Obstructed expansion valve	Clean valve and replace if necessary
		Contacts on control thermostat stuck on closed position	Repair thermostat or replace if necessary	

**Table Z****Troubleshooting Chart for Air Conditioners (Continued)**

<b>Type of Unit</b>	<b>Complaint</b>	<b>Cause</b>	<b>Possible Remedy</b>
With hermetic motor-compressor combination (continued)	Compressor runs continuously; good refrigeration effect	Air over condenser restricted	Remove restriction or provide for more air circulation over the condenser
	Compressor runs continuously; unit is too cold	Thermostatic switch contacts badly burned	Replace thermostatic switch
		Thermostatic switch bulb has become loose	Secure bulb in place
		Thermostatic switch improperly adjusted	Readjust thermostatic switch
	Compressor runs continuously; little refrigeration effect	Extremely dirty condenser	Clean condenser
		No air circulating over condenser	Provide air circulation
		Ambient temperature too high	Provide ventilation or move to a cooler location
		Load too great	Analyze load
	Compressor runs continuously; no refrigeration	A restriction that prevents the refrigerant from entering the evaporator. A restriction is usually indicated by a slight refrigeration effect at the point of restriction	Locate the possible points of restriction, and try jarring it with a plastic hammer, or heating to a temperature of about 110 degrees F. If the restriction does not open, replace the unit.
		Compressor not pumping. A cool discharge line and a hot compressor housing would indicate this. The wattage is generally low.	Replace the unit
		Short of refrigerant	See manufacturer's instructions
	Compressor short cycles, poor refrigeration effect	Loose electrical connections	Locate loose connections and make them secure
		Defective thermostatic switch	Replace thermostatic switch
		Defective motor starter	Replace defective motor starter or relay
		Air restriction at evaporator	Remove air restriction

**Table Z**

**Troubleshooting Chart for Air Conditioners (Continued)**

Type of Unit	Complaint	Cause	Possible Remedy
With hermetic motor-compressor combination (continued)	Compressor short cycles, no refrigeration	Dirty condenser	Clean the condenser
		Ambient temperature too high	Provide ventilation or move to a cooler location
		Defective wiring	Repair or replace defective wiring
		Thermostatic switch operating erratically	Replace thermostatic switch
		Relay erratic	Replace relay
	Compressor runs too frequently	Poor air circulation around the condenser or too high ambient temperature	Increase the air circulation around the condenser. In some localities the temperature is extremely high, and nothing can be done to correct this
		Load too great. Worn compressor. Generally accompanied by rattles and knocks	Analyze end use. Replace unit or bring it to the shop for repairs
	Compressor does not run	Motor is not operating	If the trouble is outside the sealed unit, it should be corrected; for example, wires should be repaired or replaced and thermostatic switches or relays should be replaced. If the trouble is inside the sealed unit, the sealed unit should be replaced.
	Compressor will not run (Assume that the thermostatic switch and relay, and the electric wiring and current supply are in good condition and operating normally)	If the cabinet has been moved, some oil may be on top of the piston	Wait an hour or so, and then attempt to start the motor by turning the current on and off many times. On some compressors, it may be necessary to wait 6 or 8 hour
		Compressor may be stuck, or some parts may be broken	Replace the unit
		Connections may be broken on the inside of the unit, or the motor winding may be open	Replace the unit. Sometimes after sealed units have been standing idle for a long time, the piston may be stuck in the cylinder wall. It is sometimes possible to start the compressor by turning on the current and bumping the outer housing with a rubber mallet.
	Compressor is unusually hot	Condenser is dirty, or there is a lack of air circulation	Clean the condenser; increase the air circulation

**Table Z**

**Troubleshooting Chart for Air Conditioners (Continued)**

Type of Unit	Complaint	Cause	Possible Remedy
With hermetic motor-compressor combination (continued)		Unusually heavy service or load	If possible, decrease load. Perhaps another unit is required
		Low voltage	Too small feed wires could cause this. If the wires feeding the refrigerating unit becomes warm, it is an indication that they are too small and should be replaced with larger wires
		A shortage of oil	Add oil if possible; if this is not possible, the unit must be replaced. A shortage of refrigerant will cause a shortage of oil in the crankcase of the compressor
	No refrigeration after starting up after a long shutdown or on delivery	Generally, during a long shutdown, an amount of liquid refrigerant will get into the crankcase of the compressor. When this happens, the compressor operation will cause no noticeable refrigeration effect until the entire liquid refrigerant has evaporated from the crankcase.	Allow the compressor to operate until its internal heat drives the liquid refrigerant from the crankcase. Under some conditions, this may take as long as 24 hours. This time can be shortened by turning an electric heater on the compressor and raising the compressor temperature, not exceeding 110 degrees F.
	Compressor is noisy	Mountings have become worn or deteriorated. The walls against which the unit is placed may be of an extremely hard surface and may resound and amplify the slight noise from the compressor into the room	Replace the rubber mountings. Place a piece of sound-absorbing material on the wall against which the unit is placed, or move the unit to a new location.
		Shortage of oil and/or refrigerant	Add oil and refrigerant if possible. If it is impossible, the unit must be replaced.
		The sealed unit mechanism has become worn	Replace the unit
	After each defrosting there is a long on cycle before refrigeration is again normal	Slight shortage of refrigerant	Add refrigerant if possible; if not, replace the unit
		Condenser is dirty	Clean the condenser
		Thermostatic switch bulb is loose	Secure the bulb in place
		There is a restriction between the receiver or condenser and/or the evaporator	Attempt to remove the restriction by jarring with a plastic hammer or by heating the possible points of restriction to about 110 degrees F. If this does not correct the trouble, the unit must be replaced or brought to the shop for repairs

Table 14-30.—Electrical Troubleshooting Loads

## ELECTRICAL TROUBLESHOOTING LOADS

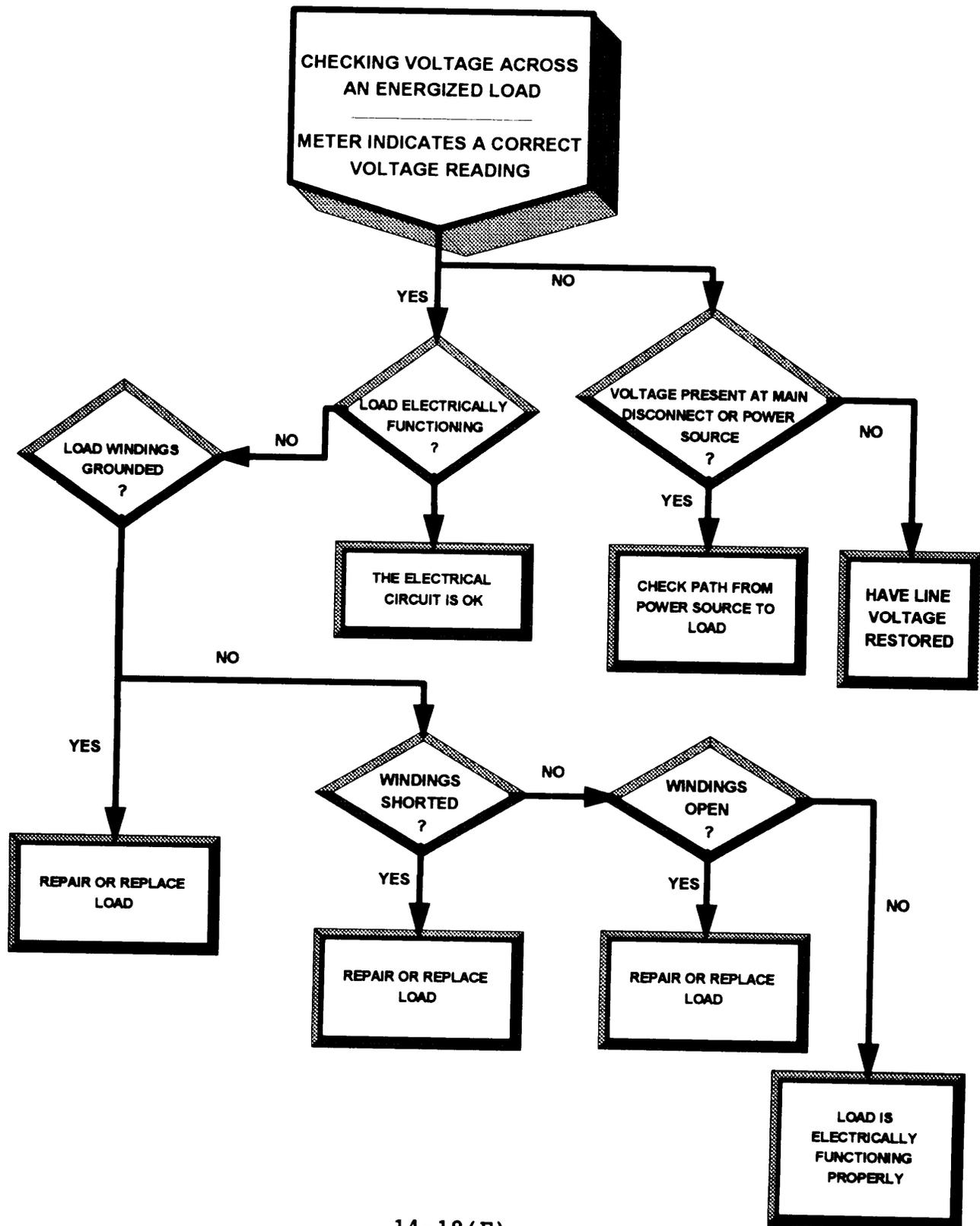
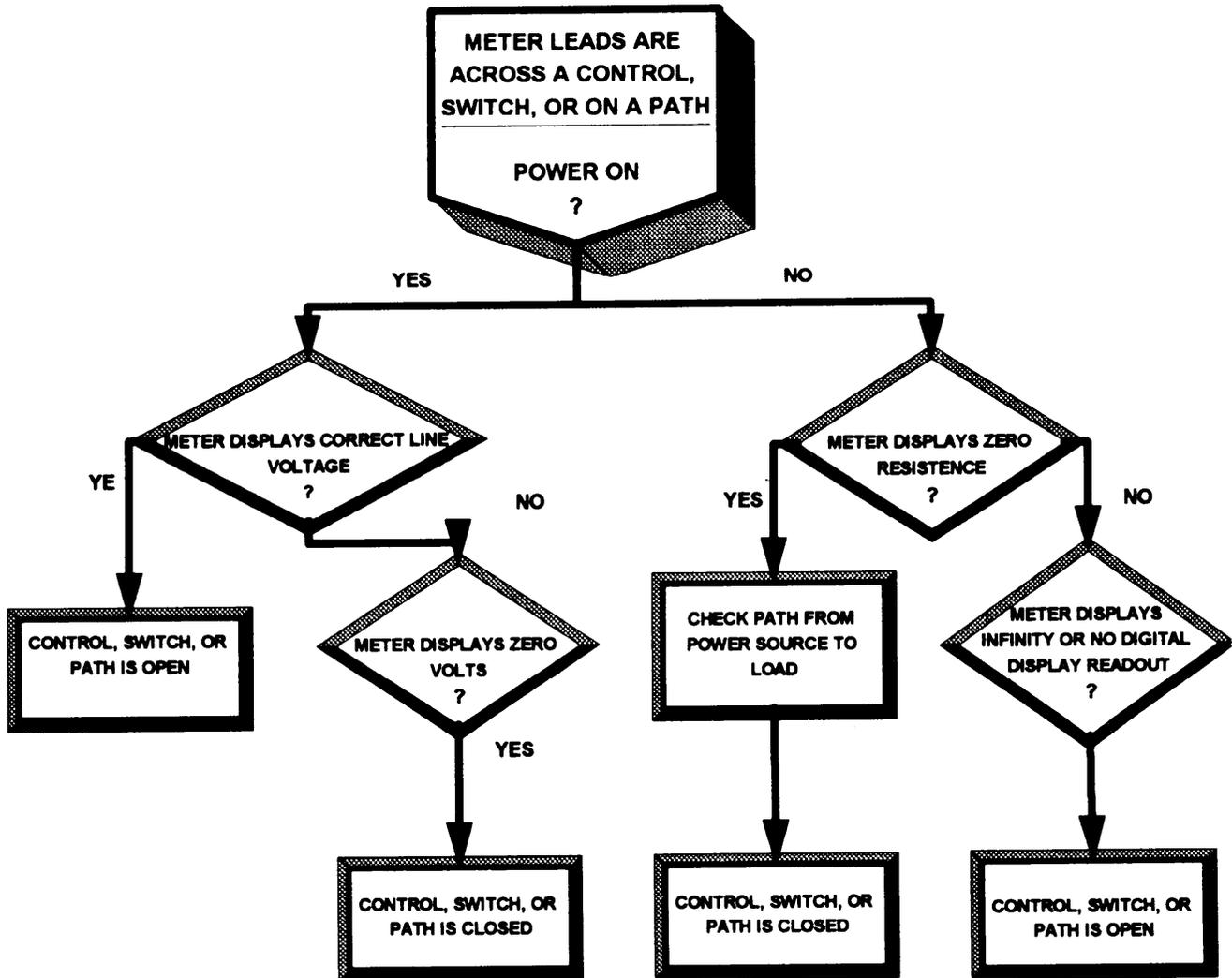


Table 14-30(B).—Testing Controls and Paths

## ELECTRICAL TROUBLESHOOTING TESTING CONTROLS AND PATHS



TABLES 14-30(A) AND 14-30(B) DO NOT COVER EVERY ELECTRICAL TROUBLESHOOTING PROCEDURE YOU WILL INCUR. THE TABLES ARE PRESENTED TO HELP YOU UNDERSTAND ELECTRICAL TROUBLESHOOTING.