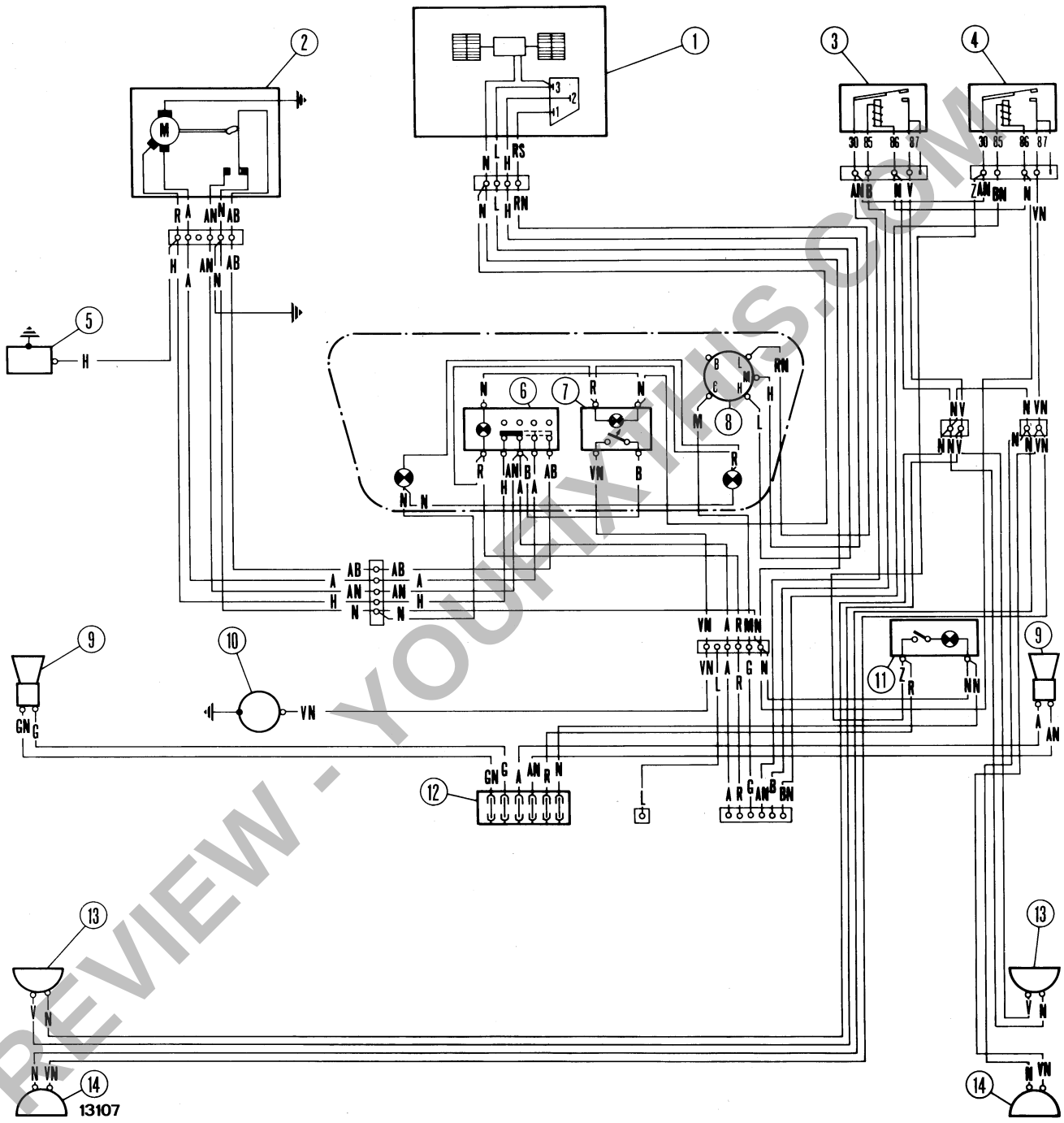
ELECTRICAL SYSTEM



Wiring diagram - supercomfort cab tractors

Supplement to wiring diagrams of Workshop Manual:

1. Heater.
2. Windshield wiper motor.
3. Front floodlamp relay.
4. Rear floodlamp relay.
5. Radio interference suppression capacitor.
6. Windshield wiper switch.
7. Windshield washer button.
8. Fan control switch.
9. Speakers.
10. Windshield washer pump.
11. Lamp with integral switch.
12. Terminal block.
13. Front floodlamps.
14. Rear floodlamps.

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CAB REMOVAL AND INSTALLATION

CAB REMOVAL TOGETHER WITH PLATFORM (Models 55-90, 60-90, 70-90, 80-90, 90-90, 100-90)

⚠ CAUTION ⚠

Lift and handle all heavy parts with a lifting device of proper capacity. Be sure parts are supported by proper slings and hooks. Watch out for people in the vicinity.

⚠ CAUTION ⚠

Handle all parts with extreme care. Keep hands and fingers from between parts. Wear authorized protective equipment such as safety goggles, heavy gloves and safety shoes.

When removing cab together with platform note the following points:

— Disconnect battery ground lead.

— Take off side panels, radiator grill and fixed center hood.

— Drain fuel and coolant.

NOTE - To drain radiator open heater cock by moving lever (F, Page 8) to red sector, back off plug on radiator hose and slacken filler cap slinghtly to facilitate coolant flow. After draining the required amount of coolant, tighten plug on radiator hose.

NOTE - On tractors equipped with air conditioner, after draining the system as directed on page 44, disconnect compressor and receiver-drier lines and carefully plug both lines and ports.

— Disconnect heater water inlet and outlet lines.

— Drain power steering system.



Removing-Installing cab with platform

1. Nylon sling **293769** - 2. Wood bar

— Disconnect hose between power steering control valve and rigid pipes, and delivery line between oil reservoir and pover steering control valve.

— Disconnect starter leads, instrument panel and cab wiring, hourmeter flexible shaft, and both throttle link and flexible shaft.

— Shut off fuel cock and disconnect fuel delivery and return lines.

— Disconnect brake master cylinder line fittings.

— Disconnect hitch linkage, lift-o-matic flexible shaft, variospeed link and response control.

— Disconnect remote control valve lines.

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AIR CONDITIONER TROUBLE

SYSTEM PRODUCES NO COOLING

1. Check system fuses.
2. Check drive belt tension.
3. Check clutch coil for O/C.
4. Check ground connection for efficiency.

5. Check system controls, relays, wiring, thermostat, etc.
6. Visually check all lines and fittings.
7. Check gap between front plate and clutch pulley.

SYSTEM WILL NOT PRODUCE SUFFICIENT COOLING

HIGH DISCHARGE PRESSURE
HIGH SUCTION PRESSURE

CHECK SIGHT GLASS

EXCESSIVE REFRIGERANT

Note: In the presence of bubbling, discharge refrigerant until a large number of bubbles appears on the sight glass and add refrigerant until bubbling disappears completely.

ENGINE COOLING SYSTEM

1. Check and if necessary adjust fan drive belt tension.
2. Check radiator cap valve setting and thermostat setting.
3. Check hoses.
4. Ensure that system is provided with antifreeze.

CONDENSER

1. May be obstructed and prevented from receiving adequate air flow. Clean fin and tube assembly.

EXPANSION VALVE

Test valve with refrigerant.

1. If test is successful, remove thermostat sensor from evaporator outlet line and clean contact surfaces. Install sensor correctly.
2. If valve test is not successful replace without hesitation.

LOW DISCHARGE PRESSURE
LOW SUCTION PRESSURE

CHECK SIGHT GLASS

BUBBLING IN SIGHT GLASS

Low refrigerant level, possibly due to minor leakage.

1. Check for leakage and rectify as necessary.
2. Top up refrigerant until bubbling ceases and both gauges indicate normal pressure readings.

NO BUBBLING ON SIGHT GLASS

Low pressure gauge readings. Possibly no refrigerant flow through sight glass.

1. Major leakage.
2. Clogged expansion valve inlet filter.
3. Expansion valve stuck closed. Replace valve.

NORMAL DISCHARGE PRESSURE
NORMAL SUCTION PRESSURE

Note: Low pressure gauge indicates vacuum or normal pressure during testing.

MOISTURE IN SYSTEM

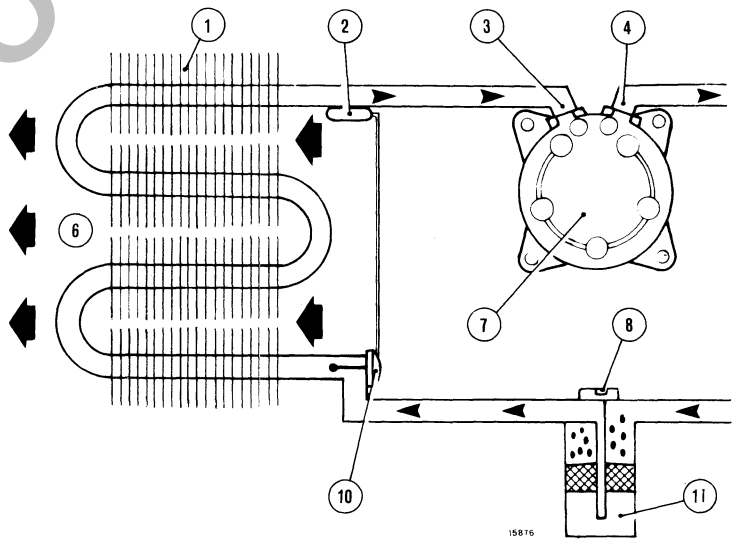
1. Drain refrigerant.
2. Replace receiver-drier.
3. Bleed system and recharge.

HIGH DISCHARGE PRESSURE
NORMAL SUCTION PRESSURE

Note: High pressure gauge reading is steady and does not tend to fall.

AIR IN SYSTEM

1. Drain refrigerant.
2. Replace receiver-drier.
3. Bleed system and recharge.



Air conditioning system

1. Evaporator - 2. Thermostat sensor - 3. Suction line - 4. Discharge line - 9. Warm air

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SPECIFICATION

Air conditioning system

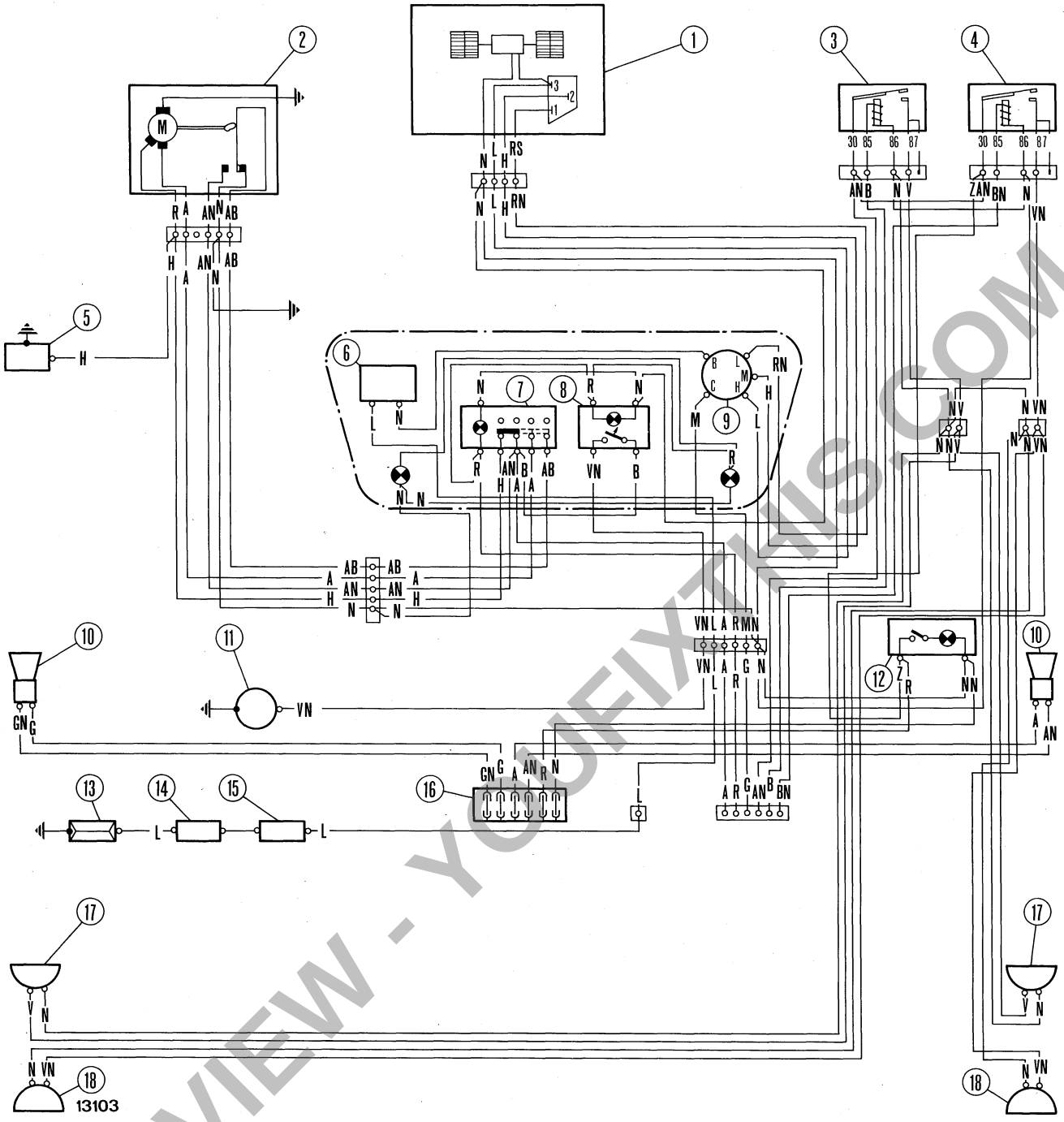
Refrigerant fluid	FREON 12
Capacity	1.7 kg / 3.74 lb
Maximum system pressure	16 to 20 bar/227 to 284 psi
Minimum system pressure	0.2 to 2 bar / 2.8 to 28 psi
High pressure switch setting	Opening - 20 bar / 284 psi Closing - 16 bar / 227 psi
Low pressure switch setting	Opening - 0.2 bar / 2.8 psi Closing - 2 bar / 28 psi
Circuit pressure (system stopped under load)	5 bar / 71 psi
Refrigerant temperature at condenser inlet	80-100°C
Refrigerant temperature on condenser outlet	60°C
Refrigerant temperature on evaporator outlet	1-15°C
Maximum centrifugal fan flow rate	8-8.5 m^3/min
Heater capacity at 35°C ambient temperature	4500 kcal/h

Compressor

Type	SANKYO SD-508 (Models 55-90, 60-90, 70-90, 80-90) SANKYO SD-510 (Models 90-90, 100-90, 115-90, 130-90, 140-90, 160-90, 180-90)
Number of cylinders	5
Bore and stroke	35 × 28.6 mm (SD-508) 36 × 31.7 mm (SD-510)
Displacement	138 cc (SD-508) 161 cc (SD-510)
Maximum permissible speed	6000 rpm (SD-508) 4000 rpm (SD-510)
Weight	5.1 kg / 11 lb (SD-508) 4.9 kg / 11 lb (SD-510)
Lubricating oil capacity	175 cc (SD-508) 135 cc (SD-510)

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Wiring diagram - air conditioned supercomfort cab tractors

Supplement to wiring diagrams of Workshop Manuals:

1. Air conditioner.
2. Windshield wiper motor.
3. Front floodlamp relay.
4. Rear floodlamp relay.
5. Radio interference suppression capacitor.
6. Conditioner thermostat.
7. Windshield wiper switch.
8. Windshield washer button.
9. Fan control switch.
10. Speakers.
11. Windshield washer pump.
12. Lamp with integral switch.
13. Compressor clutch.
14. Maximum pressure switch.
15. Minimum pressure switch.
16. Terminal block.
17. Front floodlamps.
18. Rear floodlamps.

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— Remove plugs and back off two screws retaining oddments tray to instrument panel, undo clip below platform, bundle windshield washer wiring and line together with tape and remove.

— Remove bottom and side running board strips on both right and left sides of cab.

— Take off black plastic trims from both sides of control board.

— Remove parking and turn signal lamps from right and left cab handrails, disconnect the lamps from the associated wiring and remove wiring from the associated protection.

— Take off right and left pillar trim panels.

— Remove hand throttle and lift-o-matic controls and separate from control cables.

— Remove ashtray and back off bolt inside ashtray housing.

— Remove right and left door check retainers (cable will wind automatically inside handle/handrail).

— Remove side window retainers and take off right and left side trim panels.

— Remove back light bottom retainer, back off two screws and take off rear interior trims.

— Place a wooden bar inside cab as shown in figure and connect to nylon sling **293769** hanging from a suitable hoist.

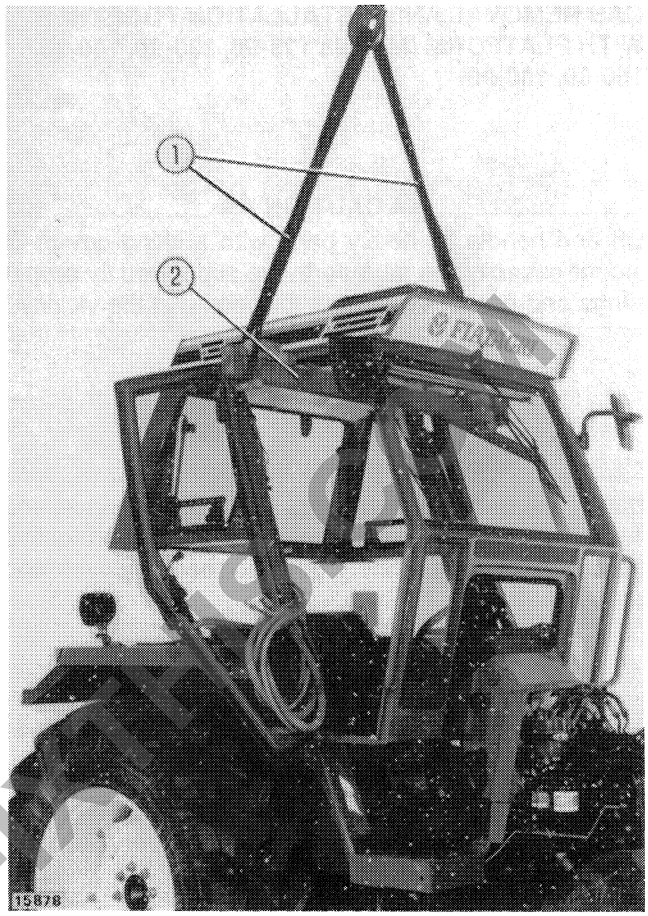
— Back off two screws on each side below platform next to access steps.

— Back off eleven screws on each side retaining cab to fenders.

— Empty the fuel tank, back off tank screws in each upper corner and tilt tank backward.

— Back off two screws on each side retaining cab to fender crossmember.

— Raise cab 20 to 30 cm, remove heater lines by hand (and air conditioner lines where applicable) freeing them from the engine. Also remove windshield washer line. Tie all lines to the cab as shown in figure. Lift off cab.



Removing and installing cab without platform

1. Nylon sling **293769** - 2. Wood bar

For cab installation adopt a reversal of the removal sequence. Lubricate front seal with soapy water. Ensure that the front seal is correctly seated on tractor hood.

Apply silicone sealer to the points previously treated with this product.

Fill windshield washer tank and engine cooling system plus heater following the instructions given on page 20.

Where applicable, fill air conditioning system adhering to the instructions given on page 38.

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SHOOTING CHART

COMPRESSOR AND CLUTCH

HIGH DISCHARGE PRESSURE
LOW SUCTION PRESSURE

RESTRICTION
Water or ice formation downstream of restriction (on receiver-drier or line from condenser to expansion valve).
1. Remove component affected, eliminate restriction or replace.

NORMAL DISCHARGE PRESSURE
NORMAL TO HIGH SUCTION PRESSURE

THERMOSTATIC SWITCH
Compressor clutch engages and disengages too quickly.
1. Defective thermostat.
2. Replace thermostat. Do not squeeze capillary when installing in the original position and at the same depth inside evaporator.

SYSTEM TOO NOISY

1. Check compressor fasteners for looseness.
2. Check engine components in compressor area.
3. Check clutch for intermittent operation or slippage.
4. Check clutch bearing.
5. Check clutch pulley for binding.
6. Check compressor oil level.

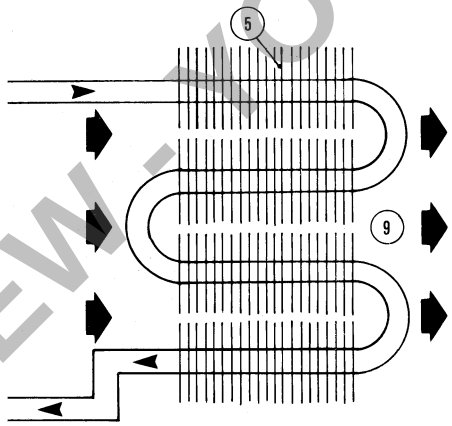
SYSTEM PRODUCES NO COOLING

Noisy or failed compressor.

1. Check belt condition and tightness.
2. Check gap between front plate and clutch pulley.
3. Check clutch supply voltage, current consumption, supply lead and ground connection.
4. Check clutch pulley for binding.
5. Check for low refrigerant level.
6. Check compressor for leakage.
7. Check system for leakage.

UNUSUAL NOISE WITH CLUTCH DISENGAGED OR CHATTER

1. Check electrical supply.
2. Check gap between front plate and pulley.



schematics

5. Condenser - 6. Cold dry air - 7. Compressor - 8. Sight glass - 10. Expansion valve - 11. Receiver- drier.

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TROUBLE SHOOTING

Three basic types of anomalies may occur:

— System produces no cooling.

— System will not produce sufficient cooling.

— Compressor failure.

Whilst insufficient cooling may also be due to external causes a visual inspection of mechanical components may be sufficient to give a rough indication of system efficienty.

Moreover, an electrical test will supplement such indications.

However, if system malfunction persists a more detailed analysis of pressures in the various sections of the system becomes necessary.

VISUAL INSPECTION

Component inspection must be carried out with the engine switched off and with the heating and conditioning system turned off.

— Check compressor and support fasteners for looseness, drive pulleys for misalignment and belt tension.

— Look for visible refrigerant leakage as revealed by the presence of oil on connections.

— Check for visible coolant leakage.

— Check lines for anomalies, especially the piping in contact with the engine, as well as fittings and pipe clamps.

— Check evaporator, heater radiator and condenser for cleanliness, removing any foreign matter.

— Check evaporator thermostat capillary condition and position.

— Check fresh air intakes for obstructions or clogging.

— Check condensate drain lines for inefficiency or obstruction.

OPERATION CHECK

Start engine and set conditioner to maximum cooling. Allow to run for 15 minutes then check:

— Receiver-drier sight glass. This should be clear. Bubbling may occur upon clutch engagement but should disappear immediately after.

— Compressor. There should be no undue noise. Clutch engagement should occur with a distinct click.

— Expansion valve output, evaporator low pressure line and compressor suction connection. These items should be cold to touch.

— Condenser, expansion valve inlet, compressor discharge connection and high pressure line. These items should be fairly warm to touch.

— Expansion valve. If a squeal is heard it means that pressure is too low and there is moisture in the system.

— Evaporator. There should be no ice formation.

SYSTEM PRESSURE TEST

The trouble shooting chart outlines system diagnosis through evaluation of pressure readings. Remedies to restore correct operation are also given.

Pressure gauges should be connected to the system as directed on page 39 and operating pressure readings should be taken as outlined on page 41, and then compared against the table given on page 42.

Note that altitude affects pressure as indicated in the table below. To obtain actual pressure readings subtract the correction factor from the pressure gauge reading.

PRESSURE CHANGES WITH ALTITUDE

Altitude (m) a.s.l.	Absolute atmospheric pressure (kg/cm^2)	Correction factor (kg/cm^2)
0	1.029	0
300	0.994	– 0.035
600	0.959	– 0.070
900	0.924	– 0.105
1200	0.889	– 0.140
1500	0.854	– 0.175
1800	0.819	– 0.210
2100	0.791	– 0.238
2400	0.763	– 0.266

NOTE: Where expansion valve testing with R12 is specified in trouble shooting chart proceed as follows:

— Set thermostat to maximum cooling.

— Spray a small amount of R12 liquid on diaphragm cover or thermostatic sensor and check low pressure gauge reading. If pressure falls, it means that the valve is operating correctly and the cause of malfunction should be traced elsewhere.

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