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TRUCK, 4 t, 4x4, BEDFORD MJ ALL VARIANTS

FAULT DIAGNOSIS

This publication contains information covering the  
requirements of Sub-Category 5-1 at information  
levels 2, 3 and 4

BY COMMAND OF THE DEFENCE COUNCIL

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- \*2 Clutch
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- 12 Cooling system (See AESP 2815-K-062-512)
- 13 Electrical system
- \*14 Hydraulic system
- \*15 Chassis frame and fittings
- \*16 Cab and fittings
- \*17 Winch
- 18 Crane

\* Not taken up

PREFACEAMENDMENT IDENTIFICATION

4 Except for manuscript entries, amendments are identified by marginal side lining. Manuscript amendments are identified by Amdt No in outside margin in line with the amendment.

COMMENTS ON THIS PUBLICATION

5 Comments on this publication are to be forwarded in accordance with AESP 0100-P-011-013 to Vehicles and Weapons Branch REME, Chobham Lane, Chertsey, Surrey KT16 OEE.

ASSOCIATED PUBLICATIONS

AESP 2815-K-062-512 Engine Diesel 6 Cyl Bedford 5.4 Litre Turbocharged

WARNINGS/CAUTIONS

6 Before driving this vehicle or operating any fitted equipment, personnel are to read and understand the Warnings, Cautions and Operating Instructions detailed in Cat 201 of this AESP.

Chapter 10

AIR PRESSURE AND BRAKING SYSTEM

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- 1 General information

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GENERAL INFORMATION

1 When diagnosing braking system faults it must first be ascertained whether the fault is caused by a mechanical, hydraulic or air system fault.

2 The mechanical system comprises the brake drums, shoes and linings, adjusters, and parking brake lever and cables.

3 The hydraulic system comprises the dual master cylinder, wheel cylinders and load sensing valve.

4 If the fault is caused by an air orientated failure it must be determined in which part of the air system the failure lies. Air pressure test points located on the master cylinder actuator and air reservoir can be of assistance when deciding this. The air pressure gauges located in the cab can also be of assistance.

The air system can be divided into the following categories:

4.1 The charging system which includes the compressor, governor valve, condensing tank and drain valve, system protection valve and reservoirs.

4.2 The service brake system which includes the footbrake valve, dual air pressure gauge, dual relay valve, changeover valve, and master cylinder actuator.

4.3 The hill holder brake system which includes the hill holder control valve and change over valve.

4.4 The trailer park brake system which includes the trailer park control valve and change over valve.

4.5 The auxiliary equipment system which includes a pressure loss limiting valve and tyre inflator.

TABLE 1 - BRAKING SYSTEM FAULT DIAGNOSIS

Fault	Possible Causes	Remedy
Service brakes release too slowly	Faulty footbrake valve Defective brake shoe return springs	Check operation of valve and linkage Check for springs which are broken or have become detached from shoes
Brakes binding on	Incorrect brake adjustment Defective brake shoe return springs Parking brake mechanism faulty	Check brake adjustment Check for springs which are broken or have become detached from shoes Check operation of lever cables and expanders
Brakes pull to one side	Incorrect brake adjustment Faulty wheel cylinder Brake linings contaminated	Check brake adjustment Check for fluid leaks from cylinder Check brake linings, replace if necessary
Slow or insufficient air pressure build up	Leaks from air lines and components in charging system or in a particular system as indicated by cab gauges Compressor faulty Governor valve incorrectly adjusted Air pressure gauge faulty	Check for leaks either audible or visual (using a soap solution) Check compressor output Check and if necessary adjust governor Replace air pressure gauge
Excessive air pressure	Governor valve faulty or incorrectly adjusted Air pressure gauge faulty Compressor unloader valves not operating	Check governor valve Replace air pressure gauge Check unloader valves
Brakes apply but performance inadequate	Low pressure in Service 1 or 11 brake systems Footbrake valve faulty Master cylinder faulty Master cylinder actuator faulty	Check for air leaks in Service 1 and 11 systems Carry out footbrake valve operating test Check for fluid leaks and operation Check actuator for leaks and examine seals (continued)

TABLE 1 - BRAKING SYSTEM FAULT DIAGNOSIS (continued)

Fault	Possible Causes	Remedy
	Load sensing valve linkage incorrectly adjusted or valve faulty Excessive brake lining to drum clearance Contaminated or glazed brake linings	Check linkage setting and carry out valve operating test  Check brake adjustment  Inspect brake shoe linings



Chapter 13

ELECTRICAL SYSTEM

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- 1 CAV AC5R/24 Alternator - general information
- 4 CAV CA45F - Starter - general information

Chart

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CAV AC5R/24 ALTERNATOR GENERAL INFORMATION

1 Before commencing a test, it is essential that the cautions given under the heading 'CAV AC5R/24 ALTERNATOR' in Level 2, Chap 13 are strictly adhered to.

2 Before investigating suspected faults in the charging system, it is essential that the battery installed in the vehicle to be checked is known to be in good condition and fully charged.

Using the chart

3 Trouble diagnosis is simple if the sequence of operations detailed on the 'tree' of the chart is correctly used. For example, if when the key-start switch is in the ON position the warning lamp does not light, follow the procedure detailed in Operation 12 and thereafter as shown in the 'tree'. Make no attempt to work from Operation 1 onwards in numerical sequence unless it happens that the fault in the charging system entails this.

CAV CA45F STARTER - GENERAL INFORMATION

4 Before carrying out any tests on the starting system, check that the vehicle gearbox is in neutral with parking brake applied.

Operations

1. Check Alternator drive belts for tension and condition.
2. Connect an ammeter in series with alternator positive output wire.
3. Remove rear cover from alternator. Reconnect wiring. Remove green wire (field) from brush box 'F' terminal and bridge terminal to ground (negative terminal on insulated return alternator). With ammeter connected in series with alternator positive output wire, adjust engine speed to produce maximum output.
4. Renew or repair alternator.
5. Switch off and stop engine. Remove wiring from rear of alternator. Switch on but do not start engine.
6. Check for short circuit in wire between alternator indicator terminal and warning lamp bulb.
7. Connect voltmeter between battery positive and negative terminals, increase engine speed to 1500 rev/min. Voltmeter should read 26-28 volts, ammeter reading 13 amp maximum. Higher amperage, which would probably give lower voltage reading, could indicate need to recharge battery before continuing with test.
8. If alternator drive belts tension and condition are satisfactory, a faulty battery or overloaded system is indicated. Comparison should be made between electrical loading and alternator output: 35 amp.
9. Switch off and stop engine. Remove rear cover from alternator. Reconnect wiring. Restart engine and increase engine speed to 1500 rev/min. With voltmeter negative connected to ground (negative terminal on insulated return alternator), and positive connected to 'A' terminal on brush box, meter should read 26-28 volts.
10. Check battery terminals and wiring between battery and alternator for poor connection and resistive circuits.
11. Install new regulator.
12. Remove connector from alternator and bridge 'IND' wire (brown/yellow) in connector to ground (negative terminal on insulated return alternator).
13. Remove rear cover and reconnect wiring. Check for loose or corroded connections between alternator, regulator and brush box.
14. Remove auxiliary diode wire (yellow) from brush box terminal leaving auxiliary diode feed wire (yellow with red sleeve) to regulator in position (see Fig 12 and 13, Chap 13, Level 3). Observe warning lamp.
15. Connect slave wire between brush box 'A' terminal and ground (negative terminal on insulated return alternator).
16. Disconnect slave wire from 'A' terminal and connect between 'F' terminal and ground (negative terminal on insulated ground return alternator).
17. Check continuity between alternator 'IND' terminal and brush box 'A' terminal. This circuit includes warning lamp wire (yellow), regulator and auxiliary diode feed (yellow with red sleeve).
18. Check warning lamp bulb. Check bulb-holder for loose connection. Check wire (brown/yellow) between alternator indicator terminal, warning lamp bulb and key-start switch for continuity. Note: warning lamp bulb must be 24 volt 3 watt.
19. Check that charging system operates satisfactorily by connecting voltmeter across battery terminals and ammeter in series with alternator output circuit. Impose approximately 35 amp load on battery, start engine and increase engine speed until ammeter reads maximum charge (35 amp). Remove load from battery. Ammeter should then drop slowly back to show trickle charge. Voltmeter should show 26-28 volts.



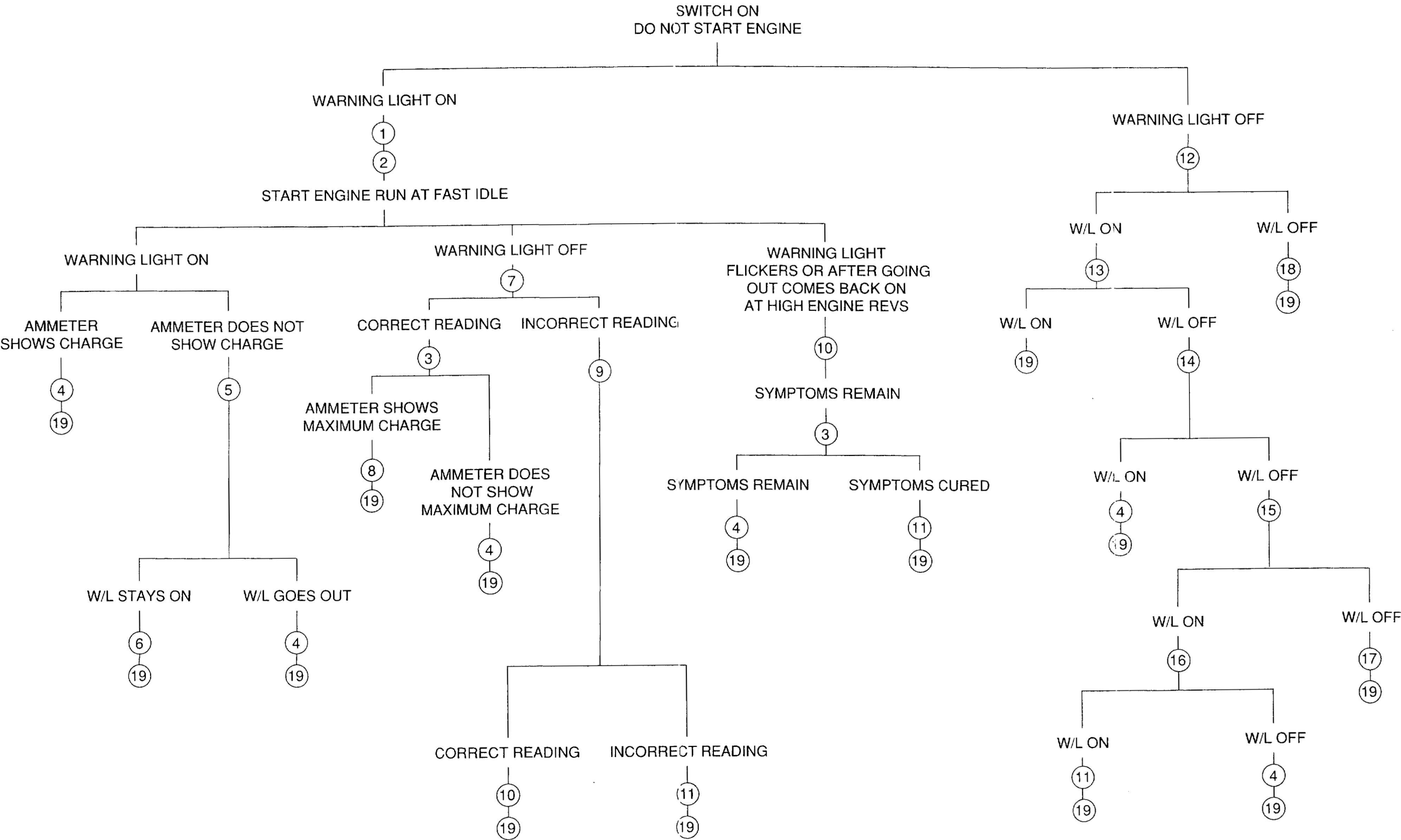
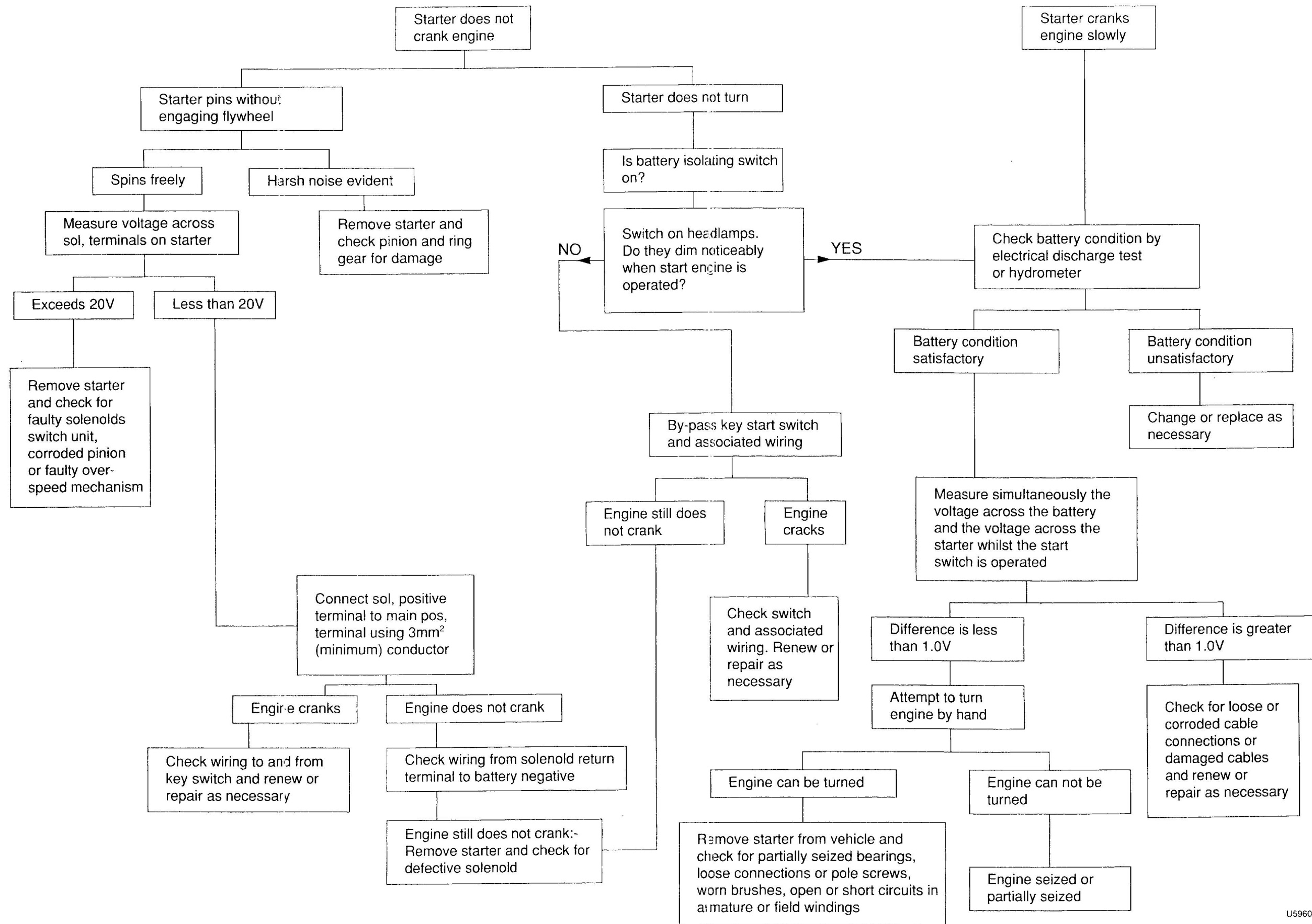


CHART 1 – CAV AC5R/24 ALTERNATOR FAULT DIAGNOSIS



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CHART 2 – CAV CA45F STARTER FAULT DIAGNOSIS

Chapter 18

CRANE

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TABLE 1 - CRANE FAULT DIAGNOSIS

Fault	Possible Causes	Remedy
Crane does not operate at all	No fluid supply	Ensure that PTO is engaged and supply shut off valve is open
	Main system relief valve not operating	Check adjustment of main relief valve
	Faulty hydraulic pump	Install gauge to gauging point and check operating pressure
Slewing operation faulty	Column bearing seized	Check for adequate lubrication of centre column bearing
	Relief valves faulty	Check adjustment of slewing relief valves
	Slewing restrictors blocked	Renew slew adaptors
	Faulty slewing ram seals	Renew rams
Hydraulic pump noisy	Pump faulty	Renew power takeoff/hydraulic pump assembly
	Hydraulic filter blocked	Thoroughly clean filter
	Leak in suction line (foam in reservoir)	Check that all joints and pipes are sound
Boom dropping	Main lifting ram relief valve pressure too low	Check operating pressures and main lifting ram relief valves
	Main lifting ram load holding valve faulty	Renew load holding valve
	Main lifting ram seals faulty	Renew main lifting ram
Jib dropping	See possible causes and remedies for boom dropping	

(continued)

TABLE 1 - CRANE FAULT DIAGNOSIS (continued)

Fault	Possible Causes	Remedy
Hydraulic oil over heating	Restriction in hydraulic system	Check that filter is not blocked. Ensure pipes have no kinks or flat spots. If necessary remove pipes and blow through with dry compressed air
	Main system relief valve faulty	Check adjustment of main system relief valve
	Air entering suction line	Check that all joints and pipes are sound
	Wrong type of oil	Ensure that oil used is OM 33
	Mechanical restriction	Ensure that all pins in boom and jib are free and adequately lubricated
Movements too slow	Hydraulic pump faulty	Install gauge to gauging point and check operating pressures
	Air entering suction line	Check that all joints and pipes are sound
	System relief valves faulty	Check adjustment of system relief valves
	Valve spool does not move into position (levers seized)	Free off clevis pin, pivot rod and quadrant





