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SPECIFICATION ARMY(AUST) 6233

FOR

TRUCK, UTILITY, LIGHT, GS, FITTED

FOR RADIO


ISSUE 7

Issue	Date	Change Authority	Paragraph
6	4 SEP 79	B VEH 247/78	Para 4.5.10
7	26 FEB 80	B VEH 411/79	Contents, Paras 2.1.1, 3.1, 4.2.4.2,
			4.2.5.1, 4.4.4.1, 4.4.6.1, 4.4.8.1,
			4.4.10.3.4, 4.4.10.4.2, 4.4.11.1,
			4.5.6, 4.5.11, 4.5.18, 4.10.4(b),
			New Section 5, New Para 4.4.14.6

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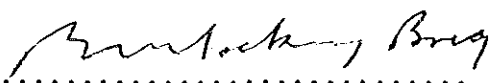
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3.

1. SCOPE

- 1.1 This specification details the requirements for the manufacture and supply of a Truck, Utility, Light, GS, Fitted For Radio.

2. APPLICABLE DOCUMENTS

Reference is necessary to the latest issue of the following documents.

2.1 Specifications and Standards

- 2.1.1 ARMY(AUST)29 - Jack, Hydraulic, Hand, 2½ Ton, Double Lift.

ARMY(AUST)5285 - Generator engine Accessory, 28V, 100A.

ARMY(AUST)606 - Manuals, Technical.

ARMY STANDARD No 1 - Climatic Factors Affecting Design Criteria.

These documents are available from the Head, Engineering Development Establishment, Private Bag No 12, P.O. ASCOT VALE, Victoria, 3032.

- 2.1.2 DEF(AUST)172 - Electromagnetic Interference Characteristics.

DEF(AUST)184 - Cloth, Duck, Cotton-Polyester, Corespun.

DEF(AUST)206 - Handbook of Liquid Fuels, Lubricants and Allied Products.

DEF(AUST)357 - Emergency Towing Facilities (Lug and Pin Dimensions).

DEF(AUST)359 - Towing Attachments (Wheeled Vehicles).

DEF(AUST)500 - Engines, Gasoline etc.

DEF(AUST)5047 - Identification Marking of Service Equipment.

DEF(AUST)5101 - Tractor - Trailer and Tractor Semi-Trailer, Electrical Inter-Connections.

DEF(AUST)5135 - Connector, Plug, Electrical and Connector, Receptacle, Electrical (12 Pin, Trailer Connection).

MIL-STD-461 - Electromagnetic Interference Characteristics, Measurement of.

These documents are available from Technical Information Centre, Technical Services Branch, Department of Productivity, 69/71 Little Oxford Street, COLLINGWOOD, Vic., 3006.

- 2.1.3 GPC-E-21 - Enamel, Acrylic, Semi-Gloss, Olive Drab.

GPC-PROCESS-22 - Process, Commercial, for Painted Articles.

These specifications are available from the Secretary, Government Paint Committee, P.O. Box 50, ASCOT VALE, Victoria, 3032.

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2.1 (Contd)

- 2.1.4 BS 1991 (Part 1) - Letter Symbols, Signs and Abbreviations.
AS 1440 - Vinyl Coated Fabrics.

These standards are available from the offices of the Standards Association of Australia, in all capital cities.

2.2 Drawings

- ADE(V) 5-16 - Registration Plate, Mounting Holes.
ADE(V) 43-1 - Unit Formation Sign Holders.
ADE(V)211-2 - Pintle, Assembly, Towing, Light Duty.
ADE(V)225-749 - Plate Designation 'C of G'.
DE 29002007/2 - Clamp.
ADE(V) 44-248 - Spade Support Bracket Assy.
ADE(V) 44-252 - Spade Handle Bracket Assy.
ADE(V) 44-260 - Axe Pick Handle Bracket Assy.
ADE(V) 44-263 - Axe Pickhandle Clamp Assy.
ADE(V) 44-249 - Pick Clamp Bracket Assy.
DE 610110000 - Distribution Box.

These drawings are available from the Head, Engineering Development Establishment, Private Bag No. 12, P.O. ASCOT VALE, Victoria, 3032.

2.3 Publications

- 2.3.1 Australian Design Rules for Safety of Motor Vehicles.
This publication is available from the Australian Motor Vehicles Standards Committee, Department of Transport, 32 Elizabeth Street, Melbourne, Vic. 3000.
- 2.3.2 Tyre and Rim Association of Australia - Standards Manual.
This publication is available from the Tyre and Rim Association of Australia, Suite 1, Hawthorn House, 795 Glenferrie Road, Hawthorn, Vic. 3122.

3. DEFINITIONS

- 3.1 The organization or agency nominated in the contract by the Department or appropriate Chief of Staff as having the responsibility for the Quality Assurance and technical acceptance functions for this contract.
- 3.2 'Quality Assurance Representative (QAR)'. The person nominated by the QAA to act in respect of the Quality Assurance and Technical acceptance provisions of the contract.
- 3.3 'Design Authority' shall mean the Head, Engineering Development Establishment or his authorized representative.
- 3.4 'Approved' shall mean approved by the Quality Assurance Representative.
- 3.5 The term 'Army' shall mean the Department of Defence (Army Office).
- 3.6 'Vehicle' shall mean the Truck, Utility, Light, GS, Fitted for Radio.

5.

3 (Contd)

- 3.7 'Net mass' shall mean the mass of the Vehicle fully equipped and serviced for operation, including fuel, lubricants, coolant, vehicle tools and equipment, but not including the driver, personal equipment, traction devices or payload.
- 3.8 'Unladen mass' shall mean the net mass of the Vehicle plus the driver, the driver's personal equipment and the traction devices when they are normally part of the vehicle equipment.
- 3.9 The terms 'laden mass' and 'gross vehicle mass' shall both mean the sum of the unladen mass plus the payload.
- 3.10 The abbreviations used in this specification for fundamental and derived units of measurement conform to BS 1991. In addition, the following abbreviations have also been used:
- GVM : gross vehicle mass.
- S.M.T.O : South East Asia Treaty Organization.
- T.P.E. : Trials and Proving Wing, Engineering Development, Establishment, Monegeeta, Victoria.
- BCF : Bromochlorodifluoromethane.
- GPC : Government Paint Committee.
- CAPO : Contract Acceptance and Purchase Order.
- GFE : Government Furnished Equipment.
- DSN : Defence Stock Number.
- POL : Petrol, Oil and Lubricants.

4. REQUIREMENTS4.1 General

- 4.1.1 The Vehicle shall be a 109 in TB, Series 3, Land Rover manufactured in accordance with the requirements of this specification.
- 4.1.2 The Vehicle shall be capable of registration in all Australian States and Territories at the date of acceptance by the Army. Compliance plates for Australian Design Rules shall be fitted in accordance with the procedures of the Department of Transport.
- 4.1.3 As far as practicable, the Vehicle shall be manufactured using fasteners of a common thread system; in the following order of preference:
- a. S.I.
 - b. Unified
 - c. B.S. (Fine).

4. (Contd)

4.2 Environmental4.2.1 Operating Conditions

The laden Vehicle shall operate without failure attributable to the following conditions.

4.2.1.1 In the conditions of the following climatic categories as defined in Army Standard No 1:

- a. Category A1 (Table II), (Hot Dry)
- b. Category A2 (Table III), (Intermediate Hot Dry)
- c. Category B1 (Table IV), (Warm Wet)
- d. Category B2 (Table V), (Wet Hot)
- e. Category C1 (Table VII), (Intermediate Cold).

This requirement shall be relaxed to allow acceptance of Type A or Type B failure in conditions above Category A2 and Type A failure above an ambient temperature of 40°C.

4.2.2 Storage Conditions

Deterioration arising from the effects of storage in the following conditions shall not cause failure of any component part, and the Vehicle and its 24V electrical system shall be capable of satisfactory operation after completion of the storage.

4.2.2.1 In the conditions of the following climatic categories as defined in Army Standard No 1:

- a. Category A1 (Table II), (Hot Dry)
- b. Category A2 (Table III), (Intermediate Hot Dry)
- c. Category B1 (Table IV), (Wet Warm)
- d. Category B2 (Table V), (Wet Hot)
- e. Category C1 (Table VII), (Intermediate Cold).

4.2.2.2 In the conditions of Tropical Storage Test for 28 days as defined in DEF(AUST)500.

4.2.3 Fording

The Vehicle shall be capable of fording water obstacles to a depth of at least 500 mm without preparation.

4.2.4 Transportation

4.2.4.1 Sling points for helicopter lifting, for a Vehicle mass taken as 2770 kg, shall comply with the following:

- a. The yield point for each suspension point shall be a minimum of 3.2 times the proportionate load on that suspension point.
- b. The Ultimate strength shall be a minimum of 1.5 times the yield strength of the suspension point.

4.2.4 (Contd)

- 4.2.4.2 Emergency towing facilities shall be provided in accordance with DEF(AUST)357. These lugs shall each be capable of withstanding a forward horizontal force, at 30° to the longitudinal centreline of the vehicle, of $(GM \times 10)N$ without yielding. These facilities may be incorporated into or provided by the attachments supplied to comply with para 4.2.4.1.

4.2.5 Fuels and Lubricants

- 4.2.5.1 The Vehicle shall operate on the appropriate Army lubricants and allied products listed in DEF(AUST)206. Individual products shall be designated by the Joint Services Designation.
- 4.2.5.2 The engine shall be tuned for operation on standard grade commercial petrol.

4.3 Performance

- 4.3.1 The Vehicle is to be capable of carrying 700 kg of cargo (made up of radio and associated equipment and a radio operator), together with a driver and a passenger, each with personal arms and equipment, whilst towing the in-service two-wheeled ½ ton trailer (Census Code 6015G) laden to a gross trailed mass of 800 kg. For the purpose of this paragraph the mass of the driver and passenger with arms and personal equipment shall be taken as 200 kg total.

4.3.2 Solo (Laden)

The Vehicle laden as in para 4.3.1 less trailer shall be capable of the performance below:

- a. Gradient (including stop and restart): 50 per cent (26.6°). The handbrake shall be capable of holding the Vehicle unassisted on this slope.
- b. Braking from 80 km/h to rest in 38 m, or a mean deceleration of 6.5 m/sec².

4.3.3 Laden, Towing

The Vehicle, laden as in para 4.3.1 shall be capable of maintaining a sustained speed of 98 km/h on a level sealed road without wind assistance.

4.3.4 Radio Interference

Radio frequency interference from the Vehicle's electrical system shall satisfy the requirements of DEF(AUST)172, MIL-STD-461, radiated emission requirements for tactical vehicles, RE 05, and conducted emission requirements, CEO7.

4 (Contd)

4.4 Construction

4.4.1 Frame

4.4.1.1 The welded chassis shall be Leyland Part No HYG0765 with extended spring hangers and complete with the following components:

<u>Item</u>	<u>Part No</u>	<u>Description</u>	<u>No off</u>
a.	537778	Shackle - Plain	2
b.	577718	Shackle - Plain	2
c.	537734	Shackle - Tapped	2
d.	577716	Shackle - Tapped	2
e.	509218	Distance piece	2
f.	504211	Distance piece	2
g.	NRC2132	Flexible Brake Hose Rear	1
h.	NRC2134	Flexible Brake Hose Front	2
i.	598598	Check Strap Rear	2
j.	526608	Bump Rubber Pad Extension	4
k.	HYG0167	Front Bumper Assy	1

4.4.2 Front Axle, Springs and Dampers

4.4.2.1 The front axle shall be Leyland Part No FRC2060.

4.4.2.2 The front springs shall be Leyland Part Nos 276034 (Spring Front Drivers) and 11225001 (Spring Front Passengers).

4.4.2.3 The front dampers shall be Leyland Part No 508042.

4.4.3 Rear Axle, Springs and Dampers

4.4.3.1 The rear axle shall be Leyland Part No FRC2126.

4.4.3.2 The rear springs shall be Leyland Part No 535173.

4.4.3.3 The rear dampers shall be Leyland Part No 508043.

4.4.4 Engine

4.4.4.1 The Vehicle shall be fitted with a Land Rover 6 cylinder engine, Part No HYG 1263.

4.4.4.2 The following performance criteria shall form the basis for acceptance of the engine:

Full throttle performance for the fully trimmed engine has been established as shown in Leyland Curve No. AUS 10922. The minimum acceptable peak power shall be 52 kW. For all engines 95 per cent shall exceed a peak power of 52.3 kW and 70 per cent shall exceed 54 kW.

4.4.4 (Contd)

4.4.3 A suppressed ignition system shall be fitted in accordance with para 4.3.4, to drawing No HYG0331.

4.4.4.4 The engine shall be fitted with a water cooling system incorporating a radiator, Leyland Part No 562922 and an oil cooler kit, Leyland Part No 90608466. (E6504).

4.4.4.5 The exhaust system shall comprise Leyland Part Nos. HYG0164, HYG0165 and 562737. All joints and pipe connections shall be gas tight.

4.4.5 Transmission

4.4.5.1 The gearbox and transfer case shall be Leyland Part No FRC2001

4.4.5.2 The clutch and housing assembly shall comprise Leyland Part Nos 576762, GCC 181 and GCF 129.

4.4.5.3 The front axle drive shaft shall be Leyland Part No 556449.

4.4.5.4 The rear axle drive shaft shall be Leyland Part No 591283.

4.4.6 Steering Gear

4.4.6.1 The steering gear shall comprise the following components:

<u>Item</u>	<u>Part No</u>	<u>Description</u>
a.	592992	Steering box
b.	NRC0147	Track Rod Assy
c.	NRC0149	Steering Tube Assy
d.	NRC1269	Steering Relay Housing

The turning circle of the Vehicle shall not exceed 15 m between kerbs.

4.4.7 Service Brakes and Emergency Brake

4.4.7.1 The Vehicle service brakes shall be drum type with hydraulic operation.

4.4.7.2 The front brake assemblies shall be Leyland Part No HYG 0355.

4.4.7.3 The rear brake assemblies shall be Leyland Part No HYG 0356.

4.4.7.4 The emergency hand brake shall operate on the transmission.

4.4.7.5 The brake booster and master cylinder assembly shall be Leyland Part No NRC 2801.

4.4.8 Wheels and Tyres

4.4.8.1 The Vehicle wheels and spare wheel shall be Leyland Part No AYG 8038 fitted with a 7.50 by 16 by 6 ply rated non-directional cross country pattern tyre and butyl tube complying with the Tyre and Rim Standards manual.

4.4 (Contd)

4.4.9 Fuel System

4.4.9.1 The fuel system shall comprise the following components:

<u>Item</u>	<u>Part No.</u>	<u>Description</u>
a.	HYG 5011	Fuel Tank
b.	NRC 1876	Pipe
c.	599279	Pipe
d.	589569	Fuel Pump

4.4.10 Electrical Systems4.4.10.1 General

4.4.10.1.1 The Vehicle shall be fitted with two electrical systems. The basic Vehicle electrical system shall be of a nominal 12 volt rating whereas the auxiliary electrical system that will provide power for radio set fitments shall have a nominal 24 V rating.

4.4.10.2 Basic Electrical System

4.4.10.2.1 The 12 V negative earth electrical system shall comprise the following components:

<u>Item</u>	<u>Part No.</u>	<u>Description</u>
a.	HYG 0762	Alternator
b.	HYG 0369	Distributor
c.	263D	Battery, 12 V, 68AH.

4.4.10.2.2 The 12 V Electrical wiring system shall be as detailed in drawing HYG0368.

4.4.10.3 Auxiliary Electrical System

4.4.10.3.1 The auxiliary 24 V electrical system shall comprise the following components:

<u>Item</u>	<u>Part No. or DSN</u>	<u>Description</u>
a.	2920-66-095-0364	Generator Engine Accessory 28V, 100 A to specification Army (Aust) 5285.
b.	HYG0510	Ammeter, 150-0-150, Bracket and 2 by 28/.012 cables
c.	NIC	Distribution Box (De610110000)
d.	NIC	Clamp (DE29002007/2), Quantity 2 per Generator.
e.	NIC	28/.012 cable from ignition switch (12V) to item C. (To close 28V relay in item C.)"

4.4.10.3.2 The auxiliary 24 V wiring system shall be as detailed in drawing HYG0368, (Harness HYG1094).

4.4.10.3.3 The items detailed in para 4.4.10.3.1 parts a, c and d, shall be supplied as GPE.

4.4.10.3.4 The installation of the Generator (Para 4.4.10.3.1, Item a) shall be in accordance with drawing HYG 1147.

4.4.10 (Contd)

4.4.10.4 Lighting

4.4.10.4.1 Lighting equipment fitted to the Vehicle shall comprise 2 each of items (a) to (h) and 1 off of item (i) as listed below:

<u>Item</u>	<u>Part No or DSN</u>	<u>Description</u>
a.	575099	Headlight
b.	589405	Front Turning Indicator
c.	589400	Front Parking Light
d.	6220-00-670-7692	Front Blackout Marker Clearance Light
e.	580079	Rear Turning Indicator
f.	589415	Rear Stop/Tail
g.	589435	Reversing
h.	6220-00-337-6471	Rear Blackout Stop/Tail Light
i.	234213	Number Plate Illumination

4.4.10.4.2 A map reading light, Hella Part No. H2800 or an approved equivalent, shall be fitted to the left hand side of the Vehicle's dash panel to drawing HYG 1211.

4.4.10.4.3 The items of lighting equipment detailed in para 4.4.10.4.1 parts d and h, shall be supplied as FTL.

4.4.10.4.4 The stop/tail, turning indicator and reversing lights are to be so positioned that when PCL and water jerricans are carried there will be no obscuration of any of these lights.

4.4.10.4.5 A combined red/white light, with a 2-way switch shall be fitted in the cargo area to drawing No HYG0142.

4.4.10.5 Switching

4.4.10.5.1 A blackout lighting switch, Rover Part No 514791 shall be installed.

4.4.10.5.2 A key-less ignition switch, Rover Part No 531552 and knob PNC 1725 shall be fitted.

4.4.10.6 Electrical Connections

4.4.10.6.1 A 12-pin receptacle, which conforms with DEF(AUST)5135 (Leyland Part No 0113010) shall be fitted to the rear of the Vehicle as shown in drawing Nos HYG0346 and HYG0126. The 12-pin receptacle shall be wired in accordance with DEF(AUST)5101.

4.4.10.6.2 An unswitched 2-pin socket, Lucas Part No 770419 or Rover Part Nos 579121 and 579122, shall be fitted to the left hand side of the Vehicle's dash panel.

4.4.10.6 (Contd)

- 4.4.10.6.3 A brass stud and captive wing nut, Leyland Part Nos. O111230 and O111321 shall be fitted as detailed in drawing HYG 0406 to provide a ground earth terminal.

4.4.11 Cab

- 4.4.11.1 Seating in the cab shall comprise the following items, covered in vinyl fabric to AS1440 WS2 (or approved equivalent) of colour green.

<u>Item</u>	<u>Part No.</u>	<u>Description</u>	<u>Quantity</u>
1	HYG 0687	Cushion, Driver and Outer	2
2	HYG 1172	Squab, Driver and Outer	2
3	HYG 0677	Cushion, Centre	1
4	HYG 1173	Squab, Centre	1

- 4.4.11.2 Seat belts shall be fitted in all cab seating positions.

- 4.4.11.3 The windscreen shall be of approved laminated construction, Leyland Part No. 345421 (2 off).

4.4.12 Body

- 4.4.12.1 The body shall be Leyland Part No HYG 1015 with fixed half-height tailboard, except that Sill Panels front and rear, Left Hand and Right Hand (Drawing Nos 337942, 337943, 347018 and 347019) shall not be fitted.

- 4.4.12.2 Two (2) seats, Leyland Part No HYG 0944 shall be fitted to drawing No HYG 0338, on either side of the rear-most section of the vehicle.

- 4.4.12.3 A radio operators seat shall be fitted to the vehicle in accordance with Leyland Drawing No HYG 1027.

4.4.13 Canopy and Bows

- 4.4.13.1 The canopy shall be Leyland Part No HYG 0266 constructed of corespun polyester cotton, 340 g/m² (8 oz) to DEF(AUST)184, of colour to sealed sample DA-184-3. The material for the canopy shall be supplied as GFE as detailed in the CAPO.

- 4.4.13.2 Three canopy bows, Leyland Part No 330551, 330553 and 330699 shall be supplied.

4.4.14 Winch

- 4.4.14.1 Where specified in the CAPO, a Bamford winch kit supplied as GFE shall be fitted to the front of the vehicle to drawing No HYG 5147, Sheet 1.

- 4.4.14.2 This shall be driven from the transfer case by a shaft, Leyland Part No HYG 5160.

- 4.4.14.3 The engine oil filter shall be repositioned as shown in drawing No HYG 5147, Sheet 2.

- 4.4.14.4 When fitted and adjusted the maximum rope tension obtainable on the lower layer of the drum shall be 27kN and the minimum rope tension obtainable on the lower layer of the drum shall be not less than 24.5 kN.

13.

4 (Contd)

4.4.15 Towing Pintle

4.4.15.1 A towing Pintle to drawing ADE(V)211-2, (supplied as GFE) shall be fitted to the rear of the Vehicle to drawing No HYG 0342.

4.5 Fittings and Accessories

4.5.1 A Brushguard, Leyland Part No HYG 0193 shall be fitted to the front bumper, to drawing No HYG 0343.

4.5.2 Two rear quarter bumper/jerrican carriers, Leyland Part Nos HYG0116 and HYG 0117 shall be fitted to the rear of the Vehicle, to drawing No HYG 0344. The left hand bumper/jerrican carrier shall accept the in-service water jerrican (DSN 7240-66-054-8602) and the right hand carrier shall accept the in-service POL jerrican (DSN 7240-00-802-2405).

4.5.3 Combined towing, and sling points, Leyland Part Nos HYG0143 shall be fitted to the front of the Vehicle to drawing HYG0345.

4.5.4 Sling Points, Leyland Part No HYG0445 and HYG0446 shall be fitted to the rear of the Vehicle to drawing HYG0249 and HYG0457.

4.5.5 Reserved.

4.5.6 An odometer with tripmeter, Leyland Part No PRC 1782 shall be fitted.

4.5.7 A 3 lb BCF fire extinguisher and bracket (supplied as GFE) shall be mounted in the cab to drawing No HYG 03550.

4.5.8 Four Unit/Formation sign holders to Drg ADE(V)43-1 shall be fitted to the Vehicle to drawing Nos HYG 0351 and HYG0461.

4.5.9 Holes shall be provided for fitting of Army registration plates (in accordance with drawing ADE(V)5-16) at the front and rear of the Vehicle to drawing Nos HYG0352 and HYG0358.

4.5.10 Two external rear vision mirrors, Leyland Part No 11226001(RH) and HYG1229(LH) shall be fitted to drawing No HYG0397.

4.5.11 Nomenclature and Servicing Date plates, Leyland Part Nos HYG0256 and HYG0261 and a modification plate (supplied as GFE) shall be fitted to drawing No HYG0353.

4.5.12 A 'C of G' Designation Plate, to Drg ADE(V)225-749, shall be fitted to drawing No HYG0492 on the Left Hand longitudinal chassis rail.

4.5.13 The Tenderer shall supply one jack and handle with each Vehicle. The jack shall comply with Army(Aust) 29 and be similar to the in-service Jack Hydraulic, Hand, 2½ Ton, Double Lift. (DSN 5120-66-012-6108). A bumper lifting jack is not acceptable.

4.5.14 A hand throttle shall be fitted in the cab to drawing No HYG0770.

4.5.15 An engine hourmeter, PRC1840 (Smith's ET 1-01) shall be fitted to the Vehicle's dashboard to drawing HYG0874. The meter shall be connected to the coil side of the ignition switch.

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4.5 (Contd)

- 4.5.16 A radio shelf and tool base shall be installed in the rear of the vehicle in accordance with Leyland Drawing No. HYG0973.
- 4.5.17 Four antenna brackets shall be fitted to the vehicle in accordance with Leyland Drawing No. HYG1088.
- 4.5.18 A rear step shall be fitted to the vehicle in accordance with Leyland Drawing No. HYG 1158.
- 4.5.19 Stowage for the Radio Batteries shall be provided in the vehicle in accordance with Leyland Drawing No HYG1053.
- 4.5.20 The vehicle shall be fitted with a lock keeper bracket(s) in accordance with Leyland Drawing No HYG1083.
- 4.5.21 Hood strap staples shall be provided in accordance with Leyland Drawing No. HYG1096.

4.6 Repair Parts

- 4.6.1 The Tenderer shall submit with the tender a fully priced and part numbered listing of repair parts considered to be necessary for the maintenance of 100 Vehicles for a period of 12 months, under normal operating conditions, during which period each Vehicle will run an average of 15,000 kilometres.
- 4.6.2 The Tenderer shall state whether the repair parts as recommended are available from Australian stocks or must be imported. An estimate of lead time shall be provided also.
- 4.6.3 The Tenderer's documentation supplied as for para 4.10.2 and the repair parts listing supplied (as per para 4.6.1) will be used by the Army to determine the initial repair parts requirement which will be detailed in the CAPO.
- 4.6.4 It shall be a condition of the CAPO that the repair parts, as detailed, must be delivered prior to the delivery date of the last Vehicle.

4.7 Branding

- 4.7.1 The Contractor shall brand the tyres in accordance with the requirements of DEF(AUST)5047, provided the branding does not interfere with the safety or function of the item.

4.8 Materials and Workmanship

- 4.8.1 Materials. All materials used in the manufacture of the Vehicle shall comply with the relevant Australian or British standards or specifications where such exist, or in their absence, to any standard or specification agreed by the QAR.
- 4.8.2 Workmanship. All workmanship shall be in accordance with the best trade practice and shall be to the satisfaction of the QAR.

4.9 Painting

4.9.1. The preparation of surfaces for painting and the painting process shall be the Contractor's standard procedure, subject to approval by GPC (in accordance with specification GPC-Process-22) except that the finishing coat shall be Olive Drab, Semi-Gloss to Specification GPC-E-21. Galvanized components not normally painted shall be left unpainted.

4.10 Documentation

4.10.1 General

4.10.1.1 The Tenderer shall furnish complete descriptive literature and technical data for the Vehicle and its components. Lack of complete and specific details shall be sufficient cause for the rejection of the tender.

4.10.1 (Contd)

- 4.10.1.2 The successful Tenderer shall supply such additional technical data as required by the Dept of Defence (Army Office) for cataloguing and technical documentation of the Vehicle and its repair parts.
- 4.10.1.3 Without the technical manuals referred to below, the Vehicles will not be issued by the Army, nor can they be operated or adequately maintained. It is therefore essential that delivery of the manuals required coincides with or anticipates the delivery of the Vehicles.

4.10.2 Publications/Manuals

- 4.10.2.1 The Tenderer shall submit a quotation for supply in quantities of 10, 50, 100 and 200 (see note 1) of the following documents, such as he normally supplies to the Australian Vehicle Trade:

- a. Operator's Manual/Instructions
- b. Maintenance/Repair Manual
- c. Repair Parts Manual/Catalogue

- 4.10.2.2 The Tenderer shall also submit a quotation for the supply of technical manuals listed hereunder to Specification ARMY(AUST)606 in the quantities of each as indicated:

- a. User Handbook in quantities of 10, 50, 100 and 200 (see note 1).
- b. Electrical and Mechanical Engineering Instructions (2 copies of draft only).
- c. Repair Parts Identification Listing (1 copy of draft only).

- 4.10.2.3 Where the Tenderer is unable to fulfil the requirements for the preparation of technical manuals in accordance with ARMY(AUST)606, he shall state that fact. He shall undertake to provide access to his premises, engineering data and records in order that technical manuals may be prepared by the Army or their approved documentation Contractor.

Note 1: Figures quoted are a guide only. The type and quantities of each manual will be advised in the CAFO.

4.10.3 Equipment User Handbook

One copy of either the accepted commercial Operators Manual/Instructions or approved User Handbook shall be supplied with each Vehicle. The cost shall be included separately in the tender price for the Vehicle.

4.10.4 Amendments to Publications/Manuals

Amendments and supersession lists shall be continually provided for the service life of the Vehicle so that the publications and manuals supplied to the Dept of Defence (Army Office) can be kept up to date. Copies of amendments/supersession lists are to be sent as follows:

4.10.4 (Contd)

a. Parts Manual Amendments to:

Supply Documentation Centre,
HQ Logistics Command,
P.O. Box 1932R,
G.P.O. MELBOURNE, 3004

b. Technical Manual Amendments to:

Maintenance Engineering Agency (Broadmeadows Element),
RAEME,
Camp Road,
BROADMEADOWS MIL P.O. 3047

4.10.5 Cataloguing Requirements

4.10.5.1 The successful Tenderer may be required to furnish to the Cataloguing Officer of Dept of Defence (Army Office) information regarding the items supplied against the contract. This information which may involve provision of manufacturer's references, part numbers, names, print drawings, specifications and related documents, will be used solely to establish directly the essential characteristics which give an item its unique character and differentiate it from every other item.

4.10.5.2 For items procured by the successful Tenderer from another source, the name of the actual manufacturer (or code) and his reference or part number shall be furnished on request.

4.10.6 Tools and Accessories

The Contractor shall prepare a schedule of 'on Vehicle' tools and accessories showing quantity of each item, full designation and prime manufacturer's number. One copy of the schedule shall be forwarded within 21 days of receipt of the CAPO to:

Supply Documentation Centre,
HQ Logistics Command,
P.O. Box 1932R
G.P.O. MELBOURNE, 3004

4.11 Warranty

4.11.1 Full details of the warranty shall be stated in the commercial publications detailed in para 4.10.2.1a and b, and the Army technical manuals as detailed in para 4.10.2.2a and b. A copy of the warranty shall be supplied with each Vehicle, for insertion in the Army Vehicle Log Book, with a list of State agents who shall honour the warranty. The Contractor, whether he is the manufacturer or not of the part(s) or items concerned, shall be responsible for honouring the warranty.

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4.11 (Contd)

- 4.11.2 Tenders shall contain the following minimum warranty clauses:
- 4.11.2.1 The Vehicle supplied under this specification shall be guaranteed for the first 20 000 km or twelve months in use, whichever occurs first after that date of delivery, against defective materials, design or workmanship.
- 4.11.2.2 The Vehicle shall operate satisfactorily on the current grades of fuels and lubricants specified in DEF(AUST)206, and the warranty shall not be invalidated by the use of such grades.
- 4.11.2.3 If the Vehicles are delivered into store for long term storage, the operation of the warranty shall be suspended for up two years.
- 4.11.2.4 If the Vehicles are withdrawn from storage before the expiration of two years, the warranty shall be on a pro-rata basis. The warranty shall range from 20 000 km or twelve months, if the Vehicle is issued in the first month, to 5000 km or three months if the Vehicle is issued to the User after a period of 24 months. The warranty shall finally expire after 27 months.
- 4.11.2.5 In the event of a failure of any part or parts during these periods, the affected part or parts shall be replaced or repaired promptly by the Contractor, or, in the particular State, by the State Agent if within 40 km.
- 4.11.2.6 When the part or parts are to be provided for the Vehicle at a greater distance than 40 km from the State Agent, the part or parts shall be delivered to the designated Unit or Agent nominated by the Army. Installation of the part(s) shall be by Army tradesmen or the nominated Agent.
- 4.11.2.7 All replacements shall be supplied free of charge and without extra costs (eg, installation, transportation costs) to the Army.

5. QUALITY ASSURANCE PROVISIONS

- 5.1 The official tender invitation and contract shall nominate the Quality Assurance Authority, the conditions of inspection and the requirements for contractor's Quality Control.
- 5.2 All contractors shall perform, or have performed, the examinations and tests necessary to substantiate that the supplies and/or services conform to the requirements, as specified herein, and shall offer for acceptance only supplies and/or services that conform to these specification requirements.
- 5.3 The Quality Assurance Authority reserves the right to perform, or have performed, any examination or tests deemed necessary to ensure that supplies and/or services conform to the contract and specification requirements.

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5.4 The acceptance of all supplies and/or services shall be subject to agreement, by the Quality Assurance Authority, that the quality requirements of the contract and specification have been fulfilled. The Quality Assurance Authority reserves the right to reject any supplies and/or services which, in its opinion, are inferior in quality of materials or workmanship, or differ in any respect from the contract and specification requirements.

5.5 The minimum examination and test necessary for proof of conformity are contained in Annex A.

6. PREPARATION FOR DELIVERY

6.1 Packaging

Packaging shall be as designated in the tender schedule or CAPO.

7. NOTES

7.1 Named Trade Items

A named trade item called up in the specification and reference documents may be replaced by an approved equivalent.

7.2 Ordering Data

The CAPO will specify the following:

- a. Title, number and date of this specification.
- b. Details of the type of packaging to be used by the Contractor.
- c. Details of the options that are to be called up in the Official Order.
- d. Details of items which shall be supplied by the Army as Government Furnished Equipment (GFE).

7.3 Changes to Pattern

7.3.1 Requests for changes to the design of an item, materials, components, fabrication methods or manufacturing techniques called up in specifications, approved drawings or sealed samples shall be made by means of the following procedures as appropriate:

- a. Production Permit. Permission in advance of manufacture to use materials or methods to make items which differ from the approved pattern. It is limited in application to cover a specific quantity, lot, series or batch of materials of items.
- b. Production Concession. A request to use or release a specific quantity, lot, series or batch of materials, components or stores already made but which do not comply strictly with approved pattern.
- c. Pattern Change Request. A request for a change in the design of an item, materials, components, fabrication methods or manufacturing techniques.

7 (Contd)

7.3.2 In the above procedures the Contractor shall pass relevant details on the correct form to the QAR together with samples and test certificates as appropriate.

7.3.3 The QAR shall pass to the Contractor in writing the outcome of any production permit/concession or pattern change request before the Contractor may incorporate or proceed with the proposed change.

7.4 Adherence to Specification

The approving authority for the specification is the Director General of Materiel on behalf of the Chief of Materiel, Department of Defence (Army Office). No departure from this specification or associated specifications will be approved by the Director General of Materiel, unless, by reason of the acceptance of a tender, full details of approved alternatives are incorporated in an eventual Contract.

* * * * *

Copies of this specification may be obtained from:

Head
Engineering Development Establishment
Private Bag no. 12, P.O.
ASCOT VALE, VICTORIA, 3032

TESTING REQUIREMENTS1. Contractor's Obligations1.1 Quality Assurance

The Contractor shall be responsible for the inspection of product and components during manufacture and assembly, including those of any sub-contractor, to ensure that the specified standards have been satisfied. The QAR shall have free access to manufacturer's works, including the premises of any sub-contractor where parts or components are being manufactured, supplied or tested. The QAR reserves the right to inspect sub-contractors' supplies at source. The Contractor shall notify the QAR in advance, the date when fabrication is to commence. Equipment shall not be delivered into the nominated depot until it has been released by the QAR.

1.2 Provision of Facilities

The Contractor shall be responsible for providing all test equipment, fuel, test loads, operators and test sites for the conduct of all tests and, where necessary, office accommodation for the QAR.

2. Testing of Specified Performance2.1 Sample Selection

The QAR shall select at random one or more samples from the total quantity for inspection and testing. Provided only that a model identical in all respects to that now submitted has previously been inspected, tested and accepted by the Army Quality Assurance Service to this issue of the specification, then, at the discretion of the QAR the selection of a sample for testing may be waived.

2.2 Conduct of Tests

The performance tests specified herein shall be applied to the sample. The Contractor shall be responsible for the conduct of all tests necessary to prove conformity of the sample with the requirements of this specification and the CAPO. Testing shall be performed in the presence of the QAR.

2.3 Extent of Testing

2.3.1 The tests are the minimum necessary for proof of compliance and they may be varied, extended or waived at the discretion of the QAR.

2.3.2 The result of all tests, determination and physical dimension checks shall be recorded and copies of all records shall be retained by the QAR.

2.4 Exemption from Tests

When a Tenderer considers that he has certification of equipment or components which would exempt him from any necessity to prove conformity, such certification shall be forwarded with the quotation. Acceptability of the tendered certification shall be indicated by a specific clause in the CAPO. Unless specific exemption from any test is written into the CAPO, the Contractor shall perform or cause to be performed, all testing necessary to prove compliance with the stated requirements.

3 Performance Tests

3.1 Environmental

3.1.1 Storage Conditions

The sample vehicle shall be stored in an approved controlled atmosphere environmental test chamber under each of the climatic categories of Army(Aust)6233 para 4.2.2.1, including all the applicable factors additional to temperature and relative humidity. Inability of the vehicle to perform its normal operational functions after the storage test shall be reason for non-acceptance.

3.1.2 Operational conditions

The sample vehicle, laden with an evenly distributed load of 700 kg plus a distributed mass equivalent to driver and passenger each with personal arms and equipment, shall be tested and operated in the same test chamber as para 3.1.1 of this Annex. It shall be operated under the conditions of each of the climatic categories of Army(Aust) 6233 para 4.2.1.1, including all applicable factors additional to temperature, solar radiation and relative humidity. Operation shall include engine and cooling system checks at maximum torque in 4th gear, high ratio and at idle until temperatures are stabilised. Inability of the vehicle to perform normal operational functions (relaxations of Army(Aust)6233 para 4.2.1.1 excepted) or failure of any part or assembly to function correctly shall be reason for non-acceptance.

3.1.3 Tropical storage test

The sample vehicle shall be tested in accord with para 7.18 of Standard DEF(AUST)500B for the 28 day period. Fault or failure of vehicle or equipment shall not be acceptable.

3.2 Fording

At the conclusion of a minimum 8 km run the sample vehicle shall be forded at 5 km/h through water 500 mm deep for a distance of at least 90 m. Inability to ford without stall, ingress of water causing or likely to cause faulty operation, failure in components or assemblies or any depreciation in vehicle performance or operation shall be reason for non-acceptance.

3.3 Towing and Lifting Points

3.3.1 Emergency towing points

A towing force of 30 kN shall be applied to the front fitted emergency towing attachments in the horizontal line of the attachments and at an angle 30° each side of the longitudinal centreline of the vehicle. Permanent deformation of the towing lug or its attachment to the vehicle shall be reason for non-acceptance.

3.3.2 Helicopter Sling Points

Each type of sling point for helicopter lifting, and its mounting, shall be subjected to test loads equal to those specified in Army(Aust) 6233 para 4.2.4.1. Any permanent deformation caused by the test required by para 4.2.4.1 (a), or breakage of any part caused by the test required by para 4.2.4.1 (b), shall be cause for rejection.

3.4 Vehicle performance

3.4.1 Laden, solo

3.4.1.1 Brake performance

Performance of the service braking system of the laden sample vehicle shall be determined by the average stopping distance (or mean deceleration) from three stops, 80 km/h to rest. Performance less than the requirement of Army (Aust) 6233 para 4.3.2 shall not be accepted.

3.4.1.2 Gradient testing

Ability of the laden vehicle to negotiate a proven 50 per cent gradient of at least 30 m length, including a stop and restart on the gradient, and the ability of the hand brake to hold the vehicle unassisted on this slope shall be proven.

3.4.2 Laden, towing

3.4.2.1 Road running

The laden vehicle used in the tests of para 3.4.1 of this annex shall be attached to a laden trailer, $\frac{1}{2}$ ton, 2 wheeled at gross trailed mass of 800 kg. The combination shall be tested on level sealed road for a minimum of 25 km during which running the ability of the vehicle to maintain a sustained speed of 98 km/h without wind assistance shall be proven.

3.4.3 Turning circle

The turning circle at the outer roadwheel shall be determined between 150 mm high curbs through 360° on each lock. A turning circle greater than 15 m in either direction shall not be accepted.

3.4.4 Radio Frequency Interference Suppression

The sample vehicle shall be subjected to such testing as is necessary to determine the adequacy of the RFI suppression for radiated emission to the limits of RE05 in MIL-STD-461.

3.4.5 Tyre Load

The load on each wheel of the vehicle, laden as in Army(Aust)6233 para 4.3.1 with the laden trailer attached shall be determined on a weighing device certified for accuracy by the State Weights and Measures Authority. Tyre loads in excess of the limits specified in the Tyre and Rim Association Manual shall not be accepted.

3.4 (Contd)

3.4.6 wheels

The tyre/rim combination fitted to the vehicle shall be checked to ensure contour and dimensional conformity with those specified in the Tyre and Rim Association Manual.

3.4.7 Fabric, Upholstery

In the absence of acceptable certification of conformity from the supplier of the seating upholstery fabric, the Contractor shall provide samples and have them tested against the requirements of AS 1440, for WS2.

4 Production Quality Control

4.1 Production Run Vehicles

After testing is completed and the sample is approved, the QAR shall inspect all production run vehicles manufactured against the Order to ensure that compliance with the specified features and conformity with the specification are maintained.

5. Production Run Testing

5.1 Engine Performance

The Contractor shall provide a copy of his quality control plan covering the engine, its components and assembly in such detail as will enable the QAR to be assured that the control of assembly limits will provide continuity of peak power output within the percentage limits specified in Army(Aust) 6233 para 4.4.4.2. In the absence of an acceptable quality control plan, the Contractor shall perform such testing as will prove to the satisfaction of the QAR that the peak power output of all engines used in vehicles on the contract remains within the percentage limits specified.

5.2 R.F.I. Suppression

The Contractor shall provide a copy of his quality control plan covering the fitment of the RFI suppression components on the vehicles in such detail as will enable the QAR to be assured that the control of production will provide continuity of suppression within the limits specified in Army(Aust) 6233 para 4.3.4. The QAR shall random select vehicles from production at his discretion for spot testing to prove conformity with requirements.

5.3 Operation

Each vehicle produced against the contract shall be subjected to a minimum 8 km test run during which the operation, braking and handling of the vehicle shall be tested and accessories proven. Workmanship of a quality less than the manufacturers normal product shall be cause for rejection.

5 (Contd)

5.4 Winch fitment

Where a vehicle is fitted with a winch, the winch shall be operated to prove correct fitment, function and control. Using a load cell, recently tested and certified correct, each winch shall be checked for correct setting of the overload clutch as detailed in Army(Aust) 6233 para 4.4.12.4.

6. Non Acceptance

Any deviation of all or part of the production run from the approved sample shall be cause for non-acceptance until all are corrected and brought into conformity. Such items may be offered again for inspection provided that the Contractor has remedied the cause of non-acceptance and has the approval of the QAR to resubmit the items.

7. Acceptance

The QAR shall accept the equipment only when all the requirements of the order, and in particular, Section 5 of this Specification, are complied with.