TRUCK, WRECKER, HEAVY RECOVERY VEHICLE (HRV), MC3, 123T GCM, 6X6, HYDRAULIC LIFT/TOW, W/TWIN WINCH, PALFINGER CRANE, MACK 'R' SERIES

NSN 2320-66-151-7176

DATA SUMMARY

This instruction is authorised for use by command of the Chief of Army. It provides direction, mandatory controls and procedures for the operation, maintenance and support of equipment. Personnel are to carry out any action required by this instruction in accordance with EMEI General A 001.

Figure 1 Truck, Wrecker, Heavy Recovery Vehicle (HRV), MC3, 123T GCM, 6X6, HYDRAULIC Lift/Tow, W/Twin Winch, Palfinger Crane, Mack 'R' Series

General

1. This EMEI lists the basic data for the Truck, Wrecker, Heavy Recovery Vehicle (HRV), MC3, 123T GCM, 6X6, HYDRAULIC Lift/Tow, W/Twin Winch, Palfinger Crane, Mack 'R' Series, NSN 2320-66-151-7176 as shown in Figure 1.

2. Role. The role of this vehicle is to salvage, recover and transport the ADF's fleet of light, medium and heavy support vehicles as well as selected plant and armoured vehicles. This vehicle will also provide a deployable emergency rescue and accident response capability. Transportation of disabled vehicles or equipment can be via the recovery system mounted to the truck or using the Trailer, Recovery, Heavy, MC3, Model MC-4DT.

3. Description. The Truck, Wrecker, Heavy Recovery Vehicle (HRV), MC3, 123T GCM, 6X6, HYDRAULIC Lift/Tow, W/Twin Winch, Palfinger Crane, Mack 'R' Series is a Mack 6×6 cab chassis modified and fitted with a Miller recovery platform. The recovery platform incorporates hydraulically-operated spades, underlift attachment, twin 13-tonne recovery winches and a chassis-mounted materiel handling equipment crane. The existing cab chassis has been modified to suit the role with the following major modifications:

a. upgrade of fuel injection pump governor to increase power output;

b. inclusion of speed limiter;

c. replacement of existing cooling system fan with a viscous fan clutch and nine-blade fan;

d. inclusion of ten-speed overdrive transmission;

e. inclusion of cabin isolation system and extra crew cabin; and

f. the inclusion of a radio communication system.

Detail

4. Dimensions:

a. Length Overall ..... 9500 mm

b. Width Overall ..... 2500 mm

c. Height:

(1) Overall ..... 3265 mm

(2) Reducible ..... 3075 mm

d. Shipping Cubage Reduced Height ..... 73 m^3

e. Wheel Base ..... 5537 mm

f. Track:

(1) Front ..... 1990 mm

(2) Rear ..... 1830 mm

g. Ground Clearance ..... 250 mm

(1) Limiting Feature ..... rear equalising beam

h. Towing Pintle Height (Air Suspension at Standard Ride Height) ..... 870 mm

i. Bridge Classification 19/90

5. Mass:

a. Operational (with CES, less Crew and Personal Equipment):

(1) Front Axle ..... 6560 kg

(2) Rear Bogie..... 12 300 kg

(3) Total ..... 18 860 kg

b. Maximum Loading:

(1) Front Axle ..... 6800 kg

(2) Rear Bogie ..... 20 000 kg

(3) Total ..... 26 800 kg

c. Gross Combined Mass:

(1) Highway ..... 90 000 kg

(2) Cross Country ..... 55 000 kg

d. **Maximum Gross Combined Mass.** The vehicle is capable of moving 123 000 kg GCM to a safe area in accordance with the following guidelines:

(1) Road Surface ..... 100% paved

(2) Max Towed Distance (not to exceed) ..... 500 m

(3) Max Speed (not to exceed) ..... 20 km/h

6. Wheels and Tyres:

a. Wheels ..... 8.00 × 20, 3 piece

b. Tyre Size ..... (Refer to EMEI Vehicle A 291-5)

c. Tyre Pressures ..... (Refer to EMEI Vehicle A 291-5)

7. Engine:

a. Manufacturer ..... Mack

b. Type ..... EM6-320 Maxidyne series intercooled, six cylinder in line, four cycle turbo charged, compression ignition

c. Power ..... 238 kW (320 hp) @ 2100 r/min

d. Torque ..... 1360 N.m @ 1500 r/min

e. Firing Order 1-5-3-6-2-4

f. Displacement ..... 11 L

g. Compression Ratio 15.0:1

h. Turbocharger ..... Schwitzer

i. Engine Brake Type ..... Mack Dynatard

8. Transmission:

a. Manufacturer ..... Eaton Fuller

b. Type ..... RTXF-14710, 10 speed overdrive

c. Gear Ratios ..... refer to Table 1

Table 1 Gear Ratios

Gear	Shift Lever Position	Range	Ratio
1	1/6	Lo	10.99
2	2/7	Lo	8.18
3	3/8	Lo	6.07
4	4/9	Lo	4.46
5	5/10	Lo	3.32
6	6/1	Hi	2.46
7	7/2	Hi	1.83
8	8/3	Hi	1.36
9	9/4	Hi	1.00
10	10/5	Hi	0.74
Rev	(R)	Lo	11.23
Rev	(R)	Hi	2.52

9. Transfer Case:

a. Manufacturer ..... Mack

b. Type ..... TC 150, two speed

c. Gear Ratios:

(1) High Range 0.786:1

(2) Low Range 1.992:1

(3) Front Output Shaft 0.966:1

10. Clutch:

a. Manufacturer ..... Eaton Fuller

b. Type ..... solo heavy duty, cable control

11. Crane PTO:

a. Manufacturer ..... Chelsea

b. Type ..... 6 bolt mechanical

c. Model 442XFAHX.A3XK

d. Ratio 0.520:1

12. Crane Hydraulic Pump:

a. Manufacturer ..... Commercial Hydraulics

b. Type ..... gear pump

c. Model P430A142LEAB07-25

13. Recovery System PTO:

a. Manufacturer ..... Chelsea

b. Type ..... 8 bolt mechanical

c. Model 489XFAHX.A3XK

d. Ratio 0.520:1

14. Recovery Hydraulic Pump:

a. Manufacturer ..... Commercial Hydraulics

b. Type ..... tandem gear pump

c. Model P330B242LEAB10250HAB1001

15. Front Axle:

a. Manufacturer ..... Fabco

b. Type SDA-18B

16. Rear Bogie:

a. Manufacturer ..... Mack

b. Type SA441W

c. Ratio 6.34:1

17. Propeller Shafts:

a. Manufacturer ..... Dana Spicer

b. Type:

(1) Front ..... 1610 series

(2) Rear ..... 1810 series

18. Steering:

a. Manufacturer ..... Sheppard

b. Type ..... SGP49 (Model 592)

19. Suspension:

a. Front ..... 8 leaf semi-elliptic springs

b. Rear:

(1) Manufacturer ..... Neway

(2) Type ARDST-244-6

20. Electrical System:

a. Type ..... 24 V

b. Alternator ..... EDE 28 V, 100 A

c. No of Batteries ..... 2 × 12 V

d. Terminal Grounded ..... negative

21. Brakes:

a. Air System ..... dual line

b. Service Brakes:

(1) Front ..... self adjusting wedge

(2) Rear ..... self adjusting wedge

c. Emergency/Parking Brakes ..... spring actuated

d. Work Brake ..... service brakes mechanically actuated

e. Warning Devices ..... low air buzzer and light

22. Fuel, Lubricants and Coolant. Refer to Table 2

Table 2 Fuel, Lubricants and Coolant

Assembly	Capacity	Grade/Type
Fuel	498 L	Diesel
Engine	55.3 L (including filters)	SAE Grade 40 (OMD-115)
Cooling system	54 L	Anti-freeze – Anti-boil AS-2108
Transmission	12 L	NATO O-226 (OEP-220)
Transfer case	9.5 L	NATO O-226 (OEP-220)
Front axle (differential)	11.4 L	NATO O-226 (OEP-220)
Front wheel bearings	fill to level plug (level plug horizontal with centre of hub)	NATO O-226 (OEP-220)
Inter axle	12 L	NATO O-226 (OEP-220)
Rear axle	11.2 L	NATO O-226 (OEP-220)
Power divider	fill to level plug	NATO O-226 (OEP-220)
Steering	7.75 L	SAE Grade 40 (OMD-115)
Hydraulics	150 L	ISO Grade 68
Air system lubricator	20 ml	Tellus 22 or equivalent
Winch gear box	as required	Castrol LMX or equivalent
Winch ropes	4 × 500 g aerosol cans per service	Rocol or equivalent SWR lubricant

23. Air Compressor:

a. Manufacturer ..... Bendix

b. Type TU-FLO501

c. Capacity ..... 12 CFM

d. Drive ..... gear driven

e. Lubrication/Cooling ..... integral with engine

24. Air Conditioner:

a. Manufacturer ..... Crisp-Air

b. Model ..... KTMA 0601

c. Refrigerant ..... R 134a

25. Recovery Winches:

a. Manufacturer ..... Sepson

b. Model Numbers:

(1) Left Winch ..... H 200P

(2) Right Winch ..... H 200P

c. Type ..... hydraulically driven, drum type, 2 speed, constant force

d. Rope Diameter ..... 17 mm

e. Rope Length ..... 98 m

f. Capacity Automatic Mode ..... 13 tonnes constant force on all layers

g. Capacity Manual Mode ..... 13 tonnes on bottom layer, reducing to 9 tonnes on top layer

h. Maximum Layers of Rope 4

i. Maximum Oil Pressure ..... 175 bar

j. Maximum Oil Flow ..... 60 L/min

26. Recovery System:

a. Manufacturer ..... Miller Industries, Ooltewah, Tn 37363, USA

b. Model HRV-1856

c. Rear Lifting Capacity ..... 5 500 kg with tow cylinders fully retracted

27. Crane Data:

a. Manufacturer ..... Palfinger

b. Type ..... PK 9501

c. Lifting Moment ..... 88 kN.m (64 880 lbf ft)

d. Lifting Capacity ..... refer to Table 3

Table 3 Lifting Capacity

Outreach	Capacity
1.40 m	5700 kg
4 m	2220 kg
5.70 m	1600 kg

e. Slewing Angle ..... 210°

f. Slewing Torque ..... 11.8 kN.m (8700 lbf ft)

g. Operating Pressure ..... 30.5 MPa (4422 lbf/in²)

h. Flow Rate ..... 45 L/min (min) @ 1500 r/min

i. Radio Control Frequency Range ..... 433.05 MHz to 434.79 MHz

28. Trailer Facilities:

a. Socket Type ..... NATO 12 pin

b. Pintle Hook ..... fully rotating, lockable

c. Brakes ..... twin line air

29. Performance:

a. Fording Depth (unprepared) ..... 800 mm at a maximum speed of 5 km/h

b. Turning Circle (between curbs) ..... 24.1 m

c. Maximum Gradeability ..... 1 in 2

d. Approach Angle ..... 32.5°

e. Departure Angle ..... 57°

f. Fuel Consumption (approx):

(1) Primary Road ..... 42 L/100 km

(2) Secondary Road ..... 58 L/100 km

g. Range (approx):

(1) Primary Road ..... 1 145 km

(2) Secondary Road ..... 834 km

30. Manufacturer's Details:

Mack Trucks
Volvo Group Australia Pty Ltd
20 Westgate Street
WACOL
PO Box 1047
SUMNER Park QLD 4076
Tel: (07) 3718 3500

31. Point of Contact:

National Fleet Manager Med/Hvy B Vehicles
CGSV SPO, DMO
Defence Plaza
Bourke Street
MELBOURNE VIC 3000
Tel: (03) 9282 27452

32. Associated Information

a. SIGC 2320-0053

b. NSN 2320-66-151-7176

c. Complete Equipment Schedules:

(1) CCES 19726 ..... Truck, Wrecker, Heavy, MC3

(2) CCES 19727 ..... Raven Radio Installation Kit

(3) SCES 012323 ..... Recovery Equipment HRV

(4) SCES 012318 ..... Vehicle Accessory Maintenance Kit

(5) SCES 13820 ..... Radio Set UHF 16 Channel 336-400 MHz Handheld Kit for HRV

d. Repair Parts Scale (RPS) 02252

e. Other EMEI:

(1) EMEI Vehicle D 322.....Technical Description

(2) EMEI Vehicle D 323.....Light Grade Repair

(3) EMEI Vehicle D 324-1 .....Medium Grade Repair

(4) EMEI Vehicle D 324-2 .....Heavy Grade Repair

(5) EMEI Vehicle D 329.....Servicing Instruction

(6) EMEI Vehicle D 328-1 .....Servicing/Inspection of CES

END

Distribution List: **VEH D 30.0 – Code 1** (Maint Level)
(Sponsor: CGSV SPO, Mdm/Hvy B Vehicles)
(Authority: CGSVSPO EC-003834)