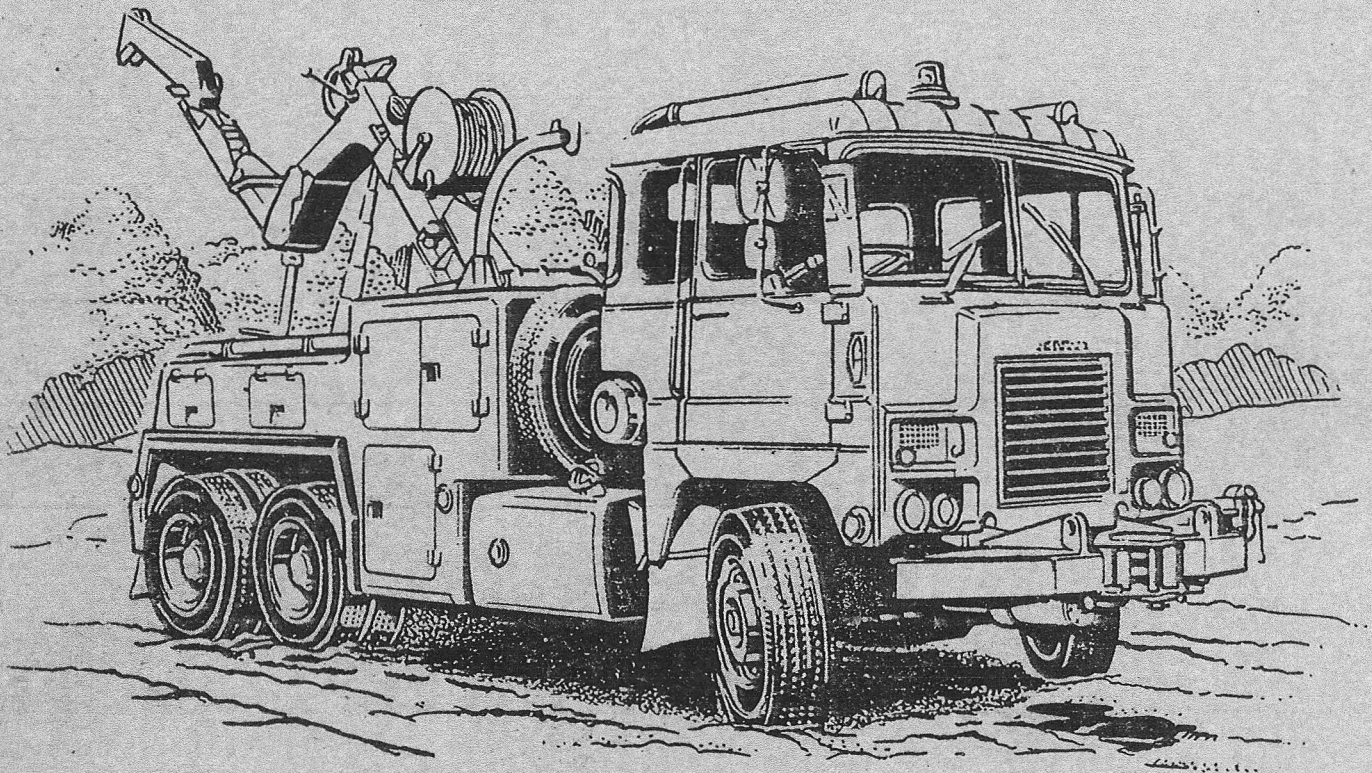


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RECOVERY VEHICLE, WHEELED, CL, 6x4, SCAMMELL/EKA

1325-0822



USER HANDBOOK 1979

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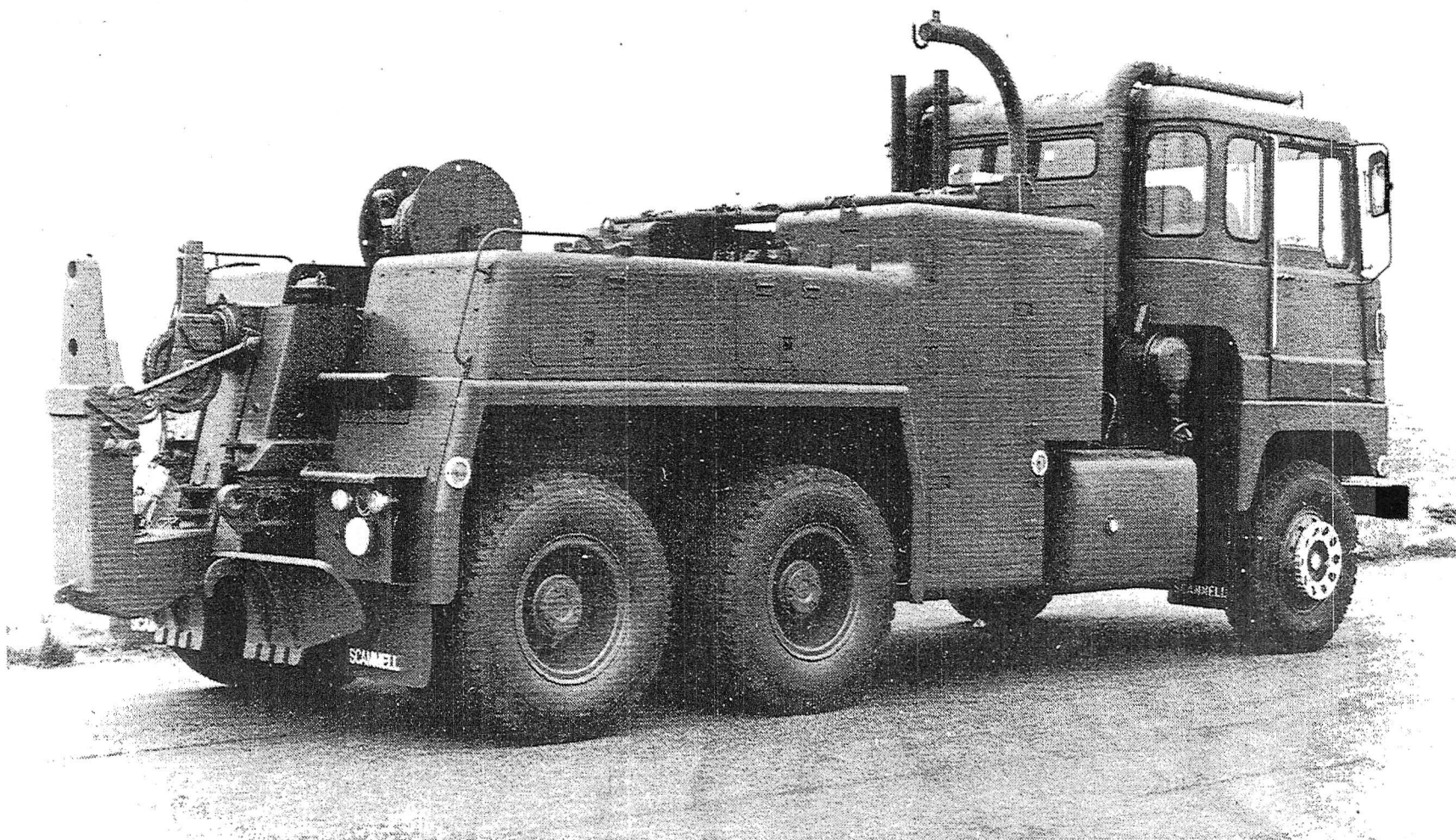


FIGURE 2 THREE QUARTER REAR VIEW OF RECOVERY VEHICLE

CHAPTER 1

DESCRIPTION

ROLE

1. The primary role of the recovery vehicle will be in support of logistic vehicles up to 16 tonne payload in Communication Zone and non-field force Units.

2. The vehicle is capable of support towing of vehicles, providing the load does not exceed 7½ tonne, and normal straight towing, using a rigid tow bar of logistic vehicles up to and including the 16 tonne range of vehicles laden, and laden trailers within the safety limits of this class of vehicle.

CHASSIS

3. The frame consists of two channel sidemembers with five fabricated crossmembers bolted to the sidemembers.

ENGINE

4. The engine is a Rolls Royce 305 Mark III turbocharged wet sump engine rated at 305 BHP.

ENGINE LUBRICATION

5. Wet sump lubrication. The lubricating oil is drawn from the sump by a gear pump, driven from a gearwheel behind the crankshaft pinion, and is delivered at a controlled pressure via a heat exchanger and full flow filters to the main bearings and then through the engine returning to the sump by gravity.

FUEL SYSTEM

6. The 455 litre (100 gall) fuel tank is mounted on the R.H. side of the chassis frame. The filler neck contains a gauze filter and the filler cap is lockable.

7. A two stage filtration system is provided. The primary fuel filter is in the fuel line near the fuel tank and renewable cartridge type fuel filters are fitted in the lines before the injection pump.

8. A direct reading magnetic fuel gauge is fitted in the side of the fuel tank.

AIR CLEANERS

9. Two dry type air cleaners are fitted. Each air cleaner is fitted with a vacuator valve and a disposable paper element. One restriction indicator is also fitted in the system to visually indicate when the air filter elements are choked and should be replaced.

COOLING SYSTEM

10. The cooling system is a pressurised no loss system pressurised to 0.087 and 0.158 kg/cm (1.25 and 2.25 lbf/in). A combined pressure and vacuum relief valve is fitted.

DESCRIPTION—contd.

11. The thermostat opening temperature is 83°C—85°C.
12. An eight bladed cooling fan is fitted.
13. A Kysor thermostatically controlled radiator shutter is also fitted.

CLUTCH

14. The clutch is a 15½in dia. twin plate pull type clutch which is hydraulically operated and fitted with a clutch brake.

GEARBOX

15. The gearbox is a twin countershaft transmission. The transmission makes 15 forward speeds and three reverse speeds available. The unit consists of a 5 speed front section and a 3 speed auxiliary rear section.

POWER-TAKE-OFF

16. The power-take-off unit is fitted on the side of the main gearbox and driven from the main gearbox via a countershaft gear supported by two taper roller bearings. The drive is transferred to the sliding gear, which moves on a splined shaft supported by a ball bearing on one side and a roller bearing on the other side.

17. The power-take-off is lubricated from the main gearbox.

FRONT AXLE

18. The axle consists of a heavy I section axle beam carrying the stub axles which pivot about the king pins. The stub axles carry the wheel hubs which run on opposed taper roller bearings. The king pins are carried in plain bushes.

REAR AXLES

19. The two rear axles have spiral bevel primary reduction and epicyclic hub reduction gearing. The first rear axle is fitted with a lockable third differential.

20. Each axle is fitted with a cross differential lock.

SUSPENSION

21. The rear suspension consists of a pair of semi-elliptic springs centrally pivoted on fulcrum pins.

22. The ends of the rear springs bear on thrust buttons located on the axle arms. A roller also bears on top of the ends of the springs above the thrust buttons.

23. The rear axles are located by radius rods.

24. The front suspension consists of a pair of semi-elliptic slipper type springs secured at the front end by rubber bushed steel pins. Shock absorbers are fitted to damp down the oscillation of the springs.

STEERING

25. The housing of the Z.F. ball nut power steering gear contains the control valve, power cylinder and a complete mechanical steering unit.

DESCRIPTION—contd.

26. An engine driven hydraulic pump draws fluid from the reservoir and passes it to the steering box.

27. A pressure limiting valve is incorporated in the system.

BRAKES

28. The brakes are Girling two leading shoe twin web fixed cam wedge brakes which are air operated.

AIR PRESSURE SYSTEM

29. The vehicle is fitted with air operated spring brake actuators on all wheels. If the air pressure in the system falls below the pressure considered safe for normal brake applications the brakes are applied mechanically by means of a coil spring situated in the rear portion of the brake actuator. Under normal conditions the pressure of this spring is counteracted by air pressure and the diaphragm portion of the brake actuator operates the brakes by means of air pressure applied by the footbrake valve. The footbrake valve applies the brakes on all wheels.

30. The hand control valve operates the brakes on all wheels by exhausting the air from the spring brake actuators and applying the brakes by spring pressure, this brake is used as a parking brake, and also for secondary braking.

31. With the hand control valve in the released position the rear brakes will be released as soon as sufficient air pressure is available to overcome the spring pressure. The vehicle cannot be moved until sufficient air pressure is available. An emergency brake release valve is also fitted in the cab.

WHEELS & TYRES

32. Single front and dual rear wheels are fitted. The tyres are 11.00 x 20 radial 16 ply with XZY pattern.

33. A spare wheel carrier is mounted on the front R.H. side of the body.

ELECTRICAL SYSTEM

34. The vehicle is wired on the 24 volt negative earth return system. The system is suppressed to commercial standard to prevent interference to radio equipment.

35. Two sets of batteries in parallel are connected to a battery isolation switch, each set consisting of two 12 volt batteries connected in series.

36. The batteries are charged by a belt driven alternator whose output is controlled by a transistorised regulator housed in a screened enclosure together with a surge protection unit.

37. The axial type starter motor is operated by a built in solenoid switch controlled by a starter button. A key operated switch on the steering column disconnects the feed to the starter button.

DESCRIPTION—contd.

38. To assist in starting vehicle in the event of discharged batteries, two inter vehicle sockets are fitted on the left hand side of the tool box. One is a 12v. socket and the other a 24v. socket.

39. The vehicle is fitted with head, side, stop, tail number plate and convoy lamps. Flashing turn indicators are also fitted. A flashing beacon lamp is fitted on the top of the cab.

CAB

40. The cab is a forward control steel cab which accommodates the driver plus three persons.

41. The cab is mounted on rubber bushes at the front and on double hydraulic struts with a radius arm at the rear.

42. A large trap type panel is provided in the centre of the cab floor to permit easy access to the engine and sound absorbing materials are used around the engine cover to reduce interior cab noise.

EKA RECOVERY EQUIPMENT

43. The main lifting boom is operated by a multi-stage hydraulic ram controlled from R.H. rear valve compartment or by the remote control unit.

44. The main hydraulic reservoir for the system is incorporated in the main boom.

45. Folding and extension booms are fitted to the main boom to use for reaching under casualties and when support towing.

46. A swivelling fairlead mounted on taper roller bearings is fitted at the main boom to permit angular winch pulls by the main winch.

47. Two extendible hydraulically operated stiff legs are provided at the rear of the vehicle. The stiff legs are controlled from the R.H. rear valve compartment with a separate control for each leg. These legs provide anchorage and stability during recovery operations.

48. A rear bogie suspension blocking device is fitted to provide weight transfer to the steering axle and this device is controlled from the cab.

49. The main winch is hydraulically driven and controlled from the R.H. rear valve compartment or the remote control.

50. The front winch is also hydraulically driven and controlled from the cab or the remote control.

MAIN WINCH

51. The main winch is powered by three hydraulic motors and is equipped with a hydraulically released spring loaded brake.

52. For low pulling power, only one of the three motors is in operation rotating the wire drum at relatively high speed. When the load increases the other motors come into operation.

DESCRIPTION—contd.

53. A dog clutch is fitted to the wire rope drum axle to allow "free spooling" of the drum for manual unwinding.

54. An adjustable friction pad (spin check) prevents the drum from rotating too freely, over-running and spilling the wire rope from the drum.

FRONT WINCH

55. The front winch is powered by one hydraulic motor and fitted with a fail safe brake.

56. To pay out the winch rope under power the hydraulic oil flow to the motor is reversed by means of a directional control valve.

57. A dog clutch is fitted to the wire rope drum to allow "free spooling" of the drum for manual unwinding.

58. An adjustable friction pad (spin check) prevents the drum from rotating too freely, over-running and spilling the wire rope from the drum.

BOGIE BLOCKING SYSTEM

59. The main purpose of the bogie blocking device is to help maintain weight on the steering axle when towing suspended loads.

60. The system consists of two double acting cylinders which are mounted on the top hamper sub frame and operated from the cab. The cylinders extend down onto the rear axle of the bogie.

61. The hydraulic system is self contained and consists of a motor/pump with its own reservoir, filter and a pressure relief valve. A hydraulic accumulator is also included in the system.

CHAPTER 2

DATA

DIMENSIONS (See Figure 3)

Overall length	8300 mm	(27ft 2in)
Overall width	2502 mm	(8ft 2½in)
Overall height	3250 mm	(10ft 8in)
Ground clearance min.	254 mm	(10in)
Wheel track, front	2116 mm	(6ft 11.3in)
Wheel track, rear	1845 mm	(6ft 0½in)
Wheelbase, front axle to Bogie Centre	4572 mm	(15ft)
Bogie Centres	1373 mm	(4ft 6in)

WEIGHTS

Complete vehicle with full fuel tank, fully equipped less crew.

Front Axle	6096 Kg	(13439 lb)
Rear Bogie	10365 Kg	(22850 lb)
Total	16461 Kg	(36290 lb)

BRIDGE CLASSIFICATION 38

FORDING DEPTH

Without preparation	762 mm	(30in)
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SHIPPING TONNAGE 68 m³ (60 Ton
8ft 3in)

RAIL LOADING DATA

MANNING REQUIREMENTS 1 Recovery Mechanic plus
1 Crew Member and emer-
gency space for casualty
crew.

CAPACITIES

Engine Oil	30.7 litre	(54 pint)
Gearbox	13.6 litre	(24 pint)
1st Rear Axle Casing	11.4 litre	(20 pint)
2nd Rear Axle Casing	10.2 litre	(18 pint)
Hubs (each)	1.7 litre	(3 pint)
Rear Spring Fulcrum	0.3 litre	(½ pint)
Hydraulic System, Steering	6.8 litre	(12 pint)
Hydraulic System, Clutch	0.6 litre	(1 pint)
Hydraulic System, Recovery Equipment	213.6 litre	(376 pint)
Main Winch	25 litre	(44 pint)
Front Winch	4.5 litre	(8 pint)
Fuel Tank	455 litre	(800 pint)
Coolant	61.3 litre	(108 pint)

ENGINE Rolls Royce Eagle 305 ver-
tical, 6 cylinder-in-line 4
stroke diesel.

Number of cylinders	6
Bore	130.17 mm (5½in)
Stroke	152.4 mm (6in)
Cubic capacity	12.17 litre (762.64in ²)
B.H.P.	305 at 2100 rev/min.
Compression ratio	16:1

DATA—contd.

Valve Tappet clearance—hot or cold						
Inlet	..	..	..	..	..	0.38 mm (0.015in)
Exhaust	..	..	..	..	..	0.63 mm (0.025in)
Firing order	..	..	..	..	..	1, 4, 2, 6, 3, 5
Engine lubricating system						
Type of system	..	..	..	..	..	Wet sump
Oil pump	..	..	..	..	..	Gear type
Oil pressure—normal	..	..	..	..	..	3.5 to 4.9 Kg/cm ² (50—70 lb per sq.in)
Oil Pressure—						
Min for continuous operation	..	..	..	..	..	2.1 Kg/cm ² (30 lb per sq.in)
Oil Filters	..	..	..	..	..	Full Flow Type
COOLING SYSTEM						
Radiator Type	..	..	..	..	..	Stack type pressurised
Fan	..	..	..	..	..	Eight Blade—28 in Belt driven
Circulation	..	..	..	..	..	Centrifugal type pump. Belt driven
Cooling Control	..	..	..	..	..	Thermostat
FUEL SYSTEM						
Fuel Lift pump	..	..	..	..	..	Simms
Fuel Injection Pump	..	..	..	..	..	Simms Majormec with 11 mm element
Air Cleaner	..	..	..	..	..	Dry Type
Filter	..	..	..	..	..	Replaceable spin on canister type
CLUTCH						
Type	..	..	..	..	..	15½in. Twin plate, pull type, with clutch brake, hydraulically operated.
GEARBOX						
Type	..	..	..	..	..	Fuller RTO 915, 15 forward speeds and 3 reverse
GEAR RATIOS						
1st	..	..	..	..	..	9.73:1
2nd	..	..	..	..	..	7.62:1
3rd	..	..	..	..	..	6.03:1
4th	..	..	..	..	..	4.78:1
5th	..	..	..	..	..	3.87:1
6th	..	..	..	..	..	6.51:1
7th	..	..	..	..	..	5.10:1
8th	..	..	..	..	..	4.04:1
9th	..	..	..	..	..	3.20:1
10th	..	..	..	..	..	2.59:1
11th	..	..	..	..	..	2.04:1
12th	..	..	..	..	..	1.59:1
13th	..	..	..	..	..	1.26:1
14th	..	..	..	..	..	1.00:1
15th	..	..	..	..	..	0.81:1
Reverse 1st	..	..	..	..	..	10.55:1
2nd	..	..	..	..	..	7.06:1
3rd	..	..	..	..	..	2.21:1

DATA—contd.

AXLE RATIO 6.5625:1

MAXIMUM SPEEDS

1st Gear	..	..	..	..	6.5 Km/h	(4.01 miles/h)
2nd Gear	..	..	..	..	8.2 Km/h	(5.12 miles/h)
3rd Gear	..	..	..	..	10.4 Km/h	(6.47 miles/h)
4th Gear	..	..	..	..	13.1 Km/h	(8.16 miles/h)
5th Gear	..	..	..	..	16.2 Km/h	(10.08 miles/h)
6th Gear	..	..	..	..	9.6 Km/h	(5.99 miles/h)
7th Gear	..	..	..	..	12.3 Km/h	(7.65 miles/h)
8th Gear	..	..	..	..	15.5 Km/h	(9.65 miles/h)
9th Gear	..	..	..	..	19.6 Km/h	(12.19 miles/h)
10th Gear	..	..	..	..	24.2 Km/h	(15.06 miles/h)
11th Gear	..	..	..	..	30.6 Km/h	(19.02 miles/h)
12th Gear	..	..	..	..	39.5 Km/h	(24.54 miles/h)
13th Gear	..	..	..	..	59 Km/h	(30.96 miles/h)
14th Gear	..	..	..	..	62.8 Km/h	(30.02 miles/h)
15th Gear	..	..	..	..	78 Km/h	(48.17 miles/h)

PERFORMANCE

Maximum speed on roads (laden)	78 Km/h	(48 miles/h)
Maximum Gradient climbable (laden)	1 in 5	
Fuel Consumption (laden)	2.0—3.0 miles/gallon	(dependent upon going)
Range of action (laden)	@ 2.0 miles/gallon = 200 miles	
	@ 3.0 miles/gallon = 300 miles	

TURNING CIRCLE

Left lock	..	..	..	..	23 m	(75.6 ft)
Right Lock	..	..	..	..	21.5 m	(70.5 ft)

NETT POWER/GROSS WT. RATIO

Tractor with casualty (46 tonne total)	6.3 Nett horsepower per tonne
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MAXIMUM TRACTIVE EFFORT

Highest gear	1.14 tonne
Lowest gear	13.70 tonne

TYRE SIZE E20/11.00 x 20 16 ply

TYRE PRESSURES See Servicing Schedule

WHEELS 137.5 x 160 mm (6.3 in)
offset x 20 rims

BRAKES

Type Air operated cam brakes
with spring brake actuators
operated by footbrake and
hand operated control
valve.

Size of brake shoes

Front	diameter	..	..	..	393.7 mm	(15½in)
	Width	..	..	..	178 mm	(7 in)
	Thickness	..	..	..	19 mm	¾in)
Rear	diameter	..	..	..	393.7 mm	(15½in)
	Width	..	..	..	178 mm	(7 in)
	Thickness	..	..	..	12.7 mm	½in)
Air Pressure	..	..	..	..	7.73 Kg/cm	(110 lbs per sq.in)

DATA—contd.

STEERING

Type	Ball and nut—hydraulically assisted.
Diameter of steering wheel.. ..	508 mm (20in)
Front wheel toe-in	Parallel to 3 mm ($\frac{1}{8}$ in)

SUSPENSION

Road Springs— front	Semi-elliptic suspension springs damped by telescopic shock absorbers.
rear	Inverted semi-elliptic suspension springs mounted on fully articulated trunnions.

FRONT AXLE

Type	Stamped "I" Section Axle beam. Drop forged stub axles. Hubs on taper roller bearings.
--------------	---

DRIVING AXLES

Type	Spiral bevel-hub reduction type with cross differential lock. Leading axle also fitted with third differential.
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PROPELLER SHAFTS

Type	Hardy Spicer
--------------	--------------

ELECTRICAL SYSTEM

Fuses	One 25 amp fuse Five 15 amp fuses Six 5 amp fuses Fitted in fuse panel behind dashboard One 130 amp fuse in bogie blocking box.
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Batteries

Type	4 off 12 volt UK6TN/FV2067
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Bulbs

Headlamps	26v 50/50w BPF Vertical Dip
Sidelamps	24v 5w SBC
Front Flashers	24v 21w SBC
Tail/Stoplamp	28v 30/7w SBC Index Transverse
Convoy & No. Plate Lamps	26v 6w SCC
Rear Flashers	24v 24w SCC Transverse
Panel Lights	24v 3w MES
Warning Lights	24v 2.8w MCC 11 mm
Beacon	24v 35w SCC HELLA No. U 2445
Interior Light (Cab)	24v 21w DP SBC

DATA—contd.

FRONT WINCH

Type	..	..	..	MR5 S
Type of winch rope	..	..	..	14 mm multi strand steel wire
Length of winch rope	..	..	..
Pulling capacity	..	..	..	7 tonne (6.9 ton)

MAIN WINCH

Type	..	..	..	MAS 32
Type of winch rope	..	..	..	22 mm multi strand steel wire
Length of winch rope	..	..	..
Pulling capacity	..	..	..	20 tonne (19.7 ton)
Main Boom				
Max lifting capacity	7.5 tonne (7.38 ton)
Extension Boom				
Max lifting capacity	7.5 tonne (7.38 ton)

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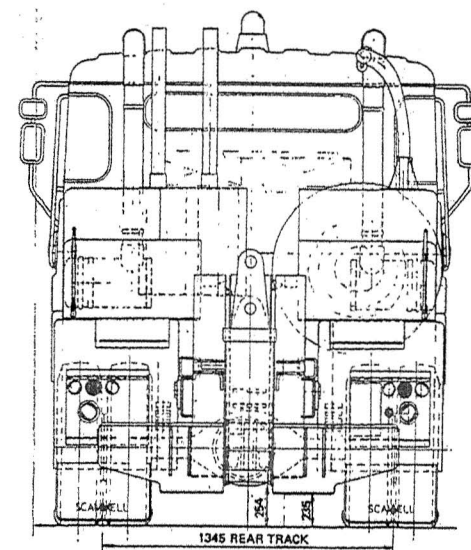
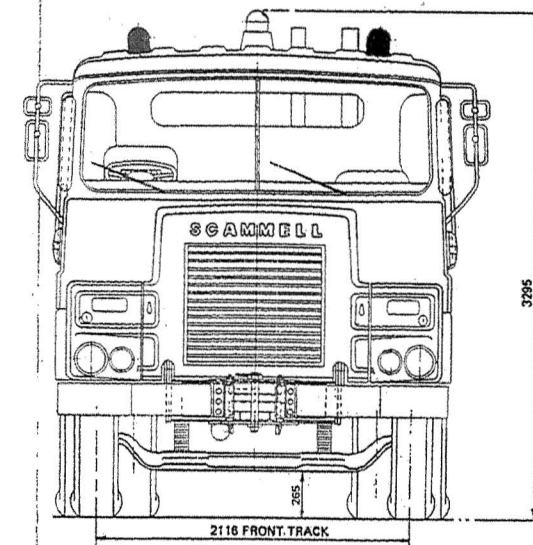
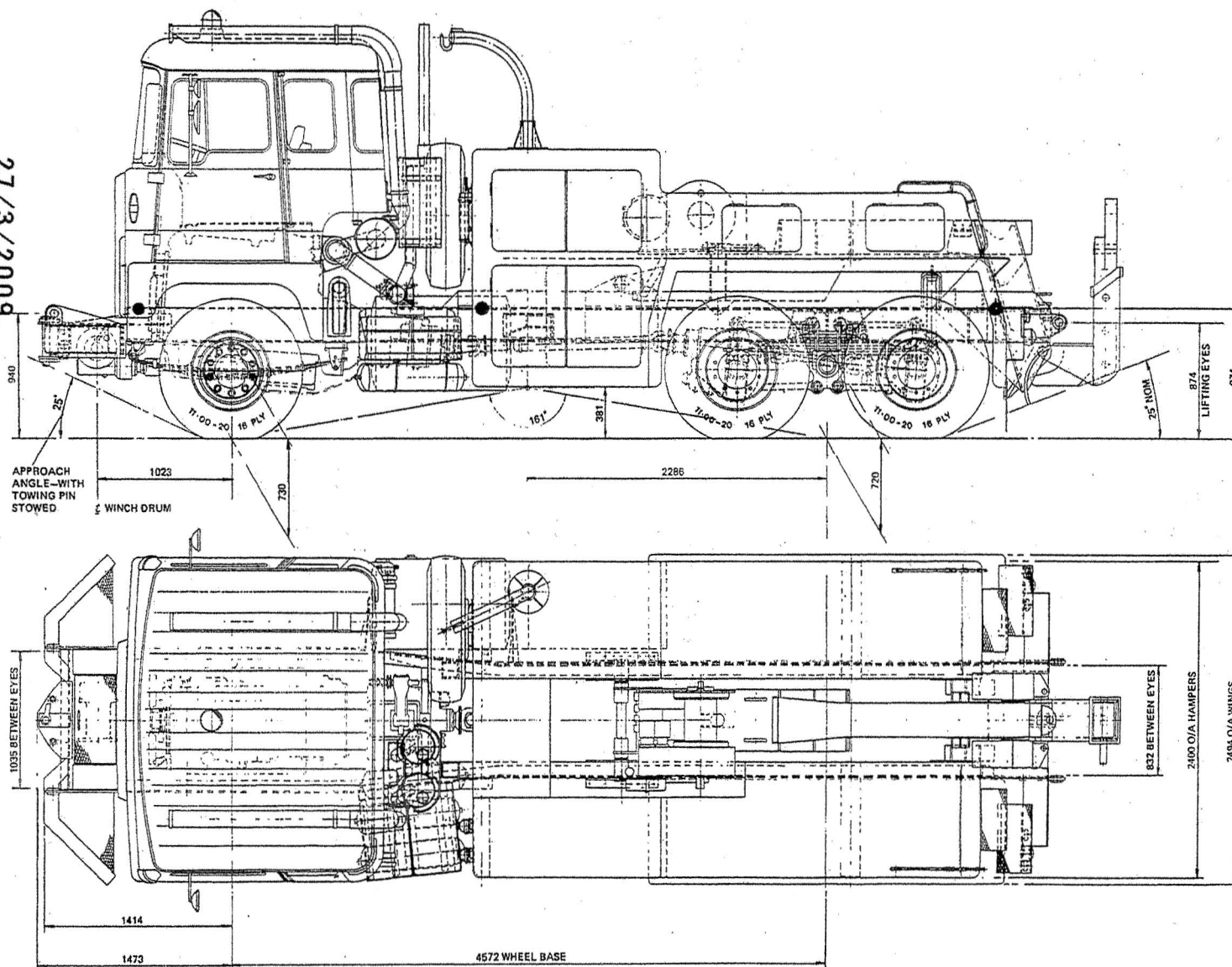


FIGURE 3. VEHICLE DIMENSIONS

OPERATING INSTRUCTIONS—contd.

89. Fire Extinguishers (Bromochlorodifluoromethane)

(a) One fire extinguisher is fitted on the floor of the cab to the right of the driver.

(b) Two fire extinguishers are fitted on the right hand front of the top hamper.

(c) All the extinguishers are located inside metal brackets and secured in position by steel or webbing straps.

(d) To operate the fire extinguisher remove by releasing locking clip and removing webbing strap around body of extinguisher. Hold with both hands, strike the brass base squarely on hard surface. Keep the jet "DOWN" and direct at the base of the fire.

(e) To test extinguisher press hard with thumb on the white spot. Renew the canister if the white spot remains domed inwards. Discard canister after use or if defective.

WARNING: VENTILATE AREA AFTER USING THE FIRE EXTINGUISHER.



FIGURE 12 THREE QUARTER FRONT VIEW OF RECOVERY VEHICLE

- | | |
|-------------------|------------------------|
| 1. Front Winch | 3. Stowage Locker |
| 2. Stowage Locker | 4. Remote Control Unit |
| 5. Stowage Locker | |

EKA RECOVERY EQUIPMENT

90. General Description

(a) The EKA recovery gear is supplied complete with a number of accessories suitable for different types of recovery operations. For description of loose accessories see para. 96.

(b) The front winch can be operated from the cab or the remote control unit.

(c) The main winch, the main boom and the extendible boom can be operated from the R.H. rear valve compartment or the remote control unit.

(d) The bogie blocking device can only be operated from the cab.

(e) The folding boom, the stiff legs and the rope tensioner can only be operated from the R.H. rear valve compartment.

(f) Before commencing any recovery operation ensure that the isolating cocks in the hydraulic system are in the "ON" position (see Figure 14).

(g) A bogie blocking system is incorporated in the system to increase steerability when towing extraheavy supported loads.

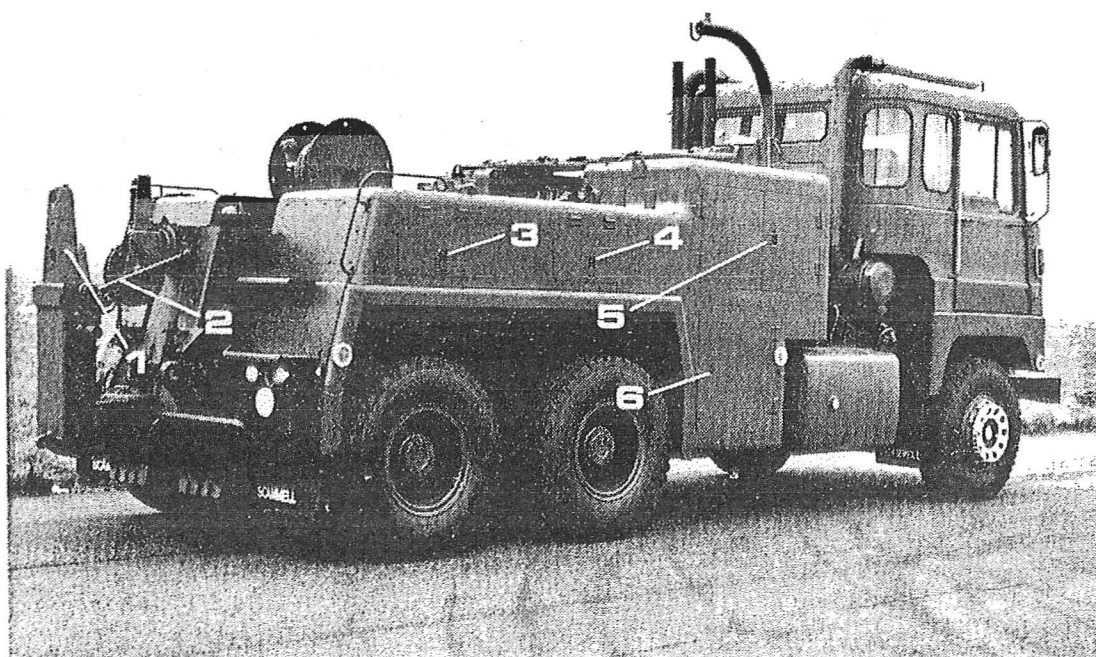


FIGURE 13 THREE QUARTER REAR VIEW OF RECOVERY VEHICLE

- | | |
|----------------------|-------------------|
| 1. Extension Boom | 4. Stowage Locker |
| 2. Folding Boom Lock | 5. Stowage Locker |
| 3. Valve Compartment | 6. Stowage Locker |

EKA RECOVERY EQUIPMENT—contd.

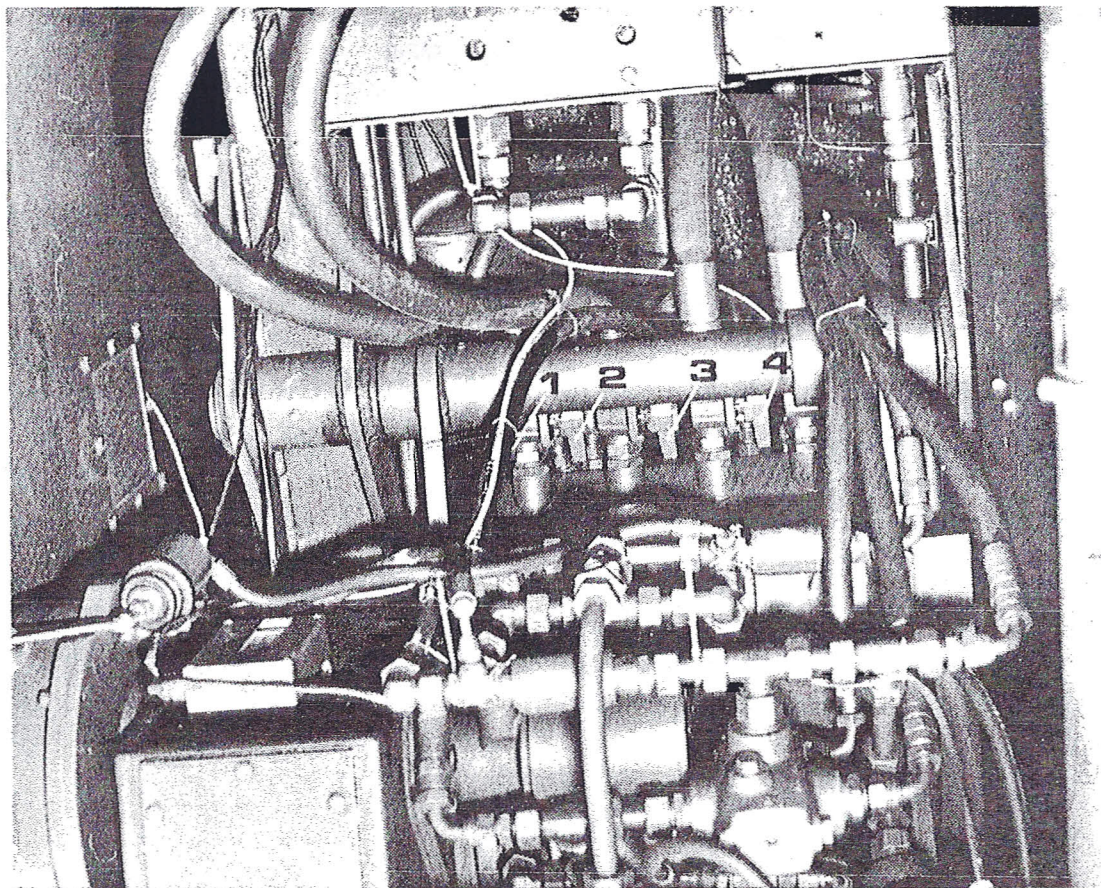


FIGURE 14 VIEW OF ISOLATING COCKS IN "ON" POSITION

91. Recovery Using Main Winch (See Figures 5 & 6)

"CAUTION 1. All winching tasks are to be carried out with at least one full layer of rope coiled on the drum. The rope end is painted red up to 1 metre beyond the rear fairlead to indicate when one full layer remains on the drum".

"CAUTION 2. Following winch operations involving 3 full line consecutive pulls at full load a pause of at least 15 minutes is required before the winch can be used again. Failure to observe this precaution will cause the hydraulic oil to overheat and result in damage to the winch components".

(a) Start engine and engage Power-Take-Off. Set hand throttle at correct engine R.P.M. (800—1000 R.P.M.).

(b) Disengage extendible boom lock. Drive out extendible boom and release automatic folding boom lock.

(c) Lower folding boom until it rests against its stop.

(d) Release main winch drum dog clutch and pull out wire rope manually.

EKA RECOVERY EQUIPMENT—contd.

NOTE: It may be necessary to "Winch Out" to release dog clutch.

CAUTION: When paying out the Main Winch Rope a minimum of 3 coils of rope must always be left on the drum.

(e) Attach the winch rope securely to the vehicle to be recovered.

(f) Lower stiff legs. One leg can be lowered for side pulls.

(g) Re-couple the winch drum dog clutch.

(h) Winch "IN" the vehicle.

NOTE: The rope tensioner works automatically by pulling out its switch in the R.H. rear valve compartment.

NOTE: The rope tensioner should only be used for slack or no load conditions.

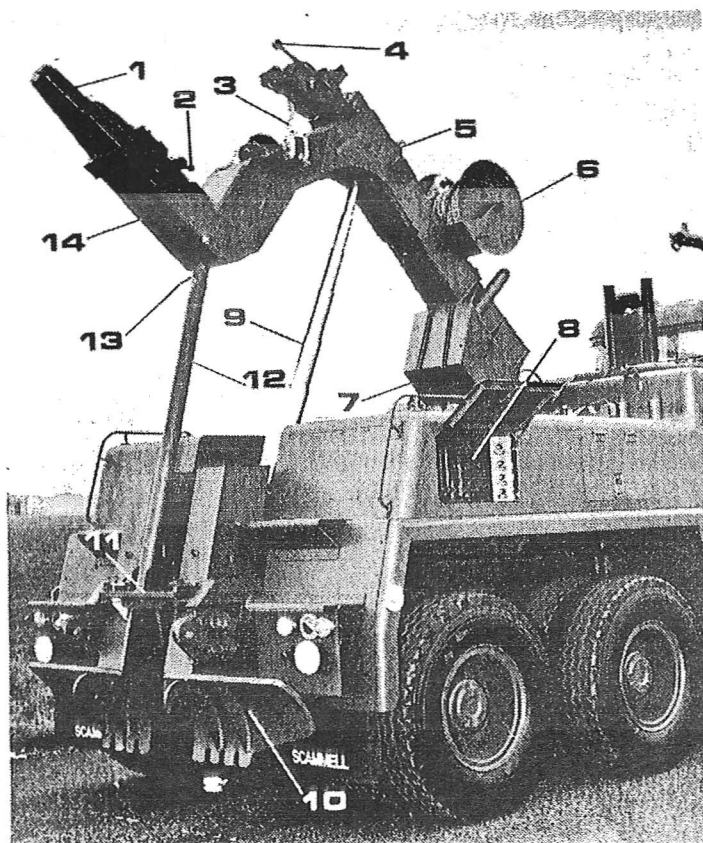


FIGURE 15 GENERAL VIEW OF BOOMS AND MAIN BOOM SUPPORT

- | | |
|-------------------------|-----------------------|
| 1. Extendible Boom | 8. Valve Locker |
| 2. Extendible Boom Lock | 9. Main Boom Cylinder |
| 3. Winch Rope | 10. Stiff Legs |
| 4. Folding Boom Lock | 11. Support Bar |
| 5. Air Cylinder | 12. Main Boom Support |
| 6. Extension Rope Drum | 13. Support Pin |
| 7. Main Oil Reservoir | 14. Folding Boom |

EKA RECOVERY EQUIPMENT—contd.



FIGURE 16 REAR VIEW OF BOOMS

- | | |
|------------------------|-------------------|
| 1. Folding Boom Lock | 4. Stiff Legs |
| 2. Fairlead Pulley | 5. Folding Boom |
| 3. Air Cylinder | 6. Extension Boom |
| 7. Extension Boom Lock | |

92. Use of Main Boom for Supported Towing (See Figures 5 & 6)

(a) Start engine and engage Power-Take-Off. Set hand throttle at correct engine R.P.M. (800—1000 R.P.M.).

(b) Disengage extendible boom lock. Drive out extendible boom and release automatic folding boom lock.

(c) Lower folding boom until it rests against its stop.

(d) Place one of the lifting bars on the extendible boom and fit two suitable forks on the lifting bar. Extend extendible boom and raise main boom until the forks are safely positioned under the vehicle.

(e) Carefully raise hoisting boom. Check that forks remain correctly positioned under vehicle during lifting. Lift until required ground clearance is available.

(f) Always have a safety chain or wire securing the towed vehicle to the recovery vehicle. The safety chain or rope should have enough slack to allow for turning of the vehicles.

EKA RECOVERY EQUIPMENT—*contd.*

(g) Retract extendible boom to shortest possible overhang position, leaving sufficient distance between the vehicles to allow for turning.

(h) When towing any casualties engage extendible boom lock into one of the three locking holes provided, and engage bogie blocking device.

(j) When towing light vehicles or cars the square towing grid can be used. Connect the grid to the extendible boom with the grid bolt and tighten up with its locking tool.

(k) Stand the vehicle front or rear wheels on the grid and fasten down with the tyre clamp kit provided (see Figure 17).

(l) The suitable ground clearance is approx. 10in.

(m) If the vehicle rear wheels are lifted the steering wheel must be secured with a strap.

NOTE: The folding boom cylinder should not be used for lifting loads.

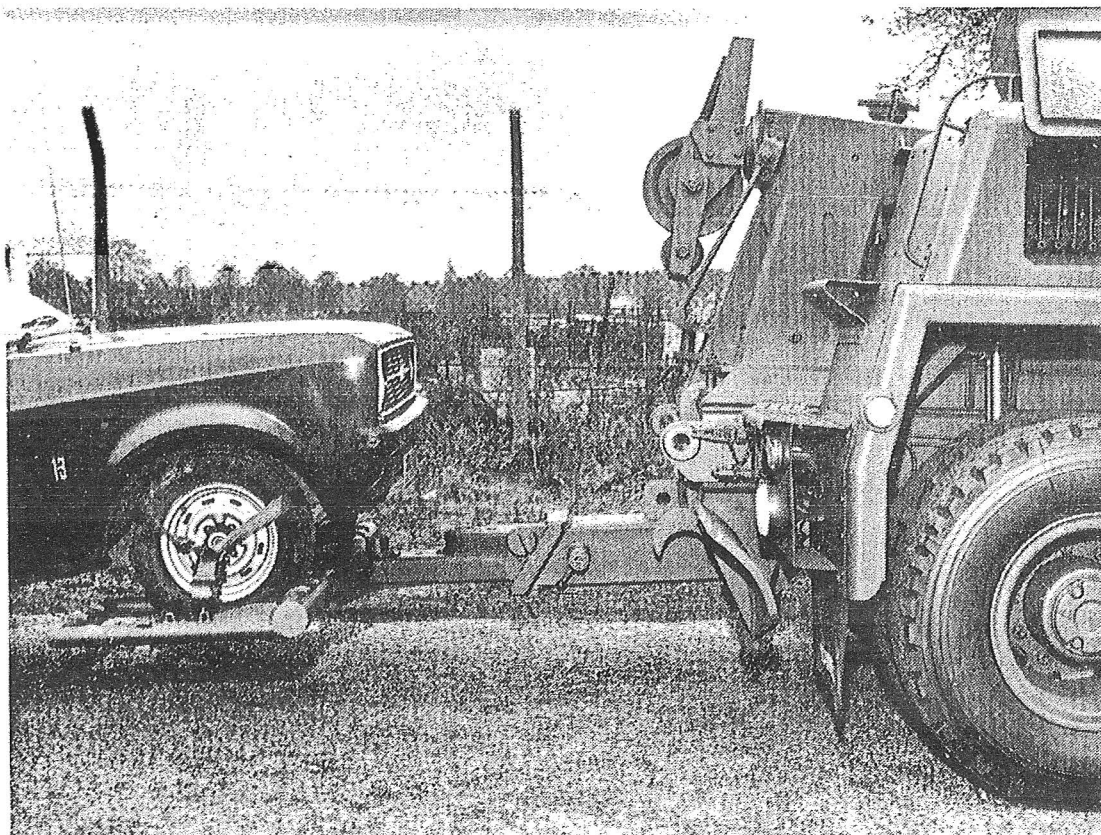


FIGURE 17 VIEW SHOWING CAR FIXED ON CAR FRAME

93. Use of Main Boom as Crane (See Figures 5 & 6)

(a) Start engine and engage Power-Take-Off. Set hand throttle at correct engine R.P.M. (800—1000 R.P.M.).

EKA RECOVERY EQUIPMENT—*contd.*

(b) Disengage extendible boom lock. Drive out extendible boom and release automatic folding boom lock.

(c) Lower folding boom until it rests against its stop.

(d) Raise main boom until extendible boom is at convenient height to connect extra extension boom and crane pulley to boom. Fit locking bolts.

(e) Release main winch drum dog clutch by pulling out switch in R.H. rear valve compartment. Pull out wire rope manually.

(f) Connect boom support to the boom.

(g) Place wire rope on crane pulley sheave and raise main boom to its top position. DO NOT open the control valve fully to avoid too high lifting speed in the final lifting stage.

(h) Connect support crossbar to stiff legs. Lower boom until boom support rests on support crossbar. (see Figure 15).

(j) Re-connect winch drum dog clutch by pushing in release switch in valve compartment.

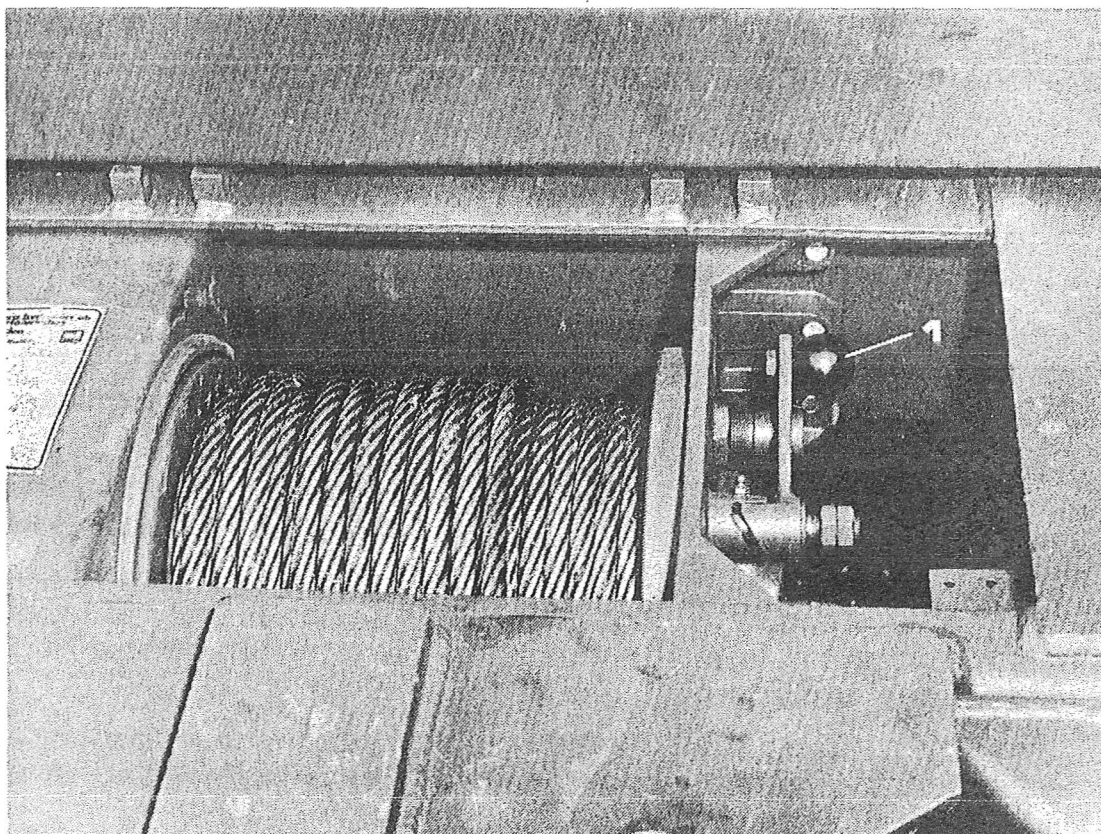


FIGURE 18 VIEW OF FRONT WINCH DOG CLUTCH LEVER

EKA RECOVERY EQUIPMENT—*contd.*

(k) When driving the recovery vehicle with a suspended load, have the load as low as possible. A suitable ground clearance is approximately 10in. Connect a retaining wire between recovery vehicle and the load to prevent damage to the load and possible injury to others.

94. Front Winch—To Operate (See Figure 18)

(a) Start engine and engage Power-Take-Off, set hand throttle at correct engine R.P.M. (800—1000 R.P.M. .)

(b) Switch on front winch master switch in cab (see Figure 3(53)).

(c) Disengage the dog clutch to the drum pulling the lever on the side of the winch forward (see Figure 18) and manually pull out the required amount of winch rope.

CAUTION: When “paying out” the front winch rope a minimum of 3 coils of rope must always be left on the drum.

(d) Re-engage the dog clutch to the drum.

(e) To winch in push control button for winching in (see Figure 3(54)).

(f) When using the winch for self recovery use the vehicle drive to assist the winch.

CAUTION: Engage low gear and keep the engine revs. down to 1500 revs/min whilst driving/winching out. This procedure is necessary to avoid over spooling of the winch rope and/or damaging the pumps which feed the hydraulic system.

95. Safe Working Loads (See Figure 19 and Table ‘A’)

1. The maximum lifting capacities for suspended towing are given in TABLE “A”.

(a) In positions “A” the extendible boom is fully retracted and a lifting bar is at the end of the extendible boom. Boom extension is not fitted.

(b) In positions “B” the extendible boom is fully extended and a lifting bar is at the end of the extendible boom. Boom extension is not fitted.

(c) In position “C” the extendible boom is fully extended, the extension boom is fitted and a lifting bar is fitted at the end of the boom extension.

(d) A, B and C positions 6—8 should not be used for suspended towing.

EKA RECOVERY EQUIPMENT—*contd.*

2. When using the vehicle as a crane the max. safe working loads are as follows:—

(a) With the main boom in the top most position supported by the boom support, the extendible boom locked in the fully retracted position and using the small crane pulley only the maximum permitted load on the rope for craning is 5 tonne.

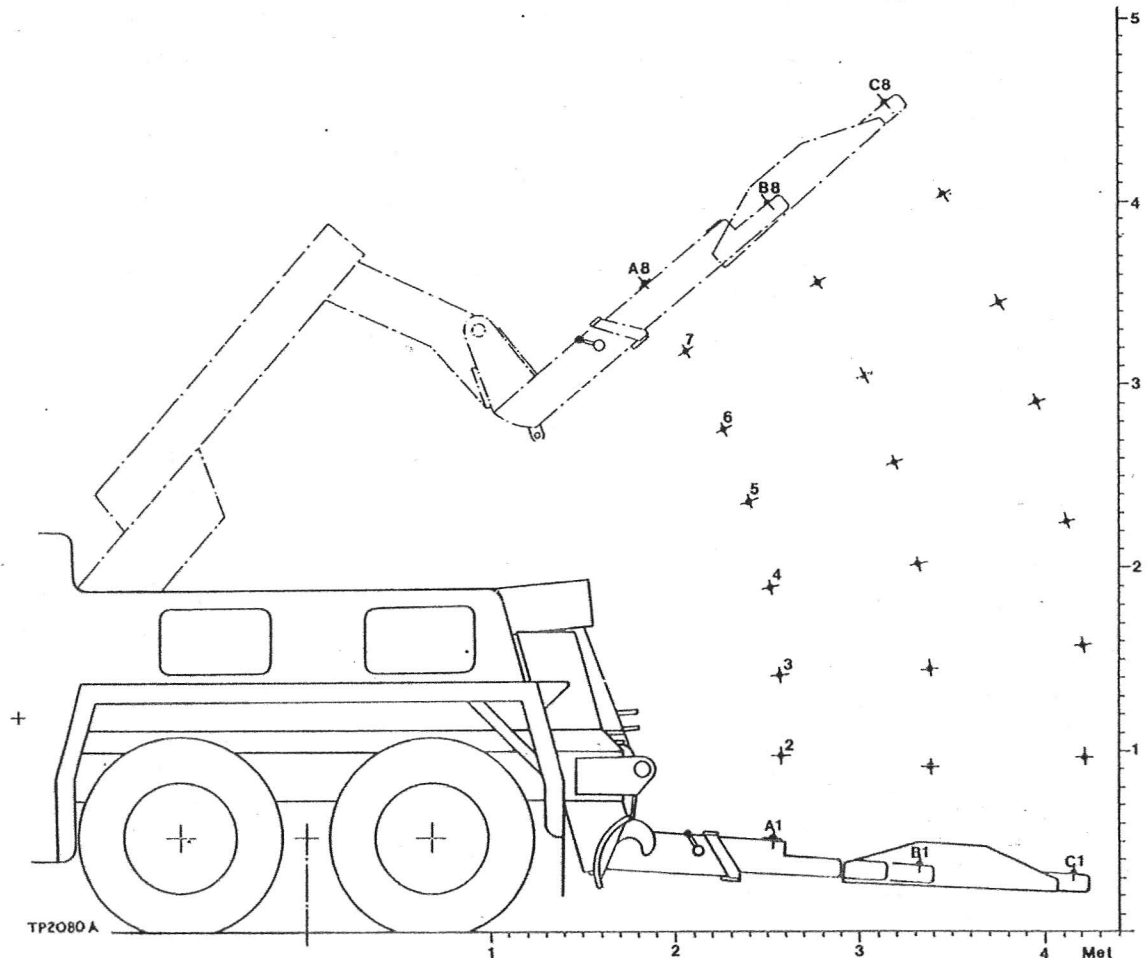


FIGURE 19 LOAD DIAGRAM

(b) With the main boom in the top most position supported by the boom support, the extendible boom locked in the fully extended position, fitted with crane extension and using the large crane pulley, a max. of 3 tonne can be lifted.

CAUTION: DO NOT STAND UNDER THE LOAD WHEN CRANING.

EKA RECOVERY EQUIPMENT—contd.

TABLE "A"

Max. loading with loading of 2000 kg on front axle			
Loading Point	Bogie Blocking disengaged	Bogie Blocking engaged	Max. Hydraulic capacity kg
A1	7504	9946	26937
A2	7357	9750	21283
A3	7357	9750	16764
A4	7357	9750	12990
A5	7657	10149	10244
A6			7503
A7			5321
A8			3512
B1	5685	7535	22539
B2	5600	7422	17808
B3	5600	7422	14027
B4	5600	7422	10870
B5	5772	7650	8571
B6			6278
B7			4452
B8			2939
C1	4576	6064	19275
C2	4520	5991	15229
C3	4520	5991	11995
C4	4520	5991	9295
C5	4690	6216	7458
C6			5368
C7			3807
C8			2513

96. Ancillary Equipment (See Figure 20)

(a) The crane pulley (2) should be fitted on the end of the extendible boom and secured by nut (1). The crane pulley (2) can be used with the extension boom (34).

(b) The long crane pulley (4) should be fitted on the end of the extendible boom and secured by bolt (3). The crane pulley (4) can be used with the extension boom (34).

(c) The main boom supporting strut (7) should be fitted on crossbar support (8) and secured with pin (5) as shown in Figure 15.

EKA RECOVERY EQUIPMENT—contd.

KEY TO FIGURE 20

- | | |
|--------------------------|---------------------------------|
| 1. Nut | 25. Fork |
| 2. Crane Pulley | 26. Chains |
| 3. Securing Bolt | 27. Pin |
| 4. Long Crane Pulley | 28. Locking Pin |
| 5. Locking Pin | 29. Lifting Bar—swivelling |
| 6. Securing Chain | 30. Lifting Bar—short |
| 7. Support Strut | 31. Lifting Bar—long |
| 8. Crossbar Support | 32. Rope Drum |
| 9. Fork | 33. Handle |
| 10. Fork | 34. Extension Boom |
| 11. Fork | 35. Locking Pin |
| 12. Special Pin | 36. Bolt (also Ref. 17) |
| 13. Fork | 37. Car grid |
| 14. Nut | 38. Strut |
| 15. Towing Attachment | 39. Tyre Clamp |
| 16. Support Strut | 40. Lock Bolt |
| 17. Bolt. (also Ref. 36) | 41. 2in. Semi-trailer coupling |
| 18. Pin | 42. Nut |
| 19. Pin | 43. Lock Clamp |
| 20. Lifting Bar—high | 44. Nut |
| 21. Fork | 45. Lock Clamp |
| 22. Fork | 46. 3½in Semi-trailer coupling |
| 23. Fork | 47. Remote control & cable drum |
| 24. Fork | |

(d) For supported towing select the most suitable lifting bar (from the four lifting bars (20, (29), (30) and (31), fit it to the extendible boom then select the most suitable size of fork and fit the pair of forks into the holes in the lifting bar ensuring that the two forks are fitted equidistant from the centre of the lifting bar and as near to the centre as possible. Once the forks have been correctly positioned under the axle or other suitable point of the vehicle to be towed secure the axle to the lifting bar by means of the 4ft chains supplied (see para. 92).

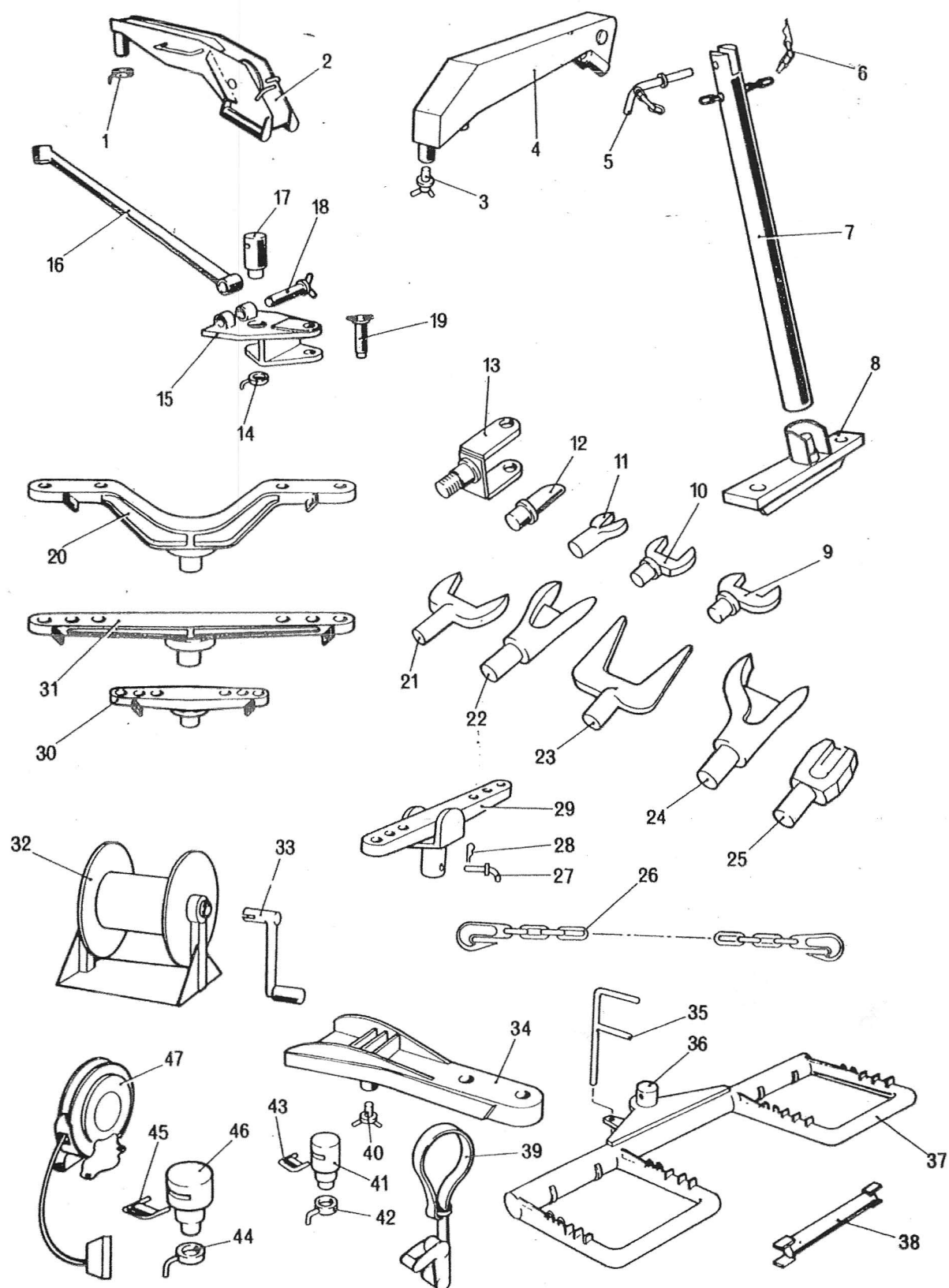
(e) The use of the car frame is described in para. 92j—m. Note that the strut (38) should be put in a suitable position in the car frame so that the wheels are well supported and secure with tyre clamps (39) DO NOT USE PIN (35) when towing with car frame.

(f) The extension boom (34) should be fitted onto the extendible boom and secured with lock bolt (40).

(g) The two semi-trailer couplings (41 and 46) can only be used for unladen semi-trailers. Fit the correct semi-trailer coupling to the extendible boom and secure by means of nuts (42 or 44). Remove lock clamp (43 or 45) position coupling so the 5th wheel king pin is supported in coupling and secure with lock clamp.

(h) The rope drum (32) fitted on the main boom is used for the storage of an additional length of winch rope.

EKA RECOVERY EQUIPMENT—contd.



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FIGURE 20 TOOLS ACCESSORIES

EKA RECOVERY EQUIPMENT—*contd.*

(j) The towing attachment (15) should be fitted to the extendible boom and secured by the bolt (36) (fitted in the car frame) and the nut (14). One end of the strut should be secured to the pin on the folding boom and the other end to the towing attachment by means of pin (18).

(k) A towing crossmember with towing hook is also supplied. This can be fitted to the end of the chassis frame by first lifting the boom and then fitting the towing crossmember over the two towing eyes at the end of the frame and securing through the towing eyes by the two pins provided with the crossmember.

97. Stowage of Ancillary Equipment (See Figures 21—24)

(a) The car frame should be stowed as illustrated on Figure 24.

(b) The following items are stowed in the L.H. front (Top) stowage locker (Fig. 21):—

Items 1, 8, 27—29, 34 and 41—46 as illustrated on Figure 20.

(c) The following items are stored in the L.H. front (Bottom) stowage locker (Figure 22):—

Items 9—25 and 30—31 as illustrated on Figure 20 also the towing crossmember complete with towing hook.

(d) The remote control system is fitted in the L.H. rear stowage locker.

EKA RECOVERY EQUIPMENT—contd.

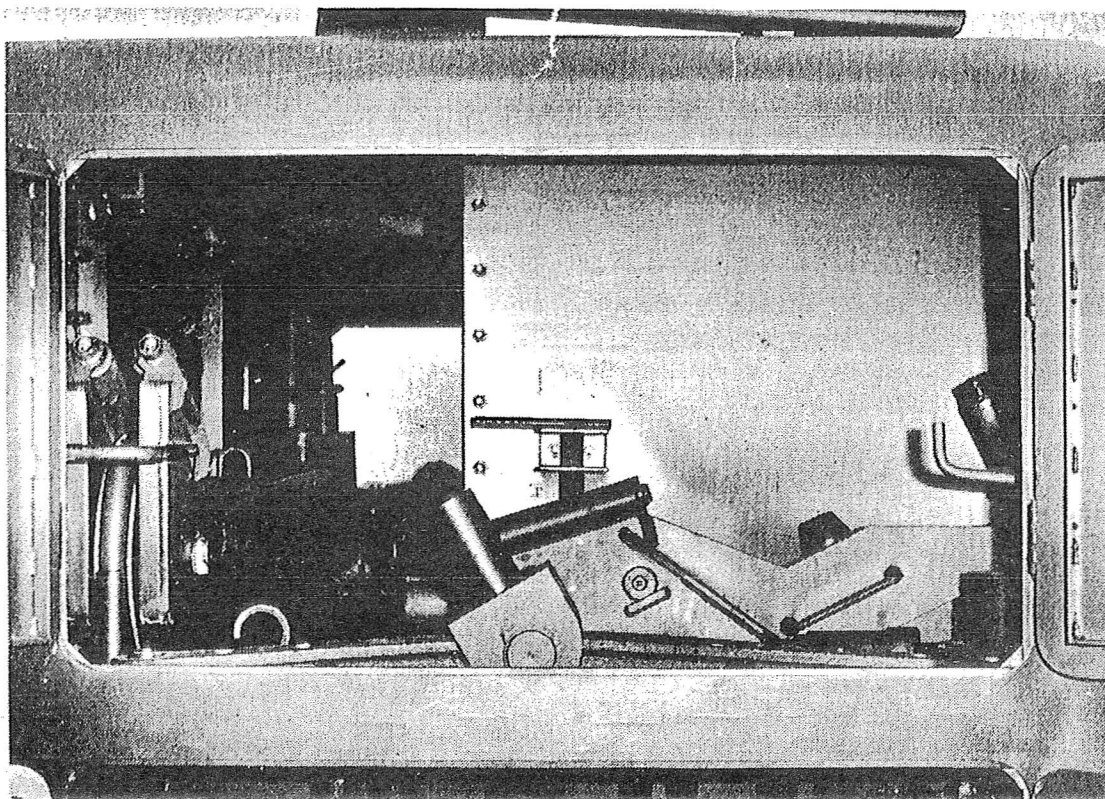
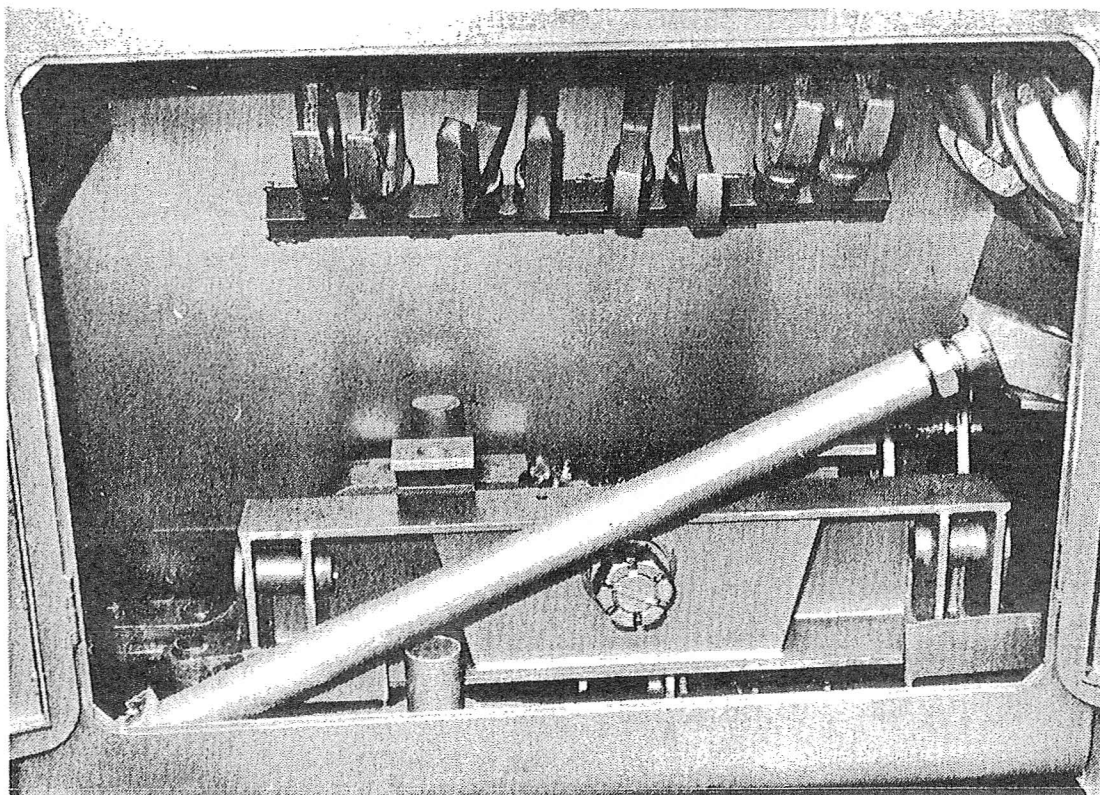


FIGURE 21 TOOLS INSIDE L.H. FRONT STOWAGE LOCKER (TOP)



**FIGURE 22 TOOLS INSIDE L.H. FRONT STOWAGE LOCKER
(BOTTOM)**

EKA RECOVERY EQUIPMENT—contd.

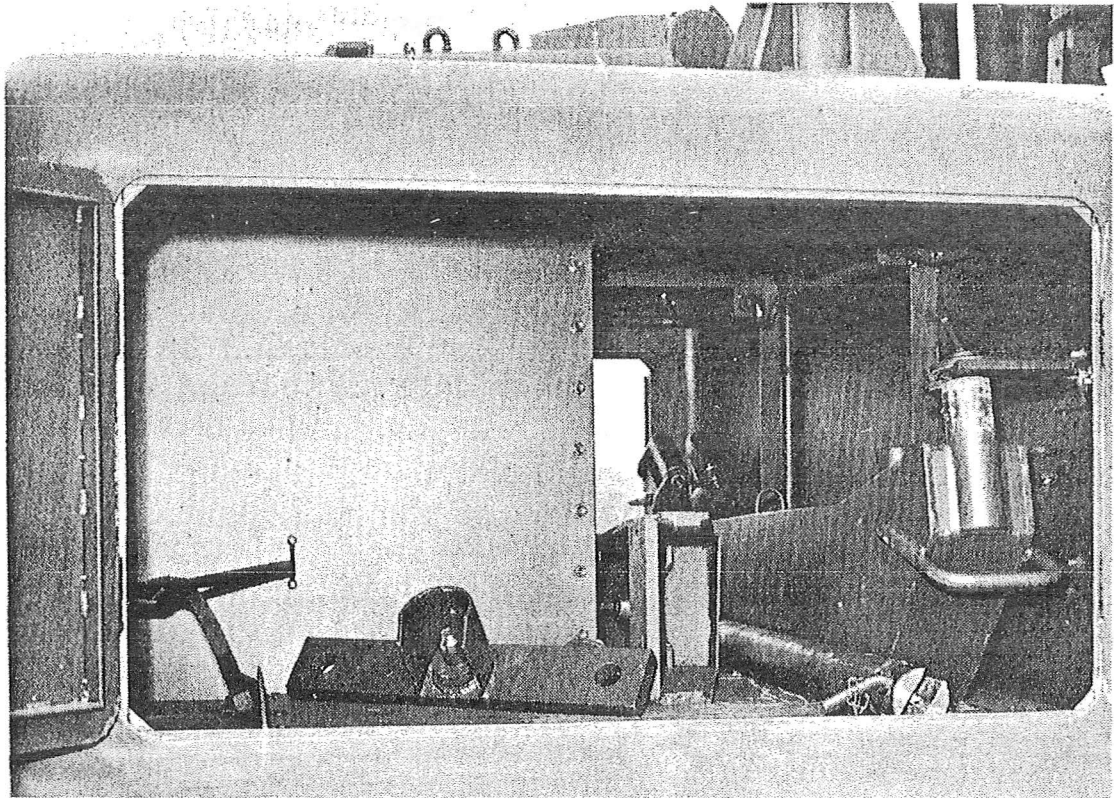
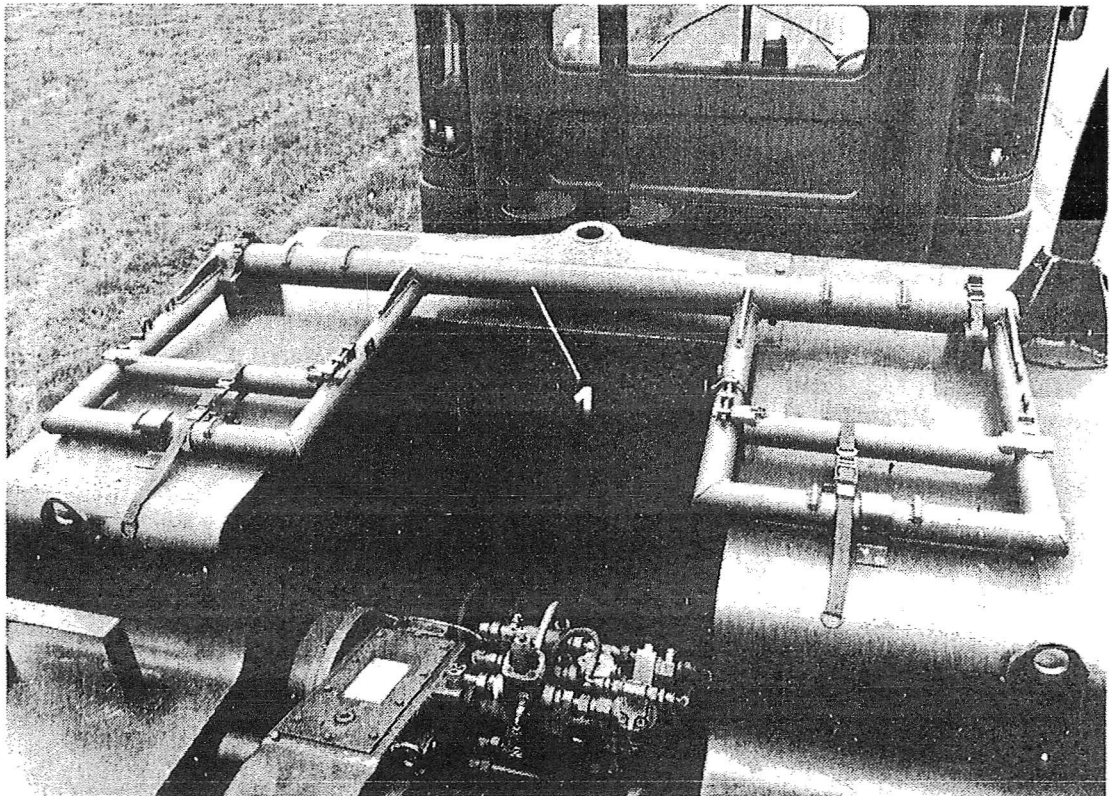


FIGURE 23 TOOLS INSIDE R.H. FRONT STOWAGE LOCKER



**FIGURE 24 VIEW SHOWING STOWED POSITION OF
TOWING FRAME**

CHAPTER 4

USER MAINTENANCE AND ADJUSTMENTS

ENGINE

98. Engine Oil Level (See Figure 25)

(a) Check engine oil level on dipstick; for accurate readings oil level should not be checked until approximately 30 minutes after engine shut down. Keep oil level on correct mark of dipstick.

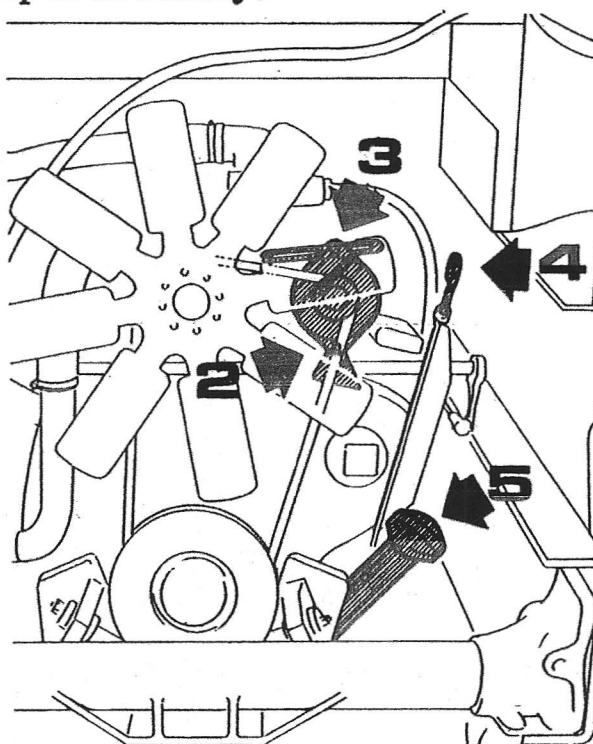
(b) Add oil as necessary.

99. Draining and Refilling engine oil

Remove the drain plug and allow the oil to drain completely (preferably while the engine is warm). Replace the drain plug and refill to the correct level on dipstick. Run the engine for short time, allow to stand for 30 minutes after shut down and then re-check oil level. Top up if necessary.

FIGURE 25
ENGINE OIL FILLER
DIPSTICK & ALTERNATOR
BELT ADJUSTMENT

- 2. Alternator
- 3. Adjusting Quadrant
- 4. Engine Dipstick
- 5. Engine Oil Filler



100. Engine Oil Filter

(a) Replace oil filter element and gaskets at every engine oil change. Check for oil leaks after starting engine.

(b) The twin filters are mounted on the right hand side of the crankcase at sump level.

(c) Each filter bowl houses an expendable element and is secured by a central fixing bolt.

27/3/2009

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FIGURE 1 THREE QUARTER FRONT VIEW OF RECOVERY VEHICLE