TECHNICAL MANUAL

ORGANIZATIONAL MAINTENANCE MANUAL

FOR

TRUCK, CARGO: 3/4-TON 4x4, M37 AND M37B1

TRUCK, AMBULANCE: 3/4-TON 4x4, M43 AND M43B1

TRUCK, MAINTENANCE: 3/4-TON 4x4, M201 AND M201B1

HEADQUARTERS, DEPARTMENT OF THE ARMY

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Technical Manual
No. 9-2320-212-20

HEADQUARTERS
DEPARTMENT OF THE ARMY
WASHINGTON, D.C., *30 November 1973*

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* This manual, together with TM 9-2320-212-10, 30 November 1973, supersedes TM 9-8030, 2 May 1955, including all changes.

CHAPTER 1

INTRODUCTION

Section I. GENERAL

1-1. Scope

a. This manual contains instructions for organizational maintenance of the following vehicles:

Truck, Cargo:	¾ Ton 4x4, M37, M37B1
Truck, Ambulance:	¾ Ton 4x4, M43, M43B1
Truck, Maintenance:	¾ Ton 4x4, M201, M201B1

The manual also contains information on the operation and organizational maintenance of the materiel cited here above.

b. Chapter 3 contains materiel used in conjunction with major items and instructions for organizational maintenance on the vehicle special purpose kits.

c. Appendix A provides a list of current reference publications, including supply manuals, forms, technical manuals, and other publications applicable to this materiel.

d. Appendix B contains the maintenance allocation chart which lists the maintenance responsibilities allocated to each level of maintenance.

e. TM 9-2320-212-20P contains the repair parts and special tools lists for maintaining the materiel and is the authority for requisitioning replacements.

1-2. Maintenance Forms and Records

Maintenance forms, records, and reports which are to be used by maintenance personnel at all maintenance levels are listed in and prescribed by TM 38-750. Reports of accidents involving injury to personnel or damage to materiel are listed in and prescribed by AR 385-40.

1-3. Destruction of Army Materiel to Prevent Enemy Use

TM 750-244-3 covers procedures concerning destruction of materiel to prevent enemy use.

1-4. Administrative Storage

TM 740-90-1 covers procedures for vehicle storage.

1-5. Reporting of Equipment Publication Improvements

The reporting of errors, omissions, and recommendations for improving this publication by the individual user is encouraged. Reports should be submitted on DA Form 2028 (Recommended Changes to Publications) and forwarded to: direct to Commander, US Army Tank-Automotive Command, ATTN: AMSTA-MAPT, Warren, MI 48090.

Section II. DESCRIPTION AND DATA

1-6. Description

a. This manual covers Cargo Truck ¾ ton 4x4, M37, M37B1, Ambulance Truck M32, M43B1, and Maintenance Trucks M201, M201B1.

b. All models are equipped with a liquid cooled, six-cylinder, L head type gasoline engine, located in the front of the vehicle. Power is transmitted through the clutch and the four-speed transmission. A short propeller shaft connects the transmission to the two-range transfer unit which then transmits power by propeller shafts to both axles.

c. Front and rear springs are the semielliptic type. Hydraulic type shock absorbers are used to control flexing of both front and rear springs.

d. The steering gear is the worm and sector type.

e. A 24-volt or 28-volt electrical system supplies current for starting, ignition, lights, and horn. The electrical system is completely waterproofed. The lighting system includes service headlights, blackout driving light, marker lights, service and blackout tail and stop lights, and instrument panel lights.

1-7. Identification

A general description of the Cargo Truck M37, M37B1, Ambulance Truck M43, M43B1, and Maintenance Truck M201, M201B1, and their identification plates is in TM 9-2320-212-10. The maintenance paragraphs of this manual contain detailed description of the components in the above-cited materiel.

1-8. Tabulated Data

a. Axles.

Front:
- Capacity ..... 6 pt
- Make ..... Dodge
- Tie-rod ..... Bell and socket
- Type ..... Full floating (hypoid)

Rear:
- Capacity ..... 6 pt
- Make ..... Dodge
- Type ..... Full floating (hypoid)

b. Brakes.

Handbrake:
- Clearance adjustment ..... 0.008 to 0.010 in.
- Lever location ..... Right side of transmission

Service Brakes:
- Make ..... Dodge
- Pedal free travel ..... 3/4 to 1 in.
- Type ..... Tapered woven and molded
- Master cylinder bore ..... 1 1/4 in.
- Type ..... Single cylinder

Wheel cylinder bore:
- Front shoe ..... 1 1/4 in.
- Rear shoe ..... 1 3/8 in.

c. Clutch.

Clutch pedal free travel ..... 1 in.
Make ..... Borg. and Beck
Model 11828
Pilot bearing type ..... Oilite
Release bearing:
- Make ..... Aetna
- Model A-893-4
- Type ..... Ball thrust (prelubricated)

d. Cooling Systems.

Cap ..... Pressure type
Capacity ..... 17 qt
Fan belt tension ..... 1 1/2 in. slack
Model 30-J-161A
Radiator:
- Make ..... Fedders or Blackstone
- Type ..... Fin and tube

Thermostat:
- Fully opened ..... 160° F

Water pump:
- Capacity ..... 26.1 gpm at 2,000 rpm
- Type ..... Centrifugal

e. Controls.

Drag links:
- Adjustment ..... Threaded plug
- Number 2
- Type ..... Tubular

Front wheel (adjustable) ..... 0 to 1/8 in.
Steering gear:
- Bearings:
  - Capacity ..... 12 oz
  - Make ..... Gemmer
  - Model B-60
  - Pitman shaft ..... Bushing-type (bz)
  - Ratio 23.2:1
  - Worm ..... Tapered roller
- Tie rod ..... Full-floating (hypoid)

f. Electrical System.

Batteries:
- Cells (each battery) 6
- Make ..... Auto-lite or Willard
- Model US2HN
- Number of batteries used 2
- Plates (each battery) 11
- Specific gravity at 80° F. (full charge) 1.275-1.300
- Specific gravity at 80° F. (replacement) ..... Below 1.220
- Voltage 12

Flasher 6-Volt
Generator (alternator)
- Manufacturer ..... Leece-Neville Co.
- Manufacturer model number (straight connector) 5300G12P
- Reference number 7954720
- Rate volts 28
- Rated amperes 100
- Speed Range (rpm) ..... 1,650 to 8,000

Generator (rectifier)
- Manufacturer ..... Leece-Neville Co.
- Manufacturer model number 1029-CP
- Reference number 7954343
- Rated volts 28
- Rated amperes 100

Generator (regulator)
- Manufacturer ..... Leece-Neville Co.
- Manufacturer model number 3392-R12P
- Reference number 8699744
- Rated volts 28
- Rated amperes 100

Horn:
- Make ..... Auto-lite, Delco, or Spark-Withington.
- Model ..... HX-40034, 1999881, or D2140A
- Type ..... Vibrator
- Voltage 24

Ignition:
- Distributor and coil assembly:
  - Automatic spark advance ..... 18° to 22° at 2,250 rpm
  - Breaker arm spring tension ..... 17 to 20 oz
  - Breaker point gap ..... 0.018 to 0.022 in.
  - Capacitor ..... 23 to 28 mfd
  - Firing order 1-5-3-6-2-4
  - Make ..... Auto-lite
  - Model ..... IAU-4005-UT or IAU-40007-UT.
  - Timing ..... 2° BTDC

Relay (distribution) Box ..... 24-volt operation
Spark plugs:
- Gap ..... 0.028 to 0.033 in.
- Make ..... Auto-lite
- Size 14-mm
- Tightening torque 30-ft-lb
- Type ..... Resistor (AR 5S)

Starter:
- Clearance between pinion and thrust washer ..... 3/32 to 1/8
- Drive ..... Mechanical shift
- Make ..... Auto-lite

- Model MCZ-4002-UT
- Voltage 24

Instruments:
- Ammeter:
  - Make ..... AC
  - Model 1501244
  - Voltage 24
- Battery-generator indicator:
  - Make ..... Auto-lite
  - Model E0-11218
  - Voltage 24
- Fuel gage:
  - Make ..... AC
  - Voltage:
    - With 95-ohm resistor 6
    - Without resistor 24
- Oil pressure gage:
  - Make ..... AC
  - Voltage:
    - With 95-ohm resistor 6
    - Without resistor 24
- Speedometer:
  - Drive ..... Pinion in transfer
  - Make ..... Auto-lite or AC
- Water pressure gage:
  - Make ..... AC
  - Voltage:
    - With 95-ohm resistor 6
    - Without resistor 24

Light assembly:
- Circuit breaker:
  - Make ..... Spencer or Wilcalator
  - Type ..... Automatic reset
  - Voltage 24
- Dimmer Switch:
  - Make ..... Douglas
  - Voltage 24
- Lamps and lamp units:
  - Make ..... Auto-lite
  - Type:
    - Blackout driving ... Lamp unit (sealed beam)
    - Blackout marker, parking, tail and done lights, (M43, M43B1) .. Lamp (G-6 bulb)
    - Headlight (two) .... Lamp unit (sealed beam)
    - Spotlight (M43, M43B1, M201, and M201B1) ... Lamp unit (sealed beam)
    - Spotlight (blackout and service) ..... Lamp (S-8 bulb)
    - Surgical light (M43, M43B1) ..... Lamp unit (sealed beam)
- Light switch:
  - Make ..... Bendix
  - Voltage 24

g. Engine.

Allowable speed (mph)

	1st	*2nd*	*3rd*	*4th*	*Rev*
Transfer:					
High range	9	18	33	55	7
Low range	4	9	17	28	4

Brake horsepower:
- At 1600 rpm 57
- At 3400 rpm 94

Compression ratio ..... 6.7 to 1
Displacement ..... 230.2 cu in.
Firing order 1-5-3-6-2-4
Make ..... Dodge T245
Torque (cylinder-head capscrew) ..... 65 to 70 ft-lb
Type ..... Gasoline, water cooled
Valve tappet clearance:
- Intake (hot) ..... 0.010 in.
- Exhaust (hot) ..... 0.014 in.

h. Exhaust System.

Exhaust pipes (upper and lower):
- Connections:
  - Inside diameter ..... 2 in.
  - Outside diameter ..... 2.25 in.

Muffler:
- Diameter ..... 5 1/16 in.
- Length (including connections) 20½ in.
- Make ..... Noblitt Sparks
- Type ..... Straight through with restrictor

Tailpipe:
- Connections (inside diameter) 1¾ in.
- Length:
  - M37, M37B1 ..... 42 7/8 in.
  - M43, M43B1, M201, and M201B1 ..... 28 7/8 in.

i. Fuel System.

Air cleaner:
- Make ..... AC
- Model ..... AC D-82072
- Type ..... Oil bath, element, (paper)

Carburetor:
- Adjustments ..... Idle mixture, idle speed
- Make ..... Carter
- Model ETW-1
- Nominal size ..... 1½ in.
- Type ..... Downdraft

Fuel filter:
- Location ..... In fuel tank
- Make ..... Skimmer
- Model R-32-63

Fuel pump:
- Drive ..... Camshaft
- Make ..... AC
- Model ..... GP 21181
- Pressure ..... 4 to 5¼ psi
- Type ..... Mechanical

Governor:
- Factory setting ..... 3,400 rpm
- Type ..... Velocity-integral with carburetor

j. Hubs, Tires, and Wheels.

Hubs:
- Bearings:
  - Method of adjustment ... Locking nut
  - Number 2
  - Type ..... Topered roller cup and cone

Tires:
- Ply 8

Pressure:
Cross-country (mud, snow, or sand) ..... 15 lb
Highway ..... 40 lb
Size ..... 9.00 x 16
Type ..... Truck and bus, mud and snow tread

k. Propeller Shafts.

Length:
Front (all models) ..... 35½ in.
Intermediate (all models) ... 10 in.
Rear:
M37, M37B1 ..... 31¼ in.
M43, M43B1, M201, and M201B1 ..... 45¼ in.
Make ..... Universal Products Company
Model:
Front (all models) 5160-56
Intermediate (all models) ... 5360-120
Rear (M37, M37B1) 5160-57
Rear (M43, M43B1, M201, M201B1 5160-58
Universal joints:
Bearings ..... Cageless roller
Type ..... Journal and roller

l. Springs and Shock Absorbers.

Front springs:
Bearings ..... Bronze, bushing type
Dimensions:
Front eye to center bolt ..... 24 in.
Rear eye to center bolt ..... 22 in.
Width ..... 2 in.
umber of leaves:
All models except M201 7
M201 8
Rear springs:
Bearings ..... Bronze, bushing type
Dimensions:
Eye to center bolt ..... 28 in.
Width ..... 2 in.
Number of leaves:
All models except M37 13
M37, M37B1 11
Shock absorbers:
Make ..... Delco, Gabriel, or Monroe
Size ..... 2 in.
Type ..... Hydraulic, three-stage control

m. Transmission.

Capacity:
Through engine T245-3955:
W / O power take-off .... 9 pt
W / power take-off ..... 10½ pt
After engine T245-3955:
W / O power take-off ..... 7 pt
W / power take-off ..... 6 pt
Make ..... new process
Models 28950, 420
Power take-off:
Gear speed ..... 395 rpm at 1,000 rpm engine speed
Gear ratios:
First 6.68:1
Second 3.10:1
Third 1.69:1
Fourth 1.00:1
Reverse 8.25:1
Lubricant capacity ..... 5.5 pt
Weight (without lubricant) ..... 125 lb approx
Speeds:
Forward 4
Reverse 1
Type ..... Helical gear synchroshift

n. Transfer.

Capacity ..... 5 pt
Make ..... new process
Model 88845
Ratio:
High range 1.00:1
Low range 1.96:1

o. Winch.

Drive shaft:
Make ..... Blood Brothers
Model 4080
Universal joints ..... Cross and trunnion
Winch:
Cable size ..... 7 / 16 in. x 150 ft
Capacity ..... 7,500 lb
Make ..... Braden
Model LU-4
Weight ..... 250 lb

CHAPTER 2

ORGANIZATIONAL MAINTENANCE INSTRUCTIONS

Section I. SERVICE UPON RECEIPT OF MATERIEL

2-1. General.

a. Refer to TM 9-2320-212-10 for operating instructions, break-in operating precautions, and break-in speeds.

b. In addition, perform a break-in of at least 500 miles on all new or reconditioned vehicles and a sufficient number of miles on used vehicles to completely check their operation according to procedures in related paragraphs.

c. Whenever practicable, the vehicle driver will assist in the performance of these services.

2-2. Inspecting and Servicing the Equipment.

a. General Procedures.

(1) If any exterior surfaces are coated with rust-preventive compound, remove the compound with drycleaning solvent or mineral spirits.

(2) Read Processing and Deprocessing Record for Shipment, Storage, and Issue of Vehicles and Spare Engines (DD Form 1397) and follow all precautions checked therein. A tag bearing the above-cited instruction should be attached to the steering wheel or ignition switch.

CAUTION

Because an excess of preservative oil may be in the combustion chambers or coolant may have leaked into the chamber, step (3) is mandatory. Engine damage could result if this step is not performed.

(3) Before activating the ignition system, crank engine with the starter at least two revolutions to test for hydrostatic lock.

NOTE

If the vehicle has been driven to the using organization, most or all of the foregoing should have been performed.

(4) Follow the operator's preventive maintenance services described in TM 9-2320-212-10.

b. Specific Procedures.

(1) When the engine has thoroughly warmed up to operating temperature, check the tightness of the cylinder head capscrews with a torque-indicating wrench as to the torque and in the sequence prescribed in (2) below.

(2) Tighten cylinder head capscrews to 65-70 foot-pounds torque as indicated in figure 2-1.

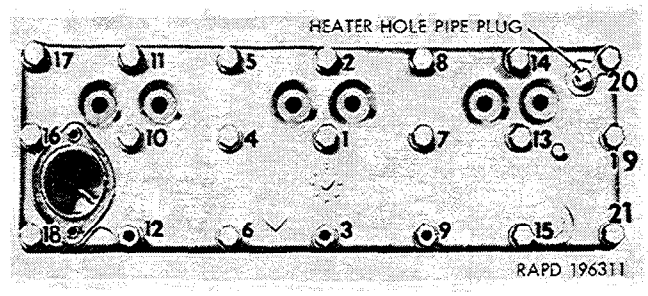

Figure 2-1. Tightening sequence for cylinder head screws.

(3) Perform the S (6 month or 6,000 mile) preventive maintenance service. (See instruction for specific procedures, para. 2-12.)

NOTE

Do not use thread lube on cylinder studs; use engine oil.

(5) Lubricate all points, regardless of interval, except as noted in (6) below. Check the levels of lubricant in all gear housings. If the gear lubricant is known to be of the correct seasonal grade, do not change it; otherwise change it.

(6) Remove hub and wheel bearings. If lubrication appears to be adequate, reinstall; do not clean and repack. Do not adjust brakes unless necessary.

(7) Provided the processing tag on the engine or vehicle states that the engine contains oil that is suitable for 500 miles of operation, and of the correct seasonal viscosity, check the level but do not change the oil.

(8) If the vehicle is delivered with dry-charged battery, activate battery in accordance with TM 9-6140-200-14.

2-3. Correction of Deficiencies

Deficiencies involving unsatisfactory design and/or material are to be reported on DA Form 2407 (Maintenance Request) as an equipment improvement recommendations (EIR) as explained in TM 38-750. The completed DA Form 2407 should be submitted to the Commander, US Army Tank-Automotive Command, ATTN: AMSTA-M, Warren, MI 48090.

Section II. REPAIR PARTS, SPECIAL TOOLS, AND EQUIPMENT

2-4. Tools and Equipment

a. Standard and commonly used tools and equipment having general application to this materiel are authorized for issue by tables of allowances (TA) and tables of organization and equipment (TOE).

b. Special tools and equipment (fig. 2-2) especially designed for use by organizational level maintenance personnel are listed in table 2-1.

2-5. Maintenance Repair Parts

Repair parts are supplied to organizational maintenance personnel for replacement of those parts most likely to be worn, broken, or otherwise proven unserviceable, provided replacement of these parts is within organization authorization. Repair parts supplied for materiel covered in this technical manual are listed in TM 9-2320-212-20P.

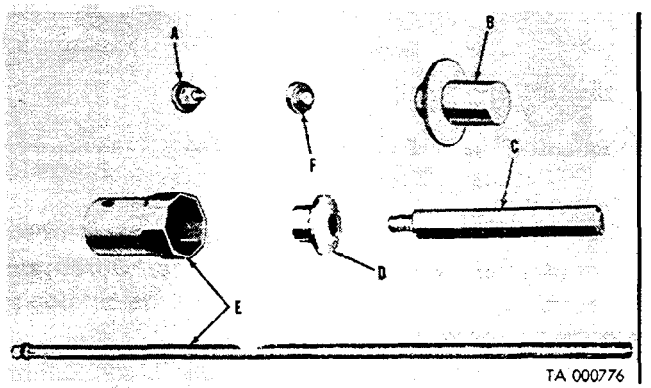

Figure 2-2. Special tools and equipment for operator and organizational maintenance.

Table 2-1. Special Tools and Equipment for Operator and Organizational Maintenance

Code ltr.	Item	References		Use
		Fig.	Para	
A	ADAPTER: Puller.	2-2 and 2-166.	2-147	To remove steering wheel (used with PULLER).
B	REPLACER: Hub bearing oil seal.	2-2 and 2-163.	2-143	To install hub bearing oil seals.
C	HANDLE: Remover and replacer.	2-2 and 2-162.	2-143	Used with DRIFT
D	DRIFT: Oil seal.	2-2 and 2-162.	2-143	To remove hub bearing oil seals.
E	WRENCH: Bearing adjusting nut.	2-2 and 2-135.	2-116 and 2-141.	To remove, install and adjust hub bearing adjusting nuts.
F	ADAPTER: Puller.	2-2 and 2-167.	2-148 and 2-164.	To remove steering idler arm (used with PULLER).

Section III. LUBRICATION INSTRUCTIONS

2-6. Lubrication

a. General. LO 9-2320-212-12 contains instructions for regular lubrication of the vehicles described in this manual. Instructions include the type and grade of lubricants to be used, lubrication locations, and the frequency of lubricating the vehicle components.

b. Special Lubrication. Refer to LO 9-2320-212-12.

c. Service Intervals. Refer to LO 9-2320-212-12.

2-7. Deficiency Reporting

Use DA Form 2407 (Maintenance Request) as an

equipment improvement report (EIR) to report any unsatisfactory vehicle performance resulting from the use of the prescribed fuels, lubricants, or preserving materials. For further information regarding use and disposition of the above cited form, see paragraph 2-3.

Section IV. PREVENTIVE MAINTENANCE CHECKS AND SERVICES

2-8. General

Preventive maintenance service requirements are outlined in table 2-2. These services are designed to insure the correct adjustment, securing, and assembly of all components of the materiel. Necessary replacements, cleaning, lubrication, and protection of parts and / or assemblies will be accomplished as required, to give reasonable assurance of trouble-free operation until the next regular preventive maintenance service is performed.

2-9. Responsibility

Organizational maintenance personnel are responsible for performing the semiannual preventive maintenance services outlined in table 2-2.

2-10. Intervals

CAUTION

Do not extend intervals between preventive maintenance services except when authorized to do so.

The preventive maintenance services for the vehicles described in this manual will be performed by organizational mechanics every six months or 6,000 miles operation, whichever occurs first. Under unusual operating conditions, such as extreme temperatures, dust, sand, or extremely wet terrain, it may be necessary to perform certain maintenance services more frequently.

2-11. General Procedures

a. Automatically Applied. All of the general procedures given in the operator's manual will be followed. Organizational mechanics must be so thoroughly trained in these procedures that they apply them automatically in the performance of their duties.

b. Operator / Crew Participation. The operator or crew usually accompanies the materiel and assists the organizational mechanics in the performance of periodic services.

CAUTION

Do not steam clean at organizational level.

c. Unwashed Materiel. The operator or crew should present the materiel for a scheduled preventive maintenance service in a reasonably clean condition; that is, it should be dry and not caked with mud to such an extent as to seriously hamper inspection and services. However, washing of the materiel should be avoided immediately prior to an inspection, since certain types of defects such as loose parts and oil leaks may not be evident immediately after washing.

d. Plates. Steel nameplates, caution plates, and instruction plates rust very rapidly. When they are found to be in a rusty condition, they should be thoroughly cleaned and heavily coated with an application of lacquer. Refer to TM 9-213.

e. Services. Organizational maintenance services are defined by, and restricted to the following general procedures unless approval has been given by the supporting direct support organization.

(1) *Adjust.* Make all necessary adjustments in accordance with instructions contained in the pertinent section of this technical manual or in technical bulletins.

(2) *Clean.* Clean the unit as outlined in TM 9-2320-212-10 to remove old lubricant, dirt, and other foreign material.

(3) *Special lubrication.* This applies either to lubrication operations that do not appear on the materiel lubrication order or to items that do appear but which should be performed in connection with the maintenance operations.

(4) *Service.* This usually consists of performing special operations, such as replenishing battery water, draining and refilling units with oil, and changing or cleaning the oil filter, air cleaner, or cartridges.

(5) *Tighten.* All tightening operations should be performed with sufficient wrench torque (force on the wrench handle) to tighten the unit according to good mechanical practice. Use a torque-indicating wrench where specified. Do not overtighten, since this may strip the threads or cause distortion. Tightening will always be understood to include the correct installation of lockwashers, locknuts, locking wire, or cotter pins to secure the tightened nut. Torque specifications for attaching parts are included with the paragraph containing the maintenance procedure.

(6) *Modification Work Order Application.* At least every six months, a checkup will be made to see that all modification work orders have been applied. A list of current modification work orders is published in DA Pam 310-7. Refer to DA Form 2408-5 (Equipment Modification Record). If a field modification has not been applied, promptly notify the supporting maintenance officer. No alteration or modification which will affect moving

parts will be made by organizational personnel, except as authorized by official publications.

f. Special Conditions. When conditions make it difficult to perform the complete preventive maintenance procedures at one time, they can be handled in sections. Plan to complete all operations within the week, if possible. All available time at halts and during bivouac must be utilized to insure the completion of maintenance operations.

NOTE

Refer to TM 38-750 for complete information pertaining to preventive maintenance services.

2-12. Specific Procedures

Specific procedures for performing each item in the six months preventive maintenance schedule are outlined in table 2-2. The condition of the vehicle after inspection and checking during preventive maintenance services is authorization to take corrective action to remove the trouble found, by performing the service or repair at the organizational level. If repairs by a higher category of maintenance are required, a DA Form 2407, Maintenance Request, will be prepared and forwarded with the equipment to the supporting maintenance activity.