

DEPARTMENT OF THE ARMY TECHNICAL MANUAL
DEPARTMENT OF THE AIR FORCE TECHNICAL ORDER

TM 9-8014 I DEPARTMENTS OF THE ARMY
TO 36A-1-401 AND THE AIR FORCE
CHANGES No. 3 WASHINGTON 25, D. C., 19 June 1958

OPERATION AND ORGANIZATIONAL MAINTENANCE:

¼-TON 4 X 4 UTILITY TRUCK M38A1 AND

¼-TON 4 X 4 FRONT LINE AMBULANCE M170

TM 9-8014/TO 36A-1-401, 6 April 1955, is changed as follows :

Page 4:

3. Forms, Records, and Reports

d. (Superseded) Report of Unsatisfactory Equipment or Materials. Any deficiencies detected in the equipment covered herein, which occur under the circumstances indicated in AR 700-38, should be immediately reported in accordance with the applicable instructions in cited regulation.

Page 18:

7. Tabulated Data

a. (Changed by C 1,5 Jun 56, and further changed as follows :)

General Data.

• • • • •

Tires: (Superseded)

Pressure, highway -----	26 lb
Cross country -----	25 lb
Mud, sand, or snow -----	15 lb
Size -----	7.00 x 16

• • • • •

b. Performance.

• • • • •

Turning circle, diameter (M170) :

Left -----	48 ft 4 in.
Right -----	49 ft 2 in.

• • • • •

Page 22:

11. Correction of Deficiencies

*

b. (Superseded) Serious deficiencies, which appear to involve unsatisfactory design or material, will be reported in accordance with AR 700-38.

Page 31:

35. Oil Pressure Gage

The oil pressure * * * graduations of 30 psi. Oil pressure under normal operating conditions is 30 to 35 psi and a **minimum of 5** psi at 600 rpm. Absence of oil * * * has warmed up

Page 50:

59. General Conditions

d. (Superseded) When chronic failure of materiel results from subjection to extreme conditions, report of the condition should be made in accordance with AR 700-38.

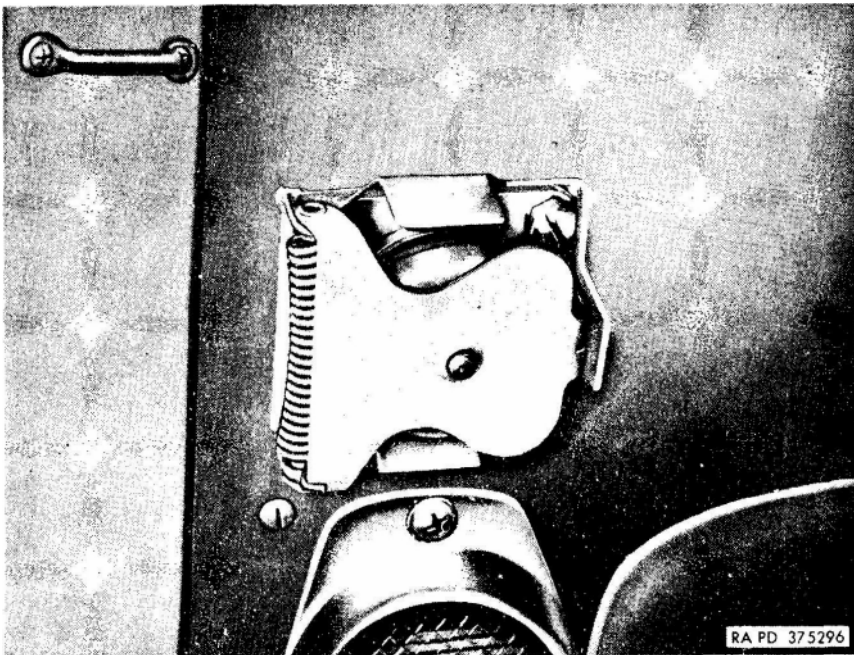


Figure 16 (Superseded) Trailer coupling connector receptacle.

70. General Lubrication Instructions

e. Reports and Records.

- (1) (Superseded) Report unsatisfactory performance of prescribed petroleum fuels, lubricants, or preserving materials in accordance with AR 700-38.

Page 77, table III:

Add the following note under item 31.

Note. Remove the crankcase ventilator metering valve assembly and disassemble. Wash the valve, seat, and all orifices with dry-cleaning solvent or mineral spirits paint thinner to remove carbon or gum. Inspect and clean all connecting lines.

Page 78, table III :

Add the following note under items 37:

Note. Annually or every 12,000 miles, remove fuel tank assembly. Clean fuel tank compartment. Clean surface of fuel tank and spot finish where protective coating is worn, using enamel Stock No. 52-3465.300-010.

Page 170, paragraph 147b.

Change line 9 from "cam angle ____ 22°" to read : dwell angle ____ 38°.

Page 211:

169. Trailer Coupling Electrical Connector Receptacle (M38A1)

(*fig.* 108)

*

b. Installation.

*

- (2) (Superseded) Insert receptacle into its mounting hole in body so hinge pin of cover will be on the left side in a vertical position and the polarizing bracket bottom prong on the right side, alining mounting holes in bracket, cover, and receptacle with mounting holes in body. Secure receptacle in position with four $\frac{1}{4}$ x % lockwasher screws.

Page 257, paragraph 213c.

Add the following note after (5) .

Note. If spring scale is not available, a torque wrench can be used to determine correct adjustment of the steering knuckle bearing. Place a torque wrench on either of the two flange cap bolts nearest the steering knuckle arm. Adjustment is correct when the steering knuckle can be turned with 3 to 5 pound-feet torque.

* * * * *

(7) Position the front * * * the flange cap. Secure the guard to the cap and flange with two $\frac{3}{8}$ x 1 1/2 bolts and lockwashers.

Page 259:

216. Rear Axle Shafts

* * * * *

a. *Removal.*

(5) Remove the **six** nuts and lockwashers from the bolts in the housing flange. Remove the grease * * * oil seal gasket (fig. 147).

* * * * *

c. *Installation.*

(7) Position the oil * * * and positioned parts. Place six 3/8 lockwasher nuts on the bolts and tighten the nuts to 25 to 35 pound-feet. Add or remove shims to **provide axle shaft end** play of 0.003 to 0.007 inch.

* * * * *

Page 260:

Change the nomenclature in figure 147, RA PD 181930, as indicated below.

From	To
LOCKWASHER NUT	NUT LOCKWASHER

Page 278, figure 159:

Delete the lubrication fitting on the axle housing and replace with plug.

Page 299:

248. Description and Data

* * * * *

b. *Data.* (Changed by C 1 and further changed *as follows*.)

Operating pressures :

Highway - - - - -	25 psi
Cross country - - - - -	25 psi
Mud, sand, or snow - - - - -	15 psi

Page 370, Appendix References, line 12:

Change "Supplies and Equipment : Unsatisfactory Equipment Report ____ SR 700-45-5" to read : Logistics (General) : Unsatisfactory Equipment Report ----- AR 700-38.

[AG 451 (9 June)]

By Order of *Wilber M. Brucker*, Secretary of the Army :

MAXWELL D. TAYLOR,
General, United States Army,
Official :

Chief of Staff.

HERBERT M. JONES,
Major General, United States Army,
The Adjutant General.

Distribution:

Active Army.

ASA (2)	USA Ord Sch (50) except
CNGB (1)	USA Ord Sch
Technical Stf, DA (1) except	Aberdeen PG (130)
CofOrd (19)	PMST Sr Div Ord Units (1)
Ord Bd (2)	Ord Ammo Comd (1)
USCONARC (3)	Ord Tk Autmv Comd (65)
US ARADCOM (2)	Gen Depots (2) except
Rgn, US ARADCOM (2)	Atlanta Gen Depot (None)
OS Maj Comd (2)	Ord Sec, Gen Depots (5)
Log Comd (3)	Ord Depots (10) except
Fld Comd, AFSWP (1)	Rossford Ord Depot (12),
MDW (1)	Anniston Ord Depot (18)
Armies (3)	Ports of Emb (OS) (2)
Corps (2)	Trans Terminal Comd (2)
Div (2)	Army Terminals (2)
Brig (2)	OS Sup Agcy (1)
Regt/Gp/Bg (1) except	Ord PG (10)
Ord Gp (2)	Ord Arsenal (5) except
Bn (1)	Raritan Arsenal (58),
Sep Co (1)	Frankford Arsenal (15),
Ord Co (2) except TOE 9—	Benicia Arsenal (20)
12,9-17,9-46,9-47,9—	Mil Dist (1)
57,9-229,9-347,9-367,	Sectors, US Army Corps
9-376,9-377,9-387 (none)	(Res) (1)
Ft & Camps (2) except	US Army Corps (Res) (1)
Ft Bragg (4), Ft Hood (9),	Ord Proc Dist (10)
Ft Sill (9), Ft Bliss (9),	MAAG (1)
Ft Sam Houston (9)	Mil Mis (1)
Svc Colleges (2)	JBUSMC (2)
Br Svc Sch (2) except	JUSMAG (Greece) (2)

NG: State AG (6) ; units—same as Active Army except allowance is one copy to each unit.

USAR: None.

For explanation of abbreviations used, see AR 320-50.

DEPARTMENT OF THE ARMY TECHNICAL MANUAL
DEPARTMENT OF THE AIR FORCE TECHNICAL ORDER
OPERATION AND ORGANIZATIONAL MAINTENANCE:
¼-TON 4 x 4 UTILITY TRUCK, M38A1
¼-TON 4 x 4 FRONT LINE AMBULANCE, M170

TM 9-8014
TO 36A-1-401
CHANGES No. 4

DEPARTMENTS OF THE ARMY
AND THE AIR FORCE
WASHINGTON 25, D.C., 11 December 1959

TM 9-8014/TO 36A-1-401, 6 April 1955 is changed as follows:
Page 368. Change heading to read appendix I.
Appendix II to be included when data becomes available.
Add the following:

APPENDIX III

BASIC ISSUE ITEMS LIST

(ADDED)

1. General

This appendix lists the basic issue items that are required for stockage by first-echelon maintenance and includes accessories, attachments, and component assemblies with quantities thereof, which constitute the major end item of equipment ; and the first-echelon maintenance accessories, tools, supplies, spare assemblies, and repair parts accompanying the equipment, all of which constitute the major end item for issue to users.

2. Explanation of Columns

a. Source, Maintenance, and Recoverability Code. This column lists a. code that indicates the selection status and source of supply of the repair part, and the recoverability and expendability aspects of the repair part. Refer to paragraph 4 for an explanation of codes.

b. Federal Stock Number. This column lists the Federal stock number.

*These changes supersede Section I, DA Supply Manual, ORD 7 NL G758, 6 April 1956, and together with TM 9-2320-208-20P, 13 February 1959, supersede DA Supply Manual ORD 7 G758, 5 April 1956.

c. Description. This column lists the Federal item name and any additional description required for supply operations. The abbreviations "w/e" (with equipment) when used as a portion of the nomenclature indicates that the major item or major combination includes all armament, equipment, accessories, and repair parts issued with the item. The technical service or manufacturer's part number is also included for reference.

d. Unit of Issue. This column lists the minimum quantity that will be supplied. Where the unit of issue is shown as ft, in., etc., such as for bulk materials, the requisition should indicate the exact amount that is required, for example, 6 ft.

e. Quantity Authorized. This column lists the quantity of the listed item authorized for stockage by first echelon.

f. Illustration. This column indicates the figure number of the illustration that depicts the item. When more than one item appears on an illustration, the item number is also indicated.

3. Abbreviations and Symbols

a. Abbreviations.

assy	assembly (ies)
cap.	capacity
comb.	combination
extn	extension
h	height, high
hdl	handle(d)
hex	hexagon (al)
hv	heavy
lg	length, long
M	model
mtl	metal
nom	nominal
opng.	opening
S	steel
sgle-hd	single head
sq	square
stght	straight
w	watt(s) wide, width
w/	with
w/e	with equipment
w/wn	with winch

b. Symbols.

5	Corps of Engineers
10	Quartermaster Corps
12	Adjutant General

4. Explanation of Codes

N Indicates nonexpendable item

5. Suggestions and Recommendations

Notice of discrepancies and recommendations for additions and deletions of repair parts and special tools should be forwarded on DA Form 2028 to the Commanding Officer, Raritan Arsenal, Metuchen, N.J., ATTN: ORDJR—CPRA.

(1) Source mainte- nance and recover- ability code	(2) Federal stock No.	(3) Description	(4) Unit of Issue	(5) Quan- City author- ized	(6) Fig. No. (a)
		MAJOR ITEMS (WITH EQUIPMENT)			
N	2310-835-8686	TRUCK, AMBULANCE: front line, ¼-ton, 4 x 4, M170, w/e (8358686) -----			5
N	2320-835-8319	TRUCK, UTILITY: ¼-ton, 4 x 4, M38A1, w/e (8358319) -----			1
N	2320-835-8320	TRUCK, UTILITY: ¼-ton, 4 x 4, M38A1, w/wn, w/e (8358320)			
N	2320-141-8841	TRUCK, UTILITY: ¼-ton, 4 x 4, M38A1C, w/e (8358946)			
N	2320-141-8842	TRUCK, UTILITY: ¼-ton, 4 x 4, M38A1C, w/wn, w/e (8358947)			
		COMPONENTS OF MAJOR ITEMS			
		The following items under the sub-heading below are <i>installed in position</i> on the TRUCK, prior to the issue of the vehicle to the using troops.			
		REPAIR PARTS FOR TRUCK			
		WHEEL, w/TIRE and TUBE, assy (spare) (components to be requisitioned separately).	ea	1	
		Composed of:			
	2610-269-9586	1 TIRE, pneumatic, 6 ply rating, light truck, cross-country tread, w/con- trolled bead, 6.50/7.00-16 (new) (511830).	ea	-----	172
	2610-269-7332	1 INNER TUBE, pneumatic tire, truck and bus, 6.50/7.00-16 (new) (519252)_	ea		
	2530-287-2314	1 WHEEL, w/RIM and SPIDER, assy (16 x 4.50 E, safety type) (7387807)_	ea	-----	172

**DEPARTMENT OF THE ARMY TECHNICAL MANUAL
DEPARTMENT OF THE AIR FORCE TECHNICAL ORDER**

Operation and Organizational Maintenance:

1/4-TON 4 x 4 UTILITY TRUCK, M38A1

1/4-TON 4 x 4 FRONT LINE AMBULANCE, M170

TM 9-8014
TO 36A-1-401
CHANGES No. 5

DEPARTMENTS OF THE ARMY
AND THE AIR FORCE
WASHINGTON 25, D.C., 7 March 1960

TM 9-8014/TO 36A-1--401, 6 April 1955 is changed as follows:
Page 3, (C 4)

4. Explanation of Codes

(Superseded)

N Indicates a repair part that is *nonexpendable* and *not recoverable*.

NR Indicates a repair part or assembly that is *nonexpendable* and *recoverable* and is economically repairable.

Page No.	Action	Source maintenance, and recoverability code	(2) Federal stock No.	(3) Description
4	Change column 1_	NR	2310-835-8686	MAJOR ITEMS (WITH EQUIPMENT) TRUCK, AMBULANCE * * *
	Delete items_	NR NR -----	2320-835-8319 2320-835-8320 2320-141-8841 2320-141-8842	TRUCK, UTILITY - - * TRUCK, UTILITY * - - TRUCK, UTILITY * * * TRUCK, UTILITY * * *

These changes supersede C 1, 5 June 1956, and C 2, 23 December 1957.

7. Tabulated Data

a. (Changed by C 1, 5 Jun 56, and further changed by C 3, 19 Jun 58)

General Data.

	•	•	•	•	•	•
Tires: (Superseded)						
Pressure, highway -----						25 lb
Cross country -----						25 lb
Mud, sand, or snow - - - - -						15 lb
Size -----						7.00 x 16

70. General Lubrication Instructions

•
d. Points of Application

(3) Clean and lubricate unsealed bearings as shown below.

(c) (As superseded by C 2, 23 Dec 57) Before installing bearing cone and roller assemblies in wheel hubs, coat the entire inner surface of the hub with a thin layer of lubricant (GAA) (not over 1/16 in.) to prevent rusting. Before installing wheel hubs on axle spindles, carefully inspect grease retainers. Particular attention must be given to the leather insert to make sure there are no frayed edges, breaks, or splits and that it is not worn thin; replace seals or retainers as necessary. Apply a thin coat of lubricant (GAA) (not over 1/16 in.) to the spindle and hub caps. Do not fill hub caps to serve as grease cups under any circumstances.

Note. For normal operation, lubricate wheel bearings at interval specified on lubrication order.

a

So much of table III, page 76, item 29, line 3, as reads "Record voltage of each cell in space provided on DA Form 461." is changed to read **Record voltage of battery, or each cell in space provided on DA Form 461.** (As changed by C 1, 5 Jun 56)

The spark plug cable numbers in figure 79, page 173, are changed as follows: (As changed by C 1, 5 Jun 56)

Change No. 1 to No. 3

Change No. 2 to No. 1

Change No. 3 to No. 4

Change No. 4 to No. 2

Add the illustration number RA PD 358259 to figure 155, page 272. (Added by C 1, 5 Jun 56)

248. Description and Data

• • • •

b. Data. (As changed by C 1, 5 Jun 56, and further changed by C 3, 19 Jun 58)

•

Operating pressures:

Highway -----	25 psi
Cross country -----	25 psi
Mud, sand, or snow -----	15 psi

The figure number and title of figure 190, page 314, are changed to read: **Figure 184. Top bows in stored position (M38A1).** (As changed by, C 1, 5 Jun 56)

BY ORDER OF THE SECRETARIES OF THE ARMY AND THE AIR FORCE :

L. L. LEMNITZER,
General, United States Army,
Chief of Staff.

OFFICIAL :
R. V. LEE,
Major General, United States Army,
The Adjutant General.

THOMAS D. WHITE,
Chief of Staff, United States Air Force.

OFFICIAL :
J. L. TARR,
Colonel, United States Air Force,
Director of Administrative Services.

DISTRIBUTION:**Active Army:**

CNGB (1)
 Tech Stf, DA (1) except
 CofOrd (14)
 Ord Bd (2)
 USCONARC (3)
 US ARADCOM (2)
 US ARADCOM Rgn (2)
 OS Maj Comd (2)
 OS Base Comd (2)
 Log Comd (3)
 MDW (1)
 Armies (3) except
 First US Army (5)
 Corps (2)
 Div (2)
 Regt/Gp/Bg (2)
 Bn (2)
 Co/Btry (2)
 Ft Bragg (2)
 Ft Hood (7)
 Ft Sill (6)
 Ft Bliss (9)
 Ft Belvoir (7)
 Ft Sam Houston (7)
 Svc Colleges (2)
 Br Svc Sch (2) except
 USA Ord Sch (50)
 PMST Sr Div Ord Units (1)
 Ord Tk Autmv Comd (55)
 Ord Ammo Comd (1)
 Fld Comd, Def Atomic Spt
 (1)
 CINCUSAREUR (5)
 GENDEP (2)
 Ord Sec, GENDEP (5)

Ord Dep (10) except
 Anniston Ord Dep (18)
 Rossford Ord Dep (12)
 Black Hills Ord Dep (5)
 Savannah Ord Dep (5)
 Tooele Ord Dep (4)
 Sierra Ord Dep (3)
 Umatilla Ord Dep (3)
 Wingate Ord Dep (3)
 Sioux Ord Dep (2)
 Ports of Emb (OS) (2)
 Trans Terminal Comd (2)
 Army Terminals (2)
 OS Sup Agcy (1)
 Ord PG (10)
 Ord Arsenals (5) except
 Benicia Arsenal (35)
 Rock Island Arsenal (12)
 Frankford Arsenal (4)
 Lake City Arsenal (3)
 Joliet Arsenal (4)
 Ravenna Arsenal (2)
 Radford Arsenal (1)
 Raritan Arsenal (53)
 Springfield Armory (2)
 Ord Proc Dist (1) except
 New York Ord Proc Dist (5)
 Philadelphia Ord Proc Dist (4)
 St Louis Ord Proc Dist (3)
 Cleveland Ord Proc Dist (2)
 Chicago Ord Proc Dist (None)
 MAAG (Japan) (2)
 JBUSMC (2)
 JUSMAG (Greece) (2)

NG: State AG (3): units—same as Active Army except allowance is one copy for each unit.

USA R: None.

For explanation of abbreviations used, see AR 320-50.

DEPARTMENT OF THE ARMY TECHNICAL. MANUAL
TM 9-8014
DEPARTMENT OF THE AIR FORCE TECHNICAL ORDER
TO 36A-1-401
C 6

Operator and Organizational Maintenance Manual

for

TRUCK, AMBULANCE: FRONT LINE, ¼-TON, 4 X 4, M170;
TRUCK, UTILITY: ¼-TON, 4 X 4, M38A1,
M38A1C, AND M38A1D

TM 9-8014
TO 36A-1-401
CHANGES No. 6

DEPARTMENTS OF THE ARMY
AND THE AIR FORCE
WASHINGTON 25, D.C., 12 June 1963

TM 9-8014, TO 36A-1-401, 6 April 1955, is changed as follows:

Title is changed as shown above.

The technical instructions contained in this manual for vehicle model M38A1 also apply to the M38A1C and M38A1D vehicles in all areas where the assemblies are similar. Refer to MWO ORD G758 - W3 and MWO 9-2320--208-30/1 for data and information peculiar to the M38A1C and M38A1D vehicles.

1. Scope

b. (Superseded)

- (1) Appendix I provides a current list of reference publications, including supply manuals, forms, technical manuals, and other publications applicable to this materiel.
- (2) Appendix II provides a chart of specific maintenance operations allocated to the proper echelon based on availability of time, tools, and skills.
- (3) Appendix III is a list of basic issue items that requires stockage for first echelon maintenance. Appendix III was added by C 4, 11 December 1959, and has not been changed.

*

*

d. (Superseded) Any errors or omissions pertaining to this publication will be forwarded on DA Form 2028 (Recommended changes to DA Technical Manual Parts Lists or Supply Manual 7, 8 or 9) direct to the Commanding General, Hq U.S. Army Tank Automotive Center, Detroit Arsenal, Center Line, Mich. ATTN: SMOTA-FM.

2. Organizational Maintenance Allocation

In general, the * * * TM 9-2320-208-20P proper instructions issued.

3. Forms, Records, and Reports

*

b. (Superseded) *Authorized Forms*. The forms, records, and reports required for these vehicles are prescribed in TM 38-750. Appendix I includes a list of forms that are applicable to the driver's operation and organizational maintenance of the vehicles and those that are to be used with the Equipment Log Binder.

c. (Superseded) *Field Report of Accidents and Injury to Personnel or Damage to Materiel*. The reports necessary to comply with the requirements of the Army safety program are prescribed in TM 38-750 and AR 385-40. These reports are required whenever accidents occur involving injury to personnel or damage to materiel.

d. (Superseded) *Report of Equipment Improvement Recommendations (E I R)*. Equipment improvement recommendations that appear to involve unsatisfactory design in the equipment covered herein should be reported on DA Form 2407 (Maintenance Request), and and prepared in accordance with TM 38-750 and forwarded to the Commanding General, Hq, U.S. Army Tank Automotive Center, Detroit Arsenal, ATTN: SMOTA-FM, Center Line Mich.

Note. Do not report all failures that occur. Report only repeated failures or malfunctions which would indicate unsatisfactory design or material. However, report will always be made in the event that exceptionally costly equipment is involved.

5. Difference Between Models

* * * * *

d. (Added) All vehicular maintenance preventive maintenance services, and troubleshooting procedures that are applicable to the M38A1 in this manual, also apply to the M38A1C and M38A1D models. The overall vehicle characteristic covered in the tabulated data for the M38A1 also apply to the **M38A1C** and M38A1D with the exception of vehicle weight.

*

Section I. SERVICE UPON RECEIPT OF MATERIAL

(Superseded)

8. General

a. Upon receipt of a new, used or reconditioned vehicle, it is the responsibility of the receiving organization to determine whether the vehicle has been properly prepared for service by the supplying unit, and is in condition to perform satisfactorily it's organized mission.

For this purpose, inspect all assemblies, subassemblies, and accessories to be sure they are properly assembled, secure, clean, and correctly adjust and/or lubricated. Check all tools and equipment (pars. 65-68) to be sure every item is present, in good condition, clean, and properly mounted or stowed.

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 vehicle operation, according to procedures in paragraph 9.

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

9. Preliminary Services

a. General Procedure.

- (1) If any exterior surfaces are coated with rust-preventive compound, remove it with drycleaning solvent or mineral spirits paint thinner.
- (2) A tag, DA Form 9-3 (Processing Record for Shipment and Storage of Vehicles and Boxed Engines) should be attached to the steering wheel, shifting lever, or ignition switch. Follow all precautions indicated on this tag.
- (3) On processed material, when engine has been in storage for over 30 days, service engine as outlined in TB ORD 392, by performing the following:
 - (a) Remove spark plugs from each cylinder.
 - (b) Atomize spray 2 ounces of lubricating oil, FSN 9150-281-2060 Military symbol PL SPECIAL), into each cylinder through the spark plug opening.
 - (c) After an interval of 15 minutes, rotate engine by hand or starter for about 30 seconds and reinstall spark plugs.

b. Specific Procedures

- (1) Tighten cylinder head bolts before starting engine. Refer to paragraph 111 for proper torque and tightening sequence.
- (2) Perform the "S" (6-month or 3,000 mile) preventive maintenance service prescribed in paragraph 79.
- (3) Lubricate all points of vehicle as specified in lubrication order regardless of interval. Check processing tag (DA Form 9-3, a(2) above) for gear case and engine oil. If the tag states that oil is suitable for 500 miles of operation and is of proper viscosity for local operation, check the level, but do not change the oil.
- (4) After engine has reached operating temperature, recheck all cylinder head bolts for specified torque. Refer to paragraph 111 for proper torque and tightening sequence.
- (5) After preliminary service has been performed, the break-in period (500 miles) may be accomplished in normal service of

vehicle under supervision of competent driver. The driver will be cautioned against excessive speeds, skipping speeds in shifting gears, rapid acceleration, or in any way loading the engine or power train to capacity during the break-in period. If vehicle was driven to using organization, consider mileage so traveled as break-in mileage.

(6) Schedule second "S" on DA Form 2403 (Preventive Maintenance Roster) and arrange for oil change at 500 miles.

10. Correction of Deficiencies

Deficiencies disclosed during preliminary inspection which appear to involve unsatisfactory design or material, will be reported on DA Form 2407 (Maintenance Request) and prepared in accordance with TM 38-750, and sent to the Commanding General, Hq U.S. Army Tank Automotive Center, Detroit Arsenal, ATTN: SMOTA-FM, Center Line, Mich.

59. General Conditions

*

*

d. (Superseded) When chronic failure of materiel results from subjection to extreme conditions, report of the condition should be made in accordance with TM 38-750.

Page 50, paragraph 60. Whenever TM 9-2855 appears, substitute: TM 9-207.

64. Fording Operations

*

c. (Superseded) *Deep-Water Fording*. Refer to TM 9-238 for general information, descriptions, and methods of use of deep-water fording kits, and for general procedures for the operation of vehicles so equipped.

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*

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66. Parts

Spare parts are * * * Department of the Army **TM 9-2320-208-20P**, which is authority for requisitioning replacements.

67. Common Tools and Equipment

(Superseded)

Standard and commonly issued tools and equipment having general application to this materiel authorized for issue to 1st echelon are listed in appendix III. Common tools and equipment for 2d echelon are listed in SM 9-4-5180-A01, SM 9-4-5180-A20, and SM 9-4-4940-A08, and authorized for issue by TA and TOE.

70. General Lubrication Instructions

* * * * *

d. Points of Application.

* * * * *

(2) A $\frac{1}{4}$ -inch red circle * * * fittings and oilholes. Rescinded.

(3) Clean and lubricate unsealed bearings as shown below.

(a) Wash all the * * * the parts thoroughly.

Caution: Bearings must not be dried or spun with compressed air. See TM 9-214 for care and maintenance of bearings.

* * * * *

(b) (Superseded) Before installing bearing cone and roller assemblies in wheel hubs, coat the entire inner surface of the hub with a thin layer of lubricant (GAA) (not over to prevent rusting. Before installing wheel hubs on axle spindles, carefully inspect grease retainers. Particular attention must be given to the leather insert to make sure there are no frayed edges, breaks, or splints and that it is not worn thin; replace seals or retainers as necessary. Apply a thin coat of lubricant (GAA) (not over $\frac{1}{16}$ -in.) to the spindle and hub caps. Do not fill hub caps to serve as grease cups under any circumstances.

Note. For normal operation, lubricate wheel bearings at interval specified on lubrication order.

* * * * *

e. (Superseded) Reports and Records.

(1) Report unsatisfactory performance of prescribed petroleum fuels, lubricants, or preserving materials on DA Form 2407 and prepare in accordance with TM 38-750.

(2) Maintain a record of lubrication of the vehicle on DA Form 2408-2 (Equipment Lubrication Record).

Page 68, paragraph 72. Delete "TM 2855" and substitute: TM 9-207.

75. Painting

(Superseded)

Instructions for the preparation of the materiel for painting, methods of painting, and materiels to be used are contained in TM 9 213. Instructions for comouflage painting are contained in FM 5-20.

Section III. PREVENTIVE-MAINTENANCE SERVICES

(Superseded)

76. General

a. *Purpose.* The preventive-maintenance services is to detect first signs of electrical and mechanical failures of assemblies in the vehicle,

and to insure that appropriate corrective action is taken before expensive and time consuming repairs or replacements are required. The system of preventive-maintenance services is based on frequent inspections and services accomplished by operators, company battalion, or regimental maintenance personnel under active supervision by all commanders and leaders.

b. Responsibility. Operators and crew chiefs are charged with personal responsibility for assigned vehicles. Squad, section, and platoon leaders are charged with supervisory responsibility for vehicles pertaining to their commands. Unit and organization commanders are required to insure that vehicles issued or assigned to their commands are properly maintained in a serviceable condition, and that they are properly cared for and used.

c. Intervals. The mileage that a vehicle travels is the principal criterion for the frequency of preventive-maintenance service. Operation under adverse conditions, such as extreme temperature, dust, or mud, may require preventive-maintenance services when environmental conditions indicate the need. Do not extend intervals between preventive-maintenance services, except when authorized to do so.

d. Outline. The system of preventive-maintenance services for tactically used wheeled vehicles is outlined in table I.1. Daily services, as outlined, are designated as first echelon services. Semiannual "S" services are designated as second echelon services.

e. General Procedures for All Services and Inspections.

- (1) The following general procedures apply to both first and second echelon preventive-maintenance services and to all inspections, and are just as important as the specific procedures.
- (2) Inspections to see if items are in good condition, correctly assembled or stored, secure, not excessively worn, not leaking, and adequately lubricated apply to most items in the preventive-maintenance and inspection procedures. Any or all of these checks that are pertinent to any item (including supporting, attaching, or connecting members) will be performed automatically, as general procedures, in addition to any specific' procedures given.
 - (a) Inspection for good condition is usually visual inspection to determine if the unit is safe or serviceable. Good condition is explained further as meaning: Not bent or twisted, not chafed or burned, not broken or cracked, not bare or frayed, not dented or collapsed, not torn or cut, not deteriorated.
 - (b) Inspection of a unit to see if it is correctly assembled or stored is usually a visual inspection to see if the unit is in its normal position in the vehicle and if all its parts are present and in their correct relative positions.

- (c) Excessively worn is understood to mean worn beyond serviceable limits or likely to fail, if not replaced before the next scheduled inspection. Excessive wear of mating parts or linkage connections is usually evidenced by too much play (lash or lost motion). It includes illegibility as applied to markings, data and caution plates, and printed matter.
- (3) Where the instruction "tighten" appears in the procedures, it means tighten with a wrench, even if the item appears to be secure.
- (4) Such expressions as "adjust if necessary" or "replace if necessary" are not used in the specific procedures. It is understood that whenever inspection reveals the need of adjustments, repairs, or replacements, the necessary action will be taken.

Table 1.1. (Added) Outline of Preventive Maintenance Service

Service	Interval	Accomplished by
Daily Semiannual "3" service.	Each day operated Every 6 calendar months or 3,000 miles, whichever occurs first:	Operator or crew, Regimental or battalion or separate company/battery maintenance personnel.

77. Cleaning

a. General. Special cleaning instructions required for specific mechanisms or parts are contained in the pertinent section. General instructions are as follows:

- (1) Use drycleaning solvent or mineral sprits paint thinner to clean or wash grease or oil from all parts of the vehicle.
- (2) A solution of one part grease-cleaning compound to four parts drycleaning solvent or mineral sprits paint thinner may be used for dissolving grease and oil from engine blocks, chassis, and other parts. Use cold water to rinse off any solution which remains after cleaning.
- (3) After the parts are cleaned, rinse and dry them thoroughly. Apply a light grade of oil to all polished metal surfaces to prevent rusting.
- (4) When authorized to install new parts, remove any preservative materials, such as rust-preventative compound, protective grease etc; prepare parts as required (oil seals etc.); and for those parts requiring lubrication, apply the lubricant prescribed in the lubrication order.

b. *Precautions. General precautions in cleaning are as follows:*

- (1) Drycleaning solvent or mineral spirits paint thinner is flammable and should not be used near an open flame. Fire extinguishers should be provided when this material is used. Use only in well ventilated places. Battery lead cable should be disconnected and taped.
- (2) This cleaner evaporates quickly and has a drying effect on the skin. If used without gloves, it may cause cracks in the skin and, in the case of some individuals, a mild-irritation or inflammation.
- (3) Avoid getting petroleum products, such as drycleaning solvent or mineral spirits paint thinner, engine fuels, or lubricants on rubber parts as they will deteriorate the rubber.
- (4) The use of diesel fuel oil, gasoline, or benzene (benzol) for cleaning is prohibited.

c. *Plates.* Nameplates, caution plates, and instruction plates made of steel, rust rapidly. When plates are found in a rusty condition, they should be thoroughly cleaned and heavily coated with an application of clean lacquer.

78. Daily Preventive-Maintenance Service

a. *Purpose.* Each vehicle will be inspected and serviced by its assigned operator and crew each day that it is operated. The service is divided into three parts:

- (1) *Before-Operation Service.* This service is performed on the vehicle to ascertain whether the vehicle is ready for operation and if conditions affecting the vehicle's readiness have changed since the last after-operation service.
- (2) *During-Operation Service.* This service consists of detecting any unsatisfactory performance. While driving, the driver or crew should be alert for any unusual noises or odors, abnormal instrument readings, steering irregularities, or any other indications of malfunction of the vehicle. Every operation should be considered a test and any unusual or unsatisfactory performance noted.
- (3) *After-Operation Service.* This is the basic daily service for tactical vehicles. It consists of correcting, insofar as possible, any operating deficiencies. Thus the vehicle is prepared to operate at a moment's notice.

b. *Specific Procedures for First-Echelon.* Follow the procedures listed in table II in the numerical order given.

Table II. (Superseded) Preventive-Maintenance Checks and Services

1st Echelon

Daily Schedule

Interval and sequence No.			Items to be inspected	Procedure	Paragraph and figure reference
Before opera-	During op -	After opera-tion			
				<p>Caution: All tags describing vehicle condition must be placed in the driver's compartment in a conspicuous location.</p>	
1	-----		Oil and coolant -----	Check oil and coolant levels. Check spare containers for contents.	Pars. 36, 37, 51.
2	-----		Water pump, fan belts and pulleys	Inspect pulleys and fan for alinement and bolt for tension ($\frac{3}{4}$ inch deflection). Inspect water pump for leaks.	Par. 130.
3	-----		Electrical wiring -----	Visually inspect electrical wiring, conduits, connectors and shielding.	
4	-----		Engine compartment -----	Inspect engine compartment for indications of fuel, engine oil and water leaks. Look under the vehicle for <i>indications</i> of leaking gear oil or brake fluid.	
5	-----	20	Tires -----	Note any apparent loss of air. Remove penetrating objects such as nails or glass. Note unusual wear or missing valve caps.	Par. 248.
6	-----	-----	ire extinguisher and vehicle publications.	<i>Note.</i> If necessary, service tires to 25 psi for cross-country or highway driving and 15 psi for mud, sand or snow operations. Visually inspect fire extinguisher (on vehicle so equipped) and vehicle publications. Note if fire extinguisher is charged and sealed.	
7	---		Tools and equipment -----	Inspect vehicle tools and equipment for general conditions and proper stowage.	

Table II. Preventive-Maintenance Checks and Services—Continued
 1st Echelon Daily Schedule

Interval and sequence No.		Items to be inspected	Procedure	Paragraph and figure reference
Before operation	During operation			
8		Vehicle body -----	General condition of body to include check for tampering or damage that may have occurred since last inspection. Inspect doors, windows, pintle reflectors, and lifting shackles.	
*9		Battery -----	Clean, check water level, inspect terminals for tightness and coat with grease (TM 9-6140-200-15).	
10		----- Cab, doors, glass, top and frame, curtains and fasteners, seats and paint. hood hinges and fasteners. Observe seat mountings	Inspect cab or body mountings, including springs. Test operation of doors, windows, windshield ventilator, and upholstery. Inspect the litter racks and operation of personnel heater (M170 Ambulance). Generally inspect body, glass, panels, tops, fenders, running boards, bows, paulins, and curtains. Examine condition of paint and legibility of markings and identification and caution plates.	
11	18	---- Lights and horn -----	If tactical situation permits, operate horn and windshield wipers. Inspect rear view mirrors. Check operation of exterior lights and light switches. Note whether the headlights appear to be properly aimed. Note condition of all lights and reflectors.	Pars. 24, 25, 32, 37, 38, 40; figs. 12-14.
12	19	Service brake pedal and hand brake lever.	Check service brake for proper pedal travel and hand brake for proper adjustment. (Correct service brake free travel is $\frac{3}{4}$ to 1 inch). See references for Hand-brake Adjustments.	Pars, 233, 238.

13	----- Starter and starter switch -----	<p>With the ignition OFF, note if the starter switch requires more than normal pressure, and if the starter engages smoothly without unusual noise and turns the engine with adequate cranking speed. With ignition switch ON start engine.</p> <p>Caution: If there is excessively low or no indication of engine oil pressure offer a reasonable time lapse (10 seconds max.), stop engine and determine cause.</p>	<p>Pars. 17, 23; fig. 12.</p>
14	Engine: idle, acceleration, power, noise, governed speed.	<p>In warming up engine, observe if the choke and throttle controls operate satisfactorily. Note if idling speed is correct. Listen for any unusual noises at idle and higher speeds. When operating the vehicle, note if it has normal power and acceleration in each speed range. Listen for any unusual noises when the engine is under load. Speed up the vehicle, but do not exceed the specified governed speed.</p> <p><i>Note.</i> Investigate and correct any operating deficiencies as they occur, if beyond the scope of the driver, report them to individuals in authority immediately.</p>	<p>Pars. 16, 22, 43, 44; fig. 12.</p>
21	Temperatures of brake drums, hubs, axles, transmission, transfer, differential.	<p>Immediately after the road test, feel these units cautiously. An -overheated wheel hub and brake drum indicates an improperly adjusted, defective or dry wheel bearing or a dragging brake. An abnormally cool condition indicates an inoperative brake. An overheated gear case indicates lack of lubrication, adjustment, or defective parts.</p> <p><i>Note.</i> Full floating hypoid axles operate quite hot. If lubricant levels are correct, and no unusual noises occurred during road test, assume axles are functioning properly. Do not touch hypoid axles with bare hand after vehicle has been operated a considerable distance, serious burns may result.</p>	

Table II. Preventive-Maintenance Checks and Services—Continued

Interval and sequence No.			1st Echelon	Daily Schedule	Paragraph and figure reference
Before operation	During operation	After operation	Items to be inspected	Procedure	
		22	Radiator and cap -----	Inspect radiator cores for clogging with foreign matter or if fins are bent. Check gasket in the pressure cap. Observe coolant level and examine coolant for contamination. In cold weather test coolant with hydrometer to see if it contains sufficient antifreeze (TM 9-2858) <i>Caution:</i> If it is necessary to add coolant to the radiator while engine is overheated, idle engine and add coolant slowly. Use extreme caution in removing radiator pressure cap as serious burns may result.	
		23	Winch cable -----	Clean and oil winch cable in accordance with the lubrication order.	
15	-----		Lubricate -----	Lubricate daily items specified on lubrication order.	
16		24	Clean - -----	Wash vehicle, clean inside of cab, glass, and vision devices. Clean engine and engine compartment as required.*	
17	-----	25	Fuel -----	Service fuel tank as necessary.	

* Denotes operations to be performed weekly.

79. General Procedures for Second-Echelon

a. Automatically Applied. All of the general procedures given in paragraph 78 will be followed. Organizational mechanics must be so thoroughly trained in these procedures that they will apply them automatically at all times in the performance of their duties.

b. First-Echelon Participation. The driver or crew usually accompanies the vehicle and assists the organizational mechanics in the performance of second-echelon services.

c. Unwashed Vehicle. The driver or crew should present the vehicle 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 vehicle 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. Services. Second-Echelon services are defined by and restricted to general procedures unless approval has been given by the supporting ordnance organization.

- (1) *Adjust.* Make all necessary adjustments in accordance with instructions contained in the pertinent section of this manual, information contained in changes to the subject publication, or technical bulletins.
- (2) *Clean.* Clean the unit as outlined in paragraph 77 to remove old lubricant, dirt, and other foreign material.
- (3) *Special lubricant.* This applies either to lubrication operations that do not appear on the vehicle lubrication order or to items that do appear but which should be performed in connection with the maintenance operations if parts have to be disassembled for inspection or service.
- (4) *Service.* This usually consists of performing special operations, such as replenishing battery water, draining and refilling units with oil, and changing and 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 over-tighten as this may strip 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.
- (6) *Modification work order application.* At least every 6 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 4. If a modification has

not been applied, promptly notify the local ordnance officer. No alteration or modification, which will affect the moving parts, will be made by organizational personnel, except as authorized by official publications.

e. Special Conditions. When conditions make it difficult to perform the complete preventive-maintenance procedures at one time, they can sometime be handled in sections. Plan to complete all operations within the week if possible. All available time at-halts and in bivouac areas must be utilized, if necessary, to assure that maintenance operations are completed. When limited by the tactical situation, items with special services should be given first consideration.

f. DA Form 2404 (Equipment Inspection and Maintenance Worksheet. Perform the "S" preventive-maintenance service in the sequence given in table III using DA Form 2404 as a worksheet.

g. Semiannual "S" Preventive-Maintenance Services

- (1) *Purpose.* The "S" preventive-maintenance services 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 "S" preventive-maintenance service is performed.
- (2) *Intervals.* The semiannual "S" preventive-maintenance services are performed by the organizational mechanics every 6 months or at every 3,000 miles of vehicle operation, whichever occurs first. Under unusual conditions temporary deviation from the prescribed service or interval may be authorized at the discretion of the commander. The commander will consult with the direct support ordnance officer prior to a decision to deviate from these services.

h. Specific Procedures for Second Echelon. Specific procedures for performing each item in the semiannual "S" preventive-maintenance services on the material are given in table III in accordance with procedures outlined. Results of inspection and checking during preventive-maintenance services is authorization to take corrective action by performing the service or repair at second echelon. If repairs by a higher echelon are required, a DA Form 2407 (Maintenance Request) will be prepared and forwarded with the equipment to the supporting maintenance activity.

Table III. (Superseded) Preventive-Maintenance Checks and Services

2nd Echelon

Semiannual

Sequence No.	Item to be inspected	Procedure	Paragraph and figure references
		PRIOR TO ROAD TEST	
	All "before operation" items in table II.	<i>Note.</i> When tactical situation does not permit a full road test, perform only those items that require little or no movement of the vehicle.	
1	Oil and coolant -----	Check oil and coolant levels. Check spare containers for contents_	Pars. 36, 37, 51. Par, 130.
2	Water pump, fan belts and pulleys_	Inspect pulleys and fan for alinement. Check water pump for leaks. Press fan and generator drive belts to determine correct tension. Provide $\frac{1}{4}$ -inch deflection.	
3	Electrical wiring -----	Visually inspect electrical wiring, conduits, connectors, and shielding.	Pars. 100, 249, 252.
4	Engine compartment -----	Inspect engine compartment for indications of fuel, engine oil and water leaks. Look under the vehicle for indications of leaking gear oil or brake fluid.	
5	Tires -----	Note any apparent loss of air. Remove penetrating objects such as nails or glass. Note unusual wear or missing valve caps. Gage tires for correct pressure, 25 psi for cross-country or high-way driving and 15 psi for mud, sand, or snow operations.	
6	Fire extinguisher, and vehicle publications.	Visually inspect fire extinguisher (on vehicle so equipped) and vehicle publications. Note if the extinguisher is charged and sealed.	
7	Tools and equipment -----	Inspect vehicle tools and equipment for general conditions and proper stowage.	
8	Vehicle body -----	Check for any tampering or damage that may have occurred since last inspection.	
9	Steering gear and controls -----	Check steering system and components parts for loose or damaged parts.	

Table Preventive-Maintenance Checks and Services—Continued

2nd Echelon

Semiannual

Sequence No.	Item to be inspected	Procedure	Paragraph and figure references
PRIOR TO ROAD TEST—Continued			
10	Cab: doors, glass, top, frame, curtains, fasteners, straps and paint.	Inspect these items, paying particular attention to cab or body mountings, including springs. Test operation of doors, windows, hood hinges and fasteners. Observe seat mountings and upholstery. Inspect the litter racks and operation of personnel heater (M170 Ambulance). Make a general inspection of body, including glass, panels, tops, fenders, running boards, bows, top and side curtains. Examine condition of paint and legibility of markings and identification and caution plates.	
11	Lights and horn and ,windshield wipers.	If tactical situation permits, operate horn and windshield wipers. Inspect rear view mirrors. Check operation of exterior lights and light switches. Note whether the headlights appear to be properly aimed. Note condition of all lights and reflectors.	Pars. 24, 25, 32, 37, 38, 51; figs. 11, 13.
12	Brake pedal -----	Check service brake pedal for proper travel and hand brake linkage for proper adjustment (correct pedal free travel is ^{a4} to 1 inch). See references for parking brake adjustment.	
ROAD TEST			
13	Instruments—functional check ---	Prior to starting engine, turn ignition switch on and observe instrument operation. Ammeter (if equipped) should indicate light discharge. Battery generator indicator should indicate generator is not charging--pointer in the yellow. Fuel quantity gage should move to indicate fuel tank level. Oil pressure gage should indicate 0 psi and water temperature gage should move from an off scale reading to actual water temperature reading.	Pars. 23, 33, 34, 35, 36; figs. 11-14.
14	Starter and switch -----	Note if the starter switch requires more than normal pressure, and if the starter engages smoothly without unusual noise, and turns	Pars. 42, 85.

Instrument operational check	<p>the engine with adequate cranking speed. With ignition switch on, start engine.</p> <p><i>Caution:</i> If there are extremely low or no indications of engine oil pressure, stop engine after a <i>maximum</i> of 10 seconds running and determine cause.</p> <p>Note generator output on the ammeter or battery generator indicator immediately after starting engine, before generator regulator has reduced the charging rate. Observe all instruments for normal readings. Note whether the ignition switch and light switch assembly operate freely and make positive contact. Check all other controls for normal operation.</p>	Pars. 23, 24, 42; figs. 11, 14, 15.
Engine operation -----	<p>In warming up engine, observe if the choke and throttle controls operate satisfactorily. Note if idling speed is correct. Listen for any unusual noises at idle and higher speeds. When operating the vehicle, note if it has normal power and acceleration in each speed range. Listen for any unusual noises when the engine is pulling a load. Speed up the vehicle, on a level stretch, to see if it will reach, but not exceed, the specified governed speed.</p>	Pars. 30-32; figs. 6, 7, 11.
Generator -----	<p>Watch the ammeter or battery generator indicator to note whether generator is charging properly. Observe unusual noises.</p>	Par. 33; figs. 11-12.
Clutch -----	<p>Note if the clutch pedal has 1 inch of free travel and if action of the pedal return spring is satisfactory. Note whether clutch disengages completely or has a tendency to drag. Observe smoothness of engagement and tendency to chatter, grab, or slip, and any unusual noises. With transmission in neutral, depress and release clutch pedal, listening for a defective release bearing.</p>	Pars. 15, 92, 191; fig. 121.
Transmission and transfer -----	<p>Shift transmission into all speeds and transfer into high and low ranges, observing any unusual stiffness of the shift levers, tendency to slip out of gear, unusual noise, or excessive vibration. Make similar observations of the transfer clutch lever.</p>	Pars. 18, 19, 93, 94; figs. 11, 13.

Table III. Preventive-Maintenance Checks and Services—Continued

2nd Echelon

Semiannual

Sequence No.	Item to be inspected	Procedure	Paragraph and figure references
20	Service and hand brake operation	<p style="text-align: center;">ROAD TEST—Continued</p> <p>Note if action of brake return spring is satisfactory. Observe if pedal goes too close to floor. Make several stops, noting side pull, noise, chatter, grabbing, or any other abnormal condition. Observe if the hand brake lever ratchet holds and if the lever requires more than three-quarters travel for full application. Stop the vehicle on an incline and apply the hand brake to determine if it holds the vehicle.</p>	Pars. 14, 20, 98, 99, 233; figs. 11-13, 158.
21	Steering system -----	With the vehicle moving straight ahead, determine if there is any tendency to wander, shimmy or pull to one side. Turn the steering wheel through its entire range and note any binding.	Pars. 13, 102.
22	Power train, wheels, body, and chassis.	At all times during the road test, be alert for unusual or excessive noises that may indicate looseness, defects, or deficient lubrication at any point.	
23	Hub; drum, axles, power train ----	<p style="text-align: center;">AFTER ROAD TEST</p> <p>Immediately after the road test, feel these units cautiously. An overheated wheel hub and brake drum indicates an improperly adjusted, defective or dry wheel bearing or a dragging brake. An abnormally cool condition indicates an inoperative brake. An overheated gear case indicates lack of lubrication, gears out of adjustment, or defective parts.</p> <p><i>Ca., ion:</i> Full floating hypoid axles operate quite hot. If lubricant levels are correct and no unusual noises occurred during road test, assume axles are functioning properly. Do not touch hypoid axles with bare hand after vehicle has been operated a considerable distance, serious burns may result.</p>	

24 , Battery: specific gravity - - - - -	Make hydrometer test of electrolyte in each cell of both batteries (1.275-1.300 at 80°F.) and record the readings on DA Form 2404 (TM 9-6140-200-15).	
25 Battery voltage - - - - -	Perform starting motor cranking voltage test (24 v DC) using test meter. Record the voltage registered on DA Form 2404. On vehicle so equipped, check insulator on position (X) part of the inner battery between cover and terminal.	
26 Battery terminals, carrier and fluid level.	Clean tops of batteries, coat terminals lightly with grease, and repaint carrier if corroded. Inspect the level of water to see that it covers the tops of the plates. <i>Note.</i> If distilled water is not available, clean water, preferably rain water, may be used.	
27 Spark plugs - - - - -	Remove and inspect plugs. Clean and gap 0.028-0.033 inch. Replace if necessary.	Par. 153.
28 Compression test - - - - -	With engine at normal operating temperature, throttle and choke full open, test compression of each cylinder. Record readings in space provided on DA Form 2404.	Par. 106; fig. 38.
29 Ignition components - - - - -	Remove and inspect distributor, cap, rotor, etc. Test operation of advance mechanism by hand. Test distributor shaft for looseness. Dress or replace breaker points, adjust gap 0.018-0.022 inch. Replace other ignition components as required.	Pars. 151, 152; figs. 79-83.
30 Carburetor, choke, throttle, linkage.	Inspect these items, noticing particularly if the shafts and linkage operate freely and are not excessively worn. Observe if the choke valve opens fully when the control is released and if the throttle valve opens fully when the accelerator is fully depressed or the hand throttle control is all the way out.	Pars. 21, 22; figs. 11, 12, 64, 65.
31 Carburetor adjustment - - - - -	Perform an engine vacuum test and adjust carburetor idle mixture. Be sure fuel pump pressure is between 4 and psi at idling speed. Check the ignition timing with timing light for correct timing and proper advance (2° BTDC). Test generator regulator with low-voltage circuit tester.	
32 Fuel filter sediment bowl - - - - -	Clean fuel filter sediment bowl.	

Table III. Preventive-Maintenance Checks and Services—Continued

2nd Echelon

Semiannual

Sequence No.	Item to be inspected	Procedure	Paragraph and figure references
AFTER ROAD TEST—Continued			
33	Manifold and heat control valves_ _ _	Inspect these items. Look particularly for leakage signs at the manifold gaskets. Check the manifold heat control valve seasonal adjustment.	Fig. 42.
34	Exhaust pipe and muffler - - - - -	Inspect and listen for excessive or unusual noises and look for exhaust leaks. Tighten mounting.	Par. 143; fig. 73.
35	Crankcase ventilation - - - - -	Inspect carburetor air cleaner and air cleaner elbow and the crankcase ventilation metering valve for cleanliness and condition. On vehicles so equipped, inspect operation of the ventilation shutoff valve dual control. Clean and service these items in accordance with lubrication order.	Fig. 66.
36	Radiator and cap - - - - -	Inspect these items, noting particularly if the radiator cores are clogged with foreign matter or if fins are bent. Check gasket in the pressure cap. Observe coolant level and examine coolant for contamination. Test coolant with hydrometer to see if it contains sufficient antifreeze to correspond with seasonal requirement. Tighten radiator hose clamps and mounting bolts. If need is indicated, drain cooling system, clean and fill, adding corrosion inhibitor unless antifreeze, which contains inhibitor is used.	Par. 127; figs. 60, 61.
37	Fuel tank and filter - - - - -	Clean the strainer in the fuel tank filler pipe, drain sediment from fuel tank. If excessive contamination of the tank is noted, drain into a container.	Figs. 69-72.
38	Bumpers, pintles and shackles - - -	Bumpers-front and rear, pintle, and lifting shackles will be inspected. Test operation of pintle assembly and note whether it locks securely.	Figs. 189, 190.

39	Power-takeoff winch_ - - - - -	Inspect power-takeoff, winch drive shaft, and shear pin. Inspect winch cable. Test winch operation. Inspect vent in the worm housing for clogging.	
40	Winch cable - - - - -	Clean and oil winch cable in accordance with the lubrication order.	
41	Propeller shaft and "U" joints - - -	Inspect propeller shaft assemblies. Tighten universal joint companion flange nuts, wheel and drum flange stud nuts.	
42	Vents - - - - -	Make general observations underneath the vehicle for evidence of oil, water, fuel, lubricant, or exhaust leaks. Inspect the vents in the front and rear axle, transfer, and steering gear housing for clogging.	
*43	Wheel bearing - - - - -	Disassemble, clean, and repack one wheel bearing.	
44	Brake shoes, lining, anchor pins, springs.	Test brake linkages for freedom of action. Inspect lines for leaks. Examine brake drums, shoe, anchor pin and support. Check wheel cylinder for leakage. Check operation of master cylinder.	Pars. 250; fig. 170.
45	Tires - - - - -	Rotate and inspect tires according to tread design and degree of wear. See TM 9-1870-1 for acceptable limits in matching tires. Tighten axle drive flange nuts.	Par. 249; fig. 169.
46	Springs and shock absorbers - - - -	Inspect springs, shackles, shock absorbers and attaching parts for damage and breakage.	
47	Body and frame - - - - -	Tighten body and holddown bolts.	
48	Lubrication - - - - -	Lubricate vehicle in accordance with lubrication order. Coordinate lubrication with inspection and disassembly operations to avoid duplication.	
49	Clean - - -	Wash vehicle, clean inside of cab, glass and vision devices. Clean engine and engine compartment as required.	
50	Fuel - - - - -	Service fuel tank as necessary.	
51	Test - - - - -	Final road test vehicle, observe items which required repair, replacement, or adjustment.	

* Clean and repack all bearings during the second semiannual P.M. Service.

APPENDIX I

REFERENCES

(Superseded)

1. Publications Indexes and General References

The following indexes should be consulted frequently for latest changes or revisions of references given in this appendix, and for new publications relating to material covered in this manual:

Index of Army Motion Pictures, Television Recordings, and Film Strips	DA Pam 108-1
Index of Administrative Publications	DA Pam 310-1
Index of Blank Forms	DA Pam 310-2
Index of Graphic Training Aids and Devices	DA Pam 310-5
Index of Supply Manuals—Ordnance Corps	DA Pam 310-29
Index of Technical Manuals, Technical Regulations, Technical Bulletins, Supply Bulletins, Lubrication Orders, and Modification Work Orders	DA Pam 310-4
Index of Training Publications	DA Pam 310-3

2. Supply Manuals

a. Demolition of Materiel To Prevent Enemy Use.

Explosives, Bulk, Propellants, and Explosive Devices	SM 9-5-1375
Land Mines and Components	SM 9-5-1345
Pyrotechnics, Military, All types	SM 9-5-1370

b. Maintenance and Repair

Care and Maintenance of Pneumatic Tires	TM 9-1870-1
Tool Set, General Mechanics (41-T-3534-30)	SM 10-4-5180-A13
Tool Set, Organizational Maintenance (2d echelon), No. 1, Common (518-754-0654)	SM 9-4-5180-A01
Tool Set, Organizational Maintenance (2d echelon), No. 2, Common (41-T-3538-855)	SM 9-4-5180-A20
Tool Set, Organizational Maintenance (2d echelon), No. 2 Supplemental	SM 9-4-4940-A08
Organizational Repair Parts and Special Tool List—Truck, Utility, 1/4-Ton; 4x4, M38A1 and Ambulance, M170	TM 9-2320-208-20P

3. Forms

Refer to DA Pam 310-2 for index of blank forms.

Standard Form 46, United States Government Motor Vehicle Operators Identification Card.

Standard Form 91, Operators Report of Motor-Vehicle Accident (Card).

Standard Form 94, Statement of Witness.

DA Form 2404, Equipment Inspection and Maintenance Work Sheet.

DA Form 9-79, Parts Requisition.

DA Form 9--80, Job Order File.

DA Form 17, Requisition for Publications and Blank Forms.
 DA Form 285, Accident, Report (Supervisor's).
 DA Form 2403. Preventive Maintenance Roster.
 DA Form 461-5, Limited Technical Inspection.
 DA Form 2407, Maintenance Request
 DA Form 2409, Equipment Daily Log (Consolidated)
 DA Form 2402, Exchange Tag
 DA Form 2406, Equipment Status and Deadline Report
 DA Form 1546, Request for Issue or Turn-In
 DD Form 6, Report of Damaged or Improper Shipment

4. Other Publications

The following publications contain information pertinent to major item materiel and associated equipment:

a. Vehicle.

Operation and Organizational Maintenance—Truck,
 Utility, ¼-Ton, 4 x 4, M38A1 and M170 Ambulance. TM 9-8014

b. Camouflage.

Camouflage, Basic Principles ----- FM 5-20

c. Decontamination.

Decontamination ----- TM 3-220
 Defense Against CBR Attack ----- FM 21-40

d. General.

Basic Arctic Manual ----- FM 31-70
 Driver's Manual ----- TM 21-305
 Command Maintenance Inspections ----- AR 750-8
 Operation and Maintenance of Ordnance Materiel in
 Extreme Cold (0° to -65°; F.) ----- TM 9-207
 Ordnance Corps Equipment Data Sheets ----- TM 9-500
 Operations in the Arctic ----- FM 31-71
 Ordnance Maintenance and General Supply in the
 Field ----- FM 9-3 and FM 9-4
 Preparation of Ordnance Materiel for Deep-Water
 Forging ----- TM 9-238
 Principles of Automotive Vehicles ----- TM 9-8000
 Spark Plugs ----- TM 9-8638
 Logistics (General) Equipment Improvement Report __ C2, AR 750-5
 Disposal of Supplies and Equipment Uneconomically
 Repairable Ordnance Vehicles ----- AR 755-2300-2

e. Maintenance and Repair.

Materials Used for Cleaning, Preserving, Abrading,
 and Cementing Ordnance Materiel and related
 Materials, Including Chemicals, Lubricants, Indi-
 cators, and Hydraulic Fluids ----- TM 9-247
 Automotive Vehicles with 24-volt Electrical system;
 Operating Precautions and Maintenance and Storage
 of new 12-volt Lead-Acid Storage Batteries 2HN and
 6TN ----- TM 9-6140-200-15

General Supply: Winterization Equipment for Auto-
 motive Materiel_ ----- SB 9-16
 Welding Theory and Application ----- TM 9-237
 Lubrication ----- TM 9-273
 Lubrication Order ----- LO 9-2320-208-12

f. Vehicular Maintenance.

Care and Maintenance of Pneumatic Tires ----- TM 9-1870-1
 Painting Instructions for Field Use ----- TM 9-213
 Preparation of Ordnance Materiel for Deep-Water
 Fording ----- TM 9-238
 The Army Equipment Record System and Procedures ----- TM 38--750

g. Shipping and Limited Storage.

Instruction Guide: Ordnance Preservation, Packaging,
 Packing, Storage and Shipping ----- TM 9-200

APPENDIX II

MAINTENANCE ALLOCATION CHART

1. Purpose

To allocate specific maintenance operations to the proper echelon.

2. Basis

Allocation of maintenance operations is made on the basis of time, tools, and skills normally available to the various echelons in a combat situation and influenced by maintenance policy and sound maintenance practices as outlined in AR 750-5 and FM 9-3.

3. Explanations and Definitions

The maintenance allocation chart designated overall responsibility for the maintenance function on an end item or assembly. Repair and/or rebuild of major assemblies is designated by authority of the Army commander representative, except for the specific subfunctions listed in the maintenance allocation chart. Deviation from maintenance operations allocated in the maintenance allocation chart are authorized only upon approval of the Army commander representative.

Service—To clean, to preserve, and to replenish fuel and lubricants.

Adjust—To regulate periodically to prevent malfunction.

Inspect—To verify serviceability and to detect incipient electrical or mechanical failure by scrutiny.

Remove and Install—To remove and install the same item for service, or when required for the performance of other maintenance operations.

Replace—To substitute serviceable assemblies, subassemblies, and parts for unserviceable components.

Repair—To restore to a serviceable condition by replacing unserviceable parts or by any other action required—utilizing tools, equipment, and skills available, to include welding, grinding, riveting, straightening, adjusting, etc.

Align—To adjust two or more components of an electrical system so that their functions are properly synchronized.

Calibrate—To determine, check, or rectify the graduation of an instrument, weapon or weapons system, or components of a weapons system.

Rebuild—To restore to a condition comparable to new by disassembling the item to determine the condition of each of its component parts and reassembling it using serviceable, rebuilt, or new assemblies, subassemblies, and parts.

Second Echelon "C" and "D"—"C" column refers to those maintenance operations authorized to be performed within the company

or battery. "D" column refers to those maintenance operations authorized to be performed at separate company and separate battery battalion and/or regimental level. "C" and "D" columns are intended as a guide for unit commanders and motor pool officers in the performance of organizational maintenance. Deviation from this guide within second echelons is authorized where considered appropriate by the unit commander.

Symbol X—The symbol "X" placed in the appropriate column indicates the echelon responsible for performing that particular maintenance operation, but does not necessarily indicate that repair parts will be stocked at that level. Echelons higher than the echelon marked by "X" are authorized to perform the indicated operation. Symbol "X" used with a repair operation requiring no parts, indicates overall responsibility for performance; however authority for performing less complex repairs will be governed by time, tools, and skills available.

Symbol %%—The symbol “%%” which may be placed only in the second echelon "D" column, indicates that second echelon may perform the particular maintenance function provided the request originates from organizational level and is specifically authorized by the direct support technical service officer. Use of the symbol will be strictly limited, and will apply only to replacement of major assemblies and time consuming operations which are within the capabilities of organizational maintenance, but over which control by the technical service is considered essential. In no case will performance of a "double percent" function be directed by the direct support technical service officer, and in no case will a "double percent" function authorize stockage of parts at organizational level.

Maintenance Allocation Chart

Truck, Utility, -Ton, 4 x 4, M38A1 & Ambulance M170

Group No.	Component and related operation	Echelons						Tools re-	Re- marks
		1st	C	D	3d	4th	5th		
			2d						
1	2	8	4	6	6	7	8	9	10
0100.1	Power, plant: Replace -----			%%	X				
0100.2	Engine: Replace -----			%	X				
	Cushion, engine mounting: Replace -----			X					
0101	Head, cylinder: Replace -----			X					

Group No.	Component and related operations	1st	Echelons					Tools re-quired	Re-mark,
			C	D	3d	4th	5th		
				2d					
1	2	3	4	5	6	7	8	9	10
0102	Bearing, crankshaft: Replace						X		
	Crankshaft: Replace						X		
	Pulley, drive: Replace								
0103	Flywheel: Replace								
	Gear, ring, flywheel: Replace						X		
0104	Bearings, connecting rod: Replace								
	Rod, connecting: Replace -----						X		
	Repair						X		
	Pistons: Replace						X		
	Pins, piston: Replace						X		
	Rings: Replace						X		
D105.1	Guides, valve: Replace						X		
	Spring, valve: Replace -----					X			
	Valves, intake and exhaust: Adjust clearance			X					
	Replace					X			
	Reface -----					X			
)105.2	Arm, rocker: Replace					X			
	Tappet, valve: Replace					X			
	Rod, push: Replace ----								
	Shaft, rocker arm: Replace -----								
0105.3	Bearing, camshaft: Replace						X		
	Camshaft: Replace								
0105.5	Gasket and seal, timing gear cover: Replace -----					X			
	Gears, timing: Replace -----					X			

Group No.	Component and related operations	Echelons						Tools re-quired	Re-marks
		1st	C	D	3d	4th	5th		
			2d						
1	2	3	4	5	6	7	8	9	10
0106.1	Pump, oil: Replace				X				
0106.2	Element, oil filter: Replace -----		X						
	Filter, oil: Replace ----- Repair -----			X	X				
0106.6	Lines and connections (external): Replace ----- Repair -----		X X						
	Pan, oil: Replace Repair ----				X X				
0108	Manifold, exhaust: Replace ----			X					
0200	Housing, clutch: Replace -----				X				
D201	Bearing, pilot: Replace -----				X				
	Disk, driven, clutch: Replace ----- Reline ---				X X				
D201	Plate, pressure: Replace Repair				X -	X			
0202	Bearing, release, clutch: Replace -----				X				
	Controls and linkage, clutch: Adjust ----- Replace Repair ----		X X X						
	Fork, release bearing: Replace -----				X				
0301	Carburetor: Adjust ----- Replace ----- Repair				X				
0302.1	Pump, fuel: Replace ----- Repair -----		X		X				
0304	Cleaner, air: Service ----- Repair		X	X					

Group No.	Component and related operations	1st	Echelons					Tools re-quired	Re-marks
			C	D	3d	4th	5th		
			2d						
1	2	3	4	5	6	7	8	9	10
0304	Lines and connections vent: Replace ----- Repair		X X						
0304.5	Vent, fuel tank: Replace -----			X					
D306.1	Tank, fuel: Replace. Repair -----		X			X			
0306.2	Lines and fittings: Replace_ Repair		X X						
)309	Valve, shut-off, fuel: Replace ----- Element, fuel, filter (in tank): Replace -----								
)312	Controls and linkage, age, accelerator: Repair ----- Controls, choke and throttle: Repair.		X						
)401	Muffler: Replace ----- Pipe, exhaust: Replace -----		X X						
)501	Radiator: Replace ----- Repair -----		X			X			
)502	Shroud, fan: Repair -----					X			
)503	Hose, radiator: Replace Thermostat: Replace -----		X						
)504	Pump, water: Replace ----- Repair -----			X		X			
)505	Belt, fan: Adjust ----- Replace ----- Blade, fan: Adjust ----- Replace ----- Blade, fan: ReP lace -----		X X X X		X				

Group No.	Component and related operations	Echelons						Tools required	Remarks
		1st	C	D	3d	4th	5th		
			2d						
1	2	3	4	5	6	7	8	9	10
0505	Pulley:								
0601	Replace -----			X					
	Generator:								
	Replace -----			X					
	Armature:								
	Replace -----								
	Repair -----					X			
	Bearings:								
	Replace -----					X			
	Brushes:								
	Replace -----			-----	X				
	Capacitor:								
	Replace -----				X				
0601	Seals:								
	Replace -----				X				
	Coil, field:								
	Replace -----			-----		X			
0602	Regulator:								
	Adjust -----				X				
	Replace -----				X				
	Repair -----				X				
0603	Starter:								
	Replace -----		X						
	Armature:								
	Replace -----				X				
	Repair -----				X				
	Bearing:								
	Replace -----				X				
	Brushes:								
	Replace -----				X				
	Seals:								
	Replace -----				X				
	Drive, starter:								
	Replace -----				X				
0603	Coil, field:								
	Replace -----								
	Control, starter:								
	Replace -----				X				
	Switch, starter:								
	Replace -----		X						
0604.1	Distributor:								
	Replace -----		X						
	Point set:								
	Replace -----		X						
	Cap, distributor:								
	Replace -----		X						

Group No.	Component and related operations	1st	Echelons					Tools required	Remarks
			C	D	3d	4th	5th		
1	2	3	4	5	6	7	8	9	10
0604 . 1	Capacitor (condenser): Replace		X						
	Rotor, distributor: Replace -----		X						
	Shaft, distributor: Replace -----				X				
0605	Coil, ignition: Replace -----		X						
	Plugs, spark: Replace ----- Clean -----		X	X					
	Wiring, ignition: Replace Repair -----		X						
D607	Instruments: Replace -----			X					
	Lamps: Replace -----		X						
	Light, instrument: Replace -----			X					
	Switch, ignition: Replace. -----		X						
	Switch, light: Replace -----		X						
)608.1	Switch (miscellaneous) : Replace -----		X						
D609.1	Lamps and lamp units: Replace -----		X						
	Lights: Replace ---- Repair ----			X					
D609.2	Lamp (emergency) (M170): Replace -----		X						
	Light, w/reel (emer- gency) (M170): Replace ----- Repair -----		X	X					
0610	Unit, sending: Replace ---								
0611	Horn: Adjust Replace Repair_ -----				X				
	Switch, horn: Replace ---- Repair -----								

Group No.	Component and related operations	1st	Echelons					Tools re-quired	Re-remarks
			C	D	3d	4th	5th		
1	2	3	4	5	6	7	8	9	10
0612	Battery: Service ----- Recharge ----- Replace ----- Repair -----		X	X					
0613.1	Harness, wiring, chassis: Replace ----- Repair -----					X			
0613.1	Harness, generator to regulator: Replace ----- Repair -----			X					
D617	Receptacle, trailer coupling (M38A1): Replace -----		X						
0700	Transmission: Replace -----			% %	X				
0702.1	Shaft, w /integral gear, bearing, input: Replace -----						X		
0702.3	Seal, input shaft: Replace -----				X				
0702.3	Shaft, gears, bearings, rings, rollers sleeves, washers, and snychronizers, output: Replace -----						X,		
0702.5	Countershaft, rollers and washers: Replace -----								
0704	Shaft gear and bearings, reverse idler: Replace -----						X		
0704	Cover, shifter: Repair -----				X				
0800	Transfer: Replace -----			% %	X				
0802.1	Gears, input: Replace -----								
0802.3	Shaft, gears, bearing & washers, countershaft: Replace -----						X		
0802.5	Seal, output shaft: Replace -----				X				

Group No.	Component and related operations	1st	Echelons					Tools re-quired	Re-marks
			C	D	3d	4th	6th		
			2d						
1	2	3	4	5	6	7	8	9	10
0802.5	Shaft, gear, bearings & ring, output, front axle: Replace -----								
0802.7	Seal, output, transfer rear: Replace -----				X				
	Shaft, gears, bearings, ring and shims output: Replace -----								
0804	Forks, shifter shaft: Replace ---						X		
	Shaft, shifter: Replace -----						X		
	Seals, shifter shaft: Replace -----						X		
0900	Shaft, propeller: Replace -----		X						
	Joint, universal: Repair -----		X						
1000	Axle: Replace -----			%%	X				
1002	Differential: Replace ----- Repair				X		X		
	Seal, pinion: Replace -----				X				
1004	Arms and flange: Replace -----				X				
	Bearings, steering flange: Adjust ----- Replace -----			X	X				
	Seals, retainer and spring: Replace		X						
	Knuckle: Replace -----			X					
1005.5	Valve, breather, housing: Replace -----		X						
1006	Flange, drive: Replace -----								
	Shaft, axle: Replace ----- Repair -----			X	X				

Group No.	Component and related operations	1st,	Echelons					Tools re-quired	Re-remarks
			C	D	3d	4th	5th		
			2d						
1	2	3	4	5	6	7	8	9	10
1100	Axle: Replace			% %	X				
1102	Differential: Replace ----- Repair -----				X		X		
1104.1	Shaft, axle: Replace			X					
[150.5	Valve, breather, housing: Replace		X						
[201	Cable, brake, hand: Replace (M170)			X					
	Drum, brake: Replace Repair			X		X			
[201	Linkage (M38A1): Adjust Replace Repair			X		X			
	Shoe, brake, hand: Replace Reline					X			
202	Shoe, brake, service: Replace Reline		X						
204.1	Cylinder, master: Replace Repair					X			
[204.3	Cylinder, wheel: Replace Repair								
[204.5	Lines, fittings and hose, brake: Replace								
[206	Controls and linkage, brake: Repair		X						
[311	Hub, wheel: Replace		X						
	Bearings: Replace -----								
	Seal, oil: Replace -----		X						
	Drum, brake, service: Replace ----- Repair ---		X			X			

Group No.	Component and related operations	1st	Echelons					Tools re-quired	Re-marks
			C	D	3d	4th	5th		
			2d						
1	2	3	4	5	6	7	8	9	10
1311	Wheel: Replace -----		X						
	Studs, wheel and hub: Replace -----		X						
1313	Tires: Replace ----- Repair -----		X						
	Tubes: Replace ----- Repair		X X						
1401.1	Bearings, bell crank: Replace --- Bell, crank: Replace Link, crag: Replace .. Repair -----			X					
			X						
1401.3	End, tie rod: Replace ----- Rod, tie: Replace		X X						
1401.5	Arm, pitman: Replace Gear, steering: Replace Repair Wheel, steering: Replace ----			X					
					X				
1503	Pintle: Replace Repair ---- Shackle, lifting: Replace ---- Bracket, spare tire car- rier: Repair -----								
				X					
1601.1	Spring, front: Replace ----- Repair ----- Shackle, bushings and pins: Replace -----			X					
1601.3	Spring, rear: Replace ----- Repair -----		X	X					
1604.1	Absorbers, shock: Re ^P lace -----		X						

Group No.	Component and related operations	Echelons						Tools re-quired	Re-remarks
		1st	C	D	3d	4th	5th		
			2d						
1	2	3	4	5	6	7	8	9	10
1605	Bushings, grommets and links, stabilizer bar (M170): Replace -----		X						
1701	Fender Repair				X				
1703	Hood: Repair -----								
1801	Body: Repair..				X				
1804	Windshield: Replace ----- Repair		X		X				
1806	Cushion, seat: Replace_ ___ Repair ----- Seat: Repair -----								
1808	Boxes, brackets and straps: Replace or repair_								
1001.1	Winch: Replace ----- Repair ----- Bend, brake: Adjust Replace. Reline		X	X		X			
1001.3	Joint, universal: Repair. Replace -----		X						
1002.1	Power take-off: Replace Repair			%%	X				
1002.5	Seals, power take-off: Re ^P lace				X				
1101	Controls and linkage, power take-off. Replace_ _ Repair_ _ Bumper: Repair Guard, radiator: Repair Bows: Repair -----				X				
					X				

Group No.	Component and related operations	1st	Echelons					Tools re-quired	Re-remarks
			C	D	3d	4th	5th		
			2d						
1	2	3	4	5	6	7	8	9	10
2201	Cover, top: Replace ----- Repair -----		X		X				
	Curtains: Repair ----- Replace		X		X				
2202	Arm and blade, wind- shield wiper: Replace -----		X						
	Motor, windshield wiper: Replace ----- Repair -----		X		X				
	Mirror, rear view: Replace -----		X						
	Reflector: Replace		X						
	Valve, control, wind- shield wiper: Replace -----								
?208.1	Speedometer: Replace -----			X					
	Core, flexible shaft: Replace -----		X						
	Shaft, flexible speed- ometer: Replace -----		X						
?210	Plates, vehicle data: Replace -----		X						

Maintenance Allocation Chart—Continued

SUPPLEMENT NO. 1

XM28 WEAPON SYSTEM

Group No.	Component and related operations	1st	Echelons					Tools re-quired	Re-remarks
			C	D	3d	4th	5th		
			2d						
1	2	3	4	5	6	7	8	9	10
	Note. This supplement pertains to maintenance operations peculiar to XM28 Weapons System and must be used in conjunction with basic allocation chart for Truck, ¾ Ton, 4 x 4 M38A1 SNL G758.								

Group No.	Component and related operations	1st	Echelons					Tools re-quired	Re-remarks
			C	D	3d	4th	5th		
			2d						
1	2	3	4	5	6	7	8	9	10
1503	Pintle: Replace_		X						
	Repair -----		X						
1602	Spring, helper: Replace -----			X					
1804	Lock, travel: Repair				X				
1808	Brackets and racks: Repair -----				X				
	Straps: Replace.			X					
	Repair -----			----	X				
	Support, tripod: Replace -----								
1812	Base, gun mount: Repair			---	X				
3307	Kit, adaptation weapon system: Install								

Maintenance Allocation Chart—Continued

SUPPLEMENT NO. 2

XM29 WEAPON SYSTEM

Group No.	Component and related operations	1st	Echelons					Tools re-quired	Re-remarks
			C	D	3d	4th	5th		
			2d						
1	2	3	4	5	6	7	8	9	10
1503	<i>Nose.</i> This supplement pertains to maintenance operations peculiar to XM29 weapon system and must be used in conjunction with basic allocation chart for Truck, 3 1/2 Ton, 4 x 4, M38A1 , SNL G758. Pintle: Replace -----		X						
	Repair -----		X						
1602	Extension, pintle: Repair -----				X				
1804	Spring, helper: Replace			X					
	Lock, travel: Repair -----				X				

Group No.	Component and related operations	Echelons				Tools required	Remarks
		1st	2d	3d	4th		
	2	4				8	10
1808	Brackets and racks: Repair_						
	Straps: Replace Repair_		X				
1812	Support, gun mount: Replace Repair						
	Bracket, support locking: Replace						
3307	Kit, adaptation weapon system: Install			X			

By Order of the Secretaries of the Army and the Air Force:

EARLE G. WHEELER,
General, United States Army,
Chief of Staff.

Official:

J. C. LAMBERT,
Major General, United States Army,
The Adjutant General.

CURTIS E. LEMAY,
Chief of Staff, United States Air Force.

Official:

R. J. PUGH,
Colonel, United States Air Force,
Director of Administrative Services.

Distribution:

Active Army:

DCSLOG (1)	A Dep (1) except
CNGB (1)	Black Hills (5)
USCONARC (3)	Rosford (10)
ARADCOM (2)	Savanna (5)
ARADCOM Rgn (2)	Sierra (3)
OS Maj Comd (2)	Sioux (2)
Base Comd (2)	Tooele (4)
LOGCOMD (2)	Umatilla (3)
Armies (3) except	Wingate (3)
Sixth US Army (1)	USAOSA (1)
Corps (2)	POE (2)
Div (2)	Ord PG (10)
Regt/Gp/bg (2)	Trans Tml Comd (2)
Bn (2)	Army Tml (2)
Co/Btry (2)	Ord Arsenal (5) except
USAMOCOM (2)	Benicia (15)
USAWECOM (2)	Frankford (10)
USAMUCOM (2)	Joilet (4)
USAMICOM (2)	Raritan (10)
USAECOM (2)	Springfield Armory (2)
USASMCOM (2)	Proc Dist (Ord) (1) except
Instl (1) except	Cleveland (2)
Ft Belvoir (7)	New York (5)
Ft Bragg (2)	Philadelphia (4)
Ft Sill (6)	St Louis (3)
Ft Meade (3)	Chicago (10)
Ft Bliss (9)	Ord Plants (5) except
Ft Hood (7)	Lake City (3)
Ft Sam Houston (7)	Kingsbury (none)
Svc Colleges (2)	Radford (1)
Br Svc Sch (2) except	Ravenna (2)
USA Ord Sch (50)	Pantex (2)
Army Tk Autmv Cen (105)	MAAG (1)
GENDEP (OS) (2)	Mil Msn (1)
Ord Sec, GENDEP (5)	Cen (2)

NG: State AG (3); units—same as active Army except allowance is one (1) copy to each unit.

USAR: Same as active Army except allowance is one (1) copy to each unit.

For explanation of abbreviations used, see AR 320-50.

Operator and Organizational Maintenance Manual
TRUCK, AMBULANCE: FRONT LINE, ¼-TON, 4 x 4, M170;
TRUCK, UTILITY: ¼-TON, 4 x 4, M38A1
M38A1C AND M38A1D

CHANGE

HEADQUARTERS

DEPARTMENT OF THE ARMY

No. 7

WASHINGTON, D.C., 22 October 1964

TM 9-8014, 6 April 1955, is changed as follows:

1. Scope

* * *

b. (Page 1 of C 6)

* * * * *

(2) Appendix II provides * * * to the proper **category of maintenance** based on availability of time, tools and skills.

(3) Appendix III is * * * for **organizational maintenance**.

d. Any errors or * * * direct to the Commanding General, Hq., U.S. Army Tank-Automotive Center, **Warren, Mich. 48090, ATTN: SMOTA-M.**

3. Forms, Records and Reports

* * *

d. (Page 1 of C 6) Report of * * * forward to Commanding General, Hq., U.S. Army Tank-Automotive Center, Warren, Mich. **48090, ATTN: SMOTA-M.**

10. Correction of Deficiencies

(Superseded)

Deficiencies disclosed during preliminary inspection which appear to involve unsatisfactory design or material will be reported on DA Form 2407 (Maintenance Request) and prepared in accordance with TM 38-750, and sent to Commanding General, U.S. Army Tank-Automotive Center, ATTN: SMOTA-M, Warren, Mich. 48090.

67. Common Tools and Equipment

(Page 4 of C 6)

Standard and commonly * * * for issue to **organizational maintenance** are listed in appendix **III**. Common tools and equipment for organiza-

tional maintenance are listed in SM 9-4-5180-A01, SM 9-4-4935-A31, SM 9-4-4910-A86, and authorized for issue by TA and TOE.

78. Daily Preventive Maintenance Service

b. (Page 8 of C 6) Specific Procedures for **Organizational Maintenance**. Follow the procedures listed in table II in the numerical order given.

Table II. (Pages 9-12 of C 6) (Superseded) Preventive Maintenance Checks and Services

Organizational Maintenance

Daily Schedule

Interval or sequence No.			Items to be inspected	Procedure	Paragraph and figure reference
Before operation	During operation	After operation			
1	-----		Oil and coolant -----	Caution: All tags describing vehicle condition must be placed in the driver's compartment in a conspicuous location. Check oil and coolant levels. Check spare containers for contents.	Para. 117; figs. 36, 37, 51
2	-----		Water pump, fan belts and pulleys.	Inspect pulleys and fan for alignment and bolt for tension ($\frac{3}{4}$ -in. deflection). Inspect water pump for leaks.	Para. 130; fig. 62.
3	-----		Electrical wiring -----	Visually inspect electrical wiring, conduits, connectors and shielding.	
4	-----		Engine compartment --	Inspect engine compartment for indications of fuel, engine oil, and water leaks. Look under the vehicle for indications of leaking gear oil or brake fluid.	
5	-----	20	Tires -----	Note any apparent loss of air. Remove penetrating objects such as nails or glass. Note unusual wear or missing valve caps.	Para. 248.
6	-----		Fire extinguisher and vehicle publications.	Visually inspect fire extinguisher (on vehicle so equipped) and vehicle publications. Note if fire extinguisher is charged and sealed.	
7	-----		Tools and equipment --	Inspect vehicle tools and equipment for general conditions and proper stowage.	
8	-----		Vehicle body -----	General condition of body to include check for tampering or damage that may have occurred since last inspection. Inspect doors, windows, pintle reflectors, and lifting shackles.	

Table II. Preventive Maintenance Checks and Services—Continued

Organizational Maintenance			Daily Schedule
Interval or sequence No.	Items to be inspected	Procedure	Paragraph and figure reference
Before operation	During operation	After operation	
*9	Battery	Clean, check water level, inspect terminals for tightness and coat with grease (TM 9-6140-200-15).	Para. 162; figs. 97, 99.
10	Cab, doors, glass, top and frame, curtains and fasteners, seats and paint.	Inspect cab or body mountings, including springs. Test operation of doors, windows, windshield ventilator, hood hinges and fasteners. Observe seat mountings and upholstery. Inspect the litter racks and operation of personnel heater (M170 Ambulance). Generally inspect body, glass, panels, tops, fenders, running boards, bows, paulins, and curtains. Examine condition of paint and legibility of markings and identification and caution plates.	
11	18 Lights and horn	If tactical situation permits, Oper- horn and windshield wipers. Inspect rear view mirror. Check operation of exterior lights and light switches. Note whether the headlights appear to be properly aimed. Note condition of all lights and reflectors.	Paras. 24, 25, 32, 37, 38, 40; figs. 12 and 14.
12	-----19 Service brake pedal and handbrake lever.	Check service brake for proper pedal travel and hand brake for proper adjustment. (Correct service brake free travel is in.). See references for handbrake adjustments.	Paras. 233, 238; figs. 158, 163.
13	----- Starter and starter switch.	With the ignition OFF, note if the starter switch requires more than normal pressure, and if the starter engages smoothly without unusual noise and turns the engine with adequate cranking speed. With ignition switch ON start engine. <i>Caution:</i> If there is excessively low or no indication of	Paras. 17, 23; fig. 12.

	Engine: idle, acceleration, power, noise, governed speed.	<p>engine oil pressure after a reasonable time lapse (10 seconds max.), stop engine and determine cause.</p> <p>In warming up engine, observe if the choke and throttle controls operate satisfactorily. Note if idling speed is correct. Listen for any unusual noises at idle and higher speeds. When operating the vehicle, note if it has normal power and acceleration in each speed range. Listen for any unusual noises when the engine is under load. Speed up the vehicle, but do not exceed the specified speed ranges as governed by caution data plate.</p> <p><i>Note.</i> Investigate and correct any operating deficiencies as they occur, if beyond the scope of the driver, report them to individuals in authority immediately.</p>	Paras. 16, 22, 43, 44, 49; figs. 6, 7, 12.
21	Temperatures of brake drums, hubs, axles, transmission, transfer, differential.	<p>Immediately after the road test, feel these units cautiously. An overheated wheel hub and brake drum indicates an improperly adjusted, defective or dry wheel bearing or a dragging brake. An abnormally cool condition indicates an inoperative brake. An overheated gear case indicates lack of lubrication, adjustment, or defective parts.</p> <p><i>Note.</i> Full floating hypoid axles operate quite hot. If lubricant levels are correct and no unusual noises occurred during road test, assume axles are functioning properly. Do not touch hypoid axles with bare hand after vehicle has been operated a considerable distance, serious burns may result.</p>	Paras. 190, 197, 206; figs. 129, 130, 146.
22	Radiator and cap - - - - -	<p>Inspect radiator cores for clogging with foreign matter or if fins are bent. Check gasket in the pressure cap. Observe coolant level and examine coolant for contamination. In cold weather test coolant with hydrometer to see if it contains sufficient antifreeze (TM 9-2858).</p> <p><i>Caution:</i> If it is necessary to add coolant to the radiator while engine is overheated, idle engine and add coolant slowly. Use extreme caution in removing radiator pressure cap as serious burns may result.</p>	Para. 126; figs. 36, 60.

Table II. Preventive Maintenance Checks and Services-Continued

Organizational Maintenance

Daily Schedule

Interval or sequence No.			Items to be inspected	Procedure	Paragraph and figure reference
Before operation	During operation	After operation			
		23	Winch cable -----	Clean and oil winch cable in accordance with the lubrication order.	
15	-----		Lubricate -----	Lubricate daily items specified on lubrication order.	
16	-----	24	Clean -----	Wash vehicle, clean inside of cab, glass, and vision devices. Clean engine and engine compartment as required.	
17	-----	25	Fuel -----	Service fuel tank as necessary.	

*Denotes operations to be performed weekly.

79. General Procedures for Organizational Maintenance

(Page 13 of C 6)

b. (Superseded) **Organizational Maintenance Participation.** The driver or crew usually accompanies the vehicle and assists the organizational mechanics in the performance of organizational maintenance services.

*

d. Services. Organizational **maintenance** services are defined by and restricted to general procedures unless approval has been given by supporting ordnance organization.

*

h. Specific Procedures for Organizational Maintenance. Specific procedures for * * * performing the service or repair of **organizational Maintenance** level. If repairs by a higher category of **maintenance** is required, a DA Form 2407 (Maintenance Request) will be prepared and forwarded with the equipment to the supporting maintenance activity).

Sequence No.	Item to be inspected	Procedure	Paragraph and figure references
PRIOR TO ROAD TEST			
	All "before operation" items in table II.	<i>Note.</i> When tactical situation does not permit a full road test, perform only those items that require little or no movement of the vehicle.	
1	Oil and coolant -----	Check oil and coolant levels. Check spare containers for contents.	Para. 117; figs. 36, 37, 51 .
2	Water pump, fan belts and pulleys_ _ _	Inspect pulleys and fan for alinement. Check water pump for leaks. Inspect fan belts for damage (cuts, cracks), and correct tension. Provide $\frac{3}{4}$ -inch deflection.	Para. 130; fig. 62.
3	Electrical wiring -----	Visually inspect electrical wiring, conduits, connectors, and shielding.	
4	Engine compartment -----	Inspect engine compartment for indications of fuel, engine oil and water leaks. Look under the vehicle for indications of leaking gear oil or brake fluid.	
5	Tires -----	Note any apparent loss of air. Remove penetrating objects such as nails or glass. Note unusual or excessive wear or missing valve caps. Gage tires for correct pressure, 25 psi for cross-country or highway driving and 15 psi for mud, sand, or snow operations.	Paras. 100, 249, 252.
6	Fire extinguisher, and vehicle publications.	Visually inspect fire extinguisher (on vehicle so equipped) and vehicle publications. Note if the extinguisher is charged and sealed.	
7	Tools and equipment -----	Inspect vehicle tools and equipment for general conditions and proper stowage.	
8	Vehicle body -----	Check for any tampering or damage that may have occurred since last inspection.	
9	Steering gear and controls -----	Check steering system and components parts for loose or damaged parts.	Paras. 222, 230; fig. 149 .

10	Cab: doors, glass, top, frame, curtains, fasteners, straps, and paint.	Inspect these items, paying particular attention to cab or body mountings, including springs. Test operation of doors, windows, hood hinges and fasteners. Observe seat mountings and upholstery. Inspect the litter racks and operation of personnel heater (M170 Ambulance). Make a general inspection of body, including glass, panels, tops, fenders, running boards, bows, top and side curtains. Examine condition of paint and legibility of markings and identification and caution plates.	
11	Lights, horn, and windshield wipers__ _	If tactical situation permits, operate horn and windshield wipers. Inspect rear view mirrors. Check operation of exterior lights and light switches. Note whether the headlights appear to be properly aimed. Note condition of all lights and reflectors.	Paras. 24, 25, 32, 37, 38 , 51 ; figs. 11, 13.
12	Brake pedal -----	Check service brake pedal for proper travel and handbrake linkage for proper adjustment (correct pedal free travel is in.). See references for parking brake adjustment.	Paras. 233, 238; figs. 158, 163.
ROAD TEST			
13	Instruments—functional check -----	Prior to starting engine, turn ignition switch on and observe instrument operation. Ammeter (if equipped) should indicate light discharge. Battery generator indicator should indicate generator is not charging—pointer in the yellow. Fuel quantity gage should move to indicate fuel tank level. Oil pressure gage should indicate 0 psi and water temperature gage should move from an off scale reading to actual water temperature reading.	Paras. 23, 33, 34 , 35 , 36 ; figs. 11, 14.
14	Starter and switch -----	Note if the starter switch requires more than normal pressure, and if the starter engages smoothly without unusual noise, and turns the engine with adequate cranking speed. With ignition switch on, start engine. Caution: If there are extremely low or no indications of engine oil pressure, stop engine after a maximum of 10 seconds running and determine cause.	Paras. 42, 85.

Table III. Preventive Maintenance Checks and Services—Continued

Organizational

Semiannual

Sequence No.	Item to be inspected	Procedure	Paragraph and figure references
15	Instrument operational check -----	Note generator output on the ammeter or battery generator indicator immediately after starting engine, before generator regulator has reduced the charging rate. Observe all instruments for normal readings. Note whether the ignition switch and light switch assembly operate freely and make positive contact. Check all other controls for normal operation.	Paras. 23, 24, 42; figs. 11, 14, 15.
16	Engine operation -----	In warming up engine, observe if the choke and throttle controls operate satisfactorily. Note if idling speed is correct. Listen for any unusual noises at idle and higher speeds. When operating the vehicle, note if it has normal power and acceleration in each speed range. Listen for any unusual noises when the engine is pulling a load. Speed up the vehicle, on a level stretch, to see if it will reach, but not exceed, the specified governed speed.	Paras. 30, 32; figs. 6, 7, 11.
17	Generator -----	Watch the ammeter battery generator indicator to note whether generator is charging properly. Observe unusual noises.	Para. 33; figs. 11, 12.
18	Clutch -----	Note if the clutchpedal has at least 1¼ inch of free travel and if action of the pedal return spring is satisfactory. Note whether clutch disengages completely or has a tendency to drag. Observe smoothness of engagement and tendency to chatter, grab or slip, and any unusual noises. With transmission in neutral, depress and release clutch pedal, listening for a defective release bearing.	Paras. 15, 92, 191; fig. 121.
19	Transmission and transfer -----	Shift transmission into all speeds and transfer into high and low ranges, observing any unusual stiffness of the shift levers, tendency to slip out of gear, unusual noise, or excessive vibration. Make similar observations of the transfer clutch lever.	Paras. 18, 19, 93, 94; figs. 11, 13.

20	Service and handbrake operation - - - - -	<p>Note if action of brake return spring is satisfactory. Observe if pedal goes too close to floor. Make several stops, noting side pull, noise, chatter grabbing, or any other abnormal condition. Observe if the handbrake lever ratchet holds and if the lever requires more than three-quarters travel for full application. Stop the vehicle on an incline and apply the handbrake to determine if it holds the vehicle.</p>	Paras. 14 , 20, 98, 99, 233; figs. 11 , 13 , 158.
21	Steering system - - - - -	<p>With the vehicle moving straight ahead, determine if there is any tendency to wander, shimmy or pull to one side. Turn the steering wheel through its entire range and note any binding.</p>	Paras. 13, 102.
22	Power train, wheels, body, and chassis	<p>At all times during the road test, be alert for unusual or excessive noises that may indicate looseness, defects, or deficient lubrication at any point.</p>	
23	Hub, drum, axles, power train - - - - -	<p>Immediately after the road test, feel these units cautiously. An overheated wheel hub and brake drum indicates an improperly adjusted, defective or dry wheel bearing or a dragging brake. An abnormally cool condition indicates an inoperative brake. An overheated gear case indicates lack of lubrication, gears out of adjustment, or defective parts.</p> <p>Caution: Full floating hypoid axles operate quite hot. If lubricant levels are correct and no unusual noises occurred during road test, assume axles are functioning properly. Do not touch hypoid axles with bare hand after vehicle has been operated a considerable distance, serious burns may result.</p>	
24	Battery: specific gravity - - - - -	<p>Make hydrometer test of electrolyte in each cell of both batteries (1.275—1.300 at 50° F.) and record the readings on DA Form 2404. (Equipment Inspection and Maintenance Worksheet) (ref TM 9-6140-200-15).</p>	
25	Battery voltage - - - - -	<p>Perform starting motor (Tanking voltage test (24 V DC) using test meter. Record the voltage registered on DA Form 2404. On vehicle so equipped, check insulator on position (X) part of the inner battery between cover and terminal.</p>	

Table III. Preventive Maintenance Checks and Services—Continued

Organizational

Semiannual

Sequence No.	Item to be inspected	Procedure	Paragraph and figure references
26	Battery terminals, carrier and fluid level.	Clean tops of batteries, coat terminals lightly with grease, and repaint carrier if corroded. Inspect the level of water to see that it covers the tops of the plates. <i>Note.</i> If distilled water is not available, clean water, preferably rain water, may be used. Service date must be stamped on all batteries near the negative post (ref TM 9-6140-200-15 for testing and stamping of undated batteries).	Para. 162; figs. 97, 99.
27	Spark plugs - - - -	Remove and inspect plugs. Clean and gap 0.028-0.033 inch. Replace if necessary.	Para. 153.
28	Compression test - - - - -	With engine at normal operating temperature, throttle and choke full open, test compression of each cylinder. Record readings in space provided on DA Form 2404.	Para. 106; fig. 38.
29	Ignition components - - - - -	Remove and inspect distributor, cap, rotor, etc. Test operation of advance mechanism by hand. Test distributor shaft for looseness. Dress or replace breaker points, adjust gap 0.018-0.022 inch. Replace other ignition components as required.	Paras. 151, 152; figs. 79, 83.
30	Carburetor, choke, throttle, linkage_ - - - -	Inspect these items, noticing particularly if the shafts and linkage operate freely and are not excessively worn. Observe if the choke valve opens fully when the accelerator is fully depressed or the hand throttle control is all the way out.	Paras. 21, 22; figs. 11, 12, 64, 65.
31	Carburetor adjustment - - -	Perform an engine vacuum test and adjust carburetor idle mixture. Be sure fuel pump pressure is between 4 and 54 psi at idling speed. Check the ignition timing with timing light for correct timing and proper advance (5° BTDC). Test generator regulator with low-voltage circuit tester.	Para. 149.
32	Fuel filter (in tank) - - - - -	Clean or replace fuel filter element - - - - -	Para. 139; figs. 68, 69.

33	Manifold (exhaust) -----	Inspect for cracks and signs of exhaust gas leakage at the manifold gaskets.	Paras. 112, 113; fig. 42.
34	Exhaust pipe and muffler -----	Inspect for cracks and listen for excessive or unusual noises and look for exhaust leaks. Tighten mounting.	Para. 143; fig. 73.
35	Crankcase ventilation -----	Inspect carburetor air cleaner and air cleaner elbow, and the crankcase ventilation metering valve for cleanliness and condition. On vehicles so equipped, inspect operation of the ventilation shutoff valve dual control. Clean and service these items in accordance with lubrication order.	Fig. 66.
36	Radiator and cap -----	Inspect these items, noting particularly if the radiator cores are clogged with foreign matter or if fins are bent. Check gasket in the pressure cap. Observe coolant level and examine coolant for contamination. Test coolant with hp · ometer to see if it contains sufficient antifreeze to correspond with seasonal requirement. Tighten radiator hose clamps and mounting bolts. If need is indicated, drain cooling system, clean and fill, adding corrosion inhibitor unless antifreeze, which contains inhibitor is used.	Paras. 126, 127; figs. 36, 60, 61.
37	Fuel tank and filter -----	Clean the strainer in the fuel tank filler pipe, drain sediment from fuel tank. If excessive contamination of the tank is noted, drain into a container.	Figs. 69, 72.
38	Bumpers, pintles and shackles ---	Bumpers—front and rear, pintle, and lifting shackles will be inspected. Test operation of pintle assembly and note whether it locks securely.	Figs. 189, 190.
39	Power-takeoff winch -----	Inspect power-takeoff, winch drive shaft, and shear pin. Inspect vent in the worm housing for clogging.	
40	Winch cable -----	Clean and oil winch cable in accordance with the lubrication order.	
41	Propeller shaft and U-Joints ----	Inspect propeller shaft assemblies. Tighten universal joint companion flange nuts, wheel and drum flange stud nuts.	

Table III. Preventive Maintenance Checks and Services—Continued

Organizational

Semiannual

Sequence No.	Item to be inspected	Procedure	Paragraph and figure references
42	Vents -----	Make general observations underneath the vehicle for evidence of oil, water, fuel lubricant, or exhaust leaks. Inspect the vents in the front and rear axle, transfer, and steering gear housing for clogging.	
43	Wheel bearing -----	Disassemble, clean, and repack one wheel bearing -----	Paras. 208, 216; figs. 137, 146, 148.
44	Brake shoes, lining, anchor pins, springs.	Test brake linkages for freedom of action. Inspect lines for leaks. Examine brake drums, shoe, anchor pin and support. Check wheel cylinder for leakage. Check operation of master cylinder.	Paras. 233, 235; figs. 158, 161.
45	Tires -----	Rotate and inspect tires according to tread design and degree of wear. See TM 9-1870-1 for acceptable limits in matching tires. Tighten axle drive flange nuts.	Paras. 249, 252; figs. 169, 173.
46	Springs and shock absorbers -----	Inspect springs, shackles, shock absorbers and attaching parts for damage and breakage.	
47	Body and frame -----	Tighten body and holddown bolts.	
48	Lubrication -----	Lubricate vehicle in accordance with lubrication order. Coordinate lubrication with inspection and disassembly operations to avoid duplication.	
49	Clean -----	Wash vehicle, clean inside of cab, glass and vision devices. Clean engine and engine compartment as required.	
50	Fuel -----	Service fuel tank as necessary.	
51	Test -----	Final road test vehicle, observe items which required repair, replacement, or adjustment.	

Note. Clean and repack all bearings during the second semiannual P.M. Service.

By Order of **th** Secretary of the Army:

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Chief of Staff.

Official:

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For explanation of abbreviations used, see AR 320-50.

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