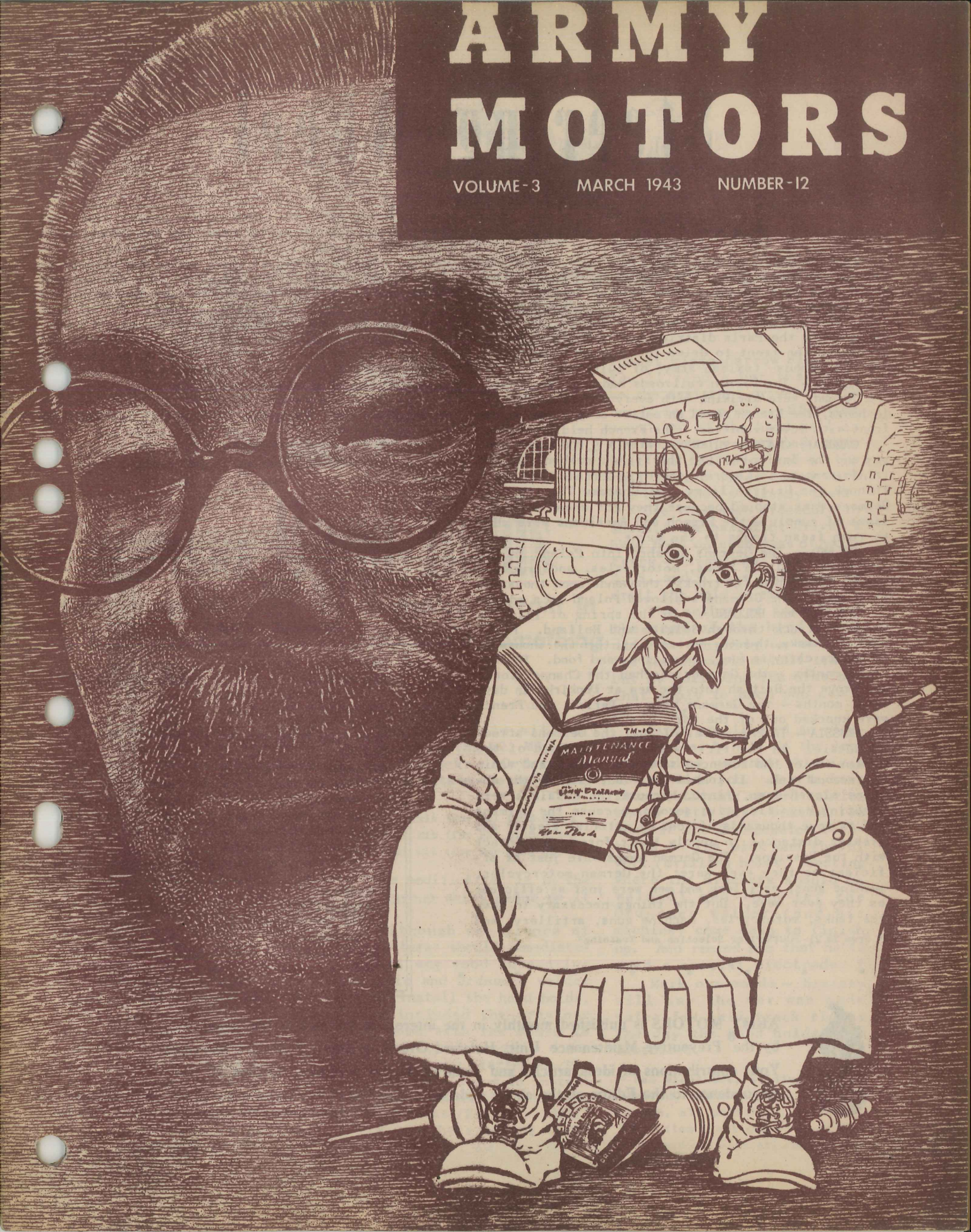


ARMY MOTORS

VOLUME-3

MARCH 1943

NUMBER-12



Steering Wheel

Newsreel *

TAXICAB ARMY - In September, 1914, the Germans had reached the Marne River. It looked as though nothing could stop them from breaking through to Paris. At that moment, the war might have been lost by the Allies, but General Joffre commandeered all the motor vehicles in the Paris district and rushed enough reserves to the front to drive the Germans back. That was the famous 'taxicab army' of 1914.

VERDUN - The French railroads had been destroyed. The Germans were striking with everything they had. In 10 hours, the French moved an entire army corps to the front with motor vehicles. The French held at Verdun.

CAMBRAI; CHATEAU THIERRY - With a 5,000 truck convoy in the fall of 1917, the French rushed 100,000 reinforcements to Cambrai, where the Germans had broken through the British lines. At Chateau Thierry, the Germans were stopped because they got ahead of their lines of supply - the French and Americans were able to rush fresh troops to the Marne.

POLAND - The Germans smashed into Poland in the summer of 1939, in tanks, motorcycles, and trucks - column after column of trucks, thousands upon thousands of trucks. The Germans swallowed Poland in a month.

BELGIUM and HOLLAND - In the spring of 1940 the Germans struck through Belgium and Holland. First came the tanks, then the motorcycles, then the thousands of trucks carrying fuel, ammunition, and food. In days - not months - the Germans reached the Channel Coast and drove the British into the sea at Dunkirk. In days - not months - the Germans were in Paris. The French were knocked out of the war.

RUSSIA - In the summer of 1941 the Germans struck at Russia. In the first week, the vanguard of the German armies had advanced scores of miles, and again the second week. It looked bad. But finally the advance slowed down, first, because the Russians were fighting magnificently; second, because the Germans had to move thousands of tons of material greater and greater distances to supply their forces in contact with the Russians. The German tanks were just as efficient as they ever were; the German motorcycles, machine guns, artillery, and men were just as efficient as they ever were. But the things necessary to keep the tanks, motorcycles, machine guns, artillery, and

* From TM 21-300 "Driver Selection and Training"

men fighting were not reaching the combat zone fast enough. The Russian winter came, and the German drive stalled in its tracks. Some say the synthetic oil the Germans used to lubricate their motor vehicles broke down in the extreme cold. True or not, the Germans themselves blamed the failure to take Moscow in the fall of 1941 on the long lines of supply, the bad Russian roads, and the terrific cold. Whatever the cause, the fact is: the wheels of the German Army didn't roll the way they rolled over Poland, Belgium, Holland, and France. The Germans were stopped and the Russians prepared their counterattack.

This is a war of great distances and swift movement. Whole divisions of men, and the supplies men need, can move up to hundreds of miles in a single day.

The key to swift Army movement is the Army truck.

The key to the Army truck is the man who drives and works on it.

In This Issue . . .

March 1943

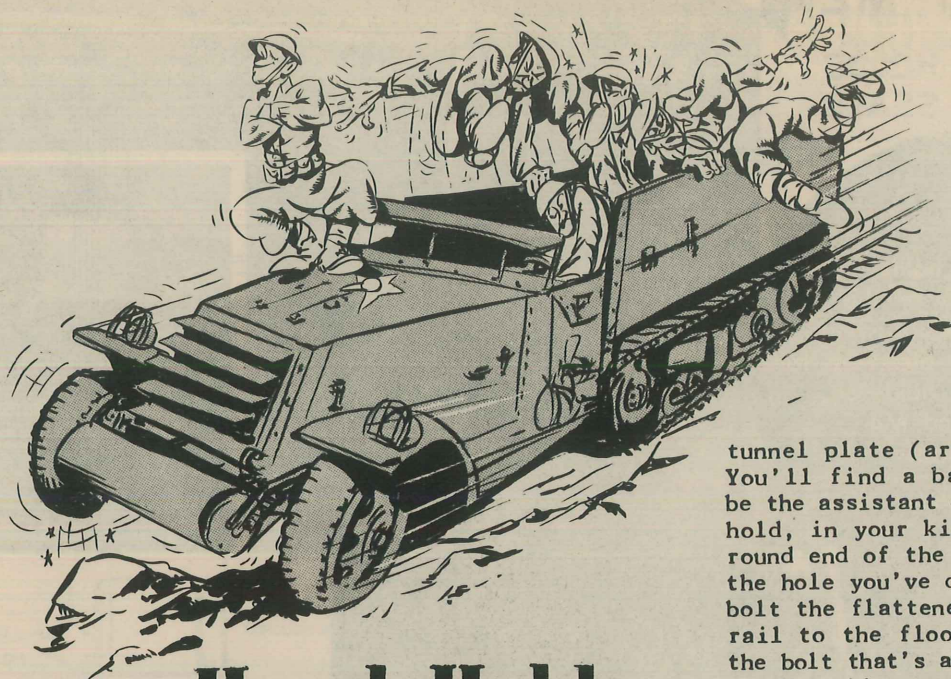
| | |
|-------------------------------------|-----|
| Half-Track Hand Holds | 349 |
| Connie Rodd | 352 |
| 1½-Ton Ford Rear Bumper | 355 |
| The Month's Directives | 356 |
| Wheel Cylinders | 358 |
| Jeep Jump Outta Gear? | 359 |
| Rumors | 361 |
| Ordnance Field Service Publications | 362 |
| Preserving Engines | 364 |
| Fuels and Lubes Chart | 366 |
| Water in the Winch | 367 |
| Low-Voltage Circuit Tester | 368 |
| Contributions | 371 |
| Half-Mast | 374 |
| Training Front | 378 |
| Relief Valve Strainer Screen | 379 |
| News Flashes | |

Inside
Back Cover



ARMY MOTORS is published monthly in the interest of Preventive Maintenance by the Preventive Maintenance Unit, Holabird Ordnance Depot, Baltimore, Maryland. Your contributions of ideas, articles and illustrations are welcome. Address all correspondence to the Editor, at the above address.

* A Unit of the Preventive Maintenance Section, Maintenance Branch, Tank-Automotive Center, Office of the Chief of Ordnance.



HALF-TRACK Hand Holds

Sailing, sailing over the bounding terrain in a half-track, a man's gotta have something to cling to.

The engineers who designed the half-track car fastened everything down but the riders.

The result is that many a half-track arrives at its destination bearing an interesting assortment of legs, arms, heads, and equipment. Business has recently become so good with the medicos sewing up cracked heads and skinned knees that the Ordnance Dep't now issues a Field Service Modification Work Order (FSMWO G102-W22).

The FSMWO directs you to install hand holds and hand rails in your half-tracks, (see Figs. next page), to give the boys something to cling to. Service kits containing all the necessary materials are even now awaiting your requisition at the Ft. Wayne Ordnance Depot, Detroit, Michigan.

The hand rails will be installed in the M2, M3, and M4 half-tracks. Order the following kits by the following numbers:

Hand-rail kit (for M2) G102-W22-1
 Hand-rail kit (for M3) G102-W22-3
 Hand-rail kit (for M4) G102-W22-4

The modification is in the 'red' group which means *do it now*.

Although one glance at our pictures should immediately tell any good automotive mechanic and Ordnance welder how to install the hand holds, we've included the drawings that come with the FSMWO to show exactly what's to be done.

To get you started on the project, here's how to install the hand hold at the assistant driver's seat (Fig. 2): drill a 7/8-inch hole in the right

tunnel plate (arrow Fig. 2). You'll find a bar that will be the assistant driver's hand hold, in your kit. Slip the round end of the hand rail in the hole you've drilled, then bolt the flattened end of the rail to the floor board with the bolt that's already there.

Use this same procedure to install the assistant driver's hand hold on each type of half-track - drawings in Figures 4, 5, and 6 show you where to drill the hole in each vehicle.

The method of installing the rest of the hand holds differs slightly on each of the three models of half-tracks but by following the drawings that apply to each you can't go wrong.

Since you'll need an electric welder to help do the job, it strikes us that this is a 3rd-echelon job. But to keep from cluttering up 3rd-echelon shops with half-tracks, we suggest the 2nd-echelon mechanics do the pick and shovel work (drilling holes, locating where the brackets should be welded) and then let the Ordnance welder (and his machine) come down to finish up. And remind him that he'll need a special electrode. *

Mark our words - history will say the war was made safer for half-track riders the day the hand holds were installed.

* Use electrode, welding, steel, covered, type 1, class b, plain carbon, all positions, soft arc, 1/8", item stock number 01-00260.

The kit contains all the welding rod you need.

FIG.1-M2

HAND HOLDS FOR REAR SEATS

The hand holds as they'll look on the M2 Half Track. See drawings on following page for directions for installing hand holds on M2, M3, and M4 Half Tracks.

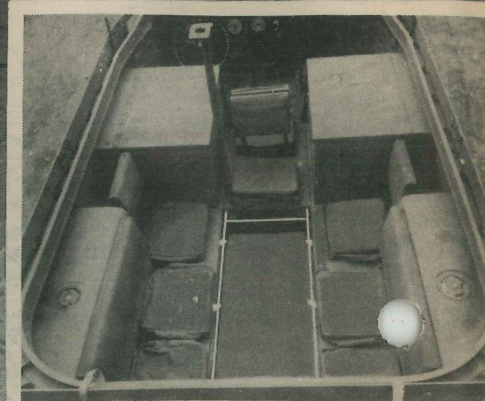


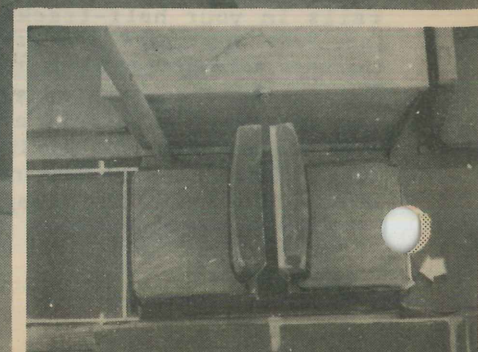
FIG.2-M2

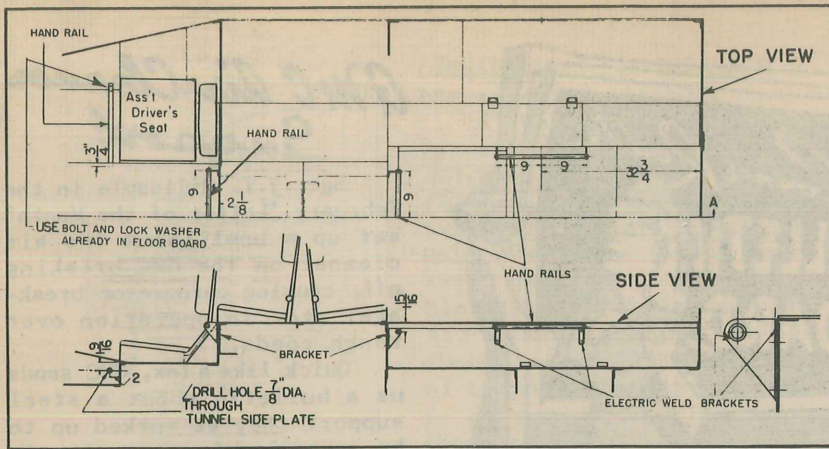
HAND HOLDS FOR ASS'T. DRIVER'S SEAT



FIG.3-M2

HAND HOLDS FOR COMMANDER'S SEAT

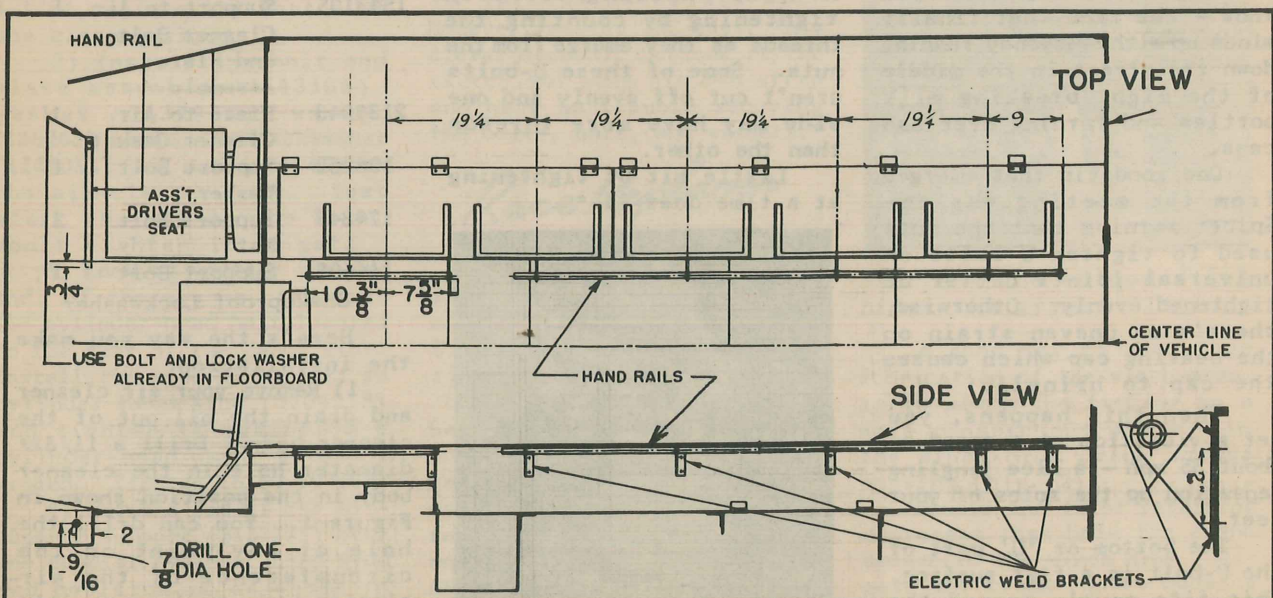
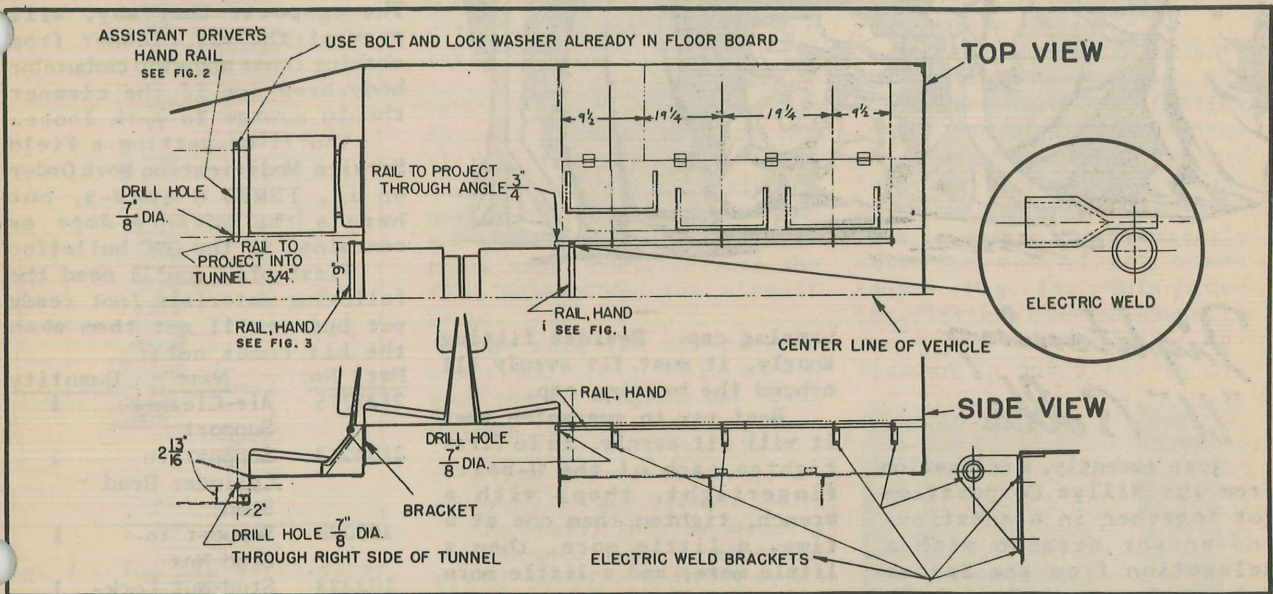


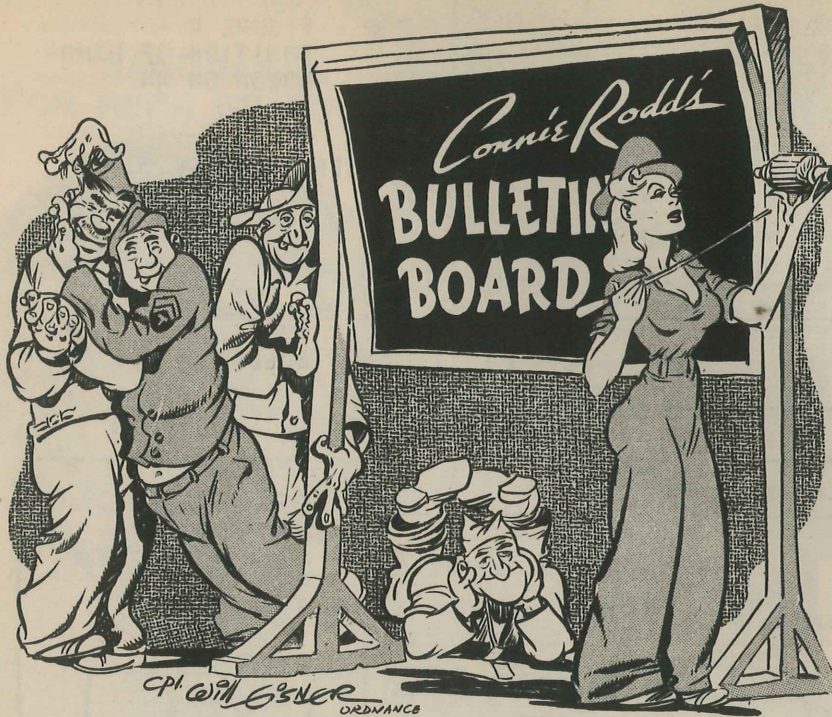


TOP - FIGURE 4 -
POSITION OF HAND-
HOLDS ON M4

CENTER - FIGURE 5 -
POSITION OF HAND-
HOLDS ON M2

BOTTOM - FIGURE 6 -
POSITION OF HAND-
HOLDS ON M3





Tightening "U" Bolts

Just recently, a delegation from the Willys Corporation got together in a question-and-answer session with a delegation from the Spicer U-joint Company. Turned out to be a nice party too — you know — the kind that finally winds up with everybody running down the street in the middle of the night breaking milk bottles and turning over ash cans.

One good tip that emerged from the meeting was the Spicer warning that the nuts used to tighten U-bolts on universal joints better be tightened evenly. Otherwise, there's an uneven strain on the bearing cap which causes the cap to brinell.

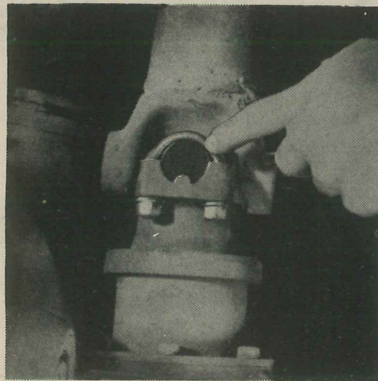
When this happens, you get a vibration at a speed of about 35 mph — a nice tingling sensation up the soles of your feet.

The bottom or 'U' part of the U-bolt is a flat surface. This fits snugly around the

bearing cap. Besides fitting snugly, it must fit evenly all around the bearing cap.

Best way to guarantee that it will fit evenly, is to first tighten each of the U-bolts fingertight, then, with a wrench, tighten them one at a time, a little more, then a little more, and a little more 'til the nuts are down snug. No fair checking for even tightening by counting the threads as they emerge from the nuts. Some of these U-bolts aren't cut off evenly and one side may have more threads than the other.

Little bit of tightening at a time does it.*



* By the way, Willys and Ford are gonna add grooves to the spider ends of the trunnions.

GMC Air-Cleaner Support

Sgt. J.T. Gillespie in the February 'Letter of the Month' set up a howl about the air cleaner on the GMC breaking off, causing carburetor breakage, etc. in operation over rough roads.

Quick like a fox, GMC sends us a bulletin about a steel support they've worked up to be installed between the air cleaner and the cylinder head. The support, they say, will prevent the air cleaner from shaking loose and stop carburetor body breakage if the cleaner should manage to work loose.

You'll be getting a Field Service Modification Work Order on it, FSMWO G 508W-3, but here's the advance dope as contained in the GMC bulletin:

First off, you'll need the following materials (not ready yet but you'll get them when the kit comes out):

| Part No. | Name | Quantity |
|----------|--|----------|
| 2137775 | Air-Cleaner Support | 1 |
| 2104213 | Support to Cylinder Head Stud | 1 |
| 103028 | Support to Stud Nut | 1 |
| 103323 | Stud-Nut Lock-washer | 1 |
| 1543105 | Support to Air Cleaner Bolt and Plate Assembly | 1 |
| 2137943 | Plate to Air Cleaner Gasket | 1 |
| 106262 | Support Bolt Washer | 1 |
| 174845 | Support Bolt Nut | 1 |
| 114605 | Support Bolt Shakeproof Lockwasher | 1 |

Here's the way you make the installation:

1) Remove your air cleaner and drain the oil out of the cleaner body. Drill a 11/32" diameter hole in the cleaner body in the position shown in Figure 1. You can drill the hole at any point on the circumference of the air-cleaner body as long as it's

(103323) and nut (103028) on the stud and tighten.

5) While you've got the air-cleaner off and empty of oil, service it: Clean the filter element thoroughly by swishing it around in solvent. Hold an air hose some distance away from the mesh element and blow it dry (don't hold the air hose too close to the element or you'll blow it full of holes). Dip the element in clean engine oil and let the surplus drain off. Wash the air-cleaner reservoir with solvent, wipe it dry, and fill with engine oil to the oil-level mark.

6) Put the air cleaner back on the carburetor. Position the air cleaner so that the slot in the upper end of the support you've just installed on the cylinder head, fits on the support bolt you've put in the cleaner body, between the flat washer and the cleaner body.

Be sure the air-cleaner cover and clamp seals are in good shape. Tighten the cover nut and clamp screw.

Finally, tighten the nut to clamp the cleaner support securely to the cleaner body.

As we say, this is strictly the advance dope — when the Field Service Modification comes out, it'll tell you where to get the materials kit. However, as the TAC says, "Any clever mechanic can look at the sketch and make his own strap and have no trouble securing the bolts, nuts, and washers."

Race Replacer

Under 'Rear Wheel Bearings,' the 1-1/2-ton Chevy manual says, 'use Special Driver J-872-4 to press the race against its seat.'

S'far's we know you don't have this special tool. But don't you fret your pretty head — here's a tool you can use to do the job: 'Replacer, rear-axle wheel bearing, inner and outer race.' It's in the GMC special tool set which every echelon from the 2nd up

is entitled to, and its Stock No. is 41-R-2396-12; the manufacturer's number is KM J-1709.

Grease Fitting

Humankind will be rendered its greatest service when somebody invents a grease fitting that will reach out and grab the greaseball who is about to pass it up.

Lacking that, the next best thing is to make every grease fitting as conspicuous as possible.

On the Diamond T Wrecker, the winch-drum bushings are lubricated through a fitting in the end of the winch-drum crank square. But the outboard legs that furnish additional anchorage for the Wrecker when it's in action, hang directly over the end of the crank square (Fig. 1). This hides the fitting from greaseballs who would otherwise be delighted to put a gun to it.

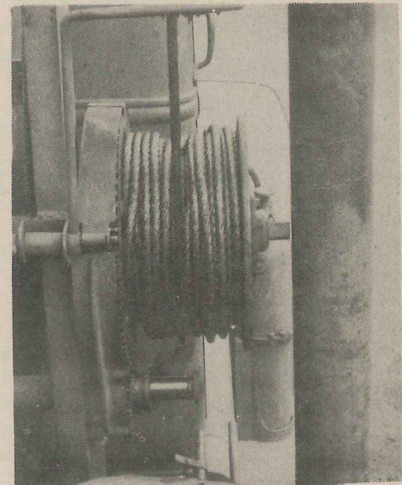


Fig. 1 - The outboard leg hides the grease fitting.

A good way to encourage lubrication of the winch drum, is to place the fitting in a more conspicuous place — in the winch-drum crank square housing (Fig. 2).

Remove the three retaining capscrews that hold the crank square to the winch drum. Remove the crank-square housing and drill a 7/32" hole in the

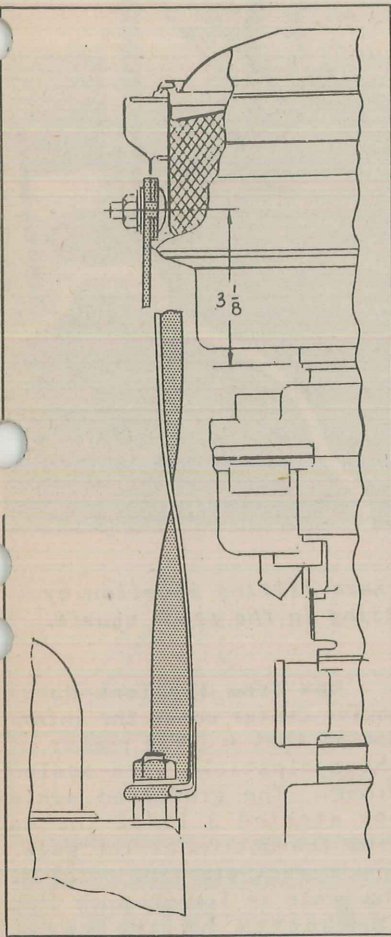


Fig. 1 - The new air-cleaner support.

3-1/8" up from the bottom of the cleaner clamp.

2) Install the bolt and plate assembly (1543105), gasket (2137943), washer (106262), shakeproof lockwasher (114605), and nut (174845) in the air-cleaner body. Just start the nut on the bolt, don't tighten it up yet.

3) Looking in from the fan end, of the engine, take out the cylinder-head bolt located to the rear of the carburetor. Install the special support to cylinder head stud (2104213) and tighten it against the cylinder-head using a torque wrench. Tighten to 60-70 lbs.

4) Set the end of the air-cleaner support (2137775) over the special cylinder-head stud and position it as shown in Figure 1. Install lockwasher

354 location shown in Figure 2. Run a 1/4" tap through the hole and install a straight zerk fitting in it.

Bury the old grease-fitting location by brazing over the hole in the end of the crank square.

To insure a leakproof connection between the crank square and the drum itself, make a gasket and install it between the square and the drum.

Reinstall the assembly, hook up a large, red, electric sign that flashes off and on and says, 'FOOD', and you can rest assured the fitting will never be overlooked.

Chevy Bracket

That little bracket we talked about in December that braces the Chevy emergency brake and two transfer-case shift-lever, fulcrumbolts, is now the subject of a Field Service Modification Work Order (G506-W1). As you may remember, it was intended to prevent distortion and looseness of the shift-lever linkage and breakage of the fulcrum bolts.

A parts kit (in the December article, we gave you the parts needed, by separate parts numbers) will be available from Ft. Wayne Ordnance Depot, Detroit, Michigan as soon as the formal FSMWO is distributed.

Tire Gage

The tire-gage people stand up in a body to declare that all your flat tires need not be 'roadside' flats.

There are two kinds of air loss from tires, they say: 1) preventable air loss — loss through the tire valve. You can take care of this by checking for escaping air at the valve and keeping the valve caps on. 2) There's 'unpreventable but detectable' air loss — tube punctures, caused

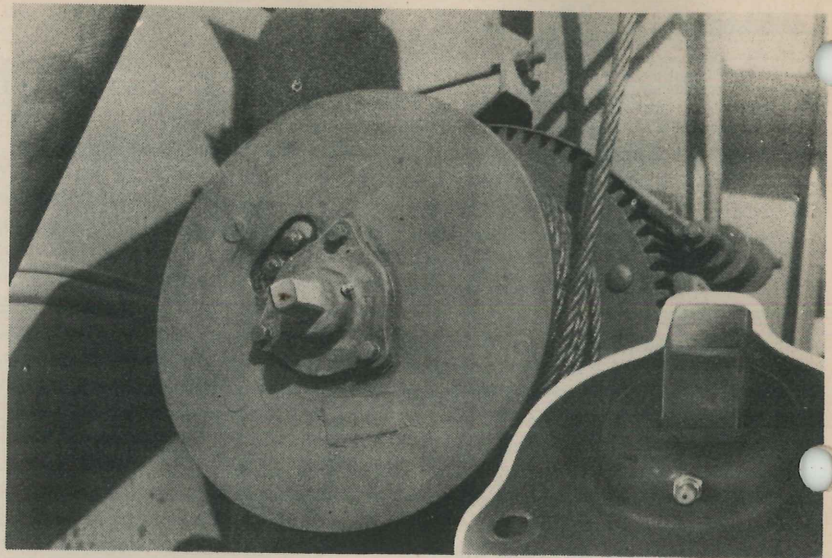


Fig. 2 - Close up the old grease-fitting location by brazing, and install a new fitting in the crank square.

by nails, glass, pinches, etc. In a great many cases, these result in slow leaks and the tires eventually go flat, usually some place where it's cold, dark, and dirty.

You can catch these slow leaks before they become inconvenient flats, by checking the air pressure of each tire instead of just adding air blindly. If you find one tire with pressure consistently lower than the others, and the valve is in good shape, you can be sure the reason is a slow leak.

Take off the tire and have it changed at a shop where you have the tools, time, and delightful working conditions.

Medium Tank Dipstick

The old gaffers amongst us who remember the early models of the Medium Tanks M4 and M4A1 (the ones with the Continental engines) will remember that the engine oil tanks had a long filler pipe (#A226831). This necessitated a correspondingly long dipstick ('oil-level gage' #B200157).

Now from the Tank-Automotive Center comes the information that a large number of these dipsticks were scaled wrong. The graduated scale was started 8 19/32 inches from the bottom of the gage. The correct starting point of the scale is 1 19/32 inch from the bottom of the gage. Just a slight error of seven inches.

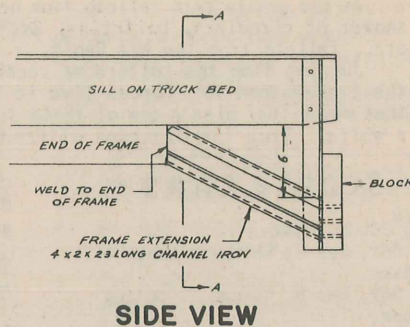
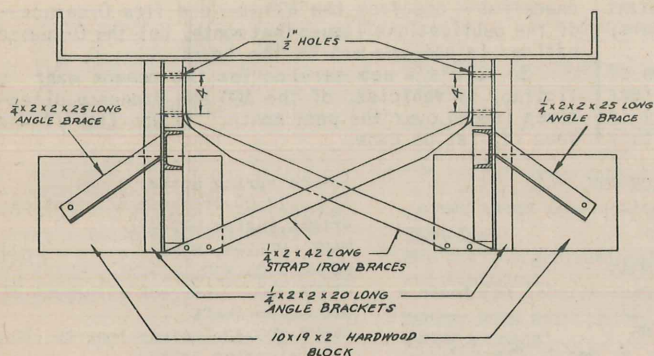
Well, anyway, the thing for you to do is round up your Medium Tanks, M4, M4A1, and start correcting the cockeyed dipsticks before somebody makes the mistake of checking the oil levels by them.

Fill in the present scale marks with solder and then on the reverse side of the gage, file or grind a correct graduated scale starting at 1 19/32 inch from the bottom of the stick.

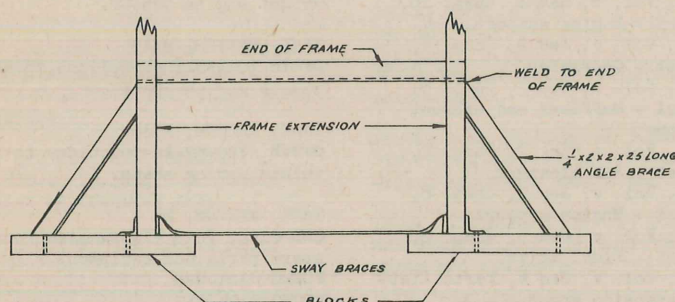
The General's Flag

The flag to go with the fancy general's flagstaff that we described in the January edition, is issued in accordance with the tables of basic allowances. We tried to get you a Federal Stock No. or something — but no soap.

BACK VIEW



SIDE VIEW

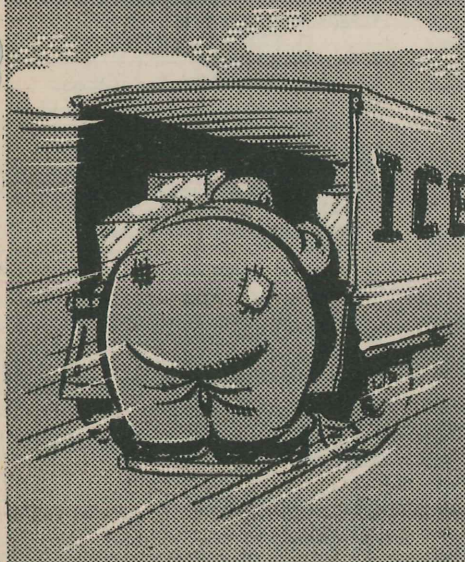


TOP VIEW

REAR BUMPER *For*
FORD 1½ TON TRUCK

DESIGNED AND USED AT
 MT. RAINIER ORD. DEPOT
 DRAWN BY A.G. HAGEN 1ST LT. ORD.

1½-Ton Ford Rear Bumper



Although the 1½-ton Ford truck is not considered a part of the 'Standard Fleet' of Army motor vehicles, still a quick riffle through our secret files shows that thousands and thousands of them are in the Army.

However, since the 1½-ton Ford is not completely decked out with the military characteristics that Combat Zone vehicles must have, we suppose it'll see only 'administrative' use. But this doesn't mean the 1½-ton Ford will be purely a domestic animal — we happen to know that a good many are being shipped over for administrative functions abroad.

For all these reasons, we are printing herewith, an easily made rear bumper for the 1½-ton Ford. The truck as it stands now, is kind of a bobtail and vulnerable around the buttocks. This rear bumper will help keep it out of trouble.

Credit for the drawings and specifications go to the Motor Repair Shop of the Mt. Rainier Ordnance Depot, Tacoma, Washington.

Did you get all the directives this month?

As the gentle rain falleth from heaven, a constant shower of circulars, bulletins, SNL's, work orders, etc., falleth from the War Dep't.

Judging from the letters we receive, many men of the tank-automotive forces live in the deadly fear that maybe they miss a few of these directives once in a while. True the Ordnance officer gets a monthly

checklist—one from the AGO and one from Ordnance—of the publications issued that month, but the Ordnance officer is not the man on the truck.

So here's a new service for the common man: a listing, by vehicles, of the AGO and Ordnance directives issued over the past month. If you like it and need it, let us know.

• SCOUT CARS •

CAR, SCOUT, M3A1
SNL G67, Sec 6, Change 1-Brake Systems.
SNL G67, Sec 8, Change 1-Cooling System.
SNL G67, Sec 12, Change 1-Gasoline Engine Group.
SNL G67, Sec 15, Change 2-Fuel System.
SNL G67, Sec 16, Change 1-Instruments.
SNL G67, Sec 17, Change 1-Lubrication System.
FSMWO G670-W9, Change 1.
FSMWO G67-W11, Change 1.
FSMWO G67-W14-Provides assembly to carry 5 gal. liquid container (Red Group).
FSMWO G67-W15-Protection of oil pan and brake booster (Red Group).
FSMWO G67-W17.
OFSTB 1705A-7, 1710A-4-Field job to prevent failure of universal joints.

CARRIERS • GUN CARRIAGES • AND TANKS •

CARRIAGE, HOWITZER MOTOR, M7
SNL G128-Addendum.
FSMWO G128-W1-Provides clearance between propeller shaft and floor support (Red Group).
*TM 9-731E-Organizational maintenance.
*TM 9-1730C-Ordnance maintenance on Wright engine 975-C2.

CARRIAGE, HOWITZER MOTOR M8
SNL G127-Organizational spare parts and equipment.
SNL G127-Part 2 - Parts Catalogue.
*TM 9-1727B-Ordnance maintenance for engine cooling, electrical and fuel systems.

CARRIAGE, GUN MOTOR M10
SNL G130-Addendum.
OFSTB 731F-2-Correction of wrong radio antenna.

CARRIAGE, GUN MOTOR M10A1
FSMWO G170-W1.
OFSTB 731F-2-Correction of wrong radio antenna.

CARRIAGE, MOTOR M12 AND T14
SNL G158-Addendum.
*TM 9-1730C-Ordnance maintenance on Wright engine 975-C2.

CARRIAGE, MULTIPLE GUN MOTOR, M15
*TM 9-708-Organizational maintenance instructions.

CARRIAGE, MOTOR GUN, T48
SNL G102-Organizational spare parts and equipment.

TANK, LIGHT, M3A3
*TM 9-726C-Organizational maintenance.

TANK, LIGHT, M5
SNL G103, Vol. v, Sec 1, Chap. 7, Parts list - Clutch & flywheel group.
SNL G103, Vol. v, Sec 1, Chap. 10, Parts list - Engine support.
SNL G103, Vol. v, Sec 2, Chap. 4, Parts list - Generator.
SNL G103, Vol. v, Sec 2, Chap. 6, Parts list - Mufflers and exhaust connections.
SNL G103, Vol. v, Sec 2, Chap. 7, Parts list - Air cleaners.
SNL G103, Vol. v, Sec 2, Chap. 8, Parts list - Engine support.
SNL G103, Vol. v, Sec 3, Chap. 2, Parts list - Final drive.
SNL G103, Vol. v, Sec 4, Parts List-Track suspension group.
SNL G103, Vol. v, Sec 7, Chap. 6, Parts list - Turret collector ring.
SNL G103, Vol. v, Sec 14, Parts list - Stabilizer installation.
SNL G103, Vol. v, Sec 15, Parts list - Ammunition stowage.
*TM 9-1727B-Ordnance maintenance for engine cooling, electrical and fuel systems.

TANK, MEDIUM, M3
SNL G104, Vol. 1, Sec 1, Chap. 8, Change 1 - Exhaust and muffler connections.
SNL G104, Vol. 1, Sec 12, Chap. 2, Change 1 - Turret traversing mechanism.
SNL G104, Vol. 1, Sec 14, Chap. 2, Change 1 - Comb. gun mount.
SNL G104, Vol. 1, Sec 14, Chap. 3, Change 1 - Cupola gun mount.
SNL G104, Vol. 1, Sec 14, Chap. 4, Change 1 - Bow gun mount.
FSMWO G104-W2-Change 1, (Red Group).
FSMWO G104-W25.
FSMWO G104-W28.
FSMWO G104-W36.
FSMWO G104-W39.
OFSTB 700-30-Correct alinement of propeller shafts.
OFSTB 700-32-Instructions to change volute spring seats.
*TM 9-1730C-Ordnance Maintenance on Wright engine 975C-2.

TANK, MEDIUM, M3A1
SNL G104, Vol. XII-Organizational spare parts and equipment.
FSMWO G104-W39.
OFSTB 700-30-Correct alinement of propeller shaft.
OFSTB 700-32-Instructions to change

volute spring seats.
*TM 9-1730C-Ordnance maintenance on Wright engine 975-C2.

TANK, MEDIUM, M3A2
FSMWO G104-W39.
OFSTB 700-30-Correct alinement of propeller shaft.
OFSTB 700-32-Instructions to change volute spring seats.
*TM 9-1730C-Ordnance maintenance on Wright engine 975-C2.

TANK, MEDIUM, M3A3
OFSTB 700-32-Instructions to change volute spring seats.

TANK, MEDIUM, M3A4
OFSTB, 700-32-Instructions to change volute spring seats.

TANK, MEDIUM, M4
SNL G104, Vol. VI-Organizational spare parts and equipment.
FSMWO G104-W28.
FSMWO G104-W37.
FSMWO G104-W39.
OFSTB 700-30-Correct alinement of propeller shaft.
OFSTB 700-32-Instructions to change volute spring seats.
*TM 9-1730C-Ordnance maintenance on Wright engine 975-C2.

TANK, MEDIUM, M4A1
FSMWO G104-W37.
FSMWO G104-W39.
OFSTB 700-30-Correct alinement of propeller shaft.
OFSTB 700-32-Instructions to change volute spring seats.
*TM 9-1730C-Ordnance maintenance on Wright engine 975-C2.

TANK, MEDIUM, M4A2
SNL G104, Vol. VII, Sec 9-Electrical system.
SNL G104, Vol. VII, Sec 14-Fuel system.
SNL G104, Vol. VII, Sec 17-Lubrication system.
SNL G104, Vol. VII, Sec 20-Track suspension group.
SNL G104, Vol. VII, Sec 23-Turret traversing mechanism.
SNL G104, Vol. VII, Sec 23-Change 1 - Turret traversing mechanism.
OFSTB 700-32-Instructions to change volute spring seats.
*TM 9-731B-Organizational maintenance.

TANK, MEDIUM, M4A3
SNL G104, Part 2-Parts Catalogue.
FSMWO G104-W37.

TANK, MEDIUM, M4A4
FSMWO G104-W37.
*TM 9-754-Organizational instructions

TANK, HEAVY, M6
SNL G118, Vol. 1, Part 2-Parts catalogue.

TANK, HEAVY, M6A2
SNL G118, Vol. III, Sec 2, Part 4, Parts list-Overspeed Switch.

ALL HALF TRACK VEHICLES

FSMWO G102-W10.
G102-W15.
G102-W17.
G102-W19.

OFSTB 1705A-7, 1710A-4-Instructions to prevent failure of universal joints.

OFSTB 1710C-2-Hydrovac operation and maintenance.

• TRUCKS •

TRUCK, 1/4-TON, 4X4 (FORD & WILLYS)
SNL G503-Temporary Addendum.
SNL G503-Organizational spare parts and equipment.

TRUCK, 1/2-TON, 4X4 (DODGE)
OFSTB 800-4, 10-1000-2-Correct alignment of transfer case.

TRUCK, 3/4-TON, 4x4 (DODGE T214)
SNL G502-Temporary Addendum.
SNL G502-Organizational spare parts and equipment.
FSMWO G502-W2-Increase leg worm (Green Group).
OFSTB 800-4-Correct alignment of transfer case.

TRUCK, 1 1/2-TON, 4X4 (CHEVROLET)
SNL G506-Temporary Addendum.

TRUCK, 1 1/2-TON, 6X6 (DODGE T225)
SNL G507-Temporary Addendum.

TRUCK 2 1/2-TON, 6X6 (GMC CCKW 352 and 353)
SNL G508-Organizational spare parts and equipment.
*TM 10-1562-Parts Lists.

TRUCK, 4-TON, 6x6, (DIAMOND T)
FSMWO G509 W-1-New type thermostat (Red Group).
*TM 10-1532-Parts List.
*TM 10-1533-Maintenance Manual.

TRUCK, 4-TON, 4X4 (FOUR WHEEL DRIVE)
SNL G531, Sec 1-Tentative preface & index to list of parts.
SNL G531, Sec 2-Tentative parts list, front axle.
SNL G531, Sec 4-Tentative parts list, body.
SNL G531, Sec 5-Tentative parts list, brakes.
SNL G531, Sec 6-Tentative parts list, clutch.
SNL G531, Sec 9-Tentative parts list, engine.
SNL G531, Sec 10-Tentative parts list, exhaust.
SNL G531, Sec 11-Tentative parts list, frame.
SNL G531, Sec 12-Tentative parts list, fuel system.
SNL G531, Sec 13-Tentative parts list, instruments.

SNL G531, Sec 15-Tentative parts list, springs & shock absorbers.

SNL G531, Sec 17-Tentative parts list, transfer case.

SNL G531, Sec 19-Tentative parts list, wheels.

SNL G531, Sec 20-Tentative parts list, winch.

TRUCK, 6-TON, 6X6, PRIME MOVER (Mack NM5)

*TM 10-1477-Maintenance Manual.

TRUCK, 6-TON, 6X6, BRIDGE PONTON (BROCKWAY)

SNL G547, Organizational Spare parts and Equipment.

TRUCK, BOMB SERVICE, M1 (YELLOW TRUCK & COACH)

SNL G85, Vol. I-Change 2.

TRUCK, BOMB LIFT M

SNL G85, Vol. IV, Part 2, Change 2-Equipment.

OFSTB 765-1-Identification, use and maintenance.

TRUCK, BOMB SERVICE, M6 (CHEVROLET)

*TM 1765A-Ordnance maintenance for axles, propeller shafts and wheels.

TRUCK, INSTRUMENT REPAIR, M10 (LOAD B)
SNL G141, Vol. II-Organizational spare parts and equipment.

TRUCK, WELDING, M12

SNL G142-Organizational spare parts and equipment.

TRUCK, ELECTRICAL REPAIR, M18

SNL G149-Organizational spare parts and equipment.

• TRACTORS •

TRACTOR, MEDIUM, M1 (ALLIS-CHALMERS HD7W)

SNL G125, Sec 5-Fuel tanks and lines.
SNL G125, Sec 6-Cooling system.

SNL G125, Sec 9-Instruments.

TRACTOR, HEAVY, M1 (INT. HARVESTER)
FSMWO G101-W2.

TRACTOR, HEAVY, M1 (CATERPILLAR)
FSMWO G101-W2.

• TRAILERS •

TRAILER, 1-TON, 2W CARGO (BEN HUR)
SNL 518, Vol. I-Organizational spare parts and equipment.

TRAILER, 1-TON, 2W, CARGO (NASH)
SNL 518, Vol. II-Organizational spare parts and equipment.

TRAILER, ARMORED, M8
*TM 9-884-Organizational maintenance.

TRAILER, 6-TON, (ATHEY)
*TM 9-790A-Organizational maintenance.

TRAILER, 20-TON (ATHEY)
*TM 9-790B-Organizational maintenance.

• AMPHIBIAN TRUCKS •

TRUCK 1/4-TON, AMPHIBIAN (FORD)
FSMWO G504-W1-Reinforce spring brackets to frame (Red Group).
FSMWO G504-W2-New oil pan drain extension (Red Group).
FSMWO G504-W3-Reinforce tunnel side walls (Red Group).

• ORDNANCE MAINTENANCE •

1. SNL N21, Vol. II-Ordnance maintenance set B.
2. SNL N348, Tentative-Tools & supplies for Ordnance Motor Vehicle Assembly Co.

• PREVENTIVE MAINTENANCE •

* W.D. Cir. 54-Description of lubrication publications and how to get them.

* W.D. Cir. 33 Sec. II-Abuse of motor vehicle engines.

* W.D. Memo., W 45-1-43, Precautions to be observed when operating the engines in M 5 light tank. (See News Flashes)

OFSC 17, Emergency stores of lubricants, cleaning and preserving materials.

• SALVAGE AND RECLAMATION •

* TC 21-Supplemental to TC 88, 1942 and outlines battlefield recovery.

* TC 18-Supplemental to TC 5 and covers destruction of Ordnance material in event of imminent capture by the enemy.

OFBS 4-16-General policy covering expendable and recoverable automotive items.

OFSC 24-Disposition of scrap rubber.

• STORAGE SHIPMENT AND ISSUE •

OFBS 2-16-Instructions for storing and issuing rubber tires, tubes and camelback.

* W.D. Cir. 14, Sec. II-Maintenance and preparation of Ordnance materiel for overseas shipment in alerted units at posts, camps, stations, staging areas, and ports of embarkation.

• TRAINING •

* 1. TC 9-List of films, film strips and film bulletin, not included in FM 21-7.

* W.D. Cir. 52-Policy for distribution of W.D., A.G.O. publications.

Wheel Cylinders

Mix a little water with dirt and you've got mud. Mix a little truck with mud and you've got trouble. Specifically, it's the water in the mud that often causes trouble.

One water-mud trouble crops up in the wheel cylinders of the hydraulic brake system. When the end covers of the wheel cylinders are made of metal, muddy or wet operation allows moisture to creep in and cause rusting and corrosion between the end-covers and the wheel cylinder (Fig. 1). This leads to 'freezing' of the wheel cylinders: the adjusting covers won't move freely on the cylinder and the brakes won't work at the particular wheel involved.

All wheels of the 1½-ton Chevy, the rear wheels of the 2½-ton GMC, and the front wheels of the GMC with banjo-type axle housings have metal end-covers in the wheel cylinders (Fig. 2). On these particular trucks built before last Sept. the wheel cylinders freeze as described above.

Since last September, Chevy and GMC wheel cylinders have been zinc coated to prevent the rusting that causes freezing, but what are you supposed to do about the earlier Chevies and GMC's without the zinc plating on the wheel cylinders?

Some people who can't see any difference between a mechanic and a horse say, "Pull all the wheels after every wet or muddy operation and clean 'em up." This line never fails to bring cheer to the heart of the mechanic with five, ten, twenty or maybe even thirty trucks to take care of. Especially when the trucks operate day in and day out in mud, through streams

The metal end-covers rust fast to the cylinder and the brakes don't brake. Here's a servicing procedure.

or over wet terrain.

Colonel Elliot B. Hopkins, Second Army Headquarters, Memphis, Tennessee, gave a little thought to the problem, experimented around a bit and wrote us a letter.

The freezing of the end-covers on the cylinders, says Colonel Hopkins, usually occurs at mileages between three and seven thousand miles. In some cases, where the driver steps hard and suddenly on the brake pedal, one or both of the end-covers break loose and allow the brake shoe to rest up against the drum. The end-covers, being badly rusted create such a bind that the brake-shoe return spring fails to pull the brake shoes inward: the brakes drag, wearing out brake linings and drums.

As far as Colonel Hopkins is concerned, an inspection is necessary, to uncover the trouble. However says the Colonel, there is another way

of disclosing the frozen condition without taking the wheels off: Let a 2nd-echelon mechanic put a wrench on the rear-wheel, brake-adjusting pinion nuts and give them a quarter turn in either direction and then back to the original position. If the nuts turn freely, the end-covers are not frozen. If the nuts do not turn freely, you can depend on it that the end-covers are frozen.

Caution: Don't strong-arm the nuts, you might shear them off.

When the end-covers are found to be frozen, the only thing left to do is remove and disassemble* the wheel cylinder. Clean the rust of the outer ends of the brake cylinder and from under the inside rim of the end-covers. Burnish them and lubricate with hydraulic-brake fluid (the cylinder cups are made of natural rubber - don't use oil or grease around them).

After assembling the wheel cylinder, carefully smear waterpump grease or graphite-grease (*no other kind*) over the cylinder and end-covers to waterproof the assembly and prevent rust formation.

And that seems to be the story. It's just unfortunate that tough military operation allows mud and water to get onto the wheel cylinder and it's just too bad that the end-covers were, until only recently, made of easily rusted metal. (The wheel-cylinder end-covers of other

*If possible by third echelon.

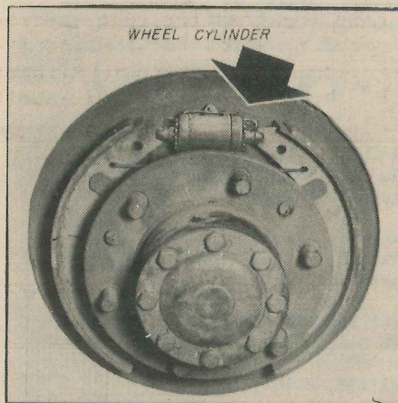


Fig. 1 - When the end-covers are metal, they rust and bind the brakes.

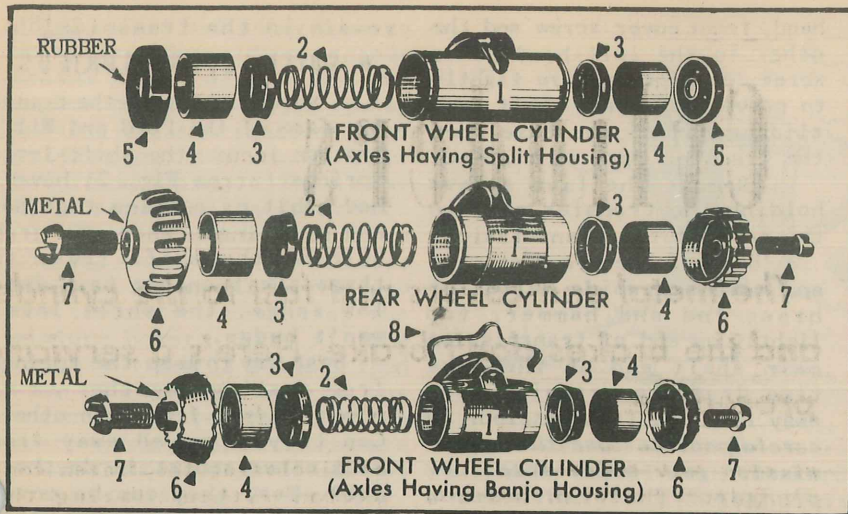


Figure 2 - The front wheel cylinders of $\frac{1}{4}$ -ton GMC's with split-type axle housings, have rubber end-covers. All the rear wheels and the front wheels with banjo housings have metal end-covers subject to rusting.

- | | |
|-------------------------|--------------------------|
| 1. Wheel Cylinder | 5. Cylinder End Boot |
| 2. Piston Return Spring | 6. Cylinder End Cover |
| 3. Cylinder Cup | 7. Adjusting Screw |
| 4. Cylinder Piston | 8. End-Cover Lock Spring |

trucks are made of rubber and won't rust.)

So the only thing left for you to do is include an inspection of the wheel cylinders in your scheduled maintenance

(especially under wet operating conditions) and have them cleaned up, waterproofing the cylinder metal and end-covers with waterpump grease or graphite grease.

About this little matter of waterproofing with grease: Some of you might be inclined to doubt it, and we haven't messed around with it enough to say you nay. All we know is that a number of correspondents report they've been using waterpump grease in this location and it works fine.

Again, observing the wheel cylinder and the way it works, we're inclined to believe (dreamily) that a rubber boot of some kind placed over the wheel cylinder and the end covers would keep out mud and water. Maybe some ambitious soul will consider this a hint and go ahead and design such a boot. If so, we'd like to hear about it.

One last thing: Although the zinc plating applied to the wheel cylinders of Chevies and GMC's built since September, has withstood a 48-hour salt-spray test without breaking down and allowing rust formation, the manufacturer would still like to hear comments pro or con from the field.

Drop us a line.

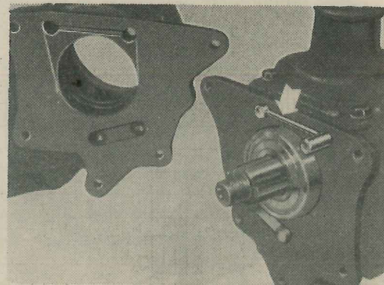
Your Jeep Jump Outta Gear?

A thing you often see is some yahoo putting a complicated assembly together and winding up with half a dozen parts left over. Usual procedure is for the yahoo to swivel-head swiftly in all directions, quickly kick the extra parts into the bushes, and walk away whistling.

This practice is the reason we hear so many complaints about $\frac{1}{4}$ -ton jeeps - both Willys and Ford - jumping out of a particular gear the driver has so wisely selected.

The little part that's too often left out of the jeep transmission is the transmission-gear-shift interlock plunger.

The reports we have, show that the interlock was left out of a good many jeeps at the time the transfer case was removed to allow for the installation of the extra oil slinger at the transmission main-shaft



Don't lose the interlock plunger between the jeep transmission and transfer case.

bearing. This oil slinger you may remember (August News Flash Page), was to prevent lubricant running from the transfer case to the transmission.

Anyway, this little interlock plunger acts as a 'stabilizer' on the transmission shift rails and prevents the rails from shifting gears without reference to the wishes of the driver. This, of course, would be a case of the vehicle driving the driver.

The honest fact is, the interlock plunger hasn't been advertised enough - a lot of our yahoos don't know it's in there. The first manual to carry a picture of the inter-

lock is the January 15, 1943 edition of the Willys manual, and there aren't too many of those around yet.

Anyway, we hereby announce to the world in general and to the yahoos in particular that there is such a thing as an interlock plunger in the jeep transmission. It's located, as you can see from the picture, between the transmission and the transfer case, right where the two assemblies bolt together.

SCRAMBLED JEEP SYNCHRO-MESH •

Pull the pin out of a grenade and it'll fall apart accompanied by a flash of smoke and fire. Pull the main shaft

hand, front cover screw and the other to the left-hand cover screw, drawing the wire tightly to prevent the main shaft from sliding out of the case when the transfer case is removed.

'Remove the five screws holding the transfer case to the rear of the transmission.

'Support the transfer case and with a rawhide mallet or brass rod and hammer, tap lightly on end of transmission main shaft and at the same time draw the transfer case away from the transmission. Be careful not to lose the transmission gear-shift interlock plunger. The transmission main-shaft rear bearing should slide out of transfer case and

remain in the transmission.

• SHIFT-LEVER SPRINGS

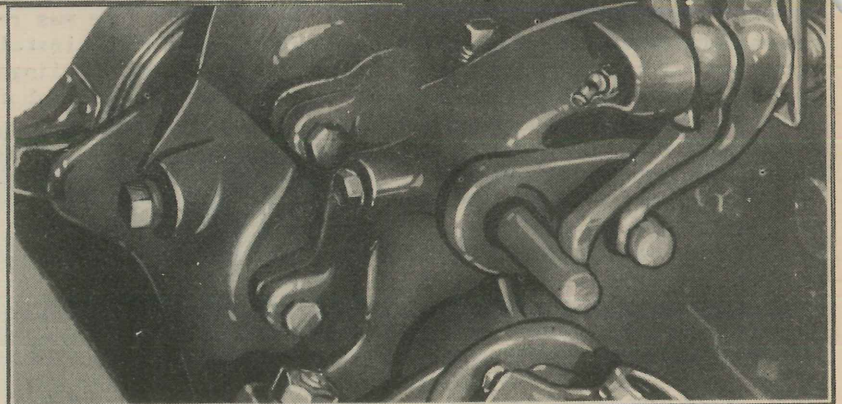
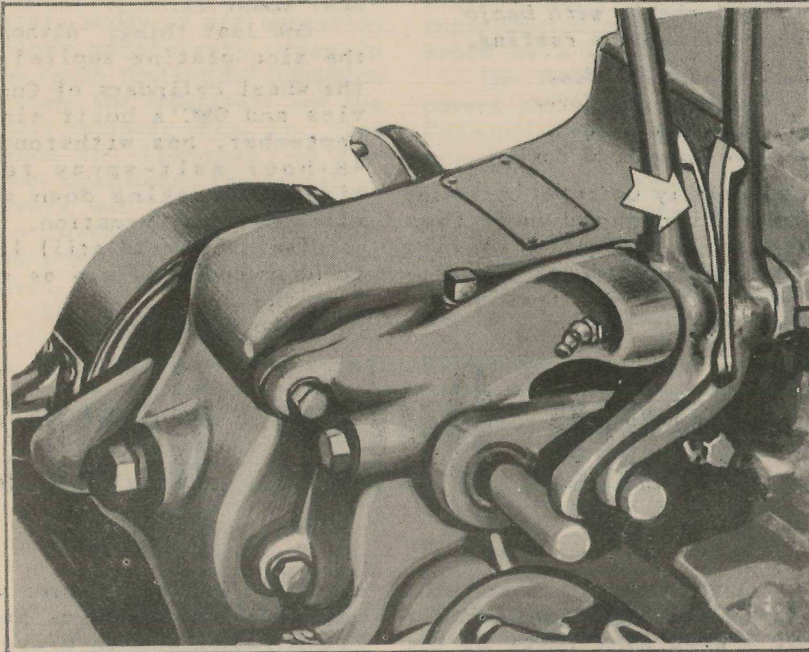
'Nother thing on the transfer case of the Ford and Willy 1/4-ton jeep: the shift-lever springs (arrow Fig. 2) have a bad habit of rusting together and sticking. When you grab hold of the shift lever to throw the transfer case into low range, the shift lever won't budge.

Best way to keep the springs from rusting together is to move them away from each other. Can they be moved away from each other and still do their job? Yes, they can be moved away from each other and still do their job.

Simply remove the shift-lever, pivot-pin thrust screw, slip out the shift-lever pivot pin, and remove the shift-lever springs.

Now just put them back, one on the outside of each shifting lever, with the curved side of each spring hugging the levers (Fig. 3). Put back the pivot pin and screw. They won't rust together anymore.

They may rust *separately* (ha-ha-ha-ha) but they won't rust *together* anymore.



out of a transmission and the synchro-mesh unit will fall apart accompanied by a tinkling noise and a flash of smoke and fire from the mechanic who has to put it together again.

To prevent the synchro-mesh unit from collapsing in this fashion, the Willys manual, under 'Dismantling the transmission,' offers the following trick with a piece of wire:

'Loop a piece of wire around main shaft, just to the rear of main-shaft, second-speed gear; twist the wire and attach one end to the right-

Fig. 2 (upper) Shift-lever springs rust together.
Fig. 3 (lower) Change the spring position to this.

Here's a bad penny turning up again: The old pernicious driver trick of revving the engine up to about 1200 rpm's, turning off the ignition, and pulling out the choke just before stopping. This time it's reported by Detroit.

The theory behind this choking maneuver is as follows: air-fuel mixture is forced into the combustion chambers, the mixture hovers there all the time the truck is parked, then when the driver starts the engine up again, the ignition spark quickly fires the mixture - and the driver never has any trouble with hard starting.

This idea is like the mackerel in the moonlight: it shines and stinks.

Of course, a charge of fuel is shot into the combustion chambers by this practice - but be damned if it hovers there like a cloud to make starting easier for the driver. What it actually does is dribble down the cylinder walls, on past the rings and into the crankcase. In this way, it washes the protective film of oil off the cylinder walls and dilutes the oil in the crankcase.

All kinds of things can happen then: excess wear on the cylinder walls and piston rings, and all the trouble that goes with over-diluted engine oil.

If any of you drivers are using this trick to overcome hard starting, have your head examined. If your head turns out to be all right, have your truck examined for an improperly closing choke, air leaks around the throttle shaft and carburetor gaskets, and all the other things responsible for hard starting.

* * *

All the boys who've been screaming like panthers about the sector-shaft bushings wearing out in the steering-gear assembly of the Ford 1/4-ton jeep, can relax - a better material is now being used for these bushings.

Still you'd better be careful about maintaining the



proper lube level in the steering-gear box of both the Ford and Willys jeep. Nothing wears out the working parts and especially the sector-shaft bushings like lack of lubrication.

* * *

The Daily Activity Report of the Normoyle Ordnance Depot reports that they've been finding the wrong inner wheelbearing on GMC trucks. Out of 52 of these trucks being processed, the wrong front inner wheelbearing was found in eight of them. The GMC Parts Manual designates Timken 33275 but the bearing found in these eight trucks was Timken 33281.

Although these two bearings have the same outer diameters, the 33281 has a larger inside diameter. The result is that the fit is bad and allows a lot of play in the wheel. On two of the trucks, the improper bearing had worn the inner oil retainers badly. 'Had these wrong bearings been continued in operation, costly damage would have resulted to retainers, wheelbearing cups, hubs, and steering knuckles.'

Forewarned is forearmed. We offer it for whatever it's worth.

* * *

We hear that certain replacement parts not suited for military operation have been found in Army vehicles. It's not sabotage or anything like that - it's just that in certain sections of the country, parts have been purchased which although perfectly all

right for vehicles in commercial operation, are N.G. for military vehicles in rough military operation.

Clutches, for instance: the standard (or commercial) GMC clutch plate has a bursting speed (flies apart) of approximately 5000 rpm's. This makes it unsuitable for military operation since much higher speeds are developed when the vehicle is coasted in low range with the clutch disengaged. To avoid burst clutch plates, a special plate has been developed with a much higher bursting speed. Use anything but this special plate, and you run into trouble.

Piston rings, for another thing: because the frequent stops and starts of military operation may lead to excessive wear on the cylinder walls, GMC has placed special rings in production in the 2½-ton, 6x6 GMC, to provide better lubrication.

Using non-genuine rings built to the original GMC engines, won't give anything like the long life expected of these engines.

In addition, 'commercial-standard' engine bearings, pistons, motorcycle bearings and a host of other parts unsuited to military operation, have been found in depot stocks.

The source of the trouble is probably local purchases from other than the original truck manufacturer's sources of supply.

Go easy, gents.



Ordnance Field Service Publications

**What are they? What's in them?
Who gets them? And how?**

For several months now, those of you who are newcomers to Ordnance (especially the ex-QM motor transport men) have been receiving publications and directives, the like of which you probably never saw before: Field Service Modification Work Orders, with bands of blue, green, and red across the top... Standard Nomenclature Lists with black arrows running up and down the margins... and

half a dozen others, more or less.

Perhaps by this time your Ordnance Officer has given you a complete picture of what the Ordnance Field Service Publications are, which ones you should be receiving, and how to get any which you may be lacking. But whether he has or not, we thought you'd welcome a series of articles on what these publications are, who should have them, how to get them, and how to use them.

In this, the first of the series, we're going to start with a bird's eye view of the ten field service publications which Ordnance publishes, together with a chart telling how they are distributed.

In future issues, we'll take up the Ordnance Field Service Publications individually and go into greater detail on their many and peculiar uses.

Here are the ten. Check'em off.

① **THE ORDNANCE CATALOGUE AND STANDARD NOMENCLATURE LISTS (SNL).** The Ordnance Catalogue is a classification of all Ordnance Materiel into groups: Groups A to G cover weapons, their component parts, and vehicles; groups P, R, S, T cover ammunition; etc. Each group is made up of Standard Nomenclature Lists, which give you the name and number of every part, the parts allowances for each echelon, illustrations of the parts, and tools for all types of Ordnance Maintenance. If your business is motors, you'll need the

'Group G' SNL's. There's no reason for you to have the entire Ordnance Catalogue. In the first place, it's more of a load than you'd want to carry; second place, it deals with a lot of other stuff you don't have any use for - like armaments and fire-control instruments. However, you ought to have SNL N-11 (Tools and Supplies, Ordnance Depot Co.), SNL N-17 (Tool Sets for Posts, Camps, and Stations), SNL N-19 (Motor Transport Tool Sets), or SNL N-21 (Ordnance Maintenance Sets), whichever applies to your outfit.

② **ORDNANCE FIELD SERVICE TECHNICAL BULLETINS (OFSTB)** are a rapid-fire method of broadcasting new and exact information on operation and maintenance of specific materiel while waiting for issuance or revision of the appropriate War Department Technical Manual.

Information on automotive equipment for first and second echelons is covered in the '700' and '800' series TB's. Information on automotive equipment for third and fourth echelons is covered in the '1700' and '1800' series. For instance, TB 757-2, normally indicates that the information pertains to TM 9-757, Medium Tank M4A1; however, a TB 700 () would be more widely applicable and may pertain to four or five different vehicles as well as Medium Tank M4A1. In any event, an appropriate note appears in text of the TB telling to which TM's the information is applicable.

③ **ORDNANCE FIELD SERVICE BULLETINS (OFSB)** (you should have a binder full of 'em) carry specific permanent directives and orders of the Chief of Ordnance to Ordnance Field Service Personnel. They are organized into seven numbered series, and remain in effect until revised, changed, or rescinded. Automotive men will be interested in Series 1 (general), Series 2 (storage, issue, transfer, and sale of

(Continued on page 380)

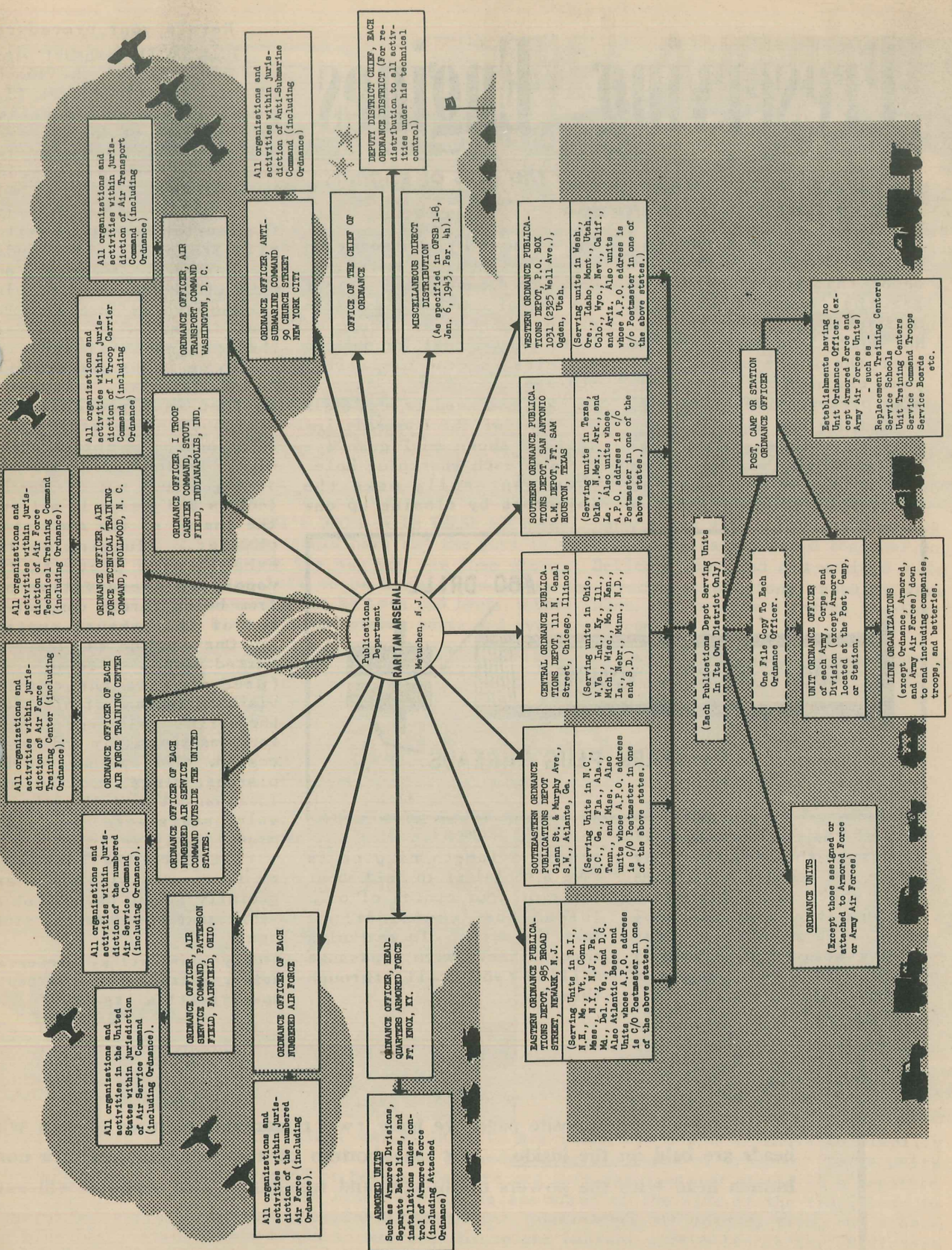
Following up our story on these pages on how the Ordnance Field Service Publications are distributed and to whom, we will next month, Allah being acquiescent, present the story of how AGO publications are distributed.

The big news is that from now on you'll be getting such publications as Field Manuals, Technical Manuals, etc., that you formerly got from the AGO through your Service Command, direct from *Adjutant General's Depots* which have been set up in every Service Command.

The distributing agencies within the territory of each Service Command are still the same - that is, your division HQ is still the distributing agency of the division, and your post HQ is still the distributing agency for non-divisional units on the post - but the post or division HQ will now get its AGO publications direct from the new AGO Depots in the Service Command.

Next month we'll give you the whole business including the addresses of the new AGO Depots.

Publications Department
BARITAN ARSENAL
Metuchen, N. J.



Preserving Engines

An easier way to coat the guts of engines being prepared for storage.

In January's article on 'Dead Storage,' we expressed doubt that you'd be able to get the 'special spraying outfits, Army Air Forces Spec. No. 50127,' to enable you to coat the inner surfaces of your engines to be stored, with preservative oil.

Nothing has happened since then to remove our doubts. (The second method of coating the interior surfaces of engines by pouring about a

ing at an Ethyl Corporation school in which a Mr. G. S. Robinson demonstrated a swell new way of coating the inside of an engine. We recommend it to every outfit for putting vehicles in dead or limited storage.

All you need is about six or eight of the homemade injectors shown in Figure 1 - one for each sparkplug hole. (You can easily make the injectors by closing up one

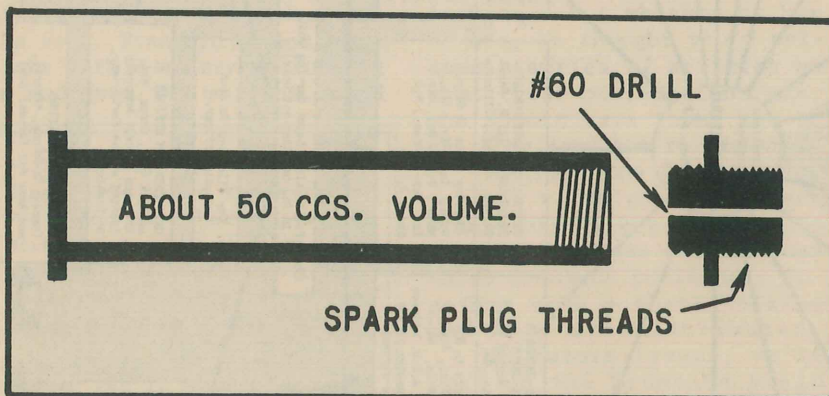


Figure 1

pint of the preservative oil in through the carburetor air intake and running the engine for a while, is after all - although it will do the job - only an alternate and deserves something better.)

So we were very happy when somebody told us about a meet-

end of a length of pipe to make a container to hold about three or four ounces of oil. Thread the 'container' to take the set of old sparkplug threads shown with a passage drilled (#60 drill) through them.)

Here's your procedure:

Plug up the exhaust pipe. Take out all the sparkplugs. Put two ounces (1/8 pint) of the preservative oil* in each of the homemade injectors, and screw an injector into each sparkplug hole.

Turn the engine over with the starter (ignition switch off) for about 15 seconds.

Remove the injectors and plug up the sparkplug holes as required by AR 850-18 for dead storage - or reinstall the sparkplugs if vehicle are to be in limited storage.

What happens, of course, is that when you crank the engine with the starter for 15 seconds, the intake stroke of the pistons pulls the preservative oil out of the injectors and sprays it all over the inside of the combustion chamber. Plugging up the exhaust pipe prevents the vaporized preservative oil from being thrown completely out of the exhaust system.

One man who saw the idea tested with a white solution (used to make the results visible) instead of oil, says the entire inside engine surface was thoroughly and evenly coated. The cylinder walls, pistons, rings, and the surfaces on out past the exhaust-valve stems were nicely and protectively wetted.

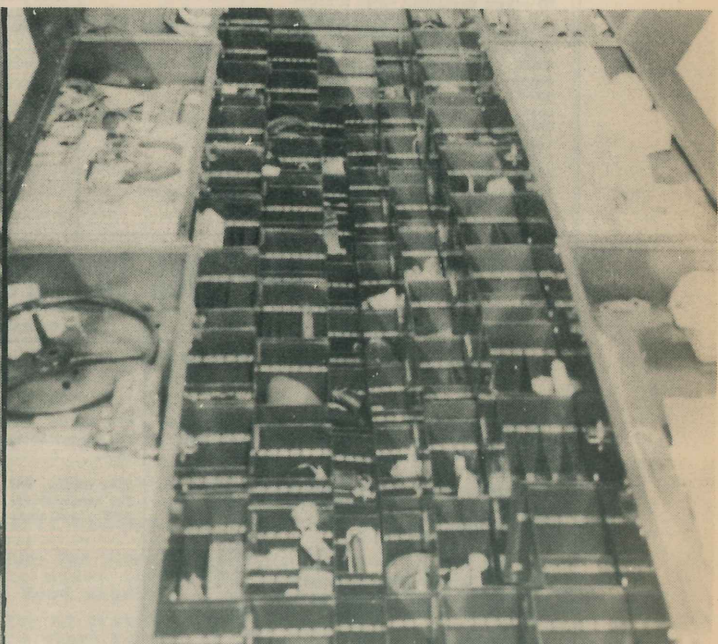
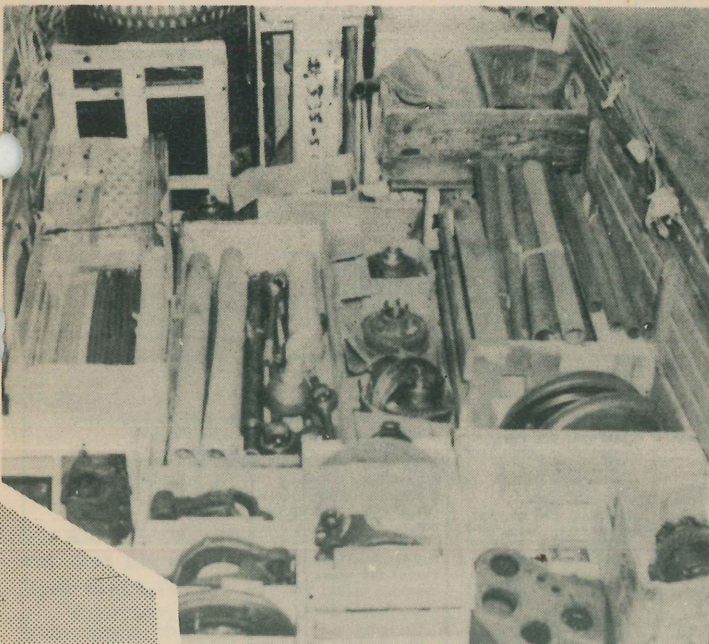
We like the idea, and we think you will too, especially if you have a lot of vehicles to prepare for storage.

*"Oil, lubricating, preservative, medium, Ordnance Dep't Specification AXS-674."

At the top of the opposite page, we have two remarkable pictures of men whose heads are bald on the inside. At the bottom of the page, pictures of a normal human head with the powers of thought and reasoning. The captions will explain.



WHAT'S WRONG WITH THESE PICTURES? Only a man with a head bald on the inside, could have had the guts to turn in spare parts hashed together on a truck the way you see them above. Delicate threaded and splined ends were left to be banged around as the truck jolted along; gaskets were tossed in to be torn and bent; rubber tubes, and hose were thrown together with oily and greasy parts and even loose cans of oil.



THE RIGHT WAY TO DO IT! All items are boxed as above to simplify handling. Splined and threaded ends are taped or wrapped. Large units are crated or boxed. Gaskets are left packaged and placed in a separate box. Brake liner and tubing are wired to the side of the truck body to prevent crushing or breaking. Inner tubes are folded, tied, and separately boxed to prevent injury and contact with oiled parts. Radiators are crated and radiator hose is in a separate container.

Fuels and Lubes

Here's a dandy guide based on OQMG Circular letter 438, Dec. 20, 1942, to tell you what fuels and lubes to use in what vehicles at what temperatures. It gives you types, grades, specifications of fuels (gasoline and diesel) and lubricants. Don't confuse this information with detailed lubrication instructions - you'll find those in the appropriate War Dep't Lubrication Guide, Ordnance Field Service Bulletins and TM's.

The fuels and lubes in this chart are for the usual operating temperatures - that is, above 0°F. For temperatures below 0°, see Ordnance Field Service Bulletin 6-11, "Cold Weather Lubrication and Service of Combat and Automotive Equipment," Dec. 15, 1942 (or directives put out by the arm or service responsible for maintenance of any particular piece of equipment).

| ORDNANCE COMBAT VEHICLES (gas and diesel) | | | | | | | |
|---|---|--|---|---|---|---|--|
| FUEL (GASOLINE) | FUEL (DIESEL) | OILS & GREASES | OILS & GREASES | OILS & GREASES | OILS & GREASES | GREASE | GREASE |
| <p>A. 91 Octane (Army-Navy Aeronautical Spec. AN-VV-F-776-Fuel, Aircraft Engine) for all climates. (This fuel is necessary for any tank units operating tanks with Continental R975 engines that have not been converted to operate on the 80 octane gasoline)</p> <p>B. 80 Octane (U.S. Army Spec. 2-103A) GRADE A for mean temperature from 50° F., to extreme heat. GRADE B for mean temperature from 25° F., to 70° F. GRADE C for mean temperature from extreme cold to 48° F.</p> | <p>U.S. Army Spec. 2-102B</p> <p>GRADE A for mean temperature from 50°F., to extreme heat.</p> <p>GRADE B for mean temperature from 25°F., to 70°F.</p> <p>GRADE X for mean temperature from extreme cold to 45°F.</p> <p>Where minimum temperatures below 0°F. are never encountered U.S. Navy Diesel Fuel (Spec. 7-0-2 (INT) having cetane number of 50 and pour point of 0°F. may be supplied. (This fuel is referred to as "submarine fuel".)</p> | <p>Tanks with (Radial Engines)</p> <p>OIL, engine, SAE 50 for temperatures above 32°F.</p> <p>OIL, engine, SAE 30 for temperatures below 32°F., and above 0°F.</p> | <p>Tanks & other Combat vehicles with Liquid In-Line Engines.</p> <p>OIL, engine, SAE 30 for temperatures above 32°F.</p> <p>OIL, engine, SAE 10 for temperatures below 32°F., and above 0°F.</p> <p>NOTE: Continental and Ford engines used in tanks use SAE 50 oil above 32°F., and SAE 30 oil below 32°F. (but above 0°F.)</p> | <p>Tank Driving Units (Transmission, Differential and Final Drives)</p> <p>OIL, engine SAE 50, for temperatures above 32°F.</p> <p>OIL, engine, SAE 30, for temperatures below 32°F., and above 0°F.</p> | <p>Driving Units for Combat Vehicles other than tanks.</p> <p>LUBRICANT, gear, universal, SAE 90, for temperatures above 32°F.</p> <p>LUBRICANT, gear, universal, SAE 80, for temperatures below 32°F. and above 0°F.</p> | <p>General-Purpose</p> <p>No. 1 (U.S. Army Spec. 2-107) for temperatures above 32°F.</p> <p>No. 0 (U.S. Army Spec. 2-106) for temperatures below 32°F., and above 0°F.</p> <p>No. 2 (U.S. Army Spec. 2-108) for wheel bearings at all temperatures above 0°F.</p> | <p>Water pump</p> <p>No. 4 (U.S. Army Spec. 2-109) for all temperatures.</p> |
| ORDNANCE TRANSPORT & SIMILAR VEHICLES | | | | | | | |
| FUEL (GASOLINE) | FUEL (DIESEL) | OILS AND GREASES | OILS AND GREASES | GREASE | GREASE | | |
| <p>80 Octane (U.S. Army Spec. 2-103A) for all overseas and outside Continental U.S. shipments.</p> <p>GRADE A for mean temperatures from 50°F., to extreme heat.</p> <p>GRADE B for mean temperatures from 25°F., to 70°F.</p> <p>GRADE C for mean temperatures from extreme cold to 45°F.</p> <p>72 Octane (U.S. Army Spec. 2-114) for all Continental U.S. Requirements. Follow same recommendations for use of Grades A, B, C, dependent upon climatic conditions.</p> | <p>U.S. Army Spec. 2-102 B</p> <p>GRADE A for mean temperatures from 50°F., to extreme heat.</p> <p>GRADE B for mean temperatures from 25°F., to 70°F.</p> <p>GRADE X for mean temperatures from extreme cold to 45°F.</p> | <p>OIL, engine, SAE 30 for temperatures above 32°F.</p> <p>OIL, engine, SAE 10 for temperatures below 32°F., and above 0°F.</p> | <p>Driving units (Gear Boxes, Differentials, etc.)</p> <p>LUBRICANT, gear, universal, SAE 90, for temperatures above 32°F.</p> <p>LUBRICANT, gear, universal, SAE 80, for temperatures below 32°F. and above 0°F.</p> | <p>General-purpose</p> <p>No. 1 (U.S. Army Spec. 2-107) for temperatures above 32°F.</p> <p>No. 0 (U.S. Army Spec. 2-106) for temperatures below 32°F., and above 0°F.</p> <p>No. 2 (U.S. Army Spec. 2-108) for wheel bearings at all temperatures above 0°F.</p> | <p>Water pump</p> <p>No. 4 (U.S. Army Spec. 2-109) for all temperatures.</p> | | |

MOTORCYCLES

| FUEL (GASOLINE) | OILS | OILS (Driving Units) |
|--|--|--|
| 72 Octane (U.S. Army Spec. 2-114) for all Continental United States Requirements. Follow same recommendations for use of Grades A,B,C dependent upon climatic conditions. | Oil, engine, SAE 50 for temperatures above 32°F. Oil, engine, SAE 30 for temperatures below 32°F., and above 0°F. | Oil, engine SAE 50 for temperatures above 32°F. Oil, engine, SAE 30 for temperatures below 32°F. and above 0°F. For service when air temperatures are below 0°F. refer to O.F.S.B. 6-11, or to the specific instructions of the service responsible for maintenance. |
| 80 Octane (U.S. Army Spec. 2-103A) for all OVERSEAS and OUTSIDE CONTINENTAL U.S. shipments. Follow same recommendations for use of Grades A,B,C, dependent upon climatic conditions. | | |

TRAILERS & SEMITRAILERS

GREASE, GENERAL PURPOSE

- No. 1 (U.S. Army Spec. 2-107) for temperatures above 32°F.
 No. 0 (U.S. Army Spec. 2-106) for temperatures below 32°F., and above 0°F.
 No. 2 (U.S. Army Spec. 2-108) for wheel bearings at all temperatures above 0°F.
 For service when air temperatures are below 0°F., refer to O.F.S.B. 6-11, or to the specific instructions of the service responsible for maintenance.

MISCELLANEOUS FUELS

WHITE GASOLINE - For field ranges, stoves and similar equipment use Treasury Department, Procurement Division, Proposed Specification for Motor Fuel "S", or use Motor Fuel "G" or use Standard White Gasoline, 50 or 60 Octane.
Must be free from tetraethyl lead.

FUEL OIL (For Oil burners) - For field laundries, water distillation outfits, and similar equipment, use Treasury Department, Procurement Division, Proposed Federal Specification VV-0-326. Available in commercial standard grades No. 1, 2, 3, 4, 5, and 6. Specific grades should be stated by requisitioning agency.

In emergencies, use Diesel Fuel in place of Nos. 1, 2, and 3 fuel oils if burners are capable of using this fuel.

Summary of Specification Data

| | | Other U.S. Department Specifications Used by Army |
|---------------------------------------|--------|--|
| Gasoline, 80 Octane | 2-103A | Gasoline, 91 Octane |
| Fuel, Diesel | 2-102B | Army-Navy Aeronautical Specification AN-VV-F-776 |
| Oil, engine, lubricating, all-purpose | 2-104A | Fuel, Diesel |
| Grease, General Purpose | | U.S. Navy Specification 7-C-2 (INT), 50 octane with 0°F. pour point. |
| No. 0 | 2-106 | Lubricant, Gear, universal |
| No. 1 | 2-107 | Fed. Prop. Spec. VV-L-761 (Also known as U.S.A. Spec. AXS-825) |
| No. 2 | 2-108 | Gasoline, White |
| Grease, water pump | | Treasury Department, Procurement Division, Proposed Federal Spec. Motor Fuel 'S', or Motor Fuel 'G'. |
| No. 4 | 2-109 | |
| Grease, wheel bearing, heavy duty | | Oil, fuel |
| No. 3 | 2-110 | Treasury Department, Procurement Division, Proposed Fed. Spec. VV-0-326. |

Water in the Winch

MYSTERY: HOW DOES WATER FIND ITS WAY INTO THE WORM HOUSING OF THE GAR WOOD WINCH ON THE 2½-TON GMC?

SOLUTION: There's a vent hole underneath the nameplate on top of the winch housing and such times as when a hose is played on a vehicle for washing purposes, water is forced in through the vent hole and down into the case where it mixes with the oil.

CURE: GMC recommends that the vent hole be plugged up. Future vehicles won't have a vent hole — the winch never operates hot enough to build up so much pressure that it

has to be vented. (Hell winches never did have a vent.)

Here's GMC's procedure for plugging up the vent hole under the nameplate of the Gar Wood winch:

1. Remove drain plug at bottom of housing and drain the winch worm housing.

2. Remove the 6 capscrews holding worm housing cover and lift off cover.

3. Wipe off all water collected between worm gear teeth. Use a piece of steel, brass or aluminum wire 1/8" diameter or a 1/8 x 1/4 or 3/8 long rivet. Coat same with shellac or permatex and drive it from inside of cover into the small vent hole in top of housing near filler plug. The

piece must have a tight fit in the hole. Peen over the end so it can't drop out. If wire or rivet is not available, plug the hole with any #6 self-tapping screw, sheet-metal or wood screw from 1/4 to 3/8" long. (Screw #185310, #6 x 3/8 self-tapping and #161787, #6 x 1/4 sheet-metal screws are carried in GMC 6x6 parts stock in depots and are suitable.)

4. Replace cover and tighten all 6 capscrews evenly to assure correct fit over bearings.

5. Remove oil level and filler plugs at side and top of worm housing. Fill worm housing with gear oil until oil appears at level plug hole. Install filler plug and after oil stops running out of level plug hole, install level plug.

GMC particularly urges that the above instructions be followed on vehicles stored or operated in freezing climates.

Low Voltage Circuit Tester

A man's afraid of a thing he doesn't understand. When the first Low Voltage Circuit Tester arrived in a 2nd-echelon shop, small groups of greaseballs stood well back and regarded it with anxious eyes. One man prodded it with a forked stick to see if he could make it spit.

But for all its vari-colored leads and switch-filled instrument panel, the Low Voltage Circuit Tester (Fig. 1) is harmless — and even useful.

It's nothing more than a combination voltmeter and am-

Does it eat little greaseballs? Does it have fangs? No! Here's the truth about this handy little troubleshooter.

meter packaged in a neat metal box, an ingenious and handy little device for troubleshooting the electrical system.

To make it work, you connect up all the leads from the box to the locations in the electrical system shown in Figure 2, then, using the various selectors and switches, you can: 1) check the condition of the battery, 2) check the starter circuit, 3) check the battery-to-generator ground circuit, 4) check the generator-to-battery charging circuit, 5) check the operation of the voltage regulator, and 6) check condition of the generator.

There are a couple of miscellaneous little things you can do like checking for voltage loss in the lighting circuit.

The Low Voltage Circuit Tester does its work by gaging the number of volts (electrical pressure) and amperes (volume of electricity) in the electrical circuits. Hitch up the leads, throw the switches and press the button — if the gage doesn't show the proper number of volts in the particular circuit being tested, something's wrong.

It's a much better approach to troubleshooting than blindly replacing units in the hope that trouble will disappear.

Here's the way the checks are made:

First, hook up the leads as shown in Figure 2: then tap the *battery leads* (with the sharp points) into the appropriate posts — be sure to tap the lead marked 'GND' into the post that's grounded.

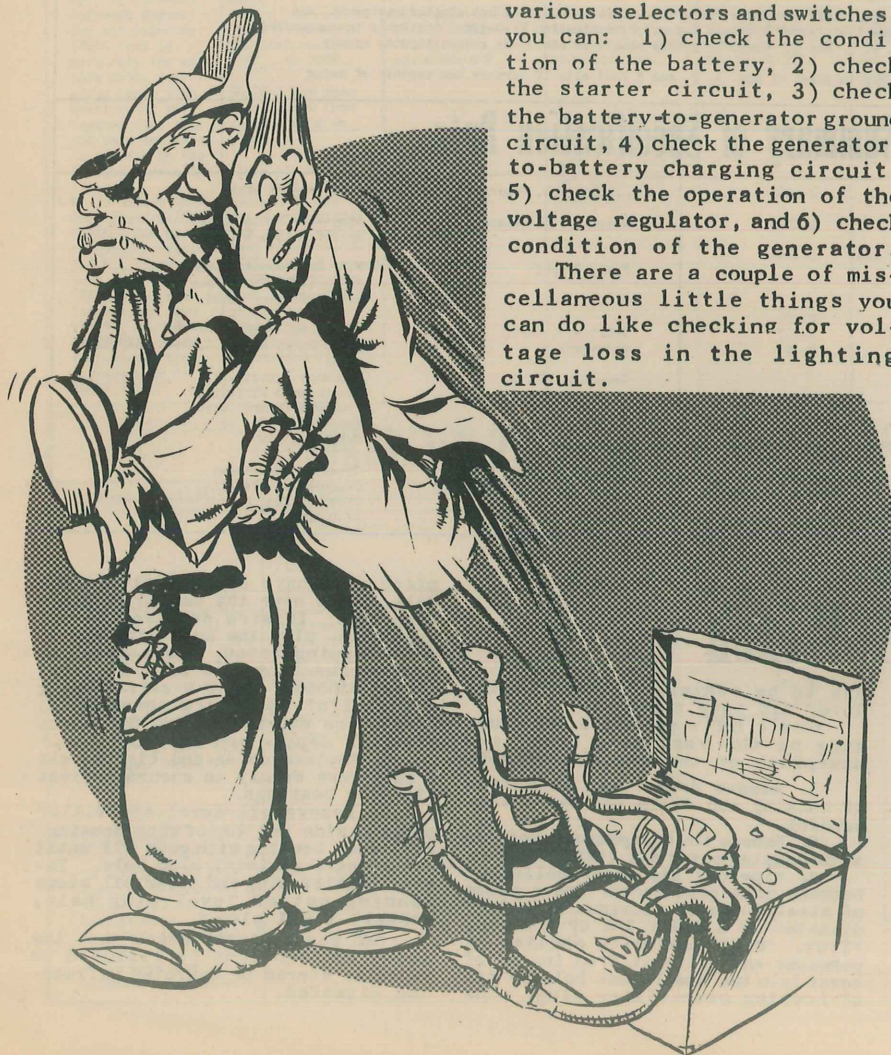
Hook the *voltmeter leads* up to the generator: the black lead to the ground terminal of the generator, the red lead to the armature terminal of the generator.

Disconnect the battery wire connected to the voltage regulator and hook up the tester lead with the shunt clip on the end, to this terminal. Put the wire that previously led to the battery terminal, on the outer screw of the shunt clip.

For our purposes, you can forget the last two leads in the tester.

Now you're all set to play with the switches.

Set the little knob of



the VOLTAGE SELECTOR SWITCH according to the voltage of the system being tested. If your truck has a 6-volt system, set it to 6 volts; if it has a 12-volt system, set it to 12 volts.

Turn the UTILITY SWITCH to the position marked REGULATOR TEST.

Set the METER POLARITY SWITCH according to the ground of the vehicle you're operating on. If it's negative grounded, turn the switch to NEGATIVE GROUND; if it's positive grounded, turn the switch to POSITIVE GROUND. This switch merely directs the current through the tester, so if you turn it one way and the needle moves in the wrong direction, set it in the other position.

Set the switch marked REGULATOR TEST SELECTOR to the No. 1 position.

Before you start making tests, remember this: all tests must be made with the engine warm and with the voltage-regulator cover in place.

Now you're all ready to go. Here's a test on the battery and the starter:

The tester being set - all you've got to do is step on the starter with the ignition off, and glance at the meter. It should read 5.25 if your truck has a 6-volt system or 10.5 volts if it has a 12-volt system (it won't read the full 6 volts on 6-volt systems or the full 12 volts on 12-volt systems because 3/4 of a volt and 1 1/2 volts respectively are used up in each of the systems).

If you don't get these readings on the meter, one or two things may be wrong: 1) the battery may be discharged - in which case you'll have to install a good battery before proceeding with further tests; 2) the starter may be bad - what usually happens is that the bearings or bushings that support the starter armature, wear and let the armature rub against the metal field posts. This results in increased current draw and consequent

voltage drop within the battery.

Now you may get a reading higher than 5.25 on the meter but still the starter doesn't have any pep. In this case the meter has told you in its own mute way that the connections somewhere between the starter and the battery are loose. The looseness could be at any number of places but the most common places are at the battery terminals - where the cable ends connect to ground and the starter switch. Looseness restricts the volume of current that's supposed to get to the starter.

The starter switch sometimes becomes burned and corroded so that it doesn't form a good path for current to flow. If the starter brush springs are weak or if the commutator is rough, the brushes won't seat properly on the armature commutator. Another thing: battery cables that are too small will slow up starter speed - make sure there are no broken wire strands near the connections.

When you're satisfied that the battery is o.k. and that the main feed lines or battery cables are doing their job properly, you can start with test No. 2 - the check for voltage loss in the Generator Ground Circuit. This is an important check for several reasons. When the engine is running, the generator keeps trying to push back into the battery, the energy used up for starting, ignition, lights, and any other accessories. Push is the word because the generator has no brains and is no judge of its own strength. If loose wires or connections between the generator ground and the battery ground resist the generator's efforts to send current back to the battery, the generator pushes all the harder trying to give off more volts. These extra volts back up in the rest of the system - a system designed to handle only 6 to 8 volts. This causes the regulator to work twice as hard resisting the extra voltage.

A greaseball of the nincompoop school, seeing that his

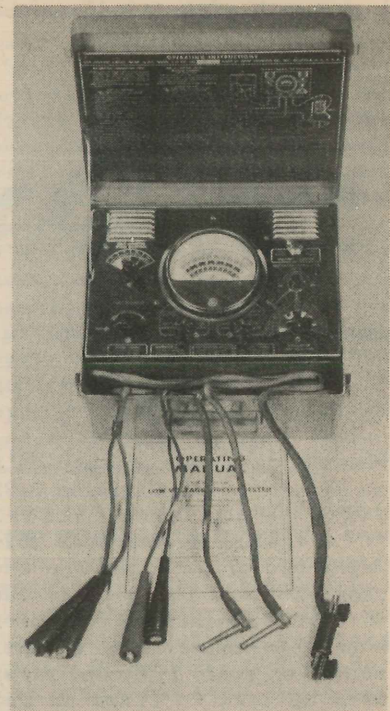
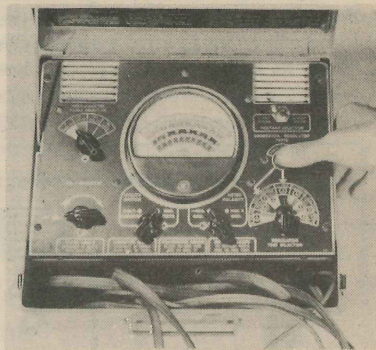


Fig. 1 \updownarrow The tester wraps its tentacles around young greaseballs and sucks the blood out of them. Below: the monster's face.



battery is not getting its full charge, starts playing with the regulator adjustments to raise the charging rate. This produces a higher voltage than the system was built to stand - the regulator points burn and burn, headlights flare up, glare brightly and fizzle out while the battery boils and fumes until its plates buckle up with the heat.

As a grand finale, the regulator folds up for what looks like no good reason at all.

The Low Voltage Circuit Tester makes the reason - poor

grounds in the generator-battery circuit - perfectly obvious. Here's how you make the test: with all the leads hooked up as before, set the REGULATOR TEST SELECTOR switch in the No. 2A position (leaving all other switches as they were). Start the engine and run it at about 2000 rpm's (about half speed) - 2000 rpm's is enough to make the generator produce its full output. Press the black button on the instrument panel and watch the green scale on the meter. Don't be surprised if it doesn't move much - it's not supposed to. When it does move, it shouldn't go more than one division (.05 volt) on the green scale.

A reading higher than this means bad grounds between the generator and the battery due to: 1) bad contact of generator housing to engine due to grease, paint, or rust; 2) ground strap from battery to frame in bad condition or loose; 3) ground from engine to frame in bad shape or loose.

Fix them up.

Another place where your Low Voltage Circuit Tester is adept at uncovering poor grounds is at the voltage regulator. Leave all switches as is, keep your engine running, and disconnect the voltmeter 'GRD'

test cable which is now connected to the regulator frame. Press the black button.

As before, the needle should not move more than one division on the green scale. If the needle moves any more than this, volts are being lost in the regulator ground circuit. Look for bad grounding of the regulator frame to the chassis due to loose mounting bolts, rust, paint, or grease under the regulator bolting lugs.

Your next test is for voltage loss in the charging circuit. Place the REGULATOR TEST SELECTOR SWITCH in the No. 2B position; keep your engine running. Press the black button and watch the yellow scale on the meter. If the battery is under the hood, the maximum loss should not be more than 1 volt (the wires are short and don't offer much resistance). If the battery is under the floor boards, out on the running board or elsewhere, the wires are longer and offer more resistance - hence the reading may be 1.5 volts.

A higher reading indicates resistance in the circuit between the generator and the battery - look for loose connections in the circuit or defective cables; look also for

defects or high resistance in the dashboard ammeter. Don't forget, undersize cables also create resistance and may be responsible for the high reading.

The regulator might be responsible for the increased voltage reading. Check this way: connect the RED voltmeter lead to the terminal marked 'BAT' on the voltage regulator, press the black button and glance at the meter. Allow for a .5 voltage drop in the meter reading. That's *normal*. If the meter reading reduces by more than .5, the regulator is building up resistance.

Thing to do is have the voltage regulator replaced (or repaired, if you're the man for the job).

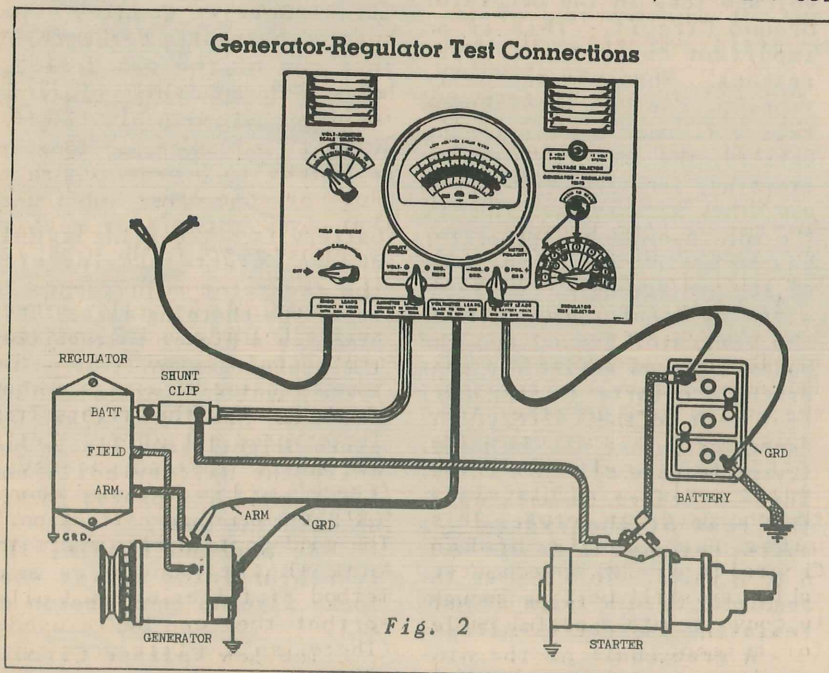
If this last test shows that the regulator is all right, the next thing to do is to check the ammeter.

Move the red voltmeter clip to the ammeter and connect the armature lead to the generator side of the ammeter. Press the button and read the meter. Now move the clip to the battery side of the ammeter and take another reading. If the reading on one side is much lower than the reading on the other, it proves that the ammeter was resisting the generator's efforts to send a charging current back to the battery.

Thing to do then is clean and tighten the connections at the ammeter and if this still doesn't do the job, replace the ammeter.

Having made all the other tests and assured yourself that everything's in apple pie order, the time now comes to check the generator output. Set the REGULATOR TEST SELECTOR switch to the No. 3 position. Run the engine at about 2000 rpm, press the black button and look at the black scale on the meter. The amperes registered on the black scale indicate the maximum output the generator is regulated to - the reading should be the same as the

(Continued on page 380)





Got a good idea? Invented something lately? Got a gripe? Shoot it along to us. Maybe you've solved a problem everybody else is worrying about. Pass it to us, and we'll buck it to the rest of the boys in the field. You'll get a personal subscription if we like your idea - you lucky thing.

Sgt. Earl F. Clark, of the 511th C.A. (AA) writes from Camp Haan to suggest a field expedient for oil-filter gaskets that start leaking out on a march. It seems that excessive 'grooving' of the gaskets has sometimes caused so much oil loss (not to mention the dirt accumulated on the engines) that officers and men have had to buy oil and gaskets to get back to their posts. This is unnecessary, Sgt. Clark points out - all they have to do is take out the gasket, turn it over, and reinstall it. It'll then give temporary protection. But don't forget to install a new gasket when you get back to the post: the same gasket can't be turned over again.

B. C. Gilmore, Base Automotive Advisor at Davis-Monthan Field, Arizona, reports on what at first glance looks like oil leaking at the rear main bearings of Chevrolet and GMC vehicles.

He finds in a good many cases that the oil leak is actually due to bad valve-cover gaskets.

The oil runs down the back end of the engine block onto the flywheel bell housing. Greaseballs finding it at the bottom of the bell housing often mistake it for a rear-main-bearing leak.

As a cure, Mr. Davis suggests checking all valve-cover gaskets to make sure they fit the cover before they're installed.

Valve-cover gaskets are cork and if held in stock for even a short time, dry out and shrink up.

If you find a bunch of gaskets dried out, soak them in water for about 20 minutes and they'll assume their original shape.

P.S. Excess tightening of the valve-cover hold-down nuts also causes valve covers to buckle and allow oil to escape.

F.R.M., Civilian Automotive Technician, 1st Cavalry Division, Fort Bliss, Texas, says:

The boys are doing a swell job cleaning and refilling the oil reservoir on the jeep oil-bath air cleaner. However, if they will look a little closer they will find a wing nut at the bottom of the filtering element. The filtering element is an important item and should be removed and cleaned the same as on the GMC's and Chevrolets.

Mr. H.M. Barnes, Technical Advisor at Camp Crowder, Mo., has a good idea for cutting down the longer speedometer cable of larger trucks to fit the 1/4-ton jeep.

The jeep speedometer cable is considerably shorter than the cables used in other Army vehicles and in most cases the instrument-panel end of the longer cable is identical to the one used for jeeps. This being the case, a broken Chevrolet or GMC speedometer cable may still be long enough to convert into a useful cable for a jeep.

Just remove the broken cable from the jeep and select

one of the GMC or Chevy cables you salvaged that has the same type adapter at the speedometer gage end. Using the broken jeep cable for a guide as to length, cut the salvaged cable to match. Now solder the blank end back about one inch and file it to fit the square opening in the transfer case in the jeep.

Squeaks are being eliminated in 1/2-ton Dodge steering-wheel hubs (they can be caused by water entering the hub and causing corrosion) by a method originating between the ears of Sgt. Russell Hinton of the 9th Signal Service Company. He sprayed hydraulic brake fluid into one of the two drilled holes in the hub, while plugging the other hole with his finger. This is a good idea, so long as he sticks to hydraulic brake fluid or some other lubricant that does not affect rubber (graphite would be O.K.).

Captain A. Hansell, Vorheesville Holding and Reconsignment Depot, doesn't like the idea of using ✓ marks to show which items on the Drivers Trip Ticket need attention. Let's use an 'X' instead, he says. 'Check' in his language means 'OK'; 'X' means 'need attention.' The good Captain also wants to know whether there is any method of filtering used oils so that they can be re-used. (There isn't. Detergent-type oils now used by the Army lose their detergency when re-

claimed. You can add new detergents but it takes a laboratory analysis to make sure your oil is fit for re-use.)

Dear Ed,

When we began removing wheels and bearings for repacking and adjusting, we found, to our sorrow, that every grease seal had been damaged by bumping out the bearing cone, this being especially true on Dodge trucks. Thus finding, we decided something had to be done.

What we decided was that by knocking the bearing cup out instead of the bearing cone, the seals come out looking almost as good as the ones we get from parts supply channels.

H. M. Johnson Auto. Adv.
Camp Butner, N. C.

Dear Ed,

In your January Contributions Department you show and describe a jeep hub-cap puller. I'd like to point out that any 2nd Echelon Set No. 2 has something that will do this work as well if not better than the puller you described.

'Puller, universal, slide-hammer type, reversible, with three jaws' is the correct nomenclature for it and the stock number is 41-P-2957. This puller is primarily a seal puller but by reversing the jaws and by turning the jaw control nut over thus making it contract the jaws instead of expanding them, you have a nifty jeep hub-cap puller.

T/4 Paul Stevens
Camp Claiborne, La.

Dear Ed,

There are thousands of Army vehicles running around with front tires rotting away as fast as melons in the sun. The rotting is taking place on the inside walls of the front tires.

If a front-wheel U-joint is not leaking, it is at least seeping, and a certain amount of this grease seepage or leakage collects on the wheel flanges. If these flanges are not frequently wiped clean, the grease drips down onto the

inside surface of the tire. Since grease rapidly rots rubber, it's no time at all before the tire begins to 'grow' and deteriorate.

We make our drivers wipe the flanges each morning and evening at motor stables. If the vehicle is in constant use, they wipe the grease off the housing too - the slight amount of grease needed to protect the smooth housing from rust, is soon enough smeared over it again.

A. C. HALLIDAY
Principal Auto. Advisor
Camp Blanding, Florida

Mr. W. A. Hurst, Automotive Advisor, 816 T.D. Bn., Camp Bowie, Texas, says:

Here's a little improvement on the hand-operated windshield-wiper of the 1/4-ton jeep (God knows we need it). It enables you to use the Universal Windshield Wiper Arm Set (Fed. Stock No. 8-A-1500) to make the nicest little wiper for hand use you ever saw.

Remove the old wiper and set aside the little handle for a minute. Cut a little shaft (one end will be threaded) about two inches or so, out of the part of the old wiper that went through the windshield frame. Take the 'drum' type adapter out of the Universal Windshield Wiper Arm Set and use it as a model to make a 'drum' type adapter you can weld onto the plain end of this little shaft. Insert the little shaft through the hole in the windshield frame (home-made drum adapter on the outside) and attach the handle on the inside by means of the nut.

Now just put the Universal Windshield Wiper Arm on the drum adapter, tighten up the little screw on the wiper arm, and you're all set for a rainy day. (Ed. note - we know Mr. Hurst won't mind that we added a couple of little improvements on his improvement. By the way, although the spring tension of the new wiper arm will help keep the wiper from dangling loose, it might be a

good idea to install a spring clip on the inside of the windshield frame to hold the handle securely when the jeep goes bouncing over rough roads. FLASH - DETROIT REPORTS THAT A BETTER WIPER ARRANGEMENT IS BEING PREPARED FOR JEEPS. WE'LL LETCHA KNOW MORE LATER.)

The top inlet pipe on the 1/2-ton Dodge radiators, has a bad habit of breaking the top tank around the inlet casting. We take a piece of 16 or 18 gage sheet metal, make a brace and solder it on the neck just above the hose and up on to the top of the tank along the edge. (A good man can do this without even removing the radiator.) The metal brace is cut in the shape of a triangle with a blunt point - about 4 inches wide where it fastens to the tank, on down to 2 inches where it solders onto the neck. Bend the brace down 1/8" along each edge to make it more rigid. We find this idea successful and have encountered no more trouble with the top inlet pipe cracking out.

Here's another thing on our 1/2-ton Dodges: oil was always leaking out of the front seal (in the axle housing) and traveling into the constant-velocity joints. When you look at the seal, the spring is always out on one side or the other, so we decided the axle was oscillating too much and pulling the spring out when the truck hit rough terrain. (Ed. note - Mr. Hurst made a bushing and installed it in the axle-shaft housing to serve as a guide for the axle shaft. However, a new and better seal has been issued by the Fargo Corporation which will be better able to take the strain of axle oscillation on the 1/2-ton Dodges. On the 3/4-ton Dodges, a steel bushing is used as a guide for the axle shaft in exactly the manner described by Mr. Hurst.)

Dear Ed,

Here's a couple of words on the subject of air brake failures: causes and cures.

CONDITION: Many air-brake-equipped vehicles are found with air leaks at relay valves on both tractors and trailers and at tractor-trailer hose couplings. Also, with damaged windshield-wiper motors and regulator valves.

CAUSE: Air systems are fouled with oil-water solutions, dust, and sand. Moisture picked up by the air compressor is mixed with oil that gets by the compressor piston rings, the moisture condenses and turns into water. Dust and sand enter the air-brake system through unprotected air-brake couplings when tractors are disconnected from trailers. Rubber bushings in tractor-trailer hose couplings become dried out, scuffed and cracked.

EFFECT: The oil-water solution deteriorates rubber diaphragms in air-brake valves and chambers. Dust and sand hold the valves open, causing air leaks. Moisture rusts, corrodes, and damages the windshield-wiper motors and regulator valves. In freezing temperatures, brake valves and chambers freeze and crack the rubber diaphragms. Rubber bushings in tractor-trailer hose couplings become cracked, scuffed, and distorted, causing air leaks.

CURE: Service air cleaner monthly (as directed on air-compressor cleaner). Drain all air reserve tanks after every four hours of operation. Keep all air-brake openings protected from dust and sand. Dummy couplings are provided for that purpose on both the tractors and trailers, brackets are provided for the trailer ends of the tractor-trailer hose on the tractors. Lubricate rubber bushings in tractor-trailer hose couplings with hydraulic brake fluid. Do not use mineral-base lubricant for this purpose.

Earle L. Busl,
Federal Motor Truck Co.

Dear Editor,

Most of our troubles at

this post are water and moisture troubles. We had a lot of difficulty with dimmer switches filling up with water with consequent rusting and eventual failure to function. We remedied the trouble by taking the switches apart, cleaning and lubricating them and then drilling a small hole in the switch body (at the lowest point) so the water would drain out. The water seems to come in at the top of the switch as a result of drivers washing the interior of the cab. (Ed. note: (1) Tell drivers not to clean the cab with water, (2) Keep that hole small as you can (1/8") to prevent dirt using it as an entrance. You can help waterproof the switch by sealing the groove between the insulation and the edge of the switch body with shellac or paint.)

I noticed in the January issue of ARMY MOTORS, a suggestion about using a piece of rubber tube wherever the blackout wire ran through the body. We have just finished installing our Blackout Driving Lights and used the same holes as used by the headlamp wires both in fender and side panel, running the blackout wire alongside the headlamp wire. In this way the wire can follow the wiring harness using loops and all up through the firewall to the switch. (Ed. note: A hunk of loom to protect the wire where it leaves the B.O. lamp and enters the body will give added protection to the wire. Install grommets where

the wire runs through the drilled holes to prevent chafing of the wire.)

Sgt. E. Swanson,
Fort Lewis, Wash.

Dear Ed,

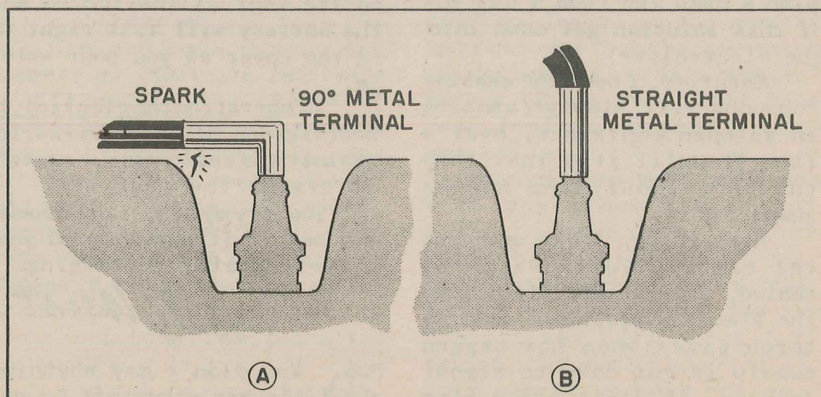
If you've been having trouble with your trucks missing on hard pulls, listen to what we found:

On rebuilt motors that we've been installing in 2½-ton GMC's, the spark-plug terminals are the '90° angle' type ('A' in Fig. 1). One end of the terminal is close enough to the head of the engine so that operating under open throttle, the spark will jump from the terminal to the head causing the engine to misfire.

Some of the wires are long enough to permit us to cut the 90° terminals off and install straight terminals. In cases where the wires aren't long enough for this we have to install all new secondary wires (except, of course, the wire from the coil to the distributor cap).

T/5 James A. Conway
Co. A 6 MTZ QM Bn.

(Ed. note: Just offhand, we'd say the trouble could be caused by using short sparkplugs: they fit down too deeply in the well and bring the spark-plug terminal close to the head, making it easy for the spark to jump. And incidentally, T/5 Conway is talking about metal sparkplug wire terminals - a lot of GMC's have little '90°' bakelite suppressors at the sparkplug.)



374 Dear Half-Mast:

We are having trouble with batteries cracking in our Ford 1/4-ton jeeps, especially the Willard 15-plate batteries.

We've tried resealing them with a hot iron and also with a blow torch, but with very little success. They have a way of cracking again within two or three days or even overnight. This happens even when the vehicle has not been driven or when the battery has not been installed in a vehicle.

Ever have any experience with this trouble?

Lieutenant R.H.P.

Dear Lieutenant R.H.P.,

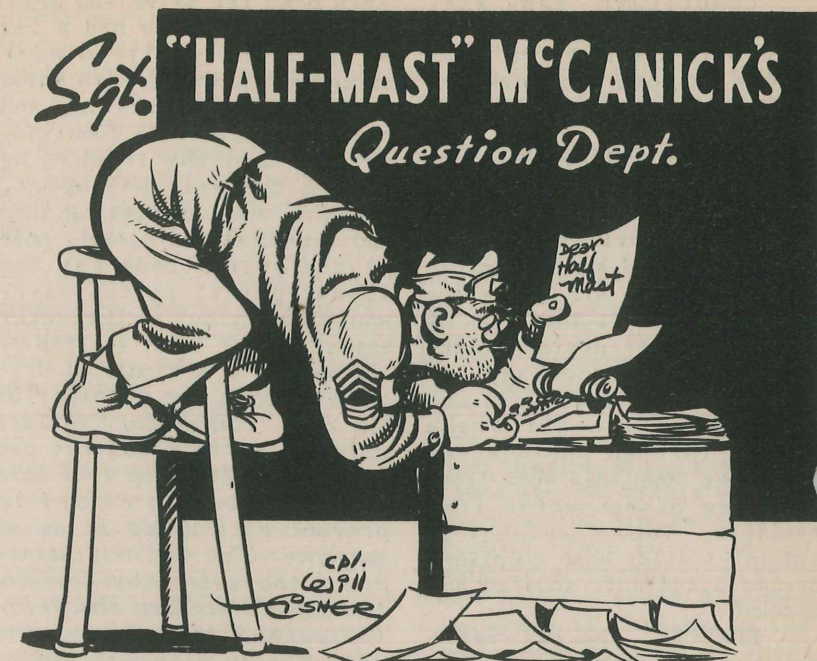
The way I usually seal a cracked battery is a little different from yours, and maybe that's why I haven't had much trouble with the sealer re-cracking.

First of all, I'm always careful to see that the cracked surfaces are entirely clean. You see, when a crack occurs, the electrolyte in the battery is likely to leak through the crack and contaminate the cracked surface. Sealing compound won't stick to a surface that's wet or contaminated with electrolyte.

Therefore, I gouge out the old compound with a screw-driver or something, and then use a hot flat-blade knife (like a putty knife) to scrape away any pieces that may be sticking to the cover or the upper part of the container. These surfaces then have to be neutralized with a bicarbonate of soda solution (cook's baking soda) and the solution wiped off with a damp rag (don't let any of this solution get down into the electrolyte).

Meantime, I heat the sealing compound very slowly (usually in an open container, over a flame), until it's just thin enough to pour, and has no lumps in it.

Next thing, I dry and heat the battery surfaces to be sealed, using a soft flame like the flame an acetylene welding torch gives when its oxygen supply is cut down to almost nothing. I don't use a blow



torch because it gets too hot and might burn or deposit impurities on the surfaces I've just so laboriously cleaned.

While the surfaces are still warm, I pour on the compound and then apply the torch flame until the compound takes hold of the rubber surfaces. I can tell when this happens because the compound creeps along the jar and cover a little bit.

Going way back, Lieutenant, one big reason for batteries cracking in the first place is overfilling. Now even though you may think that you can't overfill the newfangled batteries because of the fancy-dan airtraps they put in them, you just forget to put the cell cap on the vent as instructed and the battery will fill right up to the cover as you pour water in.

In operation the electrolyte heats up and pressure is exerted against the cell cover - zzzzt, it cracks the sealer.

You try my way, Lieutenant, and see if it doesn't end your battery sealer re-cracking.

Half-Mast

P.S. You didn't say anything about the gas given off by the

electrolyte exploding, so I assume that you've been using your head and removing all the caps while working around the battery with a torch.

Dear Half-Mast,

1) Where can we find a more complete description of tools and equipment than the mere listing of 2nd and 3rd echelon sets by stock number? How about pictures of these tools and sets?

2) You got any information on the identification card mentioned in AR 850-15, paragraph 16f to be given by the driver to civilians involved in accidents with military vehicles?

3) How about a field manual on blackout driving?

Lt. R. M. T.

Dear Lieutenant,

1) What you need is SNL N-19, 'Tool Sets, Motor Transport.' It lists the 1st, 2nd, 3rd, and 4th-echelon tool sets, and also the specialists' tool sets. It carries photographs of all the 2nd-echelon sets (there are eight of them) and photographs of the specialists' sets. Sorry, it has no photographs of the 3rd and 4th

What Half-Mast doesn't know you could put in a gnat's ear and, by the same token, what a gnat doesn't know you could put in Half-Mast's ear. Half-Mast is the answer man, he'll answer all those questions — technical, procurement, procedure — that have you up a tree. Write 'Dear Half-Mast.' Preventive Maintenance Unit, Holabird Ordnance Depot, Baltimore, Maryland.

echelon tool sets. However, if you must look at pictures of heavy machinery, you can whip out your trusty copy of the 'Ordnance Publications for Supply Index' (OPSI) which lists all the SNL's in existence and find yourself some SNL's for machine-shop trucks. The machine-shop-truck SNL's I've seen, show photographs of the trucks, tools, and equipment.

(SNL's, OPSI and similar Ordnance publications are available from the particular distributing agency serving your area and your type of organization. The chart in our story on Ordnance Field Service Publications will tell you who to write to.)

2) The identification card mentioned in AR 850-15 which is supposed to be given to civilians involved in an accident with an Army vehicle, is not printed by the Gov't. The usual practice is for an organization to have the necessary information mimeographed on a slip of paper which the driver then hands over to the civilian. Some outfits have a rubber stamp containing the information, made up. This way they turn out all the identification cards they need.

3) So far's I know there's no field manual on blackout driving. However, the following publications and film have the following sections devoted to the subject:

FM 25-10, 'Basic Field Manual, Motor Transport', Page 67 - 68.

FM 31-25, 'Desert Operations', paragraph 29, (also Change 2 to this manual, paragraphs 29 and 41). (You can get the above two manuals from the A.G.O. through your

A. G. O. Depot.)

Army Motor Maintenance Text No. 16, Page 16 (this publication is available from the Preventive Maintenance Unit, Holabird Ordnance Depot, Baltimore, Md.

Training Film 11-557, 'Motor March and Night Driving.'

Also the first letter in my dep't in the December ARMY MOTORS Magazine tells something about the proper use of the Blackout Driving Head Lamp.

Half-Mast

Dear Half-Mast,

I have a question here that has bothered me for almost a year.

Why in the hell do we have to change oil in a jeep every 1000 miles when the maintenance manual says every 2500? If oil is ammunition, then we sure are shooting off a lot of blanks.

Put me wise, will you?

S/Sgt. R. L. P.

Dear Sergeant,

It's true the manual says oil should be changed every 2500 miles. But if you read further down you'll see that 'vehicles operated in extremely dusty country should have the oil drained both winter and summer, at 1000-mile intervals or oftener.' The figure of 2500 miles is the outside maximum under the most favorable conditions, but in rough, tough, military operation dust, condensation, and sludge get into the oil and you have to change it more often. Operating conditions, not the manual alone, should tell you how often to change oil.

Half-Mast

Dear Half-Mast:

I wrote to the Auto-Lite Company for some information I need and they advised me to write to you. Seems that when our Chevvy 1-1/2-ton, 4x4's sit for three or four days, the batteries go dead. We've located the trouble in the voltage regulators — they seem to exert a slight drain on the batteries. The regulator itself seems to be okay — the points don't stick, etc. But when we disconnected the lead from the voltage regulator to the battery, our trucks could set for a week and the battery would stay up — no drain. We tried a couple of things then found that by grounding the base of the regulator to the frame of the truck, it stopped drawing juice out of the battery. Two other outfits I checked with, told me they had the same trouble. What say?

Sgt. N.N.A.

Dear Sergeant,

It couldn't have been a short circuit in the voltage regulator that was draining your batteries because you say that grounding the regulator to the frame cured the trouble. You didn't say whether you were operating your trucks while all-what-you-say was going on — but considering your remarks about the voltage regulator, I assume you were operating them. So here's the way I reconstruct the case: As I see it, your trouble was with the generator failing to get enough current back to the battery. Right here you jump up on your hind legs and say 'T'hell with that noise! I started the truck and looked at the ammeter and it showed that the generator was delivering its full charge.' Ah but, I say, you might have been fooled. A poor ground when cold will offer a lot less resistance than when hot (same with any other electrical parts). And here's what might have happened in your case: You started the vehicle, looked at the ammeter and saw that it was delivering full charge. It was delivering its full charge because the poor ground was still cold and not

offering much resistance. But then you took your truck out for a run — the poor ground warmed up and offered an increased resistance which didn't allow the generator to send a full charge back to the battery. So there you were operating your truck without the battery being rejuvenated. You took your truck back, let it stand a couple of days and your already partially drained battery ran all the way down.

Then along you came and ground the regulator to the vehicle frame. Grounding the regulator to the frame did away with the original poor ground and the high resistance it offered when warmed up. This allowed your battery to get a full charge when the truck was in operation. From that time on your bad battery trouble was ended.

Now, Sarge, you're over there and I'm over here — and the only thing I could do in your case was prog-nos-ti-cate by ear — so if you don't like my guess and still think it was a short draining the battery, why here's what you can do: Take off a battery cable and connect a voltmeter between the cable terminal and the battery post. With all switches off, the voltmeter needle shouldn't budge. If it does and you get a reading, then you know there's a short circuit somewhere. If you suspect it's in the regulator, disconnect the lead from the battery to the regulator at the regulator. If the voltmeter needle returns to zero, there's probably a short in one of the shunt windings in the regulator. In that case, replace the regulator.

But I still think the way I doped it was right.

Half-Mast

Dear Half-Mast:

We have a GMC that doesn't know there's a war on. It uses about two gallons of Prestone a

week. It seems that on cold mornings, when the truck is first started, the coolant runs out of the overflow tube and afterwards the engine overheats.

We have flushed the radiator and core, installed a new thermostat and even put on a new radiator cap, but without results.

What do you advise?
Corporal F.M.

Dear Corporal:

I'd put it down as a case of loose kidneys because normally the things you've done are enough to remedy most cooling system troubles.

You say the coolant runs out the overflow pipe soon after the engine is started. This indicates two conditions to me: First, stoppage of circulation between the radiator top tank

and the intake side of the water pump. If you're positive that the radiator core is clean, that leaves only the second condition — air entering the cooling system. When air enters it displaces the cooling fluid causing it to run out the overflow pipe.

A leaky head gasket will let 'compression' enter the cooling system and displace the coolant. You can detect this by slipping a rubber hose over the lower end of the overflow pipe and submerging the other end of the hose in a can of water. Now start the engine and watch for air bubbles. Caution: Always be sure and block the relief valve in the radiator cap open when making this test.

Sometimes a head gasket won't leak unless the engine is pulling or under load, so it's a good idea to jack the rear wheels clear of the ground and place the car in gear. Then make the engine labor by applying the brakes. If bubbles appear in the can in spurts it's a sure sign that compression is leaking into the cooling system.

If the bubbles come out slowly and in a steady stream,

air is entering by the water-pump shaft or around some of the hoses. Also you might check the thermostat to make sure the small bleeder hole is open in the thermostat valve. If this hole clogs up it allows pressure (from the heated water) to build up behind the thermostat until suddenly the hot water hits the operating element of the thermostat and causes the thermostat to pop wide open. The fluid surges up in the radiator and on out the overflow pipe.

Late ignition timing or too lean a fuel mixture are two other things that cause overheating. But if I were you I'd concentrate on checking for air entering the cooling system that looks like the source of your trouble.

Half-Mast

P.S. I sure hope you're positive about the radiator being clean — a block in the core is the usual trouble in this case.

Dear Half-Mast:

What have you got to offer on the subject of oil cans? Those pitcher-like affairs that they issue to us are about the worst way of keeping and pouring oil I've ever seen. Why not have a different can or an attachable spout with cover, so the oil will stay clean?

Having thrown quite a few dollars' worth of oil away on maneuvers and seen loss of tank engines ruined from dirt and sand, I believe something should be done either to the cans or to the drivers.

Dear Corporal: Cpl. S.

You wrote your own answer — do something to the drivers.

The Army has better oil cans, in 1-quart, 5-quart, and 5-gallon capacities, but they ship them to the boys overseas who need them worse than you do. When your drivers have to pour oil in the desert or the jungle, they'll be glad the oil cans are there instead of here.

Meantime, I suggest you get that topkick of yours to make the boys leave the oil in the drums until they are ready to use it, and pour it carefully when they do use it. This'll help stop the waste and keep the dirt out of the oil.

Half-Mast

Dear Half-Mast:

There is no part number for the Air Brake Chamber Boot on the 968 Model Diamond T. We know the Bendix-Westinghouse Number is 217164 but requisitions bearing that number always come back. There is no listing in the parts book and no Diamond T number. Our airbrake chambers are dying of dust and dirt. What do we do?

Lieutenant C.W.C.

Dear Lieutenant,

For some reason unbeknownst to me, a part number for the air-brake-chamber push-rod boots on the 968 Model Diamond T was left out of the early manuals. However, you'll find it in parts manual TM 10-1532. The front brake-chamber boot Part Number is 46437F, Bendix-Westinghouse number is 201687; the rear brake-chamber push-rod boot number is 36431F, and Bendix-Westinghouse number is 10893.

I suggest you write these numbers in your Parts Manual for future reference.

Half-Mast

Dear Half-Mast:

How do you check the level of gear oil in the Chevrolet 4x2 transmission and the Dodge 4x4 transfer case? We understand that the oil should be 1/2 inch below the filler plug but since there is a gear opposite the hole, we can't find a satisfactory method of gaging the oil level.

Question two, can we use a detergent oil in the cylinders of hydraulic lifts on bulldozers?

We are having trouble with the saddle bags getting scorched by the exhaust pipe on the 42WLA motorcycle. How can we

prevent these bags from looking and smelling like roast beef? Also is it permissible to use Neat's Foot Oil on the bags?

And while I'm on the subject of motorcycles I'd like to know if these 42WLA's are supposed to have fire extinguishers and if so, where and how are they mounted?

Last question: We've got pains with tarp straps pulling off and stitches breaking on the jeep arm support where two flaps buckle around the arm of the top support.

Well???

S/Sgt. L.

Dear Sarge:

About the gear-oil level: keep the oil in the gear case at the level of the filler plug. This magazine promoted the 1/2-inch-below-the-filler-plug idea in its last two issues to keep guys from overfilling their gear cases. Thing was that in cold climates, gear oil was often installed cold, in cold gear cases. The stiff oil piled up on top of the gears, in back of the case, etc. — then when the case warmed up in operation, the oil drained down off the gear and was way over the plug level.

Best advice for you to follow is: keep the oil at the filler-plug level — check it only after it has been warmed up by a short run (or the climate) to about what room temperature would be. About that gear being in the way — since you'll be filling the transmission to plug level, that shouldn't bother you.

I checked with the engineers on the question of oil in the hydraulic lift and they say that #10 oil, detergent or not, is O.K.

I was a little puzzled about how your saddle bags are getting scorched on the WLA motorcycle. After chasing down and looking at a WLA and talking to a couple motorcycle experts I can only offer the following solution:

Since the top of the muffler isn't close enough to the bottom of the bag to burn it, hot exhaust gases must be escaping in order to scorch the bag. I would suggest that you check the connection between the fish tail and muffler for leaks.

There's no objection to using Neat's Foot Oil to keep your bags pliable — if you can get it.

Fire extinguishers are not standard equipment on motorcycles. In special cases they are mounted on the safety rail behind the seat or on the side with U-bolts and a standard bracket.

About the tarp straps that hold the jeep top to the 'bows' coming loose — the trouble seems to be with the heavy-set boys who use tie bows as hand holds when the jeep goes bouncing along. They jerk it hither and yon and pretty soon it gives.

Half-Mast

Dear Half-Mast,

We have the tools, electric sander, and painting equipment for a good body and fender shop, but don't have any reliable source of information on how to do the work. Can you give us a few pointers on body bumping and related subjects?

Lt. R. M. R.

Dear Lieutenant,

Little girl I know up to the local burlesque institute could give you a couple of good pointers on body bumping — howsomever, since I'm sure you're not interested in such things, I'll mention a couple of good War Dep't



TM's on body bumping: TM 10-450, 'Sheet Metal Work, Body, Fender, and Radiator Repair,' and TM 10-455, 'The Body Finisher, Woodworker, Upholsterer, Painter, and Glass Worker.' You can get them from the Adjutant General's Depot in your service command.

Half-Mast

news from the - Training Front

DESERT OPERATION

So you want to know a little something about desert operation? Well, my boy, no sooner sand than dune - lo and behold, what do we have before us but Training Circular No. 2, dated January 6, 1943, 'Desert Operation of Motor Vehicles.' Chock full of operating techniques and preventive-maintenance precautions hot off the proving grounds of North Africa and our own Wild West, the Training Circular warns 'It is essential that special training be given enlisted men and also officers, whose supervisory responsibility in operations and preventive maintenance must be fully carried out on the desert.'

Of course, TC No. 2 doesn't tell the whole story. You'll have to rely on your basic FM 31-25, 'Desert Operations,' for that. But there's plenty here that hasn't been told before.

TC 2 makes no bones about what you'll be up against. Sand and heat - much too much of both for anybody's (or any vehicle's) good. Sand that gums up every part it can reach, clutters up oil and fuel, buries wheels alive. Rocks that beat tires, springs, drivers and mechanics. Blazing heat that boils up a mess of trouble under the hood.

But there are ways of taking the desert in stride, things you can do beforehand - like the well-known practice of deflating tires to a prescribed low pressure (TC 2 supplies a table of correct tire pressures for flat desert, sand dune, and rocky terrain operation). There's plenty of advice on how to free stuck vehicles, best ways to start in soft sand, when not to

shift gears, how to climb dunes, how to steer your way through miles of rock. You'll find the answers to common desert difficulties - the misbehavior of cooling systems, fuel systems, dual tires, springs, winches, even jittery nuts and bolts. Problems of camouflage and concealment are discussed.

The driver's preventive-maintenance job in the desert is just about the same as in ordinary operations, but some of it needs to be done more often. And there's a list of extra precautions.

A special kind of self-discipline required for desert driving comes in for a share of attention, too.

To drive its story home, Training Circular No. 2 winds up with a suggested 74-hour training schedule - including 56 hours of actual practice.

Which is just another way of saying you can't learn sitting on your fanny - you've got to get out and do.

BELOW-ZERO OPERATION

In Spring, a young man's fancy lightly turns to practically anything *but* 'Cold Weather Lubrication and Service of Combat and Automotive Equipment,' but remembering that it isn't Spring all over the world, the aforesaid title (found on Ordnance Field Service Bulletin No. 6 - 11, December 15, 1942) makes plenty of sense in plenty of places.

What's more, since we have it on good authority that Winter will play a return engagement next year it won't do anybody any harm to look into OFSB 6-11 - and all that its title implies.

To begin with, this bulletin* isn't interested in *Augments War Department Lube Guides and Ordnance Field Service Bulletins of the 6 series.

anything but 'hard-times' weather - temperatures from 0° F. down to 40° below. And here's the whole point: 'Automotive equipment can be operated efficiently at low temperatures if the instructions given in this bulletin are followed.'

OFSB 6-11 gets right down to cold facts. It tells you what grades of gasoline and diesel fuel to use, and how to handle them. It goes into vehicle preparation and lubrication for continued subzero operation, with special attention to the problem of starting various types of engines. Reference is made, incidentally, to winterization kits which are being prepared for all vehicles; instructions are given for operation both with and without such kits. You'll find specific detail on the lubrication of transmissions, transfer cases, differentials, final drives, gear cases, assorted bearings, joints, and chassis points. You'll be fully enlightened on the technique of oil dilution, on the proper use of shrouds and heaters, on precautions for battery protection, and whatnot.

It all comes under the heading of preventive maintenance - to keep motor vehicles from getting rigid when the weather is frigid. Definite procedures are outlined, too, for checking and improving the condition of the electrical system, starter, carburetor, air cleaner, oil filter, and fuel system - plus hints on the cold-weather care of brakes and chassis.

The bulletin outlines subzero servicing of tanks, motor gun carriages (on tank chassis), tractors, and vehicles with automotive-type engines, including trucks, half-tracks, scout cars, and armored cars. True, it doesn't tell you how to defrost *yourself* - but that's another story.



If you've been having trouble with the Romec fuel-pump vanes on radial-powered medium tanks (M3, M3A1, M4, M4A1) and motor carriages, (T14, M12, M7) bend an ear this way. We think we've got you a cure. If you haven't had any trouble, bend an ear anyway because we're quoting a red group Field Service Modification Work Order (FSMWOS G104-W49, G128-W3, G158-W1) which means, do it on the double.

The trouble originally raised its ugly head when the fuel relief valve (B-155785) was changed from its mounting on the tank chassis (Fig. 1) to a mounting on the engine. Now, y'awl know that these radial engines vibrate like a young cullud boy in a dark graveyard. Result: parts of the innards of the fuel relief valve have been breaking off and getting into the fuel system. And since there was formerly nothing to filter the fuel between the outlet side of the relief valve and the intake of the Romec pump, these pieces proceeded on their way until they contacted the vanes of the Romec pump. Zang! In-

Relief Valve Strainer Screen

stead of having a precision pump operating, you had a contribution for the scrap drive.

Well, as a temporary expedient until other changes are made, the engineers have designed a strainer screen to fit into the outlet side of the fuel relief valve (Fig. 2). This will prevent bits of metal or any other foreign material in the bypass line from entering the fuel pump.

To install, proceed as follows:

1. Turn off fuel valves.
2. Remove fuel line from outlet side of relief valve.
3. Remove elbow fitting (See Fig. 1).
4. Screw strainer screen



Piece Mark A328484 far enough into relief valve to leave room for elbow fitting (See Fig. 2).

5. Replace elbow fitting, line, and turn on fuel valves.

Now some of you may say "That's OK on the jobs that have the relief-valve return line going back to the Romec pump unfiltered, but why do you want it on the older M3's that have a sediment bowl between the return line and the fuel pump?"

Good question.

The answer is, by installing the strainer screen on *all* Wright and Continental radial engines, you are saved the trouble of having to figure out which vehicles need a strainer and which don't.

The strainer screen (Pc MK A328484) can be procured at the Fort Wayne Ordnance Depot, Detroit, Michigan, upon formal distribution of the modification work orders.



Figure 1 - Because the location of the fuel relief valve has been changed, you'll need a strainer screen.

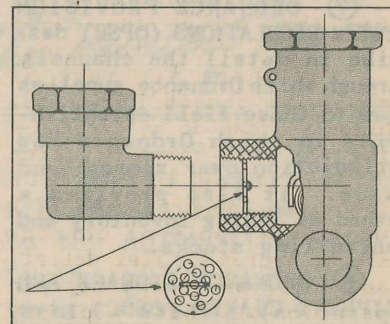


Fig. 2 - Here's the new strainer screen and installation.

OFSP

(Continued from page 362)

Ordnance general supplies). Series 4 (maintenance and care of Ordnance general supplies), Series 5 (miscellaneous), and Series 6 (lubrication).

④ **ORDNANCE FIELD SERVICE CIRCULARS (OFSC)** are used for spreading information of interest but of temporary value to Ordnance Personnel. At the end of each year, all OFSC's published during that year are automatically canceled. If any of the information they contained still has value, it is reprinted as an OFSC of the current year or incorporated in other publications. So if you have a file of last year's OFSC's, you know what you can do with it.

⑤ **ORDNANCE PUBLICATIONS FOR SUPPLY INDEX (OPSI)** is the key to SNL's - like a table of contents, telling you what SNL's there are, and what SNL's are planned for the future. The OPSI does the same for Ordnance Provision System Regulations, Schedule of Stores Reports, and Ordnance Storage and Shipment Charts.

⑥ **ORDNANCE EQUIPMENT CHARTS (OEC)** list the amount of Ordnance equipment authorized by Tables of Basic Allowances for specific organizations, and are numbered to correspond to Tables of Organization. For instance, OEC 2-25 lists Ordnance equipment for the Cavalry Mechanized Reconnaissance Squadron, personnel for which is authorized in T/O 2-25.

⑦ **ORDNANCE PROVISION SYSTEM REGULATIONS (OPSR)** describe in detail the channels through which Ordnance supplies flow to those field establishments in which Ordnance has jurisdiction over storage and issue. It also provides a method of taking inventory and controlling stocks.

⑧ **ORDNANCE STORAGE AND SHIPMENT CHARTS (OSSC)** give the weights and measurements for storing and shipping materiel. As in the SNL's, automotive equipment is covered

in Series G.

⑨ **SCHEDULE OF STORES REPORTS (S of SR)** provides the dates at which the quantity and status of Ordnance stores (supplies) are to be reported. These reports are closely keyed to SNL's, automotive materiel being represented by Group G in both publications.

⑩ **ORDNANCE FIELD SERVICE MODIFICATION WORK ORDERS (FSMWO)** carry directions from the Chief of Ordnance to make specific changes in all equipment of a certain type. They tell WHO does the work, WHAT he must do, WHEN to do it, WHERE to do it, HOW to do it, and sometimes even WHY it is necessary. Learn to recognize the colored bands at the top of a Modification Work Order, and know which series your organization requires. A red band requires immediate modification by the using troops and/or Ordnance personnel having the necessary tools. A blue band indicates modification, usually by Ordnance personnel, which does not require immediate attention but should be completed within a reasonable length of time. A green band means that the work should be done at Ordnance shops when a major repair or overhaul is being made on the assembly affected.

Well, that's the list. Ordnance wants you to have all the copies you need of each publication that will aid you. The chart on Page 363 tells you how they are distributed. If you're not getting the right publications automatically, it's time to squawk. Just remember the following:

1) Be sure you have all indexes. They will tell you what else you need. You should have the OPSI; OFSTB 1-10; OFSB 1-1, 1-2, 1-8 and 1-20; OFSC No. 1; OEC Subject Index; and FSMWO Subject Index. And don't forget the changes.

2) If you're not getting the publications you need, ask for them through the channels shown on the chart.

3) If you're a Post Ordnance Officer or an Ordnance

Commanding Officer, analyze the units under your jurisdiction and ask for enough Ordnance Field Service Publications to give them what they need (including a few extra copies to take care of losses and special cases). You should receive a monthly publication check list as a means of knowing whether you are getting all the publications you should have.

4) If you're a unit commander, see that the publications are being made available to the men who are to use them. They won't do much good in a locked file cabinet or storeroom, but they can do a job for your men and equipment if you place them where they're needed.

VOLTAGE TESTER

(Continued from page 370)

rated capacity of the generator (see the rating plate on the generator).

If the charging current is higher or lower than the rated capacity of the generator, the current regulator is incorrectly set, and has to be adjusted.

Adjustment, however, is another story and one we have little or no intention of going into - it's clearly enough explained in the operating manual.

Our only intention in this story is to convey the idea that the Low Voltage Circuit Tester is not a seven-legged octopus that eats little greaseballs. It is, as we said in the beginning, a handy-dandy little device for shooting trouble in the electrical system.

You may feel slightly put out by the fact that we haven't gone into current-regulator tests, cutout-relay tests, etc. which are perhaps the most important work of the Low Voltage Circuit Tester, but all this is clearly explained in the Operating Manual. Consider our story an introduction to the Low Voltage Circuit Tester - get to know the use of the instrument better through the Operating Manual.

News Flashes

The items on this page include latest news, revisions, and corrections verified after the publication deadline.

It's the little things like hydrostatic lock that bust up big tanks. So says WD Memo W45-1-43 which lists a number of important cautions on operating M5 light tanks.

* * *
All motor personnel, both drivers and mechanics, in the 602nd Coast Artillery (A.A.), Flushing, New York have been exempted from KP and guard duty in order to perform their maintenance functions more efficiently, according to a report from the Automotive Adviser, Joseph J. McArdle who credits Capt. Frank L. Lear with enforcing the program.

Lube Level (Chapter 3)

The level of lube in the front axle of the 1/4-ton jeep should be maintained at exactly plug level. It was recently discovered that if the lube level is allowed to fall below plug level, there's a danger that the pinion-shaft bearings will not get enough lubricant.

Thing is, in the jeep front-axle-housing center section, there's a lip cast in the case, the purpose of which is to deflect the lube whipped up by the ring gear into the channel above the pinion-shaft bearings to supply those bearings with lubricant.

But if the level is allowed to fall below the plug level, there's a very good chance that the bearings won't get enough oil to keep them going.

The jeep front-axle housing is comparatively large at the plug opening but quickly tapers down to a "V" bottom — so if you follow the 1/2-inch-below-the-plug-level rule, you remove 28% of the lubricant, which is enough to starve the pinion-shaft bearings.

Keep the lube up to plug level in the 1/4-ton-jeep front axle — the same goes for the 3/4-ton-Dodge front axle.

The number 10-1396 on Maintenance Manuals and Parts Lists for Gentry 2-wheel Semi-Trailers is WRONG. It should read TM 10-1369.

* * *
To prove that there are better uses for spare time than reading Spicy Stories, here's a little item we found in AR 850-15:

"Drivers will not smoke while driving a military vehicle except that commanders may permit drivers to smoke while driving on long trips."

* * *
The latest edition of FM 21-6 "List of Publications for Training," dated January 1, 1943 has been distributed. If you're entitled to one but didn't get it, have your CO get you one from the AGO Depot in your Service Command. As stated on this page last month, FM 21-6 no longer lists training films and film strips. These now appear in FM 21-7.

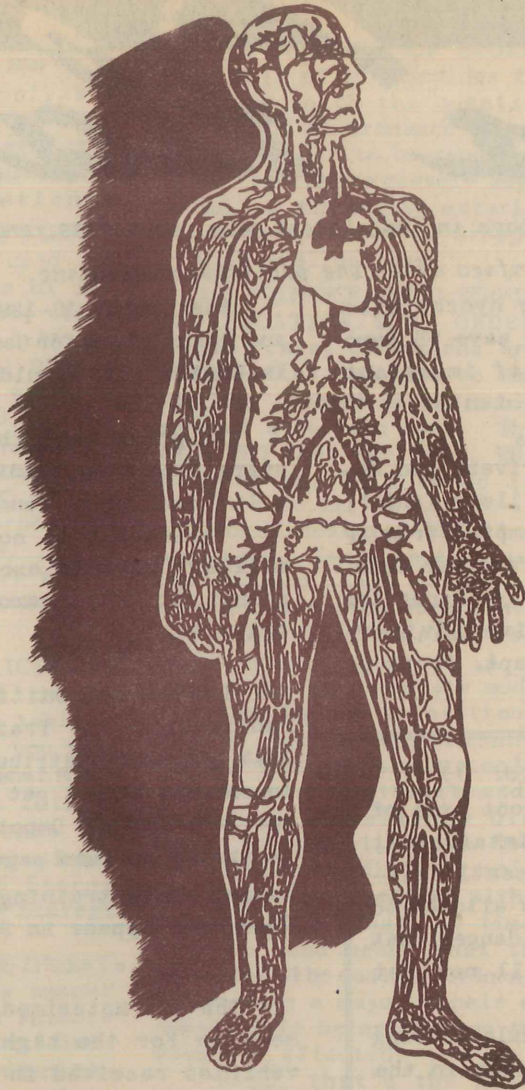
* * *
The 4th Motorized Division rates special mention for the high efficiency rating its vehicles received in a recent VII Corps inspection. Their unusual record of an 0.56% deficiency earned all regiments the rating of "excellent", and prompted the Commanding General of the VII Corps to commend the entire division as having "...achieved...unusually high standards."

* The Mostest Men *

...will get to read the ARMY MOTORS magazine if the three copies authorized to every unit of company strength are distributed as follows:

One to the AUTOMOTIVE OFFICER
One to the MOTOR SERGEANT
One to the Company DAY ROOM

No More S-29 Receivers We hate to disappoint those of you who need and want the suppressor-testing radio we offered last September, but the Signal Corps is fresh out of them and there's no more where they came from. So sorry.



ARE TRUCK DRIVERS PEOPLE ?

Many people say No - and their favorite indoor sport is "riding the driver."

But the driver can make the truck or break the truck. Ninety percent of the ills a vehicle is heir to, can be caused by the driver or prevented by driver.

He's a big man, the driver - no stinker he.

He's got tools, training, and a sheaf of Preventive Maintenance Schedules to remind him what his vehicle needs and when it needs it.

Is there anything else he can use?

YOU MECHANICS WHO REPAIR WHAT THE DRIVERS RUIN, GOT ANY SUGGESTIONS?

YOU DRIVERS, WHAT DO YOU NEED TO HELP YOU DO YOUR JOB BETTER?

Write: Editor, ARMY MOTORS, Preventive Maintenance Unit,
Holabird Ordnance Depot, Baltimore, Maryland