

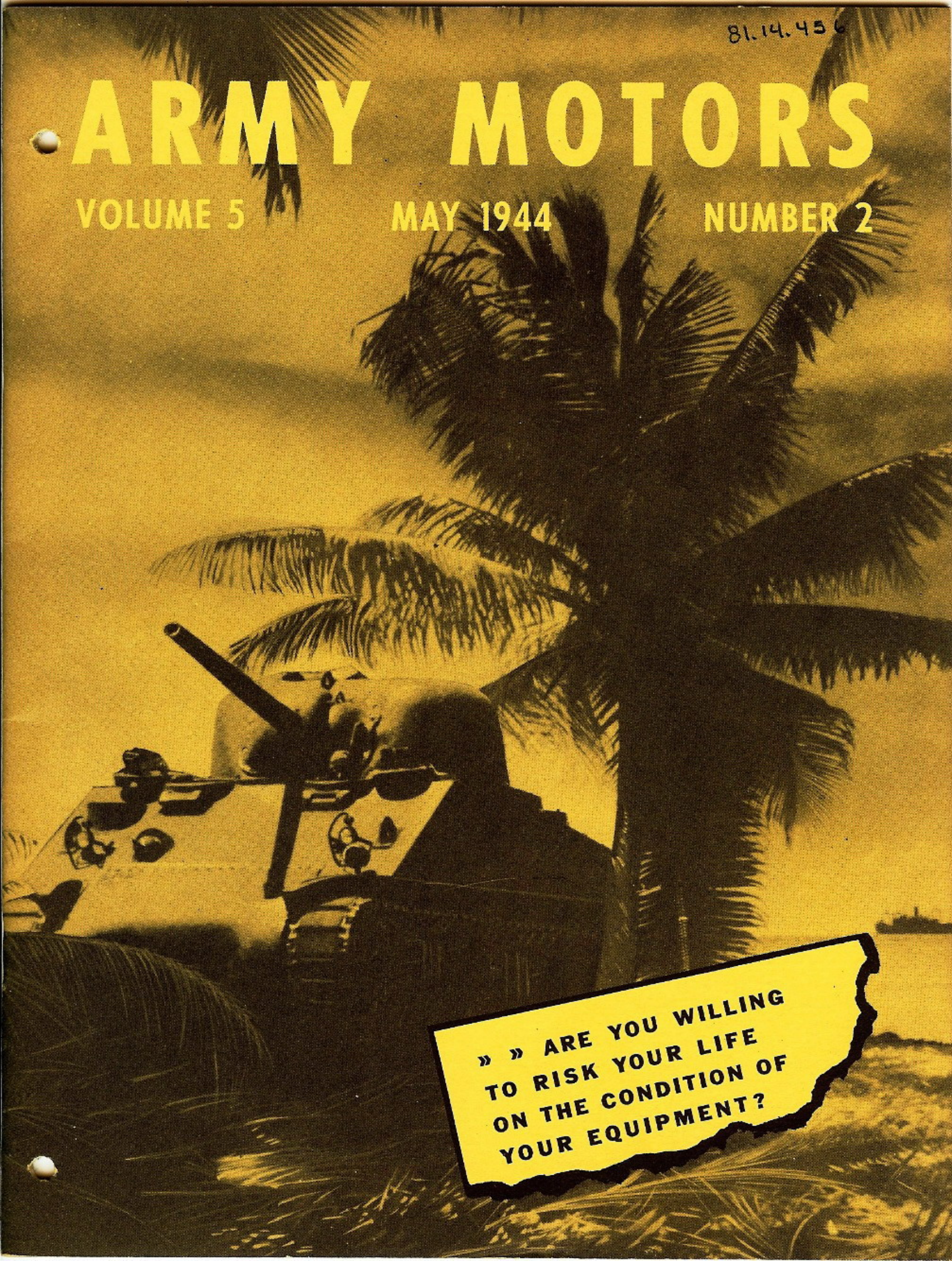
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ARMY MOTORS

VOLUME 5

MAY 1944

NUMBER 2



» » ARE YOU WILLING
TO RISK YOUR LIFE
ON THE CONDITION OF
YOUR EQUIPMENT?

Duration and Six Months-PLUS

Only because it contains the theme of our story do we cite you again the example of the lowly little bookkeeper who, after getting the dirty end of the stick at the office all day, used to go home and kick hell out of his wife. He had to take it out on somebody so he took it out on the old lady. It made him feel less like a dog.



We were reminded of this the other day by the representative of a tank manufacturer who said, "When the lieutenant or top-kick gave these boys hell, they took it out on their tank or truck. I saw it in Africa and I saw it in Tennessee. They're good boys and if you leave 'em alone, they'll do what they got to do—but if somebody starts workin' on 'em . . . lookout."

Well, what shall we say? Shall we say to the lieutenant and top-kick, leave the boys alone, keep out of their hair? We could but that's none of our business. Our business begins where the boys start taking it out on their vehicles and equipment.

From up here in the peaceful solitude of our padded cell, such an act by an American soldier is vicious and treacherous. If you want to call it by its right name, it's sabotage. But out in the theaters, such sabotage may come under the heading of "natural human reaction" (ha, ha). It's perpetrated by "patriots," even as you and I.



Take a typical mythical case. A case of T. S. where somebody has took off with Pfc. Seymour McGonigle's erector set. Burned to the eyeballs, Seymour seeks out the first sergeant, a man of gentle mien, a calm dispenser of justice. "McGonigle," the 1st sergeant says, "Why the #]†‡§ can't you take care of your own #]†‡§ equipment? You're gettin' to be a regular #]†‡§ goof-off around here." Thus eaten, Seymour hotfoots it back to his truck, jumps in and bangs the starter button till he like to drive it through the floor-boards. Bashing the gears back and forth, he takes off over a field full of ruts and finally winds up the day with a broken front spring.

But he feels much better—he has lashed out at authority and "showed" the first sergeant.

Now, is there any man in the audience who will rise and call McGonigle a saboteur? Not in the old-fashioned meaning of the word—a genuine saboteur has a motive. What has McGonigle got?

McGonigle has got no brains.

Because if somebody was to tell McGonigle how many other McGonigles are operating in the American army every minute of the night and day—and tote up all their itty-bitty acts of sabotage to show McGonigle how many extra days, weeks, and months it's going to keep him in the army, McGonigle would need a quick change of drawers.

Extra days, extra weeks, extra months . . . Think it over.

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ARMY MOTORS is published monthly in the interest of organizational maintenance by the Preventive Maintenance Section, Maintenance Branch, Office, Chief of Ordnance-Detroit.

ARMY MOTORS is glad to get your ideas for articles or illustrations, and is glad to answer your questions. Just write to: ARMY MOTORS MAGAZINE, Office, Chief of Ordnance-Detroit, Detroit 32, Michigan.

CONNIE RODD BREAKS OUT IN A COLD SWEAT OVER Trouble With The Foot-Firing Cable ON M5A1 LIGHT TANKS

A frightful thing's been happening to some of the 37mm Guns on M5A1 Light Tanks. The gun's been jamming and refusing to fire. It makes cold all over just to think about it. Brrrr. The trouble is in the foot-firing cable on the gun. Cadillac sent out a batch of these cables a wee bit too short.

So when you tramp down on the foot-firing pedal, the end of the cable near the breech jams under the firing-plunger lever (Figure 1). The cable's too short to push the plunger all the way forward. It cocks the plunger, and sticks there. The gun won't fire at all, hand or foot. Mmmmm gives me goose flesh.

If it's been happening to your gun, you can either order a new cable or fix the one you've got. The numbers you need on a requisition are: Ordnance No. B110622, Item Stock No. G103-08-685—Cable, Firing, 37mm. While you're waiting for the part, take off the cable so it won't get you in trouble. Loosen the capscrew X (Figure 2) under the firing solenoid and it comes off easy. About fixing your cable, you just have to make it a little longer. Follow Figure 3 and make yourself a little extenderator. Remove the cable, and solder the extenderator on the end. Now measure the cable to see if you've extended it enough (Figure 3). If your measurement's more than the pretty picture shows, file the end of the drill rod till you get a correct measurement— $1\frac{3}{8}$ ". Go out and try the gun. If your foot-firing troubles are gone . . . so are my goose-pimples.

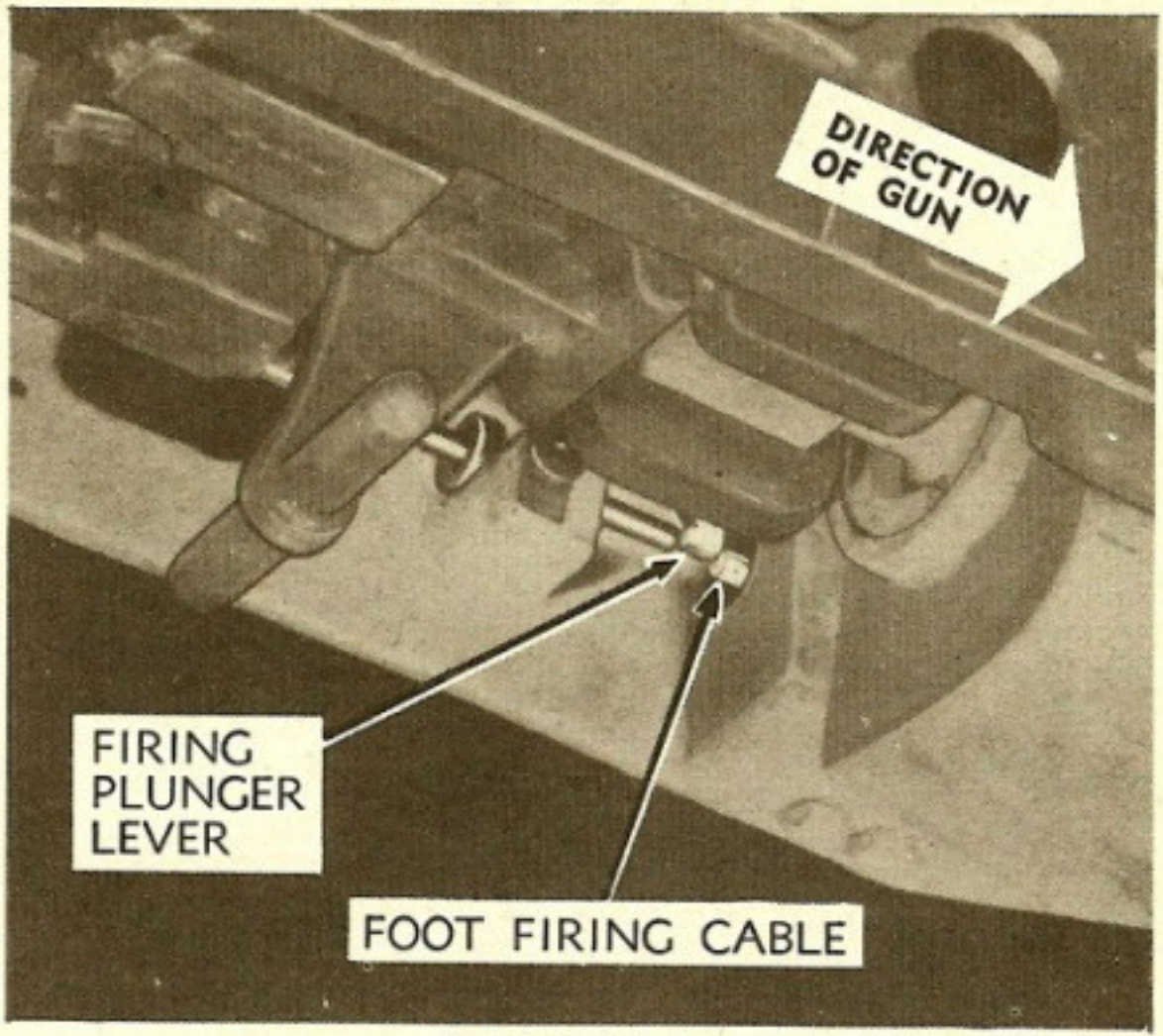


FIGURE 1

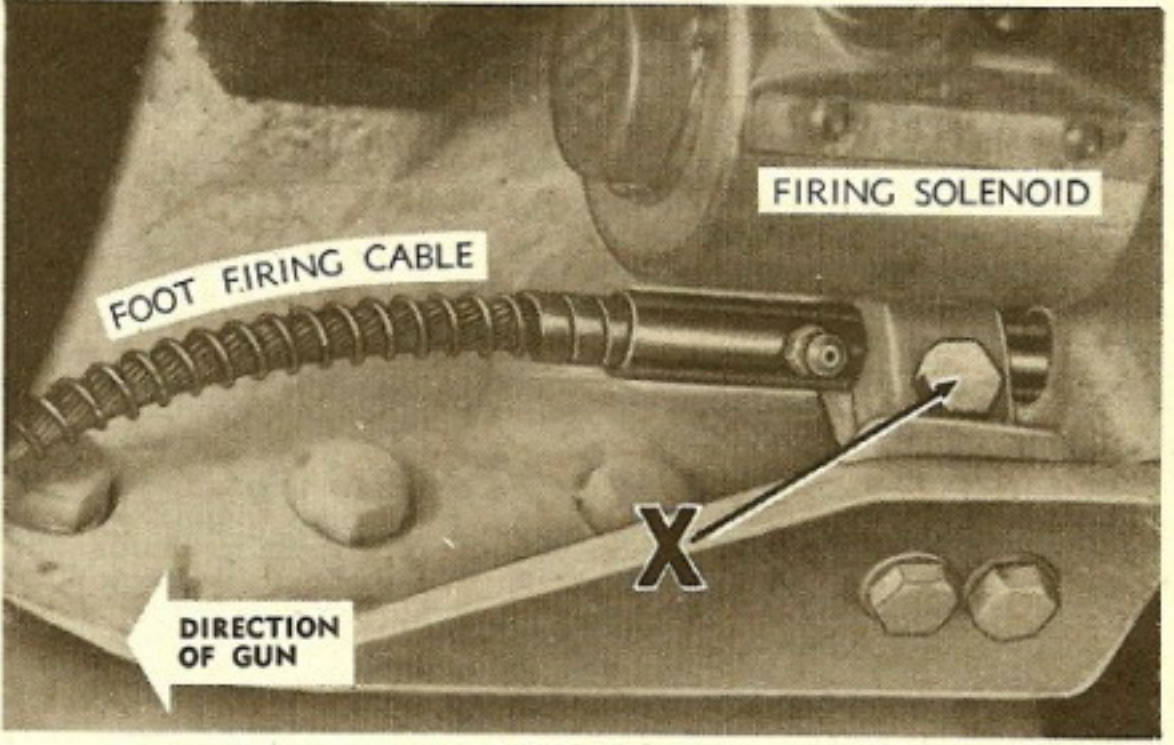


FIGURE 2

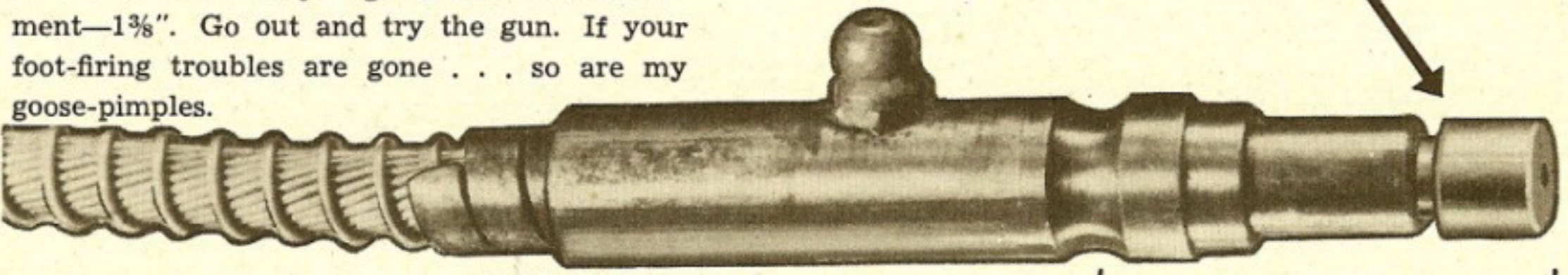
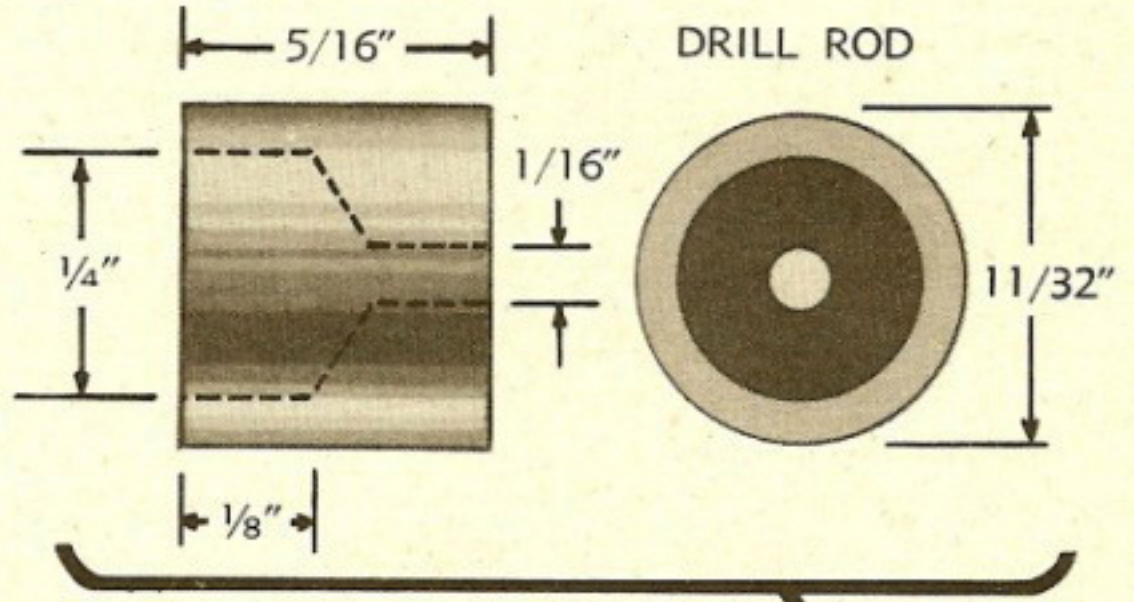
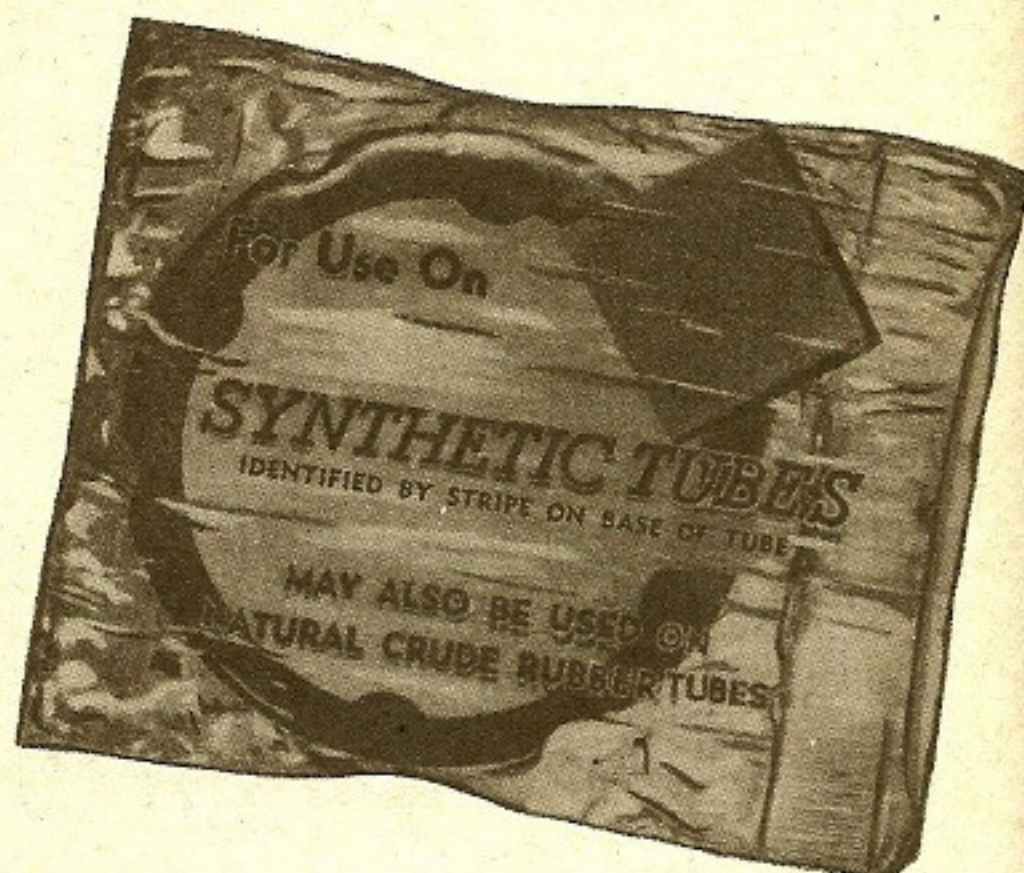


FIGURE 3

SHOULD BE $1\frac{3}{8}$ "

Synthetic Hot Patches Ready for Issue!

We told you they were coming soon, and here they are—all dressed up in cellophane. The packages are complete with patches and quick-cure gum (the hole in the tube must be plugged before putting on the patch), and they come ten packages to a box—Federal Stock Number H-14-520-828 will bring them to you. **Patches can also be used on Crude Rubber Tubes**



Synthetic hot patches are the **only sure field-fix** for those synthetic tubes with the colored stripe. Don't turn a blank, questioning stare in our direction, because you learned all about the temperamental nature of synthetic rubber when you read why "Striped Tubes Are Ticklish" in the March issue.

Synthetic tubes **can't** take the same treatment as natural rubber tubes and cold patching is taboo. Sometimes it works and sometimes it doesn't—mostly it doesn't.

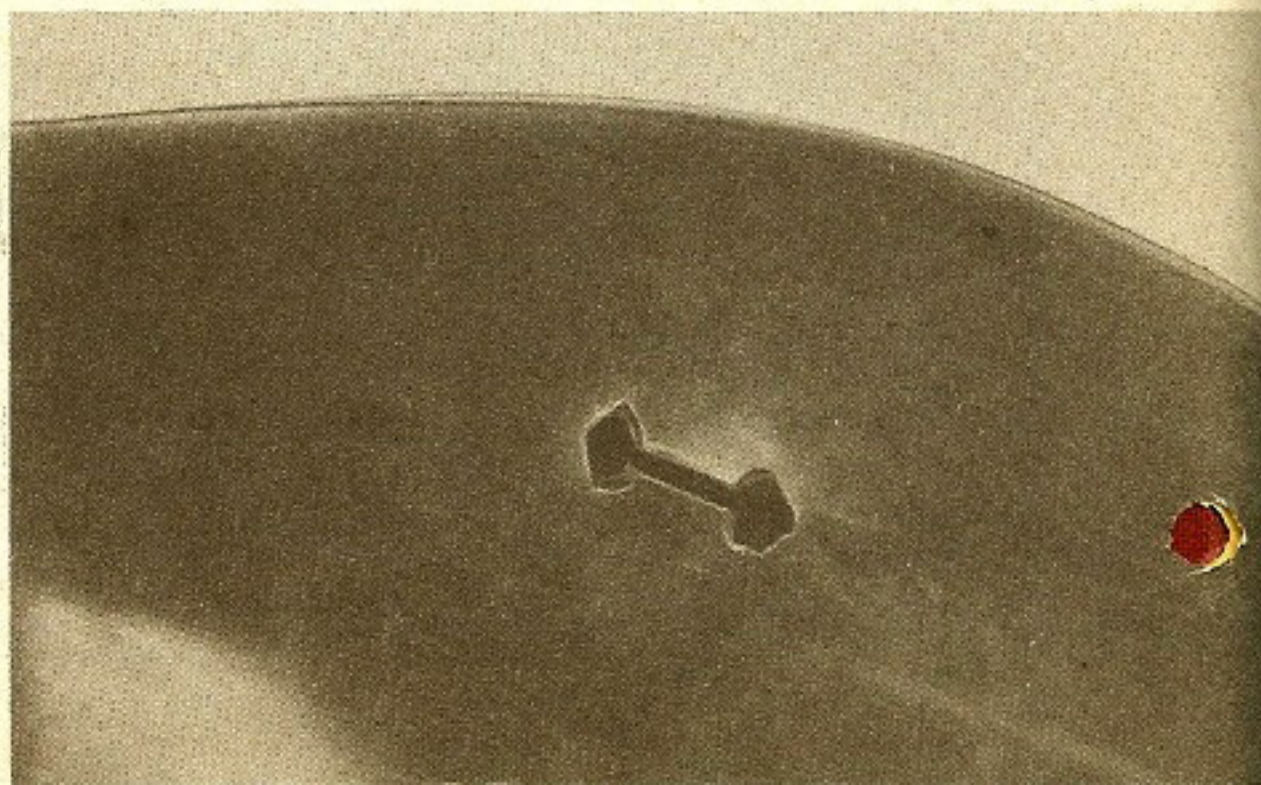
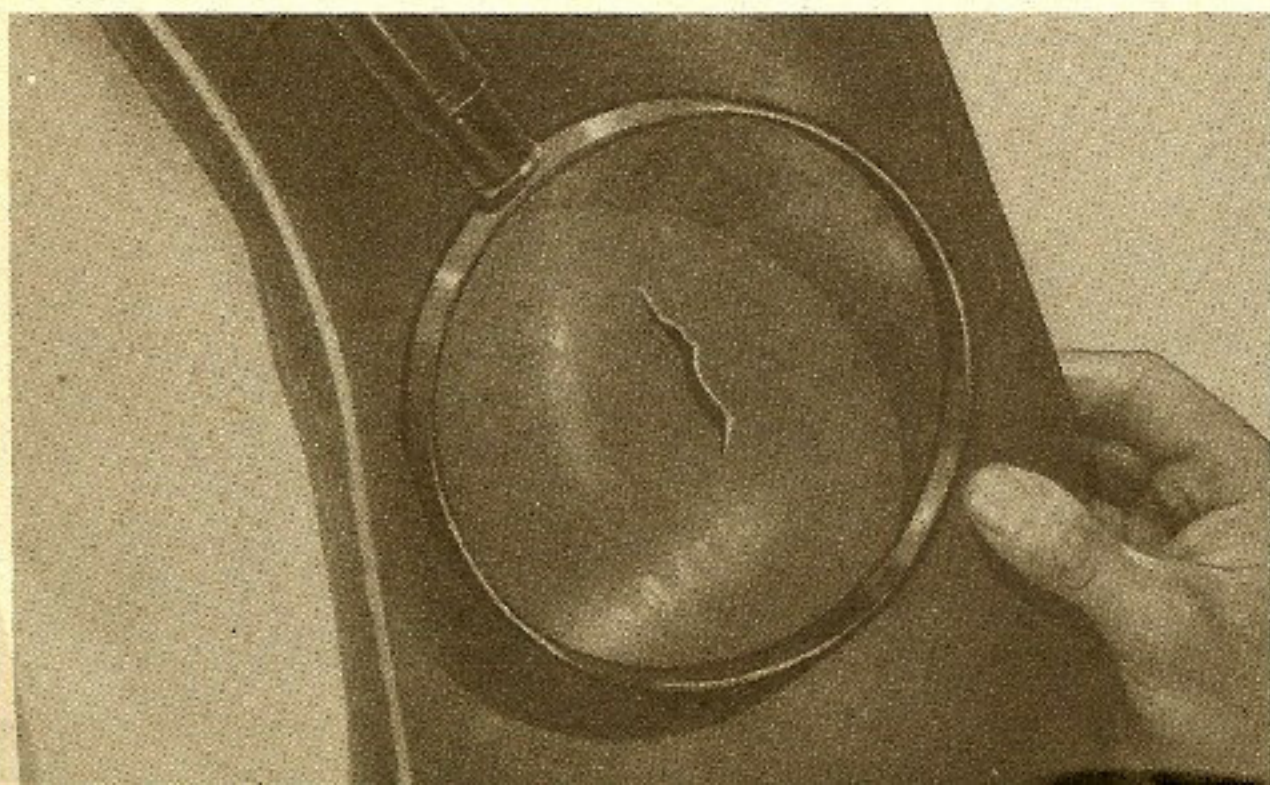
FIG. 1—Most injuries in synthetic tubes will look like the one below. Synthetic has a tendency to rip instead of puncturing in a nice round hole—and once the rip has started, there's no telling when it'll stop. So, check the tube for partial injuries in the rubber while you have it out, and repair even the tiniest one. Else the minute your back is turned, those partial injuries will tear themselves into another flat tire. This thing called synthetic is a plenty good substitute for natural rubber, if it gets just the right care.

In an emergency, when you have no choice in the matter, you might have to cold-patch a flat tire. But just as soon as you possibly can, rip off that emergency patch and replace it with a synthetic hot patch.

If the injury in the tube, before being trimmed, is more than $\frac{3}{4}$ " (and we mean $\frac{3}{4}$ "—don't let the size of the patch fool you because that extra space is needed to make the patch stick), the new hot patches won't cover the injury. The tube will have to be sent to a

higher echelon where they have the curing equipment necessary for synthetic tube repair. If the injury isn't over $\frac{3}{4}$ ", then the hot patch will take care of it, and you can do the patching job yourself. Like mounting synthetic tubes, this new hot patch must be applied with care and tenderness. You can't get away with a slipshod repair job—the synthetic will squawk. There's only one way to do the patching and this picture story should tell you—how to do the job right.

FIG. 2—To stop this mad tearing, the ends of the injury should be rounded out and the tear itself should be widened—cut the circles with shears or with a pocket-knife and trim the whole (or hole) injury smooth as shown. Don't think the rounding procedure is a quirk of some artistic, bewhiskered mind—it isn't. The injury will continue to tear even after the patch is applied **unless** you stop it with the tricky design—so let the dumbbell be the hole in the tube. You cut it to look something like the work of art shown below.



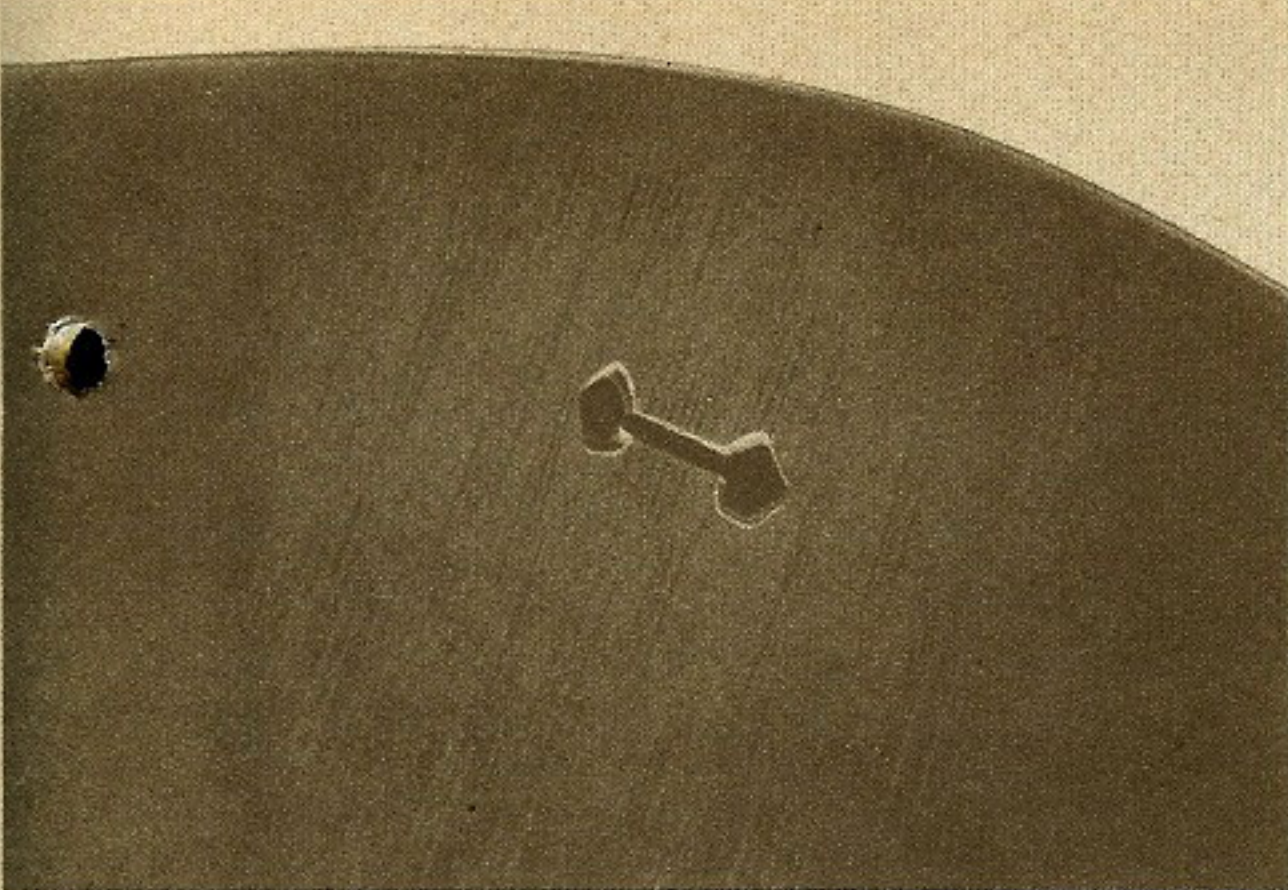


FIG. 3—The buffing on synthetic needs a delicate hand. There'll be no wire brushes for this job—use emery cloth or sandpaper, or use the Shaler scraper that comes with the vulcanizer in 2nd-echelon Tool Sets No. 1 and No. 2. Buff the surface thoroughly, a good long inch from all sides of the injury. There's not too much adhesive quality in synthetic rubber, and the better the buffing, the tighter the patch. It's important that this buff job be done in a cross-section to the injury—across the injury and **not** in the same direction as the tear. If you buff as shown by the buff-marks above, you won't be taking a chance on tearing the injury further. And be careful—deep buff-marks and scratches will start those partial injuries that rip like lightning and never slow down for breath.

FIG. 5—Now, the synthetic hot patch. Remove the holland cloth from the rubber patch on the fuel pan, and center the fuel pan directly over the hole in the tube. (Of course you have the tube on the vulcanizer?) Tighten the vulcanizer clamp on the fuel pan—and here's a caution—tighten the clamp **finger-tight only**. The fuel pan needs only enough pressure to do a good job of vulcanizing—just enough and no more. So no pliers, no hammers, or anything else—finger-tight is sufficient. Light the fuel in the pan by touching a flame to the colored fuse. It might be necessary to scratch up the end of the fuel before it'll start burning. Once it gets started though, let it burn.

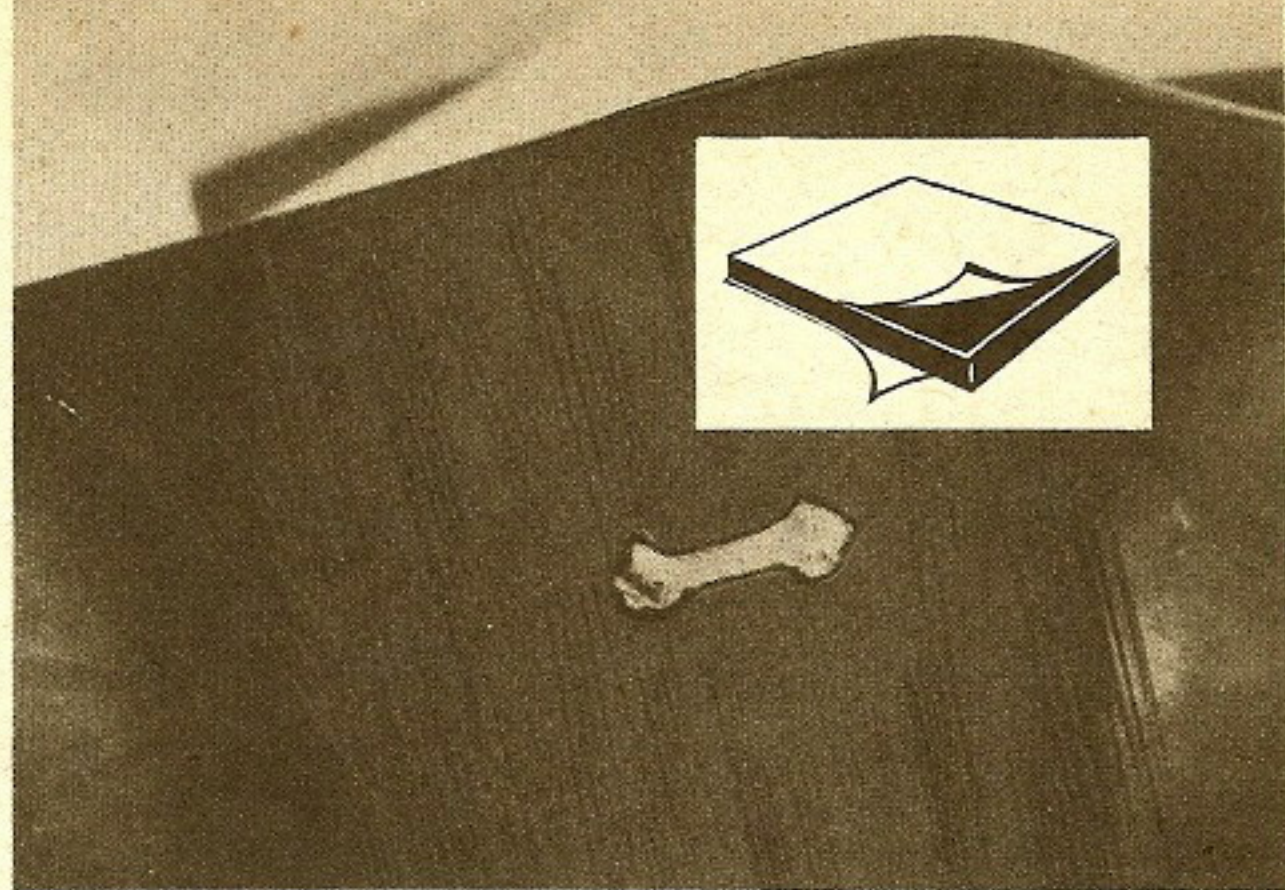
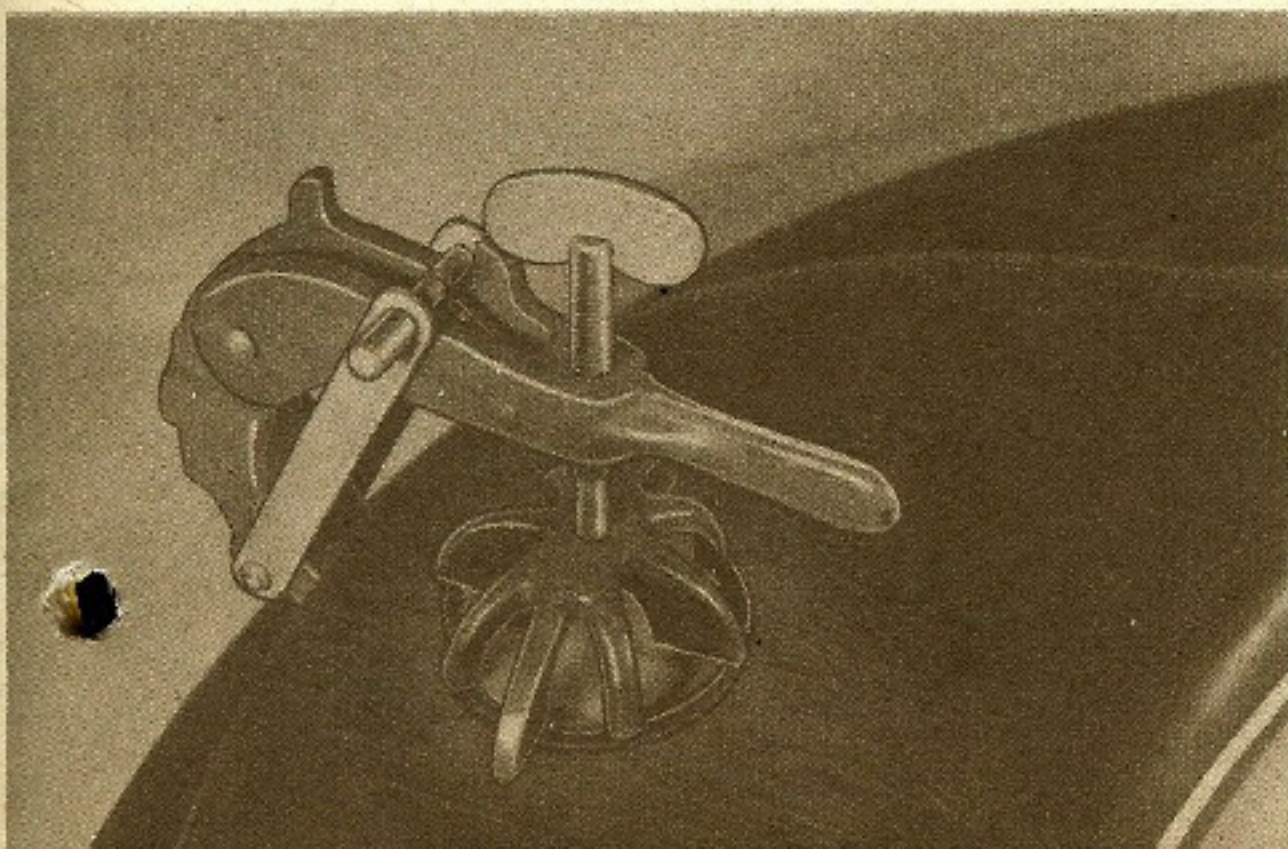
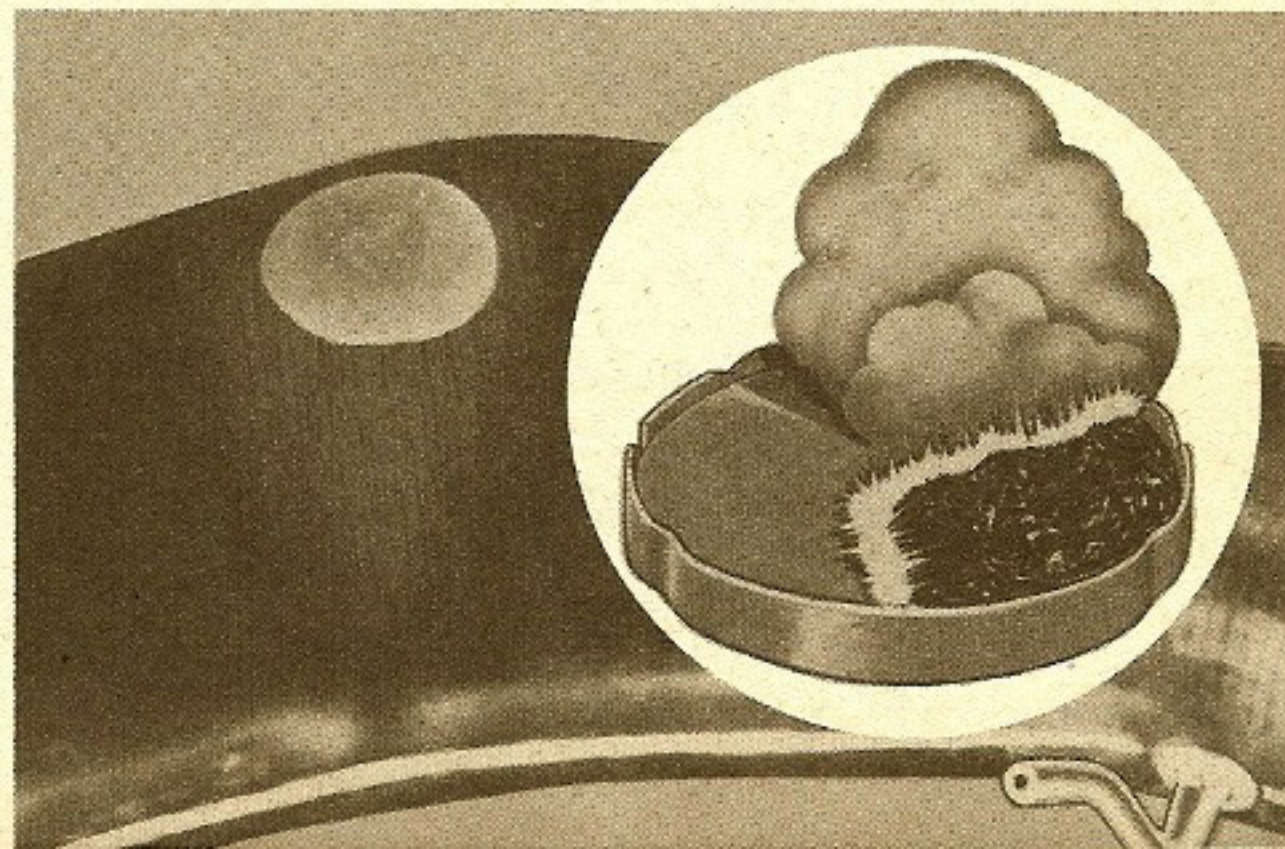
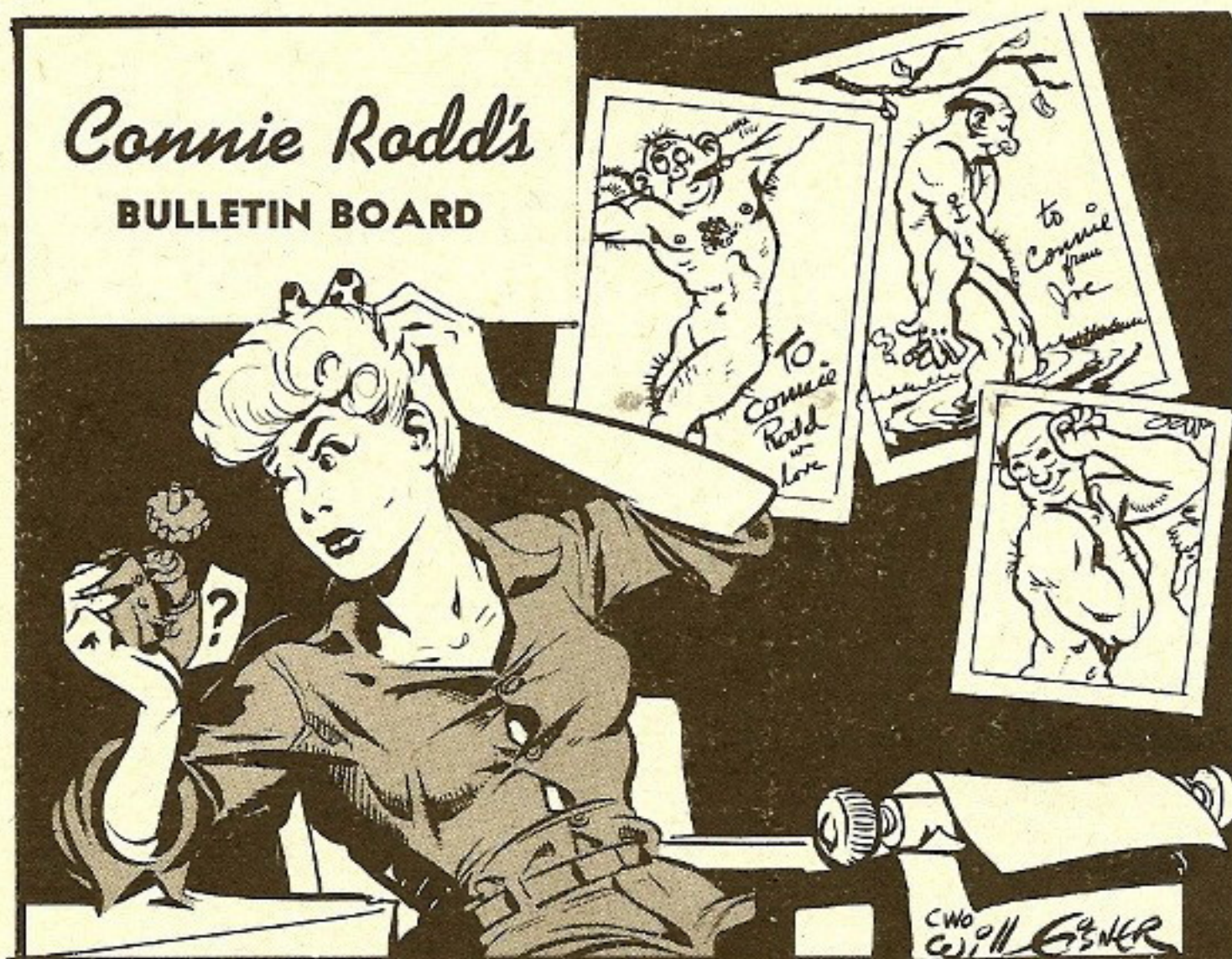


FIG. 4—This is the operation that takes care of the quick-cure gum from the cellophane package, see inset. Cut the gum to fit the injury and remove the holland cloth from both sides of the gum. Be sure you cut the gum to fit. It shouldn't overlap the injury, but there shouldn't be vacant spaces in the hole either. It's much better to cut the gum slightly larger than the injury and then gently force it into the hole (it's soft and pliable, you can squeeze it to fit)—instead of undershooting the size and not having enough gum to fill the hole completely. As we've already said, synthetic rubber hasn't too much adhesive quality, so you don't want to leave any part of the injury without enough gum to make the repair good and solid (any left over you guys can chew).

FIG. 6—The fuel burns like a fire-cracker (see inset below) for about two minutes, but after it stops sparking and fizzing the real heat begins to do the vulcanizing. The fuel in the pan has been perfected to vulcanize synthetic rubber with the correct amount of heat in the correct amount of time, and until the pan has cooled sufficiently, the patching job isn't complete. So don't haul out a pair of pliers and yank off the fuel pan—it shouldn't be removed until it's cool enough to be taken off with your fingers. When you do take it off, the tube should have a neat little patch, like the patch in the photograph. It'll stay stuck, too—if you did the job right—and we bet you did.





Dodge Propeller Shafts

You have taken off in your 1½-ton, 6x6 Dodge like a big-eared bird and shortly find yourself bouncing up and down over what the book calls "rough terrain." Suddenly and without warning, a commotion commences under the truck. Getting out and under you discover that the propeller shaft running from the transfer case to the center bearing (or what you used to call the "pillow block") has slipped out of its splines and is lying on the ground.

After this has happened a couple of times, you begin to think maybe something is screwed up.

Something is screwed up. In a nutshell, the propeller shaft slipped out of its splines because it is too short. In two nutshells, you have the wrong propeller shaft running from the transfer case to the center bearing.

How could such a thing happen? Well, it's not altogether your fault. The propeller shaft running to the front axle, and the propeller shaft running to the center bearing look identical to the naked eye. But they're not identical. The shaft running to the front axle is just a hair shorter than the center bearing shaft.

However, when the truck was unloaded from the boat, uncrated and assembled, somebody took the shaft that was supposed to run to the front axle, and made the mistake of hooking it up in the space between the transfer case and the center bearing.

Shortly afterward, when you went for a ride over rough ground, the "stretching" of the assembly caused the male splines to pull out of the female splines—and the shaft fell down.

The remedy of course, is to exchange the position of the shafts and hook up each where each belongs.

Since, as we say, the shafts look identical and also since the part numbers on the shafts are too small for you to read easily, the only way to tell positively which is which, is to measure the length of each of the shafts.

Here's your guide: the shaft running to the front axle (Part No. 924653) measures 34 inches. The shaft running from the transfer case to the center main bearing (Part No. 926798) measures 33½ inches. Not a hell of a lot of difference but enough to cause it to pull out under stress.

If you're in the assembling business at a port of debarkation, keep these measurements in mind. Also to make it easier for you, the shafts will now be coming through

tagged—the tag telling where each propeller shaft belongs.

But if you're running into this trouble out in the field, just exchange the positions of the shafts.

Testing Delco-Remy Coils

To test the secondary circuit of Delco-Remy ignition coils, you have been accustomed to placing the test points between either one of the primary terminals and the high-tension terminal. Since one end of the secondary circuit is traditionally grounded through the primary circuit, this method of testing told you whether the secondary circuit was complete and in good working order.

Lately, however, Delco-Remy has stopped grounding the secondary through the primary in order to reduce radio interference. The secondary is now grounded directly to the coil can. If you test these coils the old way—that is, between one of the primary terminals and the secondary, it's going to look like you've got an open or incomplete circuit.

The right way to test the secondary of these latter-day DR coils, is to connect the test points between the high-tension terminal and the coil can.

These new late-model coils carry the following parts numbers:

1115079*	1115253
1115149	1115280
1115227	1115281
1115252	

*The first few hundred of part No. 1115079 coils were built the old way with the secondary grounded through the primary. You can usually identify those with the secondary grounded to the can by the end of wire soldered directly below the primary cap of the can.

Carburetor Floats

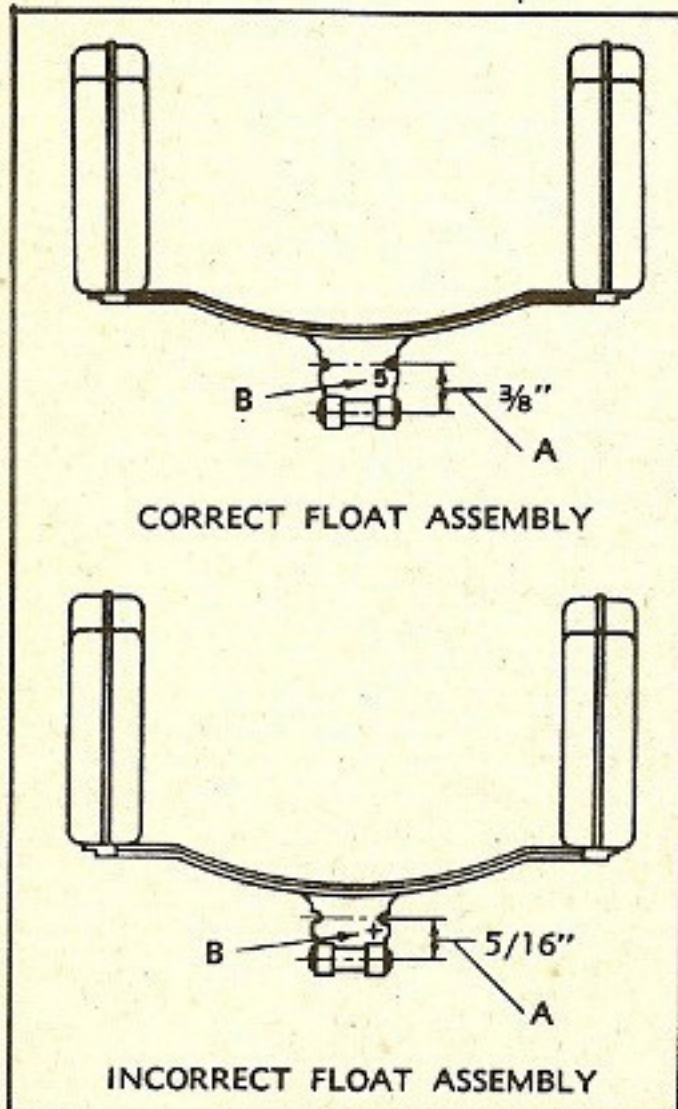
A bunch of incorrect carburetor floats recently drifted into spare parts supply channels under the Part No. A214624, according to TB 9-1711-4. They look just like the correct float of that number, but they'll get you in trouble if you use them; they won't let the needle-valve seat properly in the carburetor. Here's a picture of the correct float assembly and the incorrect assembly and the different dimensions: Dimension

from the centerline of the fulcrum pin bushing to the centerline of the needle-valve-clip notch:

Correct Float **Incorrect Float**
 $\frac{3}{8}$ " $\frac{5}{16}$ "

Identification stamped on float arm:

Correct Float **Incorrect Float**
 5 +



Check over all your carburetor float assemblies in stock and ship all the incorrect floats back to the Cleveland Ordnance District on an O.S. and D. report, through regular supply channels.

Recognition Aids for Armored Vehicles

I just saw some new silhouette posters that the Army has out, and they're yours—for not even the asking. They show all—important Allied and Axis armored vehicles, and they're issued automatically by AG depots. Look at the posters from 10 yards away, and it's looking at the real McCoy from a distance of 400 yards.

There are two sets of the posters—Set No. 1 (U. S. Army vehicles) and Set No. 2 (Allied and Axis vehicles)—a No. 1 set going to each company or similar unit; a No. 2 set to each armored or tank-destroyer company or similar unit, and to each battalion for other arms and services.

When new vehicle models are

ready, the AG depots will send you posters automatically—on the same basis of issue as the sets. If you want extra sets, requisition (see AR 310-200, paragraphs 3 and 4) after the original distribution is finished.

Speaking of armored vehicles, there's a revised edition of FM 30-40 just out. It's popping with pictures of Allied and Axis armored vehicles and tells exactly how to recognize each one—little things about turret shapes, hull shapes, position of guns, position of the turret on the hull, etc. FM 30-40 (3 Nov. 43) supersedes the old FM 30-40, 30-41, and 30-42.

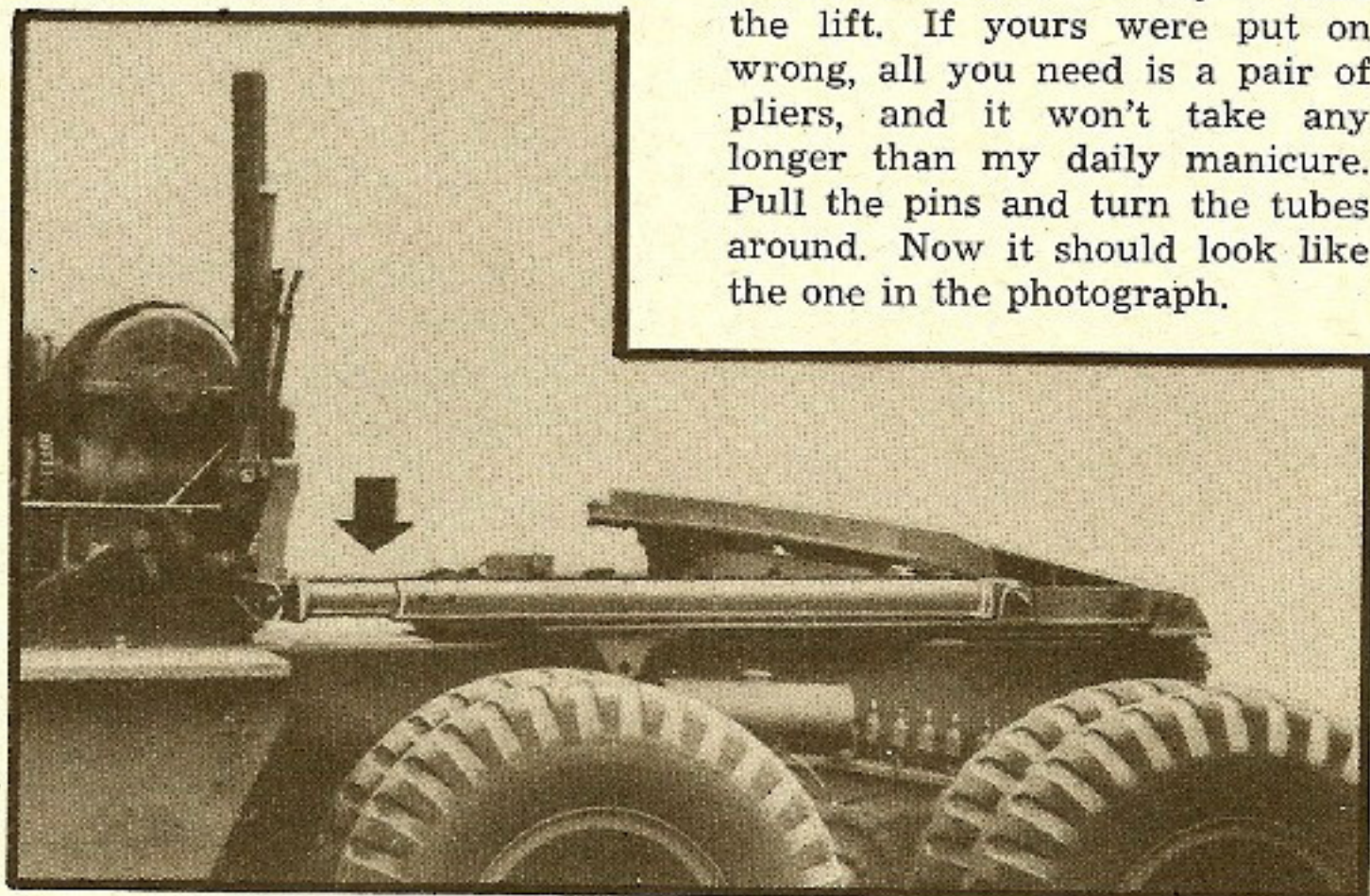
And to make sure you're really going to **know** what those vehicles look like, the Army's also issuing film slides (2"x2") showing not only silhouettes, but also operational views from various angles.

Set No. 1 of the film slides (U.S. Army vehicles) goes to film libraries on the basis of one set for each armored or tank-destroyer battalion, and one set for each 3,000 men of other arms or services.

Set No. 2 (British, Russian, German and Japanese vehicles) goes to film libraries on the basis of one set per 3,000 armored or tank-destroyer men, and to film libraries at staging areas on the basis of one set for each 3,000 men.

Both sets will be sent to overseas film libraries only on the request of the base, defense, or theater commander.

Then there's a brand new thick



edition of FM 21-7 (1 Jan. 44) listing (among others) training films and film strips that deal with recognition of armored vehicles. Section III of the manual tells how to get them.

GMC Valve Clearance

A number of tests that have been made on the exhaust-valve clearance of the GMC 270 engine (in your 2½-ton 6x6, 6x4 trucks, and in the amphibian), show that the exhaust valves will live longer if the clearance is increased from 0.012 to 0.016". This holds primarily for doing heavy work in hot climates, but the tests show that the increased clearance will not effect the efficiency of the 270 engine in normal operating conditions.

Therefore, TB ORD 18 tells you to increase the exhaust-valve clearance on your GMC 270 engines accordingly. Make the adjustment while the engine is at operating temperature.

Whose Face is Red?

Yours may be if you don't take a look at the vertical lift on that big M-26 tank-transporter unit you're playing with these days. Hundreds of them came out of the factory with this lift on **backwards**.

If the outside tubes are attached to the forward connection, (at the base of the rear tandem winch), they'll interfere with the clutch-control cross-rod when you raise the lift. If yours were put on wrong, all you need is a pair of pliers, and it won't take any longer than my daily manicure. Pull the pins and turn the tubes around. Now it should look like the one in the photograph.

How to Shift on Heavy-Duty Trucks

If you're one of those wise Joes who's been shifting from high range to low range while your heavy-duty truck (4-ton, 6-ton, 7½-ton) is moving, I've a notion to scratch your name right off my list.

Wrong shifting causes lots of transfer-case failures—and shifting from high to low range while your vehicle's in motion can really jimmy up the works. The transfer case just isn't built to have the engaging gears rotating when you make this particular shift.

Most of the later TM's tell you to bring the vehicle to a dead stop before making the shift to take the load off the power train.

Another habit some GI's have fallen into is not shifting into front-wheel drive **before** shifting into low range when using both. That's 'cause the Army has some supermen who are using the interlock to shift both levers with one motion. But that's where the catch comes in—the interlock was put on to prevent your going into low range without engaging the front axle **for safety's sake**, not to make things easier for you. Enough motion is lost in shifting to keep the front-wheel drive clutch from engaging completely and that, in turn, keeps the low-range gear in the transfer case from meshing with its mating gear.

Once this happens, it's harder and harder to get complete engagement; because the sliding gear comes up against the shoulder formed on the mating gear and the gears will engage at only one point. So please—won't you use **both levers**, and always shift the **front-wheel drive lever first** when you're going to use both the low-range and front-wheel drive? I'll put you back on my list if you do.

Spoke-type Wheels

Enemy soldiers have been attempting to snafu our tanks and gun motor carriages by running up and jamming a steel bar through the spokes of the idler or

bogie wheels. To put a quick cease to this kind of nonsense, combat outfits have been closing spoke openings on idler and bogie wheels by spot welding steel plates between the spokes.

This applies only to vehicles in the theatres of operations—don't bother with training vehicles in the U.S.

Improving Transfer Case on 7½-Ton 6x6 Mack

If you don't feel or hear a "click" as you shift in and out of front-wheel drive on your 7½-ton, 6x6 Mack Prime Mover, chances are the gears aren't meshing completely because you still have an old-style shifter-shaft ball-spring in the transfer case.

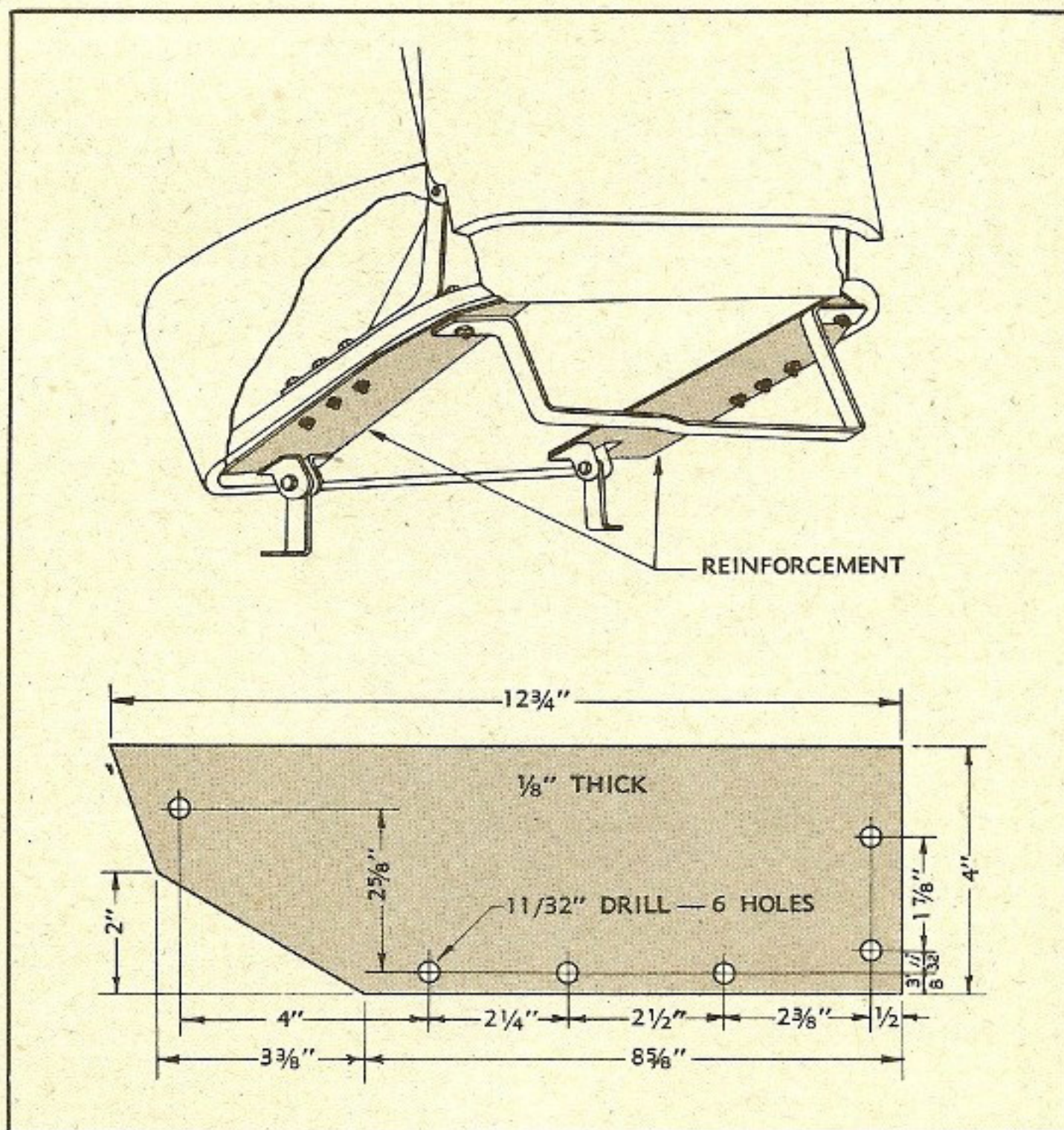
The click that you should hear, is caused by a new and stronger spring (see TB 8-1814B-2, 6 January 44) seating the transfer-case shifter-shaft ball in the groove on the shifter-shaft when you

finish shifting—and it means there's complete engagement of the gears.

So if you don't hear or feel it, your 7½-ton Mack is probably one of those vehicles with chassis numbers **below** 8D1534 that still have the old spring. If it is, return it to a 3rd-echelon shop **now** for a new spring—you'll save yourself a lot of trouble later. Those vehicles with chassis numbers **above** 8D1534 have the new spring installed in production, so you won't have to worry about them.

Ambulance Seat

To accommodate ambulance attendants, the plywood attendants' seat in the ¾-ton Dodge ambulance is being reinforced in production as per the picture accompanying. If you're having trouble with yours, go ahead and make the sheet metal reinforcement yourself according to our layout. If the seat is too badly beat up, replace it before making the reinforcement.



What does Circular 33 Mean to You?

Simply that from now on, you'll be giving your special equipment the same kind of regular PM servicing your motor vehicles get.

Those of you who've been wringing your hands because special equipment around your shop's been getting kicked about can start ringing bells for WD Circular 33 (26 Jan. 44).

This be-ribboned circular says that from now on, all special equipment powered by internal combustion engines will get the same careful preventive maintenance that motor vehicles get. Not only will it get that treatment, but you'll keep a record of it on the same PM forms you use for trucks, tanks, etc.

Special equipment means tractors, road rollers, cranes, fork-lift trucks, air compressors, welders, generator units, and so on. Circular 33 says they're vehicles, and orders the same PM treatment for them that's prescribed in AR 850-15. And their storage is covered by AR 850-18.

As for keeping track of this maintenance—you've used the familiar Duty Roster (WD Form 6), for dozens of things—maintenance of special equipment is another. As for the other forms—like the Driver's Trip Ticket (WD Form 48), Inspection Work Sheets (WD Forms 461 and 462), Spot Check Inspection Reports (WD Form 7353)—fill in just the sections of these forms that apply to the unit you're using.

Technical services are busy writing TM's, Lube Orders, and other publications on maintenance of special equipment; but we can't say just when you'll get them. Meanwhile, you can start PMing as of now!

Since it'd fill a couple of vol-

umes if we tried telling all of you what maintenance is needed on all of your special equipment—we'll mention just a few, to give you a general idea of what Circular 33 means. You take it from there.

If you're pumping water out of ditches, you Engineers are liable to pump yourself a lot of trouble if the engine isn't protected from splashing water with a canvas or tin shield. And when you put your baby to bed at night, cover it up. Comes the dew and comes condensation, too—which might result in fouled spark plugs.

For Signal Corps earth-borer equipment: see that all pins and lever bearings are oiled daily.

Before starting that big wash, you QM guys should check your laundry unit for leaks in all steam and water lines. If you do find a leak, stop everything and have it repaired.

In the fight against vesicants in the Chemical Warfare Service, you know that bleach mixture is nothing to fool with, because it'll start corrosion plenty fast if you accidentally spill some on the decontaminating apparatus. You can help to keep things sweet and clean by being sure that all the metal parts on your apparatus are protected by a film of oil.

For the daily maintenance of equipment that carries a real load: take the Generator Unit M5, used to power remote control systems M1, M3, M4, and M5. This unit has four parts: the generator itself, the housing and skids, a switchboard, and an engine. Keep the

housing and skid assembly clean and make sure the bolts connecting the housing and skids are tight (to lessen vibration). See that the porter brackets are attached to the housing, so that when you hoist the unit you'll take it with you and not just romp off with the brackets.

There isn't much you have to do with the generator before you begin firing, except keep the grease-cups on the bearings filled; but give the cup one turn after every 200 hours of operation. During operation, keep an eye on the instrument panel (find it by opening the little door at the generator end of the housing). The voltmeter, voltage control, ammeter, and cycle meter, located below the line on the instrument panel, tell you if there's anything wrong with the generator.

Above the line on the instrument panel is the switchboard for the controls and indicators of the engine. Take a long look at the engine itself. Is there anything dripping? Do you find oil leaking from the crankcase, oil cooler, filters, or lines? Is the cooling system tight? What about the radiator core and connecting hose? Your ignition wiring should be connected and clean—the fan, water pump, and generator secure; the belts in good condition. The oil in the oil-bath air cleaner should be changed when it's dirty—every day if you're operating where it's very dry and dusty.

When the engine is running, it talks. If it purrs, you're ready to take on the load and start firing. If it spits, sputters, or squeals, those are cries for help and you'd better look quick.

If you still don't know what Circular 33 means to you, then read the story on preventive maintenance servicing of the portable air compressor on the next page. And give the same kind of thorough, understanding care to your other special equipment.

Air Compressors Are Vehicles, Too!

CIRCULAR 33 SAYS SO ... AND PM AS PRE- SCRIBED BY AR 850-15 WILL BE PERFORMED ON CERTAIN TYPES OF SPECIAL EQUIPMENT

How'd you like to pump a few 9.00x16's by hand sometime when you hadn't taken PT for weeks, or hadn't eaten for days, or when you were standing on your head?

Silly question—ain't it? You know very well what the answer is. It's hard to picture yourself in a spot like that, yet lots of your portable air compressors are gasping for breath because they're getting that same kind of treatment.

While an air compressor isn't human and it doesn't need calisthenics to keep it in shape, it does need its own brand of vitamins and special care if you expect it to be Johnny-on-the-spot.

The air compressor (Federal Stock No. 66-C-1380) that's in your 2nd-Echelon Tool Sets No. 1 and 3 is a 4 cubic-foot, air-cooled compressor, driven by a four-cycle, single-cylinder, air-cooled gasoline engine; and is mounted on a portable tubular frame. It's probably the first tool you look for when there's a tire to be pumped, a paint job to be done, a radiator to be pressure-flushed, an engine to be cleaned.

Go ahead—run the thing without oil, don't bother to drain the water out of the frame reservoir, tilt the whole works while you're using it. Go ahead—but someday that compressor's going to heave

one big sigh, and lay down and die. Then you'll be sorry.

BEFORE OPERATION CHECK-UP

One sure way to ruin a perfectly good air compressor is to start it before you read the manufacturer's manual that comes with every model. Generally, operating instructions are standardized, but just to be on the safe side, better read the manual that's with your particular unit.

There are certain things to be done before you start the engine—what's more, they're just as important as the before-operation check-up a driver is supposed to give his vehicle.

This is the time you start feeding the air compressor its vitamins—by putting **clean** gasoline in the fuel tank. It's important that the gasoline be pure and clean—none of this fancy half-oil-half-gasoline mixture. (Your air compressor has an independent pump lubricating system that forces a stream of oil to all moving parts of the motor.)

While there's just one gas tank to fill, you have **two** crankcases to check for oil level—one in the engine, one in the compressor. SAE 30 (nothing heavier) is right for the **engine crankcase** when the temperature's mild; and when it's cold—really cold—you'll use a thinner grade. Like SAE 10.

The **compressor crankcase** gets SAE 30—or possibly SAE 10, if you're operating in a cold climate. As long as you're looking at oil level marks, check the air cleaners on both the gasoline engine and the compressor. They need a light engine oil, so SAE 10 will do the trick.

Right now's a good time to mention that the on-the-ball GI will wipe the gas cap and oil-filler

plugs and all around the filler holes before refilling—just to avoid getting any dirt into the gas or oil.

Even though the machine's had its meal, there are still a couple of things to be checked before you push the starter pedal. Like making sure the drain cocks in the reservoir legs are closed. And closing the shut-off cock in the grease-gun-hose supply-line unless, of course, you've connected the hose-line to the grease gun.

Any greenguard knows enough to do all these things before he starts the engine. He **knows** enough to do them, but sometimes he starts day-dreaming and **forgets**. That's why so many connecting rods have been broken in air compressors. Running the gasoline engine with too little oil will do it quicker than anything.

But don't get all excited about this before-operation check-up—it'll only take a coupla minutes to see that everything's set. Then read the starting and operating directions in the manual—and follow them.

DURING OPERATION

Air compressors can eat a lot, so it's a good idea to check the oil level in the gasoline engine crankcase, and to add oil if it needs it after every five hours of running time; after 25 hours, drain all the old oil out and put fresh in. On the compressor, the crankcase oil-level should be checked and brought up to the full mark after every ten hours of running time, and changed every 50 hours. Lots of men have told us they've kept their record of oil changes on Duty Rosters, and it seems sensible. (See the "Time Check Card" ARMY MOTORS ran on page 183 of the September-October, 1943 issue.)

When you're changing the oil in the crankcases, clean out the air cleaners—every 25 hours for the engine air-cleaner; every 50 hours for the compressor air-strainer. The curled hair from the compressor air-strainer should be washed in gasoline, soaked in lubricating oil, and then reinstalled. Of course, if you're running the unit in a very dusty place, clean-

ing both air cleaners should be just as much a daily routine as chow.

Another daily job is draining the water from the reservoir. Moisture from the air collects during the day and settles in the bottom of the tubular reservoir. Naturally, the more water that collects, the less space there is for air. Drain cocks were put in the legs of the frame so you could drain the water out—use them.

While the engine shouldn't be tinkered with just because you have a wrench in one hand and time on both, there are some parts that do need regular adjusting and cleaning.

The engines are small to begin with, so you've got very small carburetor passages where a drop of water or a particle of dirt can cause a lot of trouble. In this case, little drops of water, little

grains of sand, don't make a mighty ocean and the pleasant land—instead, they make for clogged passages and balky engines. That's why the gas filter and fuel lines should be cleaned every week.

Every hundred hours isn't too often to pay a little attention to the spark-plug, to clean it and to adjust the gap to .025". And while you're taking time out for this job, check the clearance between the unloading valves and the rocker-arm adjusting screws—it should be between .010" and .015".

Double the hundred mark and it's time to remove discharge-valve cap-nuts in the compressor cylinder-head and check for carbon. You may have to take the cylinder head off to get carbon deposits out of the unloading valve, discharge valve, or the discharge line. If you do, be sure and

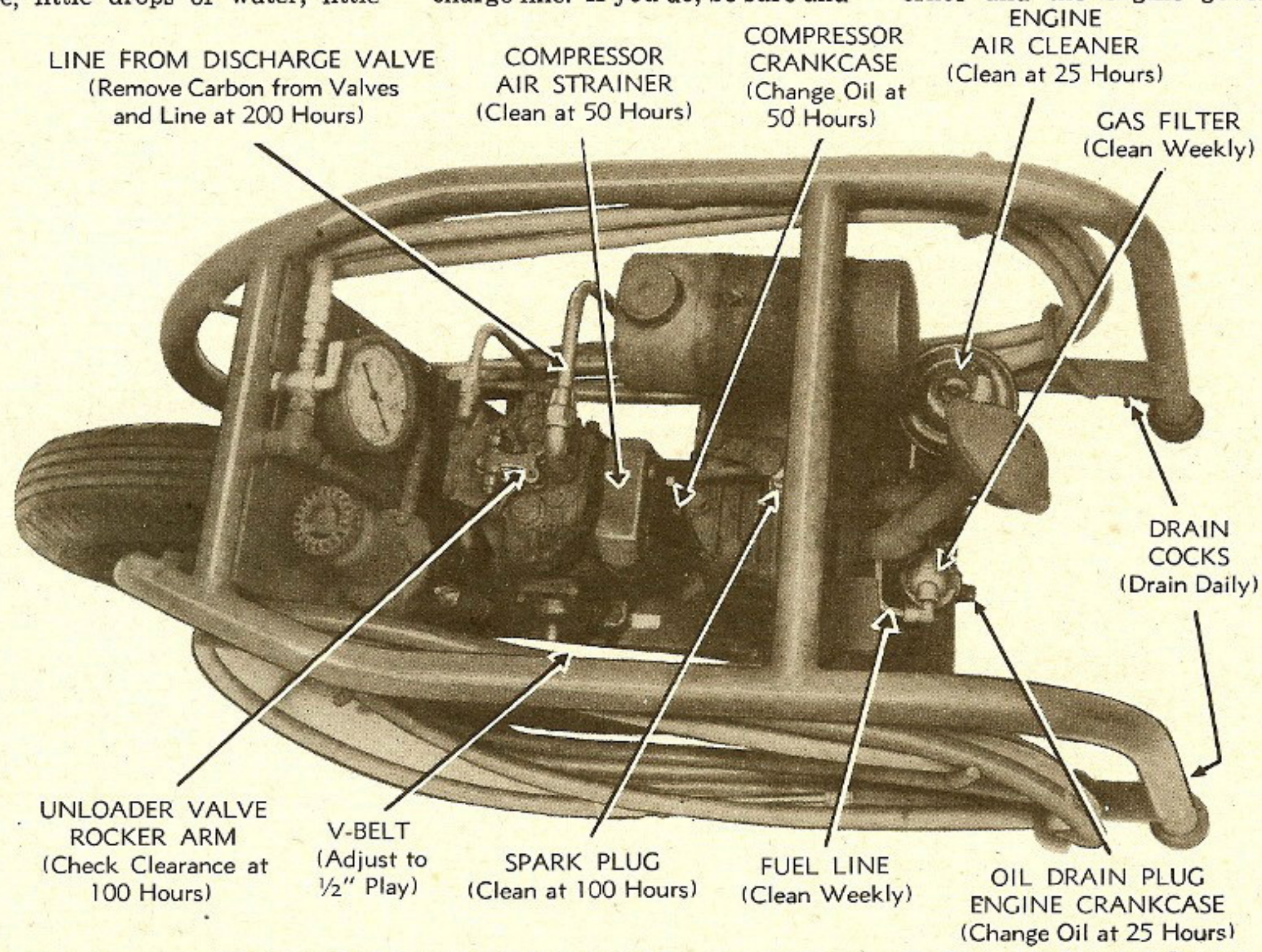
replace with a new cylinder-head gasket.

Maybe you'll find that the engine flywheel and compressor pulley are over-heated someday, or that pressure's not being built up as fast as it should be. That's usually a sign that the V-belt has stretched, and slippage is causing friction and heat. That's why you'll check the belt tension, drive alignment and mounting bolts from time to time—to see that the belt has 1/2" deflection and no more.

TO DO OR NOT TO DO

While we hate to use the word "DON'T," there are some parts of the air compressor unit that should be marked in glaring red letters, "DON'T TOUCH!"

Extra big and extra red letters should be on the **compressor governor** and the **engine governor**;



Here's some of the high spots on the portable air compressors that need special attention. Service them regularly, keep track of all treatment, and your unit will breathe free and easy.

because both were set at the factory and shouldn't need adjusting. In spite of what you are thinking, those governors weren't put there to slow down war production. They were put on there for one purpose—to **protect that equipment**. If you're tempted to tamper with either governor, PM on this type of equipment falls under AR 850-15 which says "tampering with sealed governors will be considered cause for disciplinary action."

Also on the "Do Not Play

Around With" list are the feed valves and safety valves—so make sure they're what's ailing the unit before you go after them with wrench and screwdriver.

If you ever find it necessary to take the tire-chuck off the tire inflation hose, be sure you put it back on the correct hose. The grease hose wasn't made for inflating tires, although it can pinch-hit in a really great emergency. If you're in a spot and have to do it—be careful of over-inflation, as

the pressure through the grease hose is higher than the tire inflation hose.

Not only should parts be put back in the right place, they should be kept tight. Since most compressors get a good shaking while they're in operation and while being carried on a vehicle, it's a smart idea to check all items that are bolted or screwed on to make sure that vibration hasn't loosened them. That means the muffler, carburetor, governors, etc.

And when you're using your air compressor, don't tip it uphill, or downhill, or sideways, or upside down—it places too much extra strain on the working parts. For the same reason, **don't move the unit around while the engine's running**. The crankcase doesn't hold much oil to begin with, and moving or tilting the compressor while it's running is liable to lift the oil-pump suction pipe right out of the oil. Presto—you have damaged bearings, among other things. You'll find it pays to be on the level with the unit—it'll give you better service in the long run.

If you expect the compressor to be idle for any length of time, follow the policy of "all or nothing at all" with gasoline. Either drain it all out or fill the tank to the brim—gasoline evaporates fast from a half-full tank and leaves a gummy residue that clogs up carburetor passages and filters.

Finally we'll mention one of the most important things—that's keeping the **outside** of the unit clean, as well as the **inside**. Wipe it off once in awhile—keep oil and grease off the flywheel, belts, and compressor pulley. And **don't** leave the outfit standing out in the rain.

All treatments should be kept track of on the PM Forms listed in WD Circular 33 (26 Jan. 44), so you'll be able to tell at a glance how long the compressor's been run, when it had its last vitamins, what it ate, what PM was performed and when. That way you'll be able to keep your air-compressor maintenance up to date, and the unit will work like a charm. Then you'll have something you can really afford to "blow" about.

An "Up" Eccentric Can Get You Down

The other day we went out and found something on our sharp new M10A1 (3-inch Gun Motor Carriage) that shouldn't happen to a dog. The eccentric shaft at the rear idler wheel (you know, where you adjust track tension) had been set in the high position or "upper arc." This resulted in three separate and distinct headaches: (1) the track rode so high up to the hull that there wasn't enough clearance for the grousers—they'd hit the hull and break up or maybe throw the track during operation; (2) the track was held off the rear roller so that the roller just spun free; and (3) with the eccentric shaft in that position, you had to **pull down** on the big track-adjusting wrench to adjust the track. This last was the worst of the headaches—when the eccentric shaft is correctly positioned, you have to **pull up** on the wrench to adjust the track tension. Pulling up is easy—you can use the chain hoist on the rear of one of the 2½-ton trucks which is always floating around or you can push up on the wrench with a jack. But adjusting by pulling down is murder.

If we were you, we'd go out and examine all our M3 and M4 Tanks and all our gun carriages and carriers and other vehicles with medium tank suspensions and check to be sure that they have not been delivered with the eccentric shafts in this high position. If they have, get busy and bring the adjusting shaft around to the lower position: (1) Loosen up the two clamping bolts on the split housing of the idler adjustment and tighten up the center (spreading) bolt to free the adjustment. (2) Tap the collar plate off the idler spindle. (3) Put the big wrench on the adjusting nut and turn it till the eccentric shaft is in the down position (you'll need a hunk of pipe as an extension on the big wrench and about a platoon of fat boys to help you pull down on the wrench).

Although we know how busy you are, we'd advise you to do this job right away. Later on when rust and dirt get into the assembly, you'll kill yourself trying to get it done.

Are You Getting Full Elevation on Your 3" Gun?

Lower the M10 and M10A1 Interphone box —and cut down the interference.

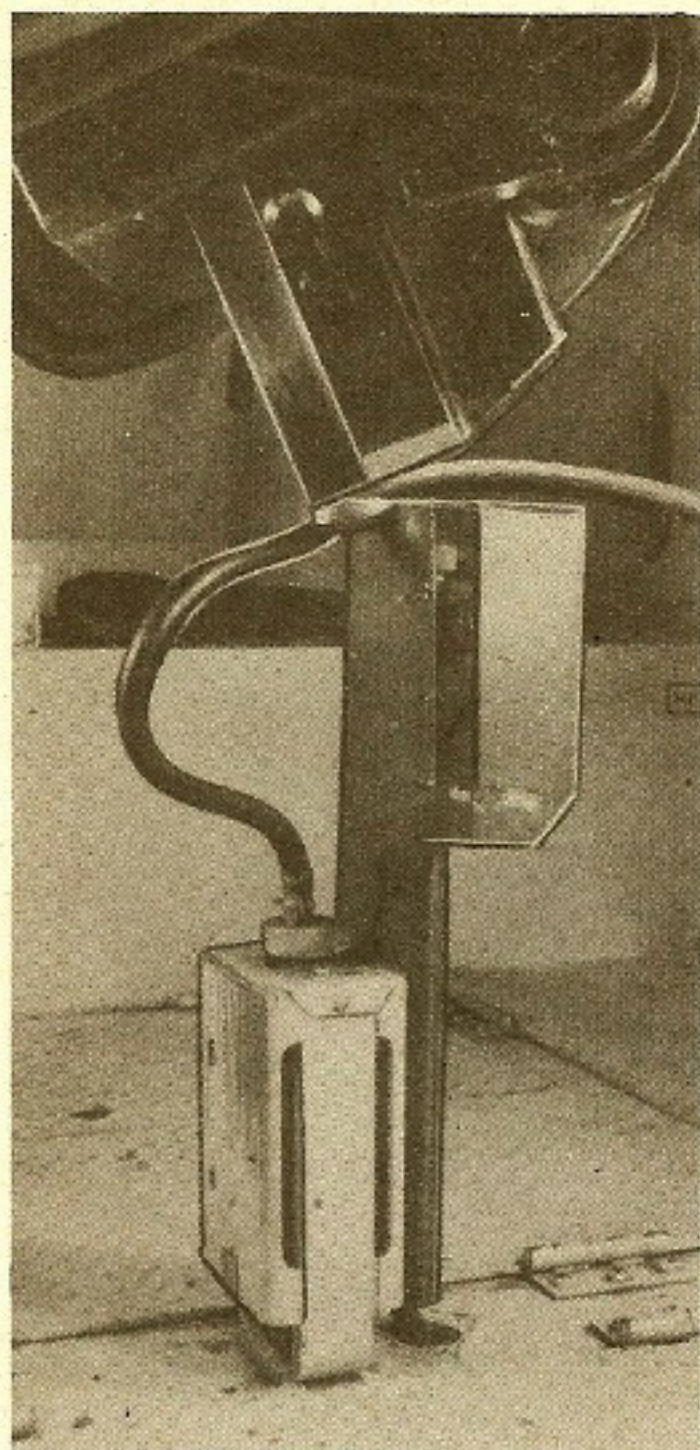
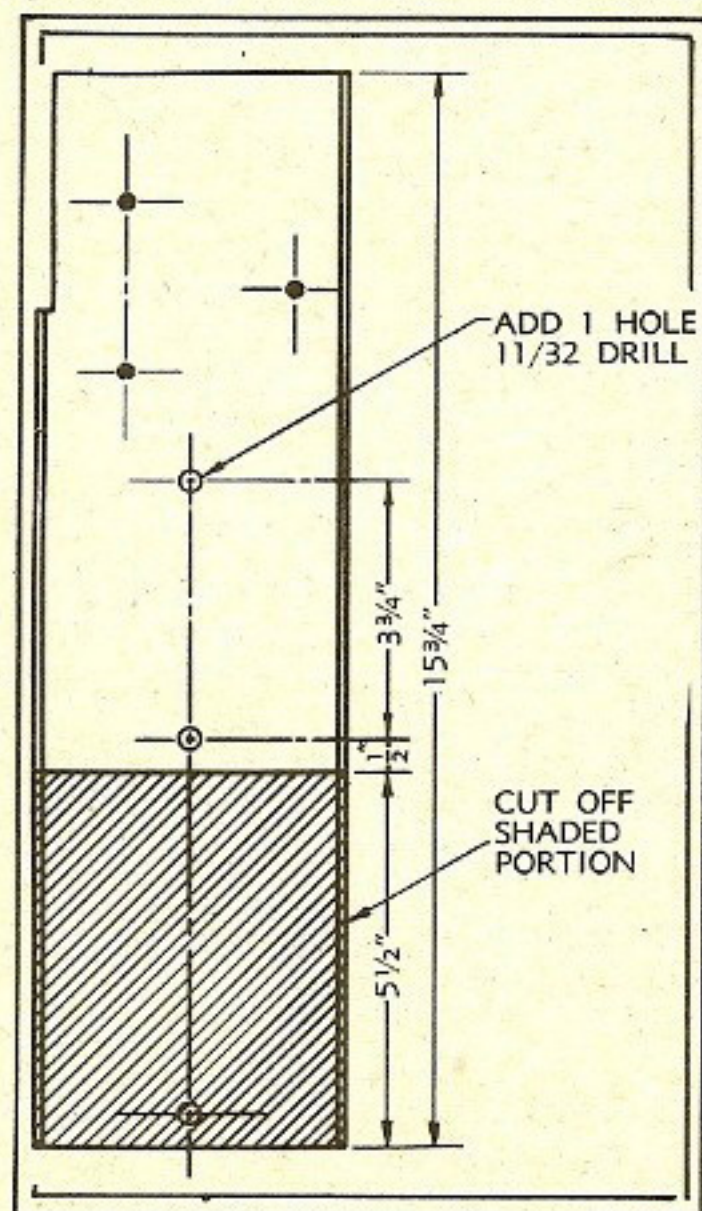


Fig. 1—Here's how it looks if the interphone box is on a bracket 16" from the floor, making you gnash your teeth when you throw open the breech block anywhere above 20° elevation.



Gunners in the M10 and M10A1 gun motor carriages who've been cussin' everytime the breech block on the 3" gun hits the interphone terminal box (see Fig. 1), can shift their cud and come up for air. If your vehicle has the interphone box mounted on a bracket about 16" above the floor on the front side of the center floor receptacle housing, here's how to shove the schnozzle of that gun up past the 20° elevation you've been getting. And you don't need new parts or tools.

First, open both battery switches. Then remove the screws holding the interphone box cover. Those three screws holding the box to the bracket also have to come out. Give with the gentle touch so you won't bend or damage the contact prongs. Take out the two 5/16" capscrews holding the bracket to the floor-receptacle housing and remove the bracket.

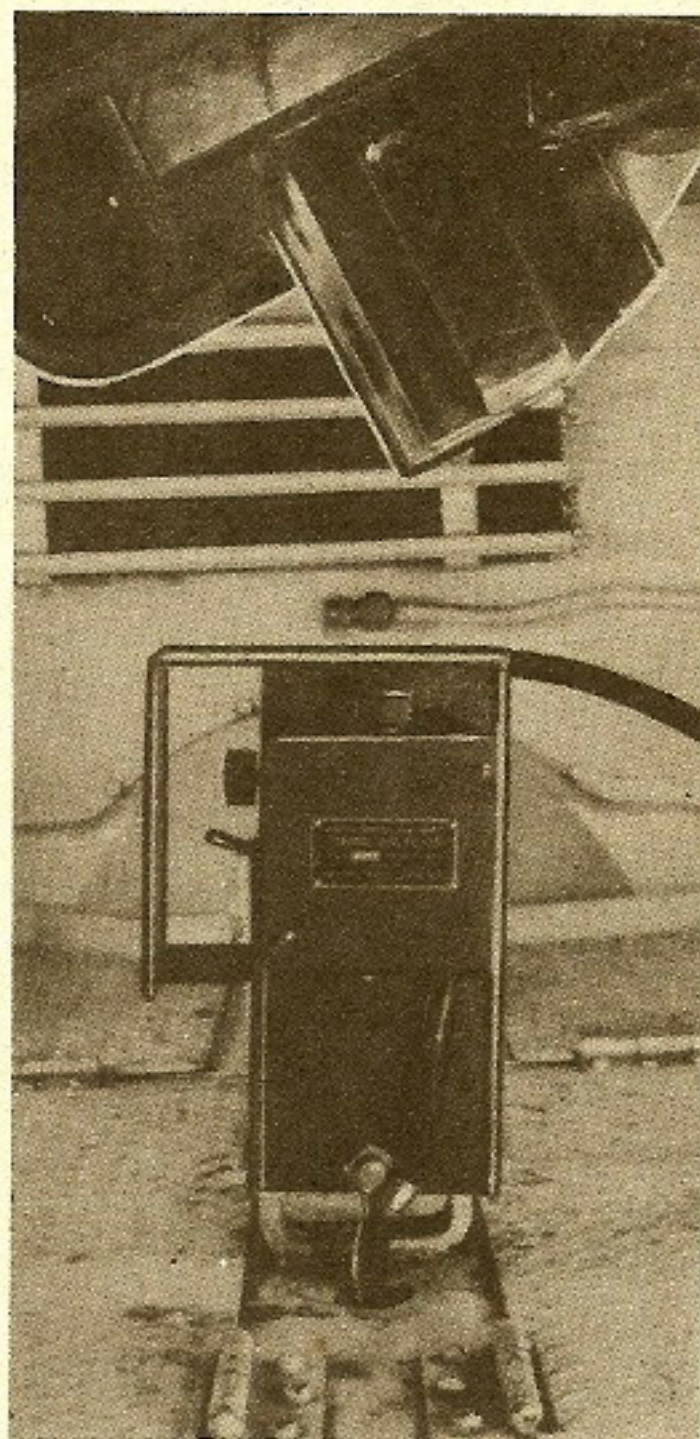
Everything under control? Now cut 5 1/2" off the bottom of the bracket and drill one 11/32" hole (see Fig. 2). Drill and tap a new hole in the floor-receptacle housing 3 3/4" above the lower one. Put the interphone box back on the

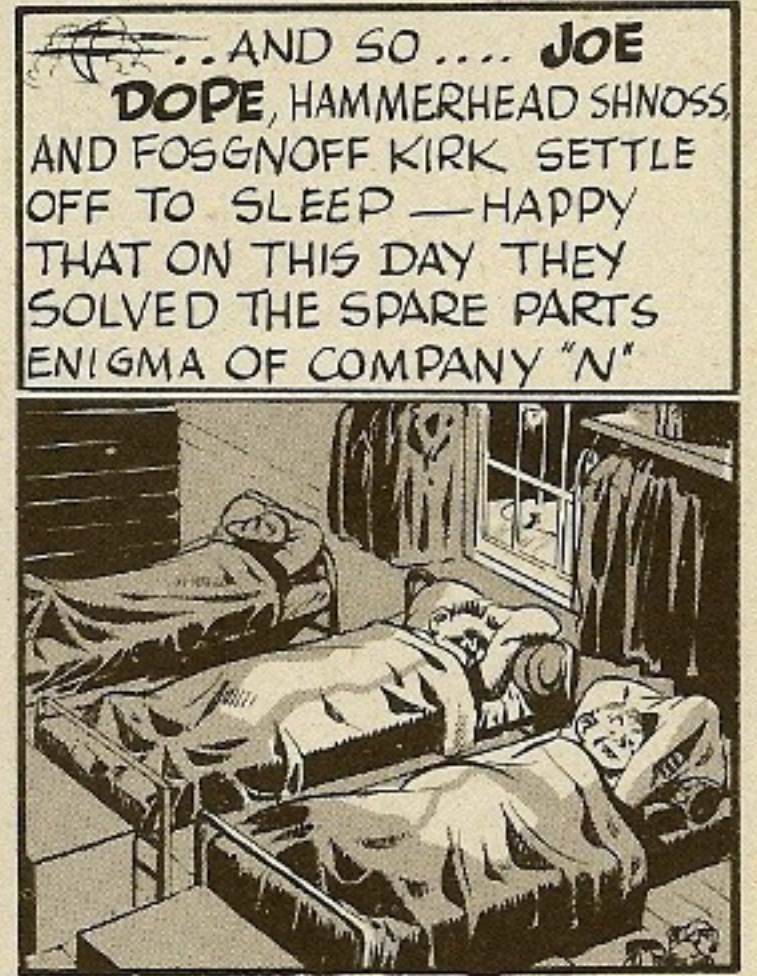
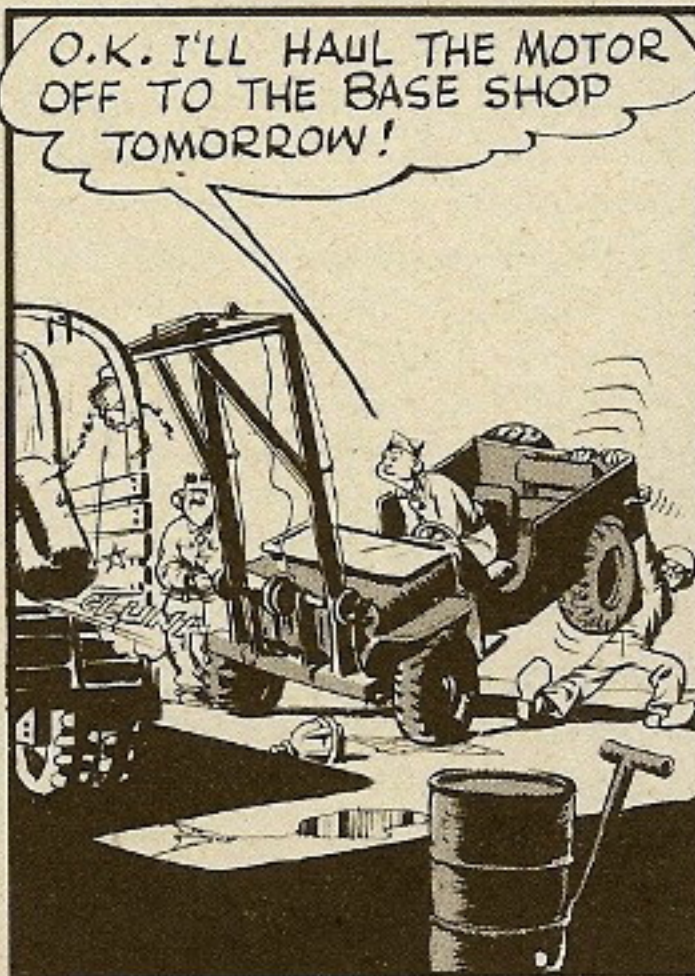
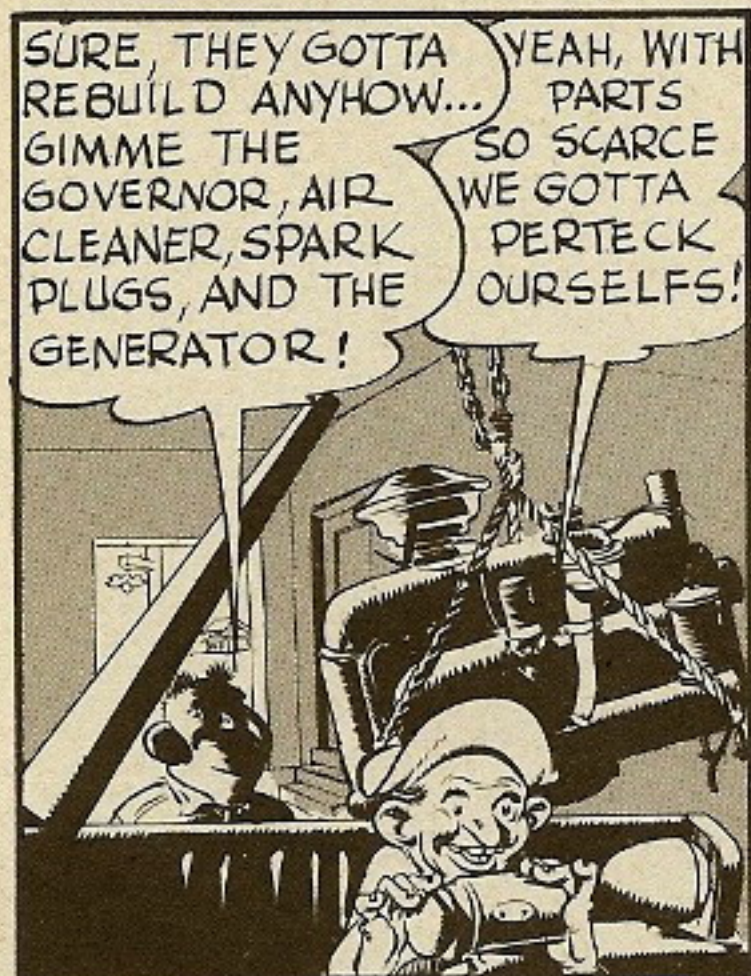
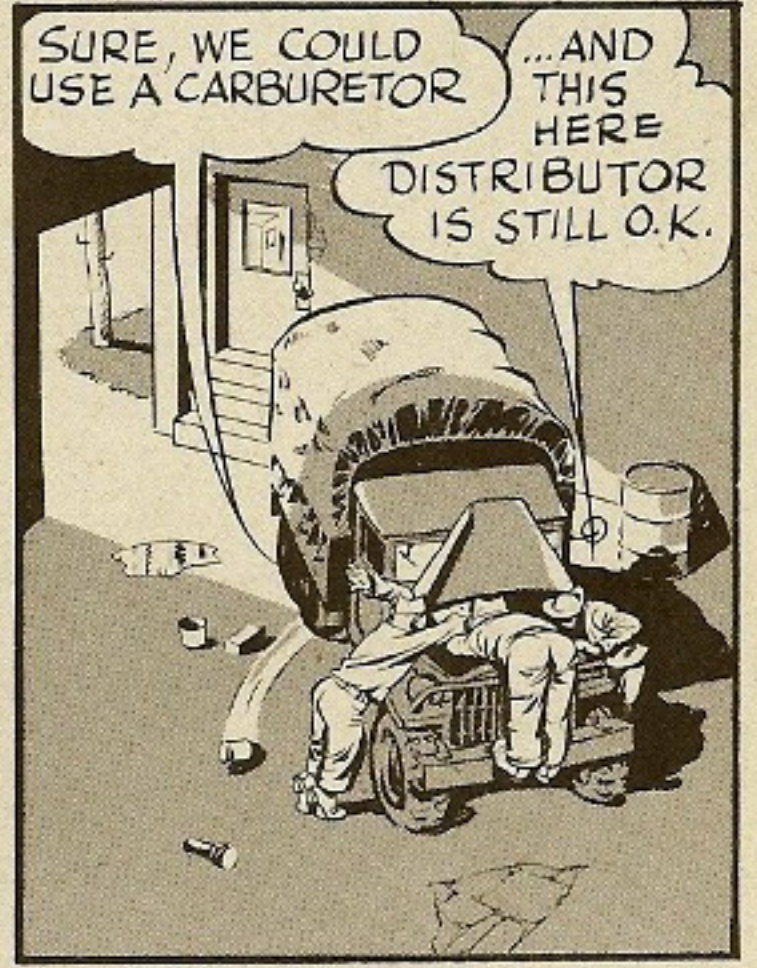
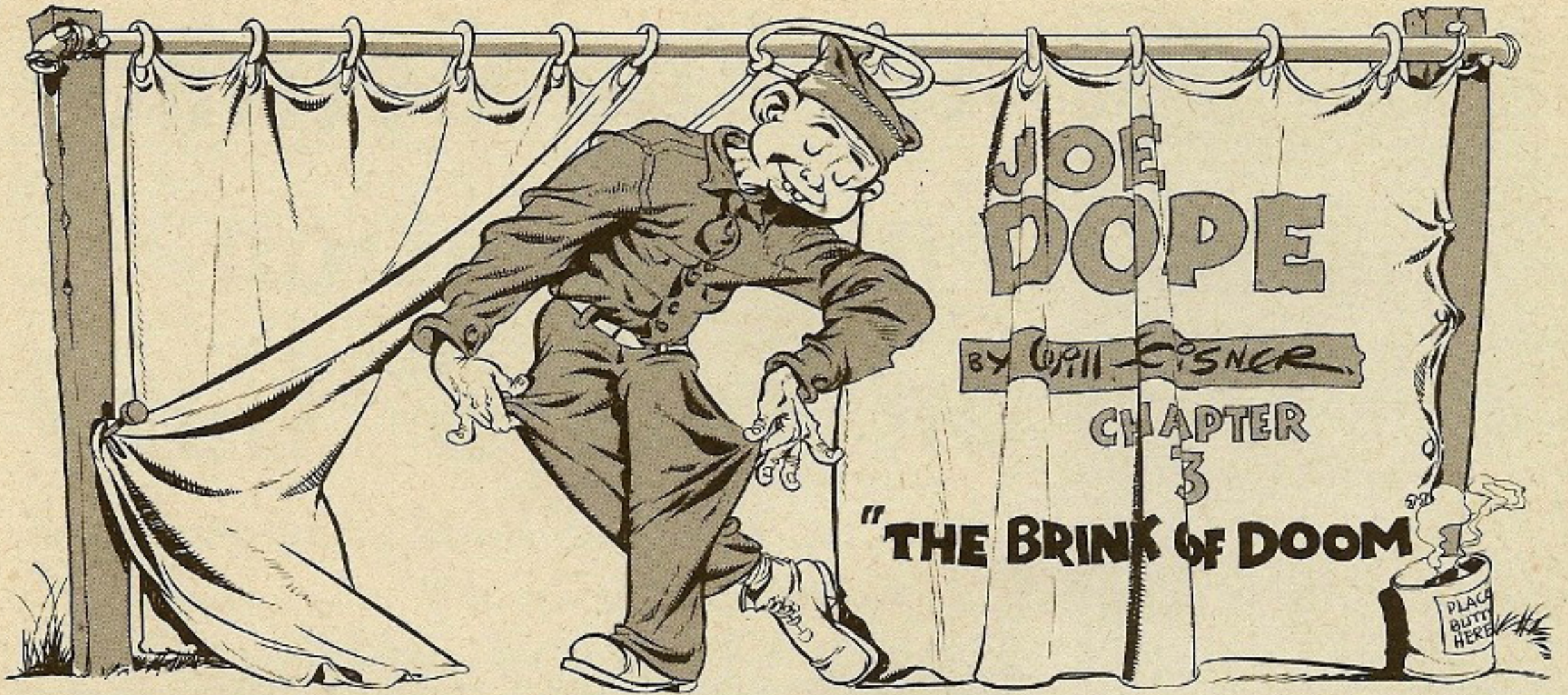
Fig. 2 (left)—Now's your chance to cut off the offending part of the bracket (shaded).

Fig. 3 (right)—Here she is—ready and waiting for you to grind her up to top elevation.

bracket, using the original screws and replace the terminal-box cover. Remove the upper wire clip from the cable and bolt the bracket to the housing with the original screws and using only the lower clip. Push the excess phone cable down through the hole in the floor and leave slack (see Fig. 3).

All right, Gentlemen, the sky's the limit.





BUT HAVE YOU SOLVED IT? JOE! YOU MADE IT WORSE!

I'M DREAMING! SURE, YOU ARE... BUT WHAT I'M GONNA TELL YOU IS TRUE... DOPE

TOMORROW, YOU'RE GONNA LUG THAT MOTOR TO THE BASE SHOP FOR REBUILD... YOU'LL RIDE OVER ROUGH ROADS... AS USUAL YOU WILL NOT CRATE THE ENGINE AND IT'LL SMASH ITSELF TO A PULP!

WHEN IT ARRIVES AT THE SHOP IT'LL BE UNTAGGED... YOU ALWAYS FORGET...
WHAT'S WRONG WITH IT BESIDE THE CONNECTING ROD? DON'T KNOW SIR... IT'S IN SUCH BAD SHAPE WE CAN'T RUN IT TO FIND OUT!

GUESS WE'LL HAVE TO ORDER MORE SPARE PARTS OF PARTS... WHATS HAPPENING TO THOSE UNITS...?? WE'RE SURE DRAINING THE DEPOTS OF PARTS...??

YOU HAVE 'EM JOE DOPE IF YOU WERE WOUNDED - WOULD YOU LIKE IT IF THE MEDICS REMOVED YOUR UNIT ASSEMBLIES BEFORE SENDING YOU BACK?
OUCH!

YEAOW MY ARM - MY EARS MY CARBURETOR
HEY JOE WAKE UP WAKE UP

FELLERS... I'VE REFORMED I'M GONNA REPLACE ALL THOSE UNIT ASSEMBLIES AND PUT THE MOTOR BACK IN THE TRUCK... AND I'M GONNA TOW THE WHOLE THING IN... PROPERLY!

AND SO - AT THE CLOSE OF THE NEXT DAY JUST AS THE MOON RISES OUT OF THE ONCOMING NIGHT A FOURTH - ECHELON SERGEANT PREPARES FOR BEDDY-BYE...
...AND BLESS JOE DOPE TOO FOR BRINGING IN HIS JOBS PROPER AT LAST!

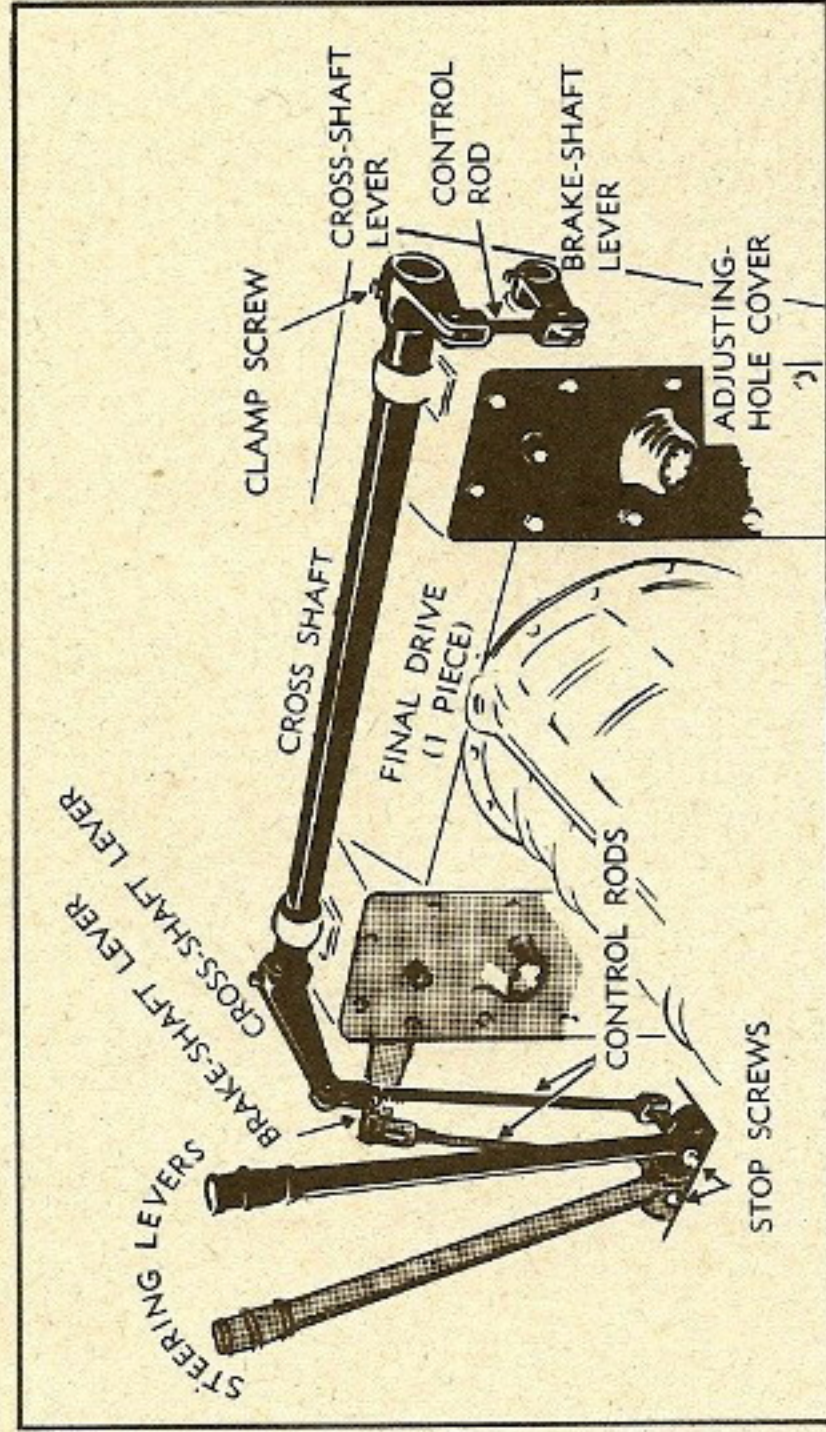
The M4 Tanks, the M7, M10, M10A1 Gun Motor Carriages are All Rough 'n Tough Jobs . . . but their

Steering Brakes Should Work

Gentle 'n Easy

If not—here's what to do and how to do it. A brand-new procedure—easier, clearer, completer than anything in your TM or anyplace else

From the driver's seat every tank feels a little different. You've noticed it . . . every M4 you've driven steers different. Some you can whip around with two fingers on the steering levers. Some need a heavy hand and knotty arm muscles to budge the levers back for a long wide curve. Yet all have the same maze of steering levers, rods, and shafts. Where's the difference? It's all in the brake adjustment. If the brakes are in good shape and adjusted the way we show here, the steering on all M4's (and M7's, and M10's) will be the same. They'll all be easy to steer. A steady pull on the levers will pivot the tank around nice and pretty as you've ever seen, IF the brakes are adjusted. But most of the tanks we saw creeping around in the field needed a service job on the brakes.



A typical steering brake system in a tank—with all the disguises removed. Just the bare rods, levers, and shafts that wrap around the final-drive housing. The grayed parts have to do with the left-hand brake, the blacked parts with the right-hand brake. Do you know the names of all the parts? Then learn 'em.

Some of the drivers on those wagons needed a service job on their faces. A few had their front teeth missing, other guys had their chins sliced up, and some had their noses flattened. Fighting over Helen? . . . hell no. The brakes.

what happens—the driver's riding along with his head out of the hatch and he's bending forward grabbing for the steering levers. Comes a bump—ooops—he's bounced up and bats his teeth against the front edge of the hatch. You shouldn't have to get your

face all bashed up to find out your brakes need a going over. There's an easier way. In fact, three or four easier ways. Easy because you can do the checking all from inside the tank, without any special tools, and without any messy procedure like draining the 50 or so quarts of oil from the final drive. It doesn't take long to do, either. A good driver will steal time to check-up on his steering brakes. Hold on now and we'll show how to do the job, and how to make the few adjustments so your vehicle will have easy steering and no chance of battering your profile on the hatch.

First, measure the space between the final drive and the steering levers when they're released. It should be 7 to 7½ inches as you see in the drawing—below, center.

RELEASED POSITION OF LEVERS SHOULD BE

7 to 7 1/2"

If it is...

... you've got a fairly normal vehicle. On most jobs, that adjustment's all right. Your steering can still be out of whack. You'll find out by following the column on this side of the page straight through, and making these three checks:

Check 1. When making a regular turn, the steering-brake levers should not come back farther than vertical. If they don't, you're OK. You can skip over the rest of this Check and the next one, and go down to Check 3 (page 50). When your levers do come back past vertical, it's a sign your brake linings have worn a little. They don't need relining. Just normal brake wear that puts more space between the lining and drum, inside the final-drive housing. To you, that extra space means you have a longer pull on the levers before you get the tank to turn. Your tank steers hard, like a couple of trucks. Then at the end of a day you feel like your arms are made of wood. Instead of putting up with this kind of steering, adjust your brakes so you get action before you pull the levers all the way back. That means reducing the free travel. First measure it:

Check 2. Each Steering lever should have at least 4 inches of free travel. Measure the free travel like we did in Fig. 1. Less than 4 inches is bad. It doesn't leave enough clearance between the lining and drum, inside the housing. That amounts to riding around with your brakes partly on. You know the rest—glazed linings, and finally back-breaking steering for you. So unless your free travel's right, adjust it this way.

First, take off the adjusting-hole screw plug, or adjusting-hole cover, whichever your vehicle has. (The plug directly in front of the driver is for the left-hand brake adjustment, the one in front of the assistant

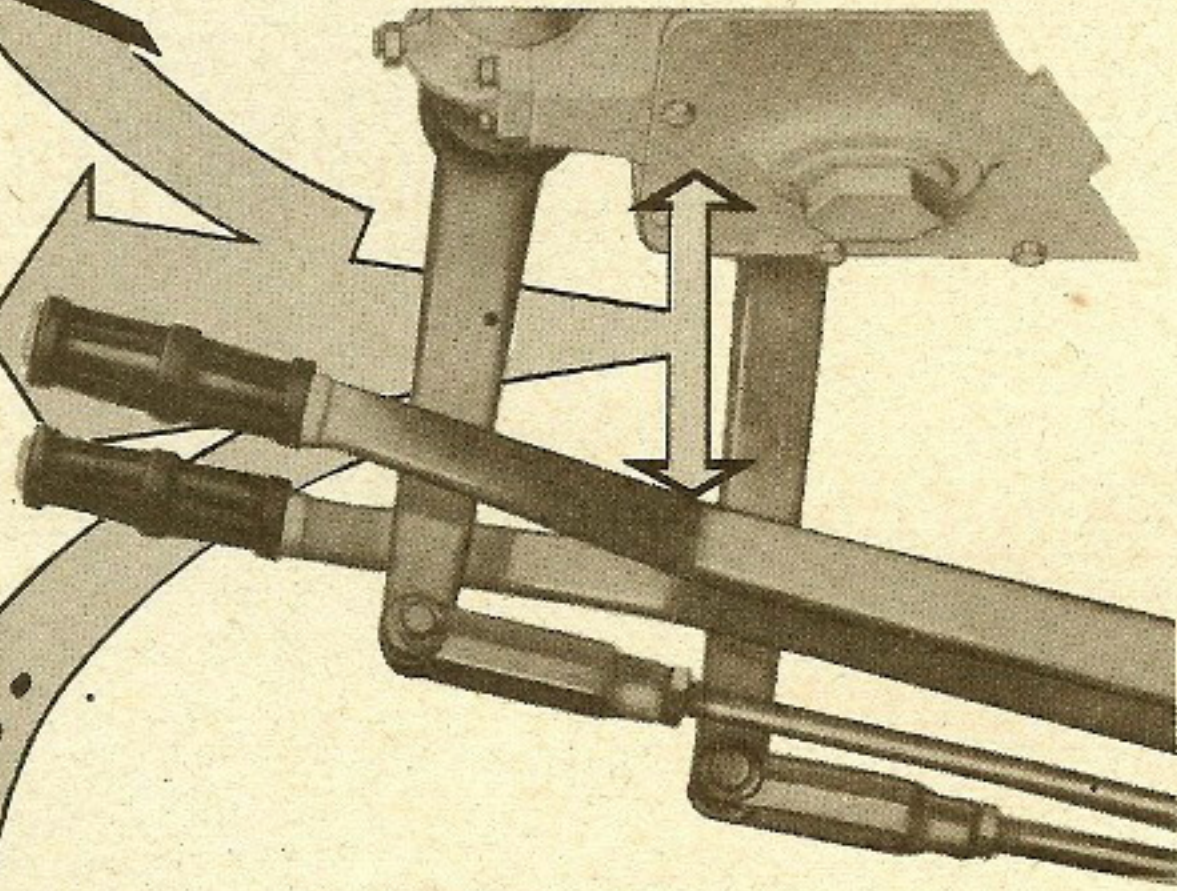
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If it is not

... follow this column straight through. Your steering linkage is out of adjustment somewhere along the line. That, bub, is serious. Two ways—it'll get your face bashed up, and your steering will be twice as hard as it should be. The whole idea of that zigzag combine of the rods, levers, and shaft is for one thing: so you can steer the 30-ton tank by just an easy pull on the steering levers. The levers and rods take the small pressure at your end and turn it into a big pressure by the time the force gets to the brake shoes. So, if your steering linkage is out of adjustment just a little, it puts the brake shoes way out of adjustment. That's why your end's so important. Start to put your linkage back in perfect shape by rifling through these steps:

Step A. First pull out the yoke pins that connect the control-rod yokes to the brake levers and cross-shaft levers. Now turn the stop screws at the lower end of the steering levers till the levers stop 7 to 7 1/2 inches from the final-drive housing. You'll probably have a little trouble with the stop screws. They're hard to get at—but it can be done. Just takes a little fumbling around.

Step B. You'll have to check the position of the brake levers and cross-shaft levers. But to do it, you'll have to find out which type of steering your vehicle's got. There are five different set-ups—Figures A, B, C, D, F, on next page. Pick out the Figure that matches your tank. Then see if your measurements jibe with those. It's hard to measure your tank exactly. Anyhow, if you're off a few sixteenths of an inch, your steering's still all right. You'll probably find one or two of the levers a good half-inch out of line. Then you've got trouble. Check over your tank by the Figures on the next page and see.



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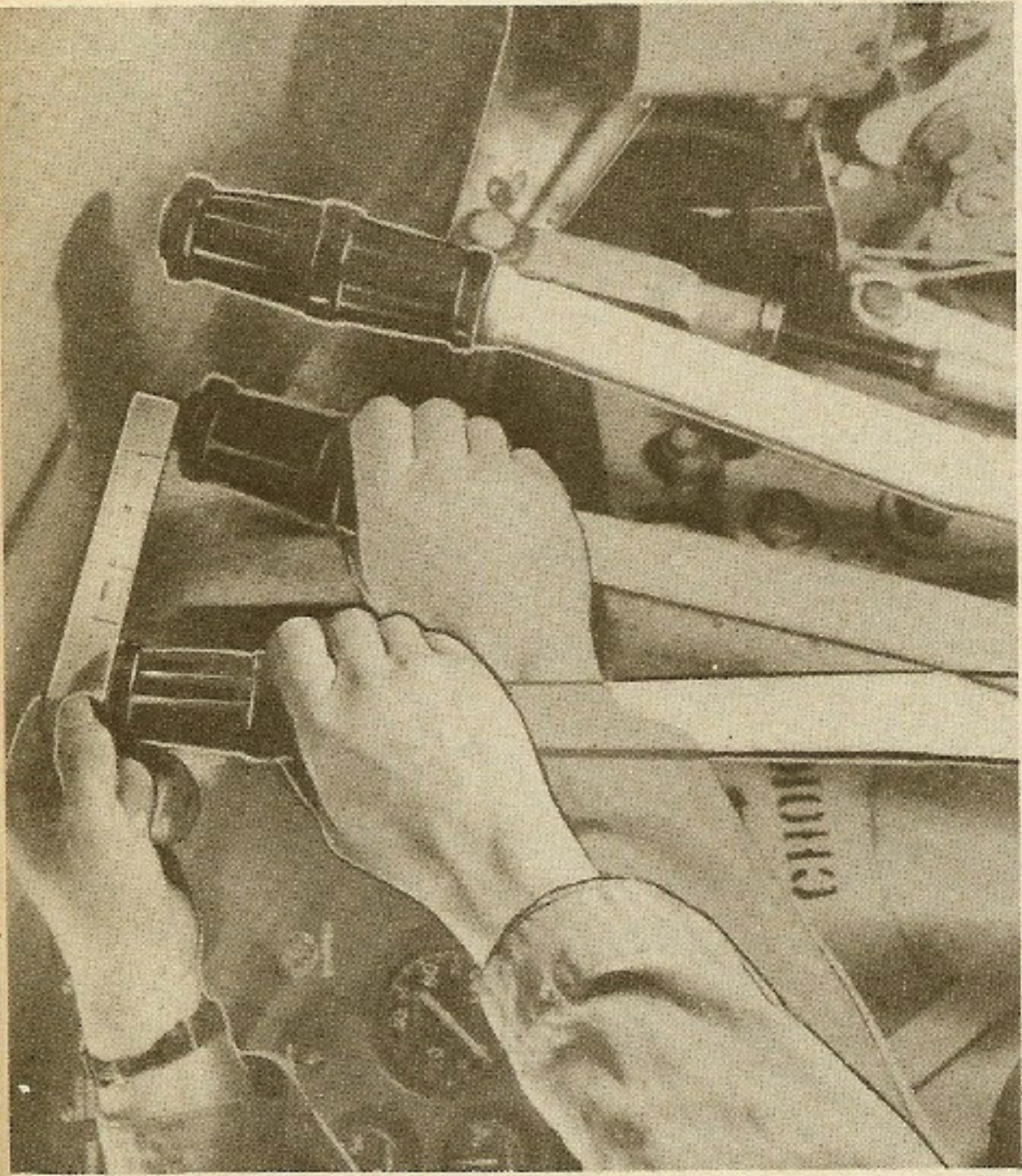


Fig. 1—How much free travel do you have in each lever? Good question. The hands above show how to find out. This one's OK... it's more than 4".

driver is for the right-hand brake adjustment.) Inside there's one or two different kinds of adjusting-rod nuts. One has a spring clip that rests on the top and bottom faces of the nut (Fig. 3), the other has no clip (Fig. 2). You're liable to find either one on your tank. But you've got to know which you have. There's a different adjusting procedure for each one. So stick a thumb and forefinger in and try to feel out which type your job's got.

IF THE NUT DOESN'T HAVE THE CLIP: Disconnect the control-rod yoke from the lever (Fig. 2). Then put your 1 1/8" deep socket on the

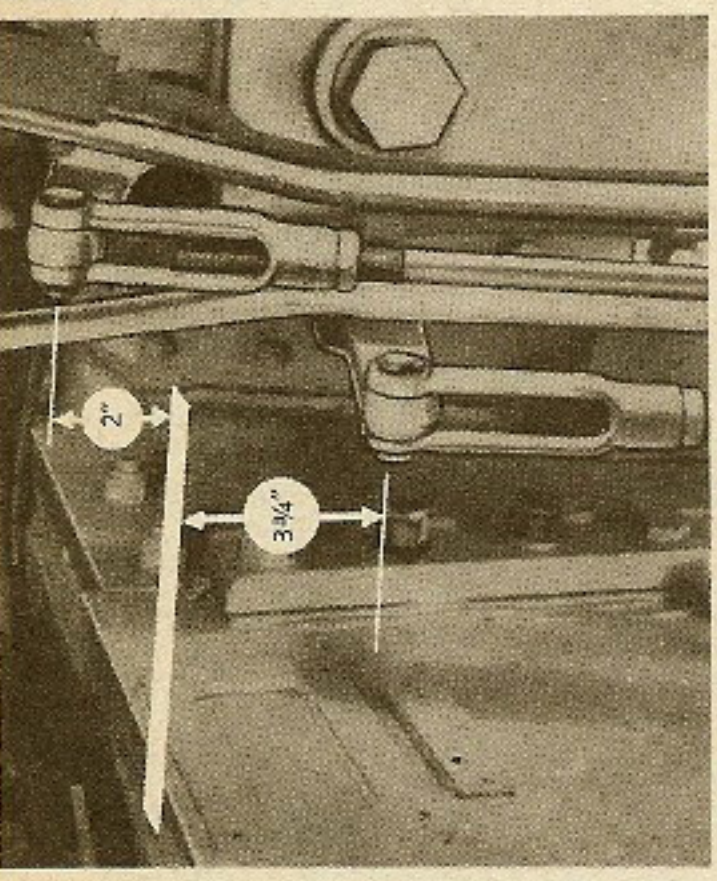
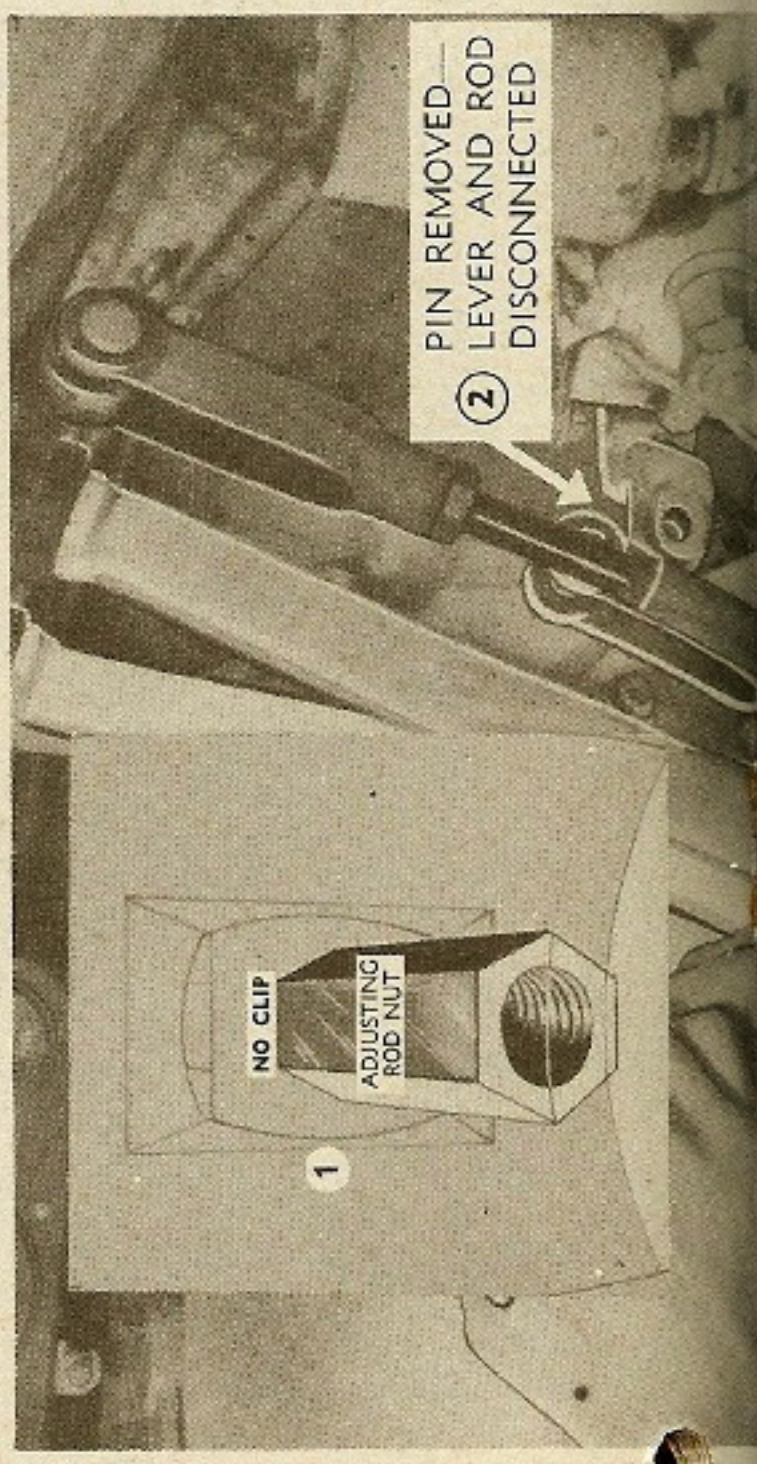


Fig. A—Old-Type Brakes (Single Anchor) on One-Piece Final-Drive Housing.

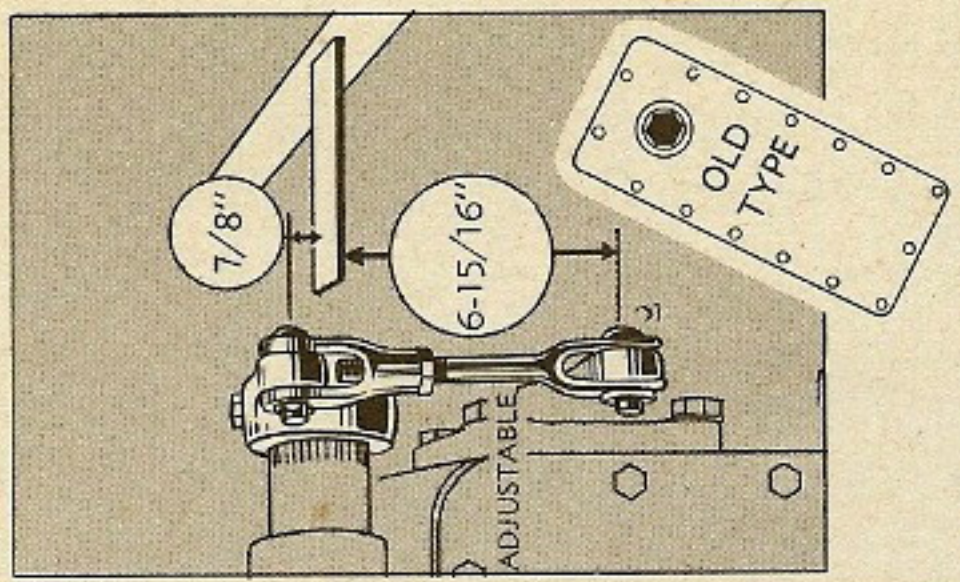
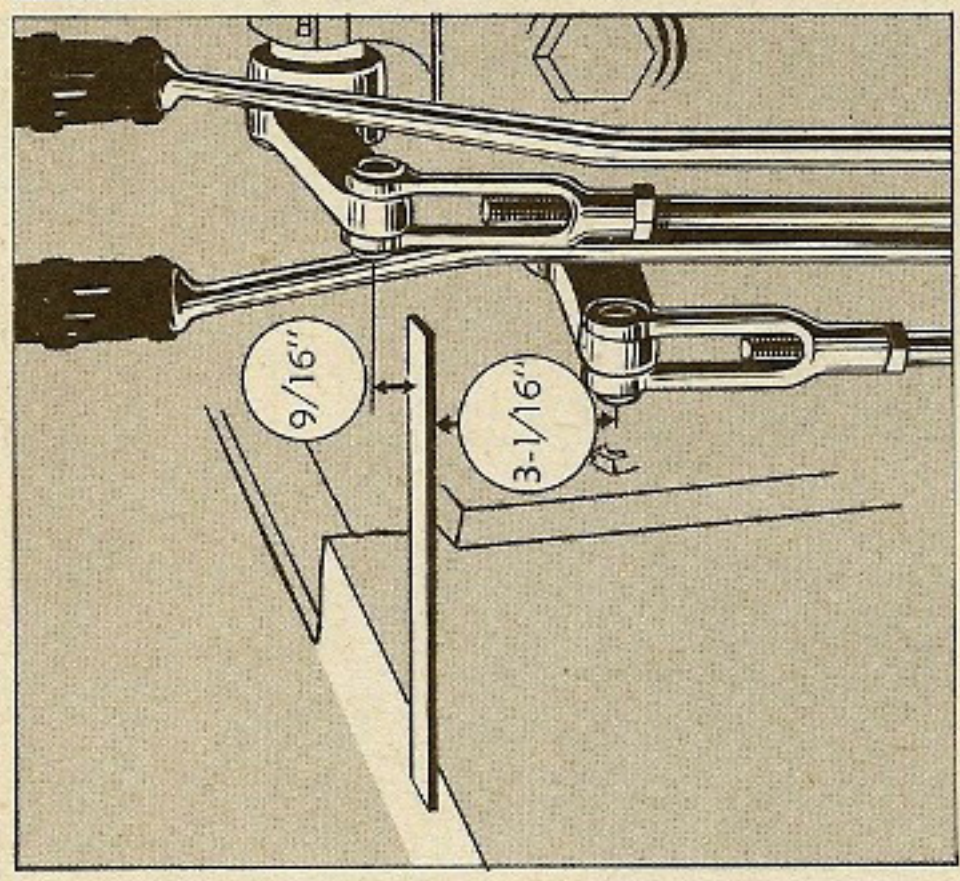
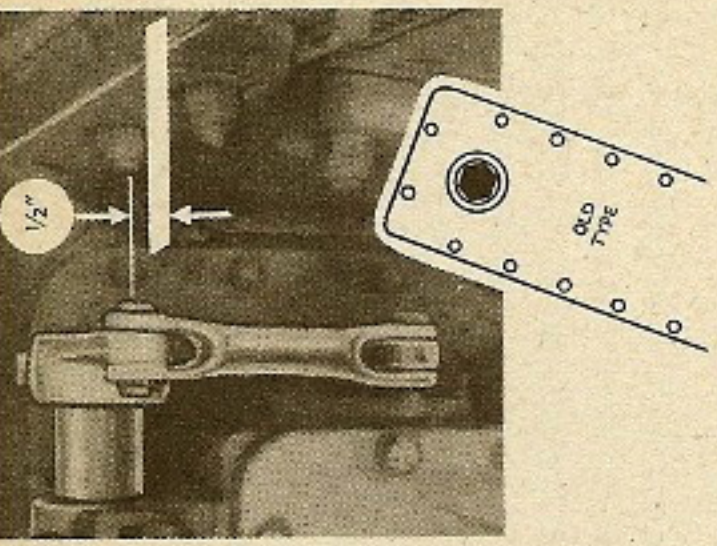


Fig. B—Old-Type Brakes (Single Anchor), Three-Piece Final-Drive Housing, With Adjustable Control Rod.

(Caution—Some tanks have a brake system like the ones in figures A or B—but the two levers and control rod at the right end of the cross shaft are different. They point toward the FRONT of the tank instead of the BACK as shown above. The brakes are all right, but none of the measurements shown above apply. When your brakes get bad take off these levers and reinstall them like figure A or B. Then follow the measurements).



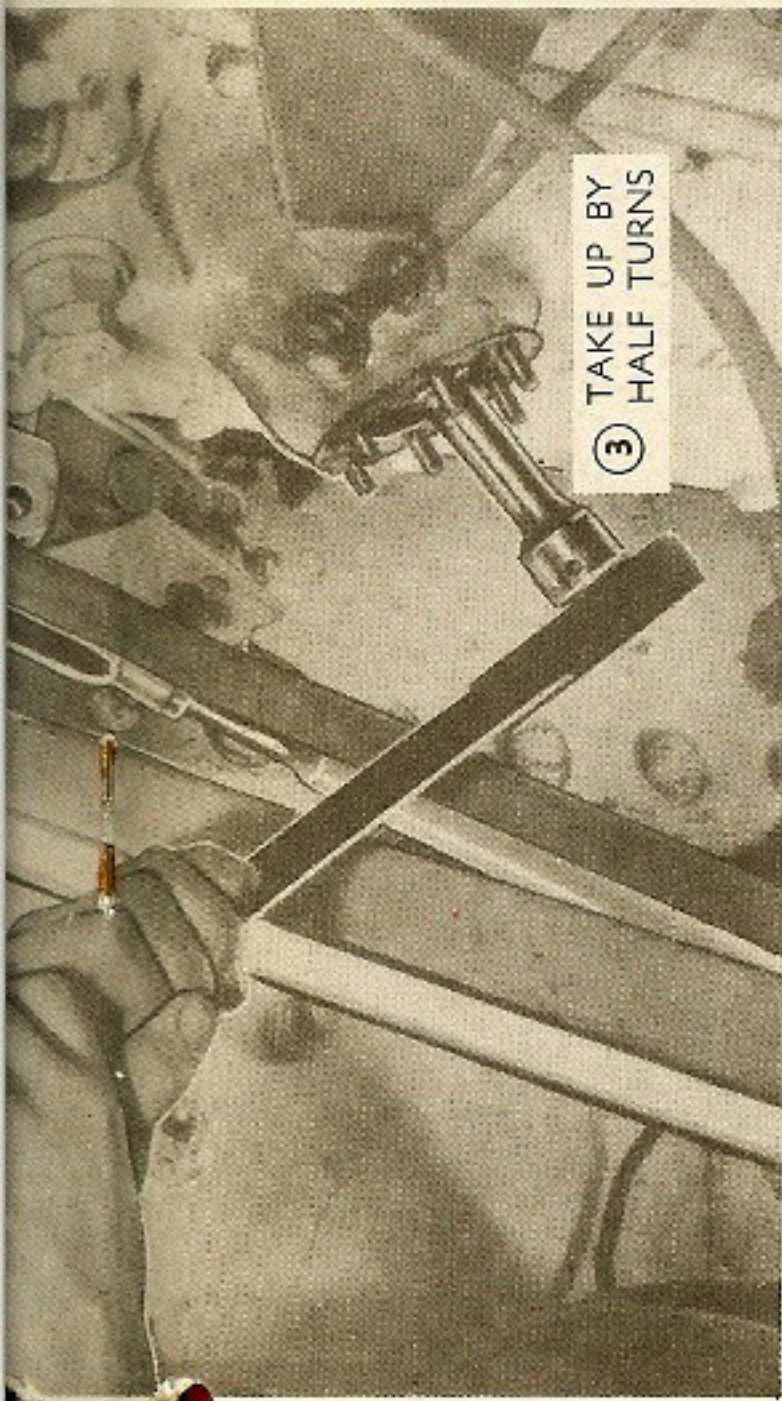


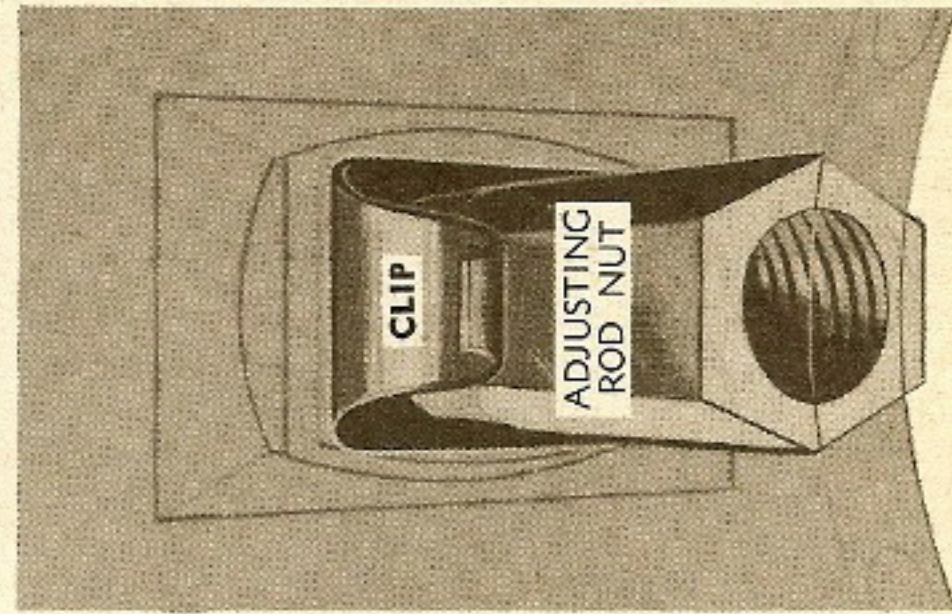
Fig. 2—If your adjusting-rod nut's like this (1) in inset, follow (2) and disconnect the control rod, then (3) to adjust your free travel (left brake).

(Caution—Watch out the socket doesn't come loose as you're removing it and drop down the final drive. You'll have to go through the torture of fishing it out if you do. Leave the socket down there and it'll make hash out of the gears).

adjusting-rod nut and start turning—counterclockwise if you want more free travel, clockwise if you want less free travel. The way the nut's built you'll have to take it up in half turns. Not less. But don't try to turn it at all unless you've disconnected the control rod. You'll chew up the nut and ruin the chances of ever getting a good brake adjustment on your vehicle. Test the free travel by re-connecting the control rod to the brake lever for a moment. When you've got 4 to 5½ inches free travel you're done. (Note Caution above.) Put back the cover plate (or screw plug), connect the control-rod yoke and the brake's adjusted.

IF THE NUT HAS THE CLIP (Fig. 3): You don't have to disconnect any of the linkage. Just put your 1½" deep socket on the adjusting-rod nut and turn it a few clicks. Counterclockwise for more free travel, clockwise for less. When your steering lever tests at 4-5½" free travel you're all done. (Note Caution above, under Fig. 2.) Put back your adjusting-hole screw (or plate) and the brake's adjusted.

Fig. 3—When you feel a fancy curved clip like this, don't disconnect any rods.



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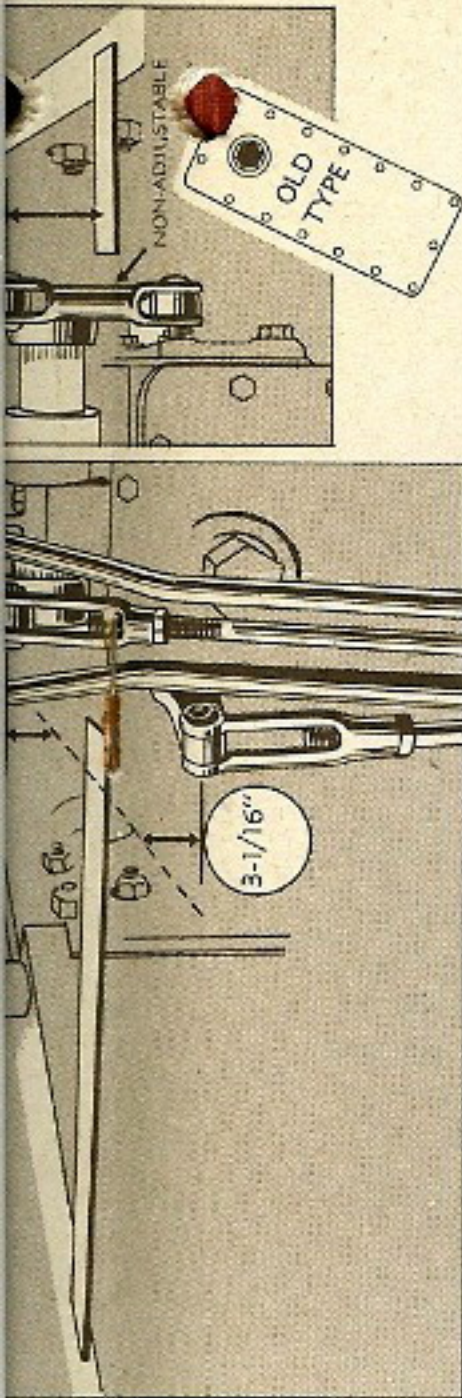


Fig. C—Old-Type Brakes (Single Anchor), Three-Piece Final-Drive Housing, with Non-Adjustable Control Rod.

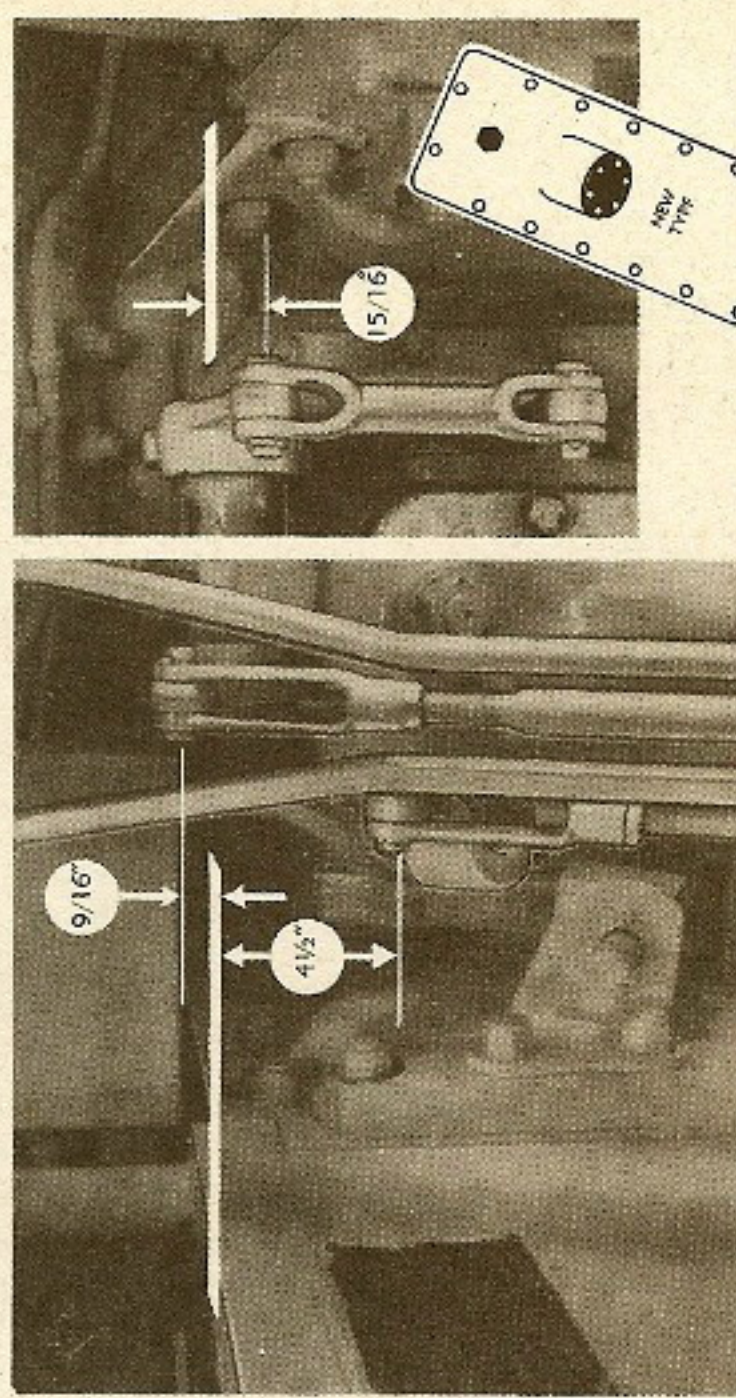


Fig. D—New-Type Brakes (Double Anchor) on One-Piece Final-Drive Housing.

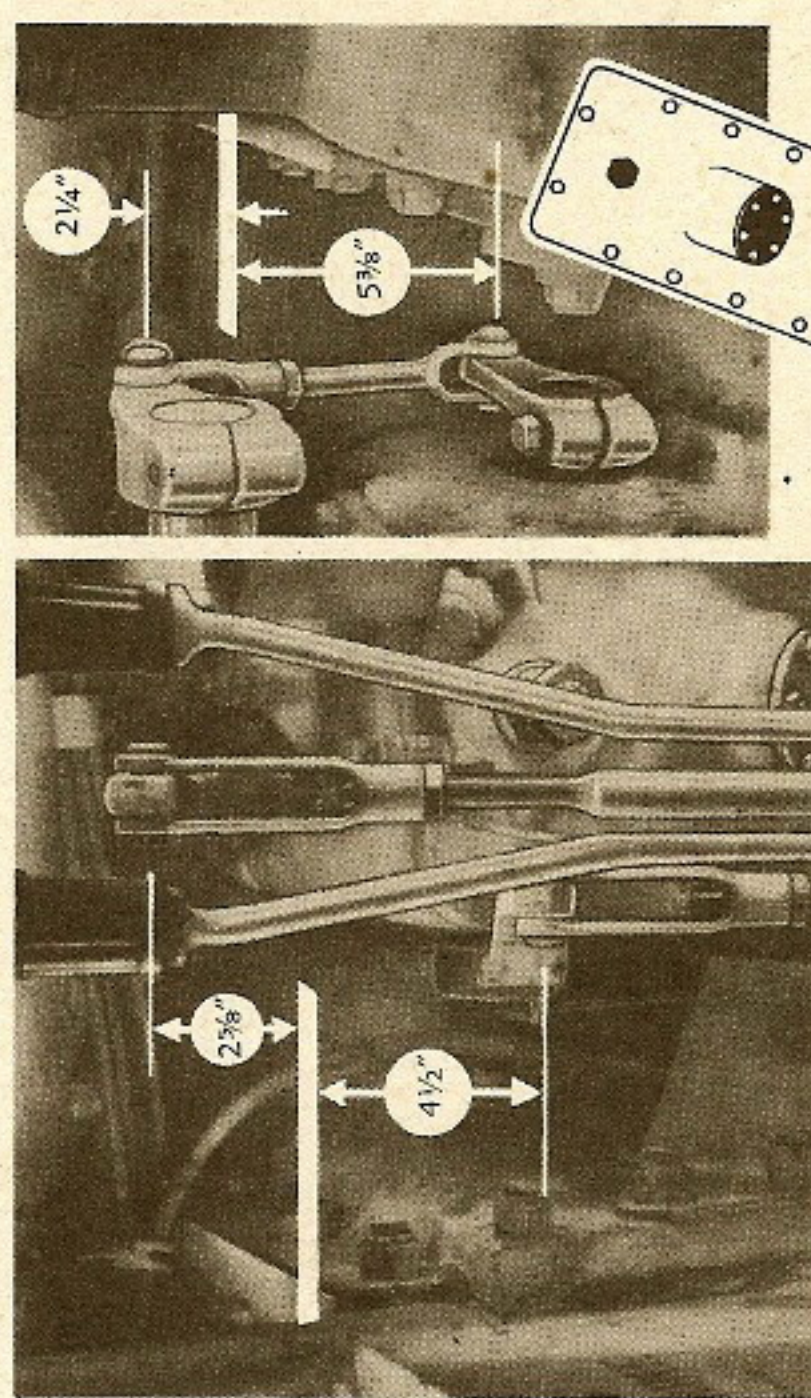


Fig. E—New-Type Brakes (Double Anchor) on Three-Piece Final-Drive Housing.

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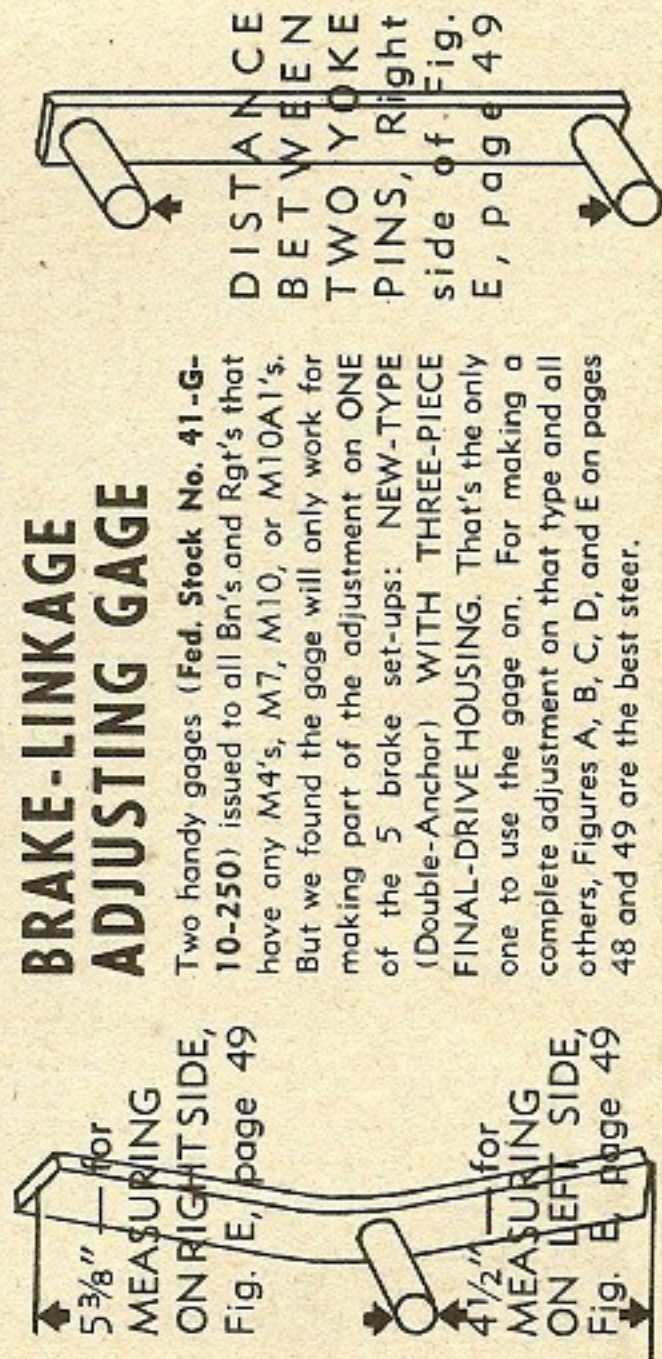
We've shown and talked mostly about the left-hand brake. The same things go for the right brake. It should be tested for a minimum of 4 inches free travel. If you've just finished getting one brake all adjusted for free travel and you're about to try the other one, it's a good time to make this check:

Check 3. When both steering levers are pulled back together, they should both take hold together. Nothing serious if they don't. It just makes steering and stopping tough when one lever grabs and the other one doesn't take hold till later on—sometime in the future. Easy enough to correct. First check the free travel in each steering lever (Fig. 2). Be sure each has at least 4 inches. Usually it happens that one lever doesn't have the right free travel. Use the procedure in Check 2 on that lever. Then both levers should line up and take hold at the same time when you draw the levers back.

The Checks (1, 2, and 3) are called a "minor" brake adjustment. Their big job is to make up for the wear brakes get in everyday use. On most tanks under 300-hours old (or 3000 miles) this is all you'll probably have to do to keep the steering brakes tip top. Just keep your eye on them and watch how they behave as you jog along. Soon as the brakes get wild and woolly and don't measure up with Checks 1, 2, and 3 above, tame them with an adjustment.

Some older tanks with mileage up around the 3000-mile mark won't hold a minor adjustment. You'll go through the three Checks and everything will seem fine. But—in 10 miles the levers will be out of adjustment again. They just won't stay in line. If it happens to you, first be sure you've followed Checks 1, 2, and 3 to the word. And if you have, your brakes are bad—damn bad. They need something more than an adjustment—maybe a relining, or maybe a recenting. Turn your tank in to your organizational mechanic next sick call. **END**

THESE TWO PIECES OF METAL IN YOUR BN OR RGT SET ARE A



BRAKE-LINKAGE ADJUSTING GAGE

Two handy gages (Fed. Stock No. 41-G-10-250) issued to all Bn's and Rgt's that have any M4's, M7, M10, or M10A1's. But we found the gage will only work for making part of the adjustment on ONE of the 5 brake set-ups: NEW-TYPE (Double-Anchor) WITH THREE-PIECE FINAL-DRIVE HOUSING. That's the only one to use the gage on. For making a complete adjustment on that type and all others, Figures A, B, C, D, and E on pages 48 and 49 are the best steer.

Step C. Now after you find the cross-shaft or brake-shaft lever that has the wrong measurement, correct it this way. See if the reference marks at the end of the shaft are in line. Each lever has two marks (Fig. F). When they don't line up, they throw the lever out of line and

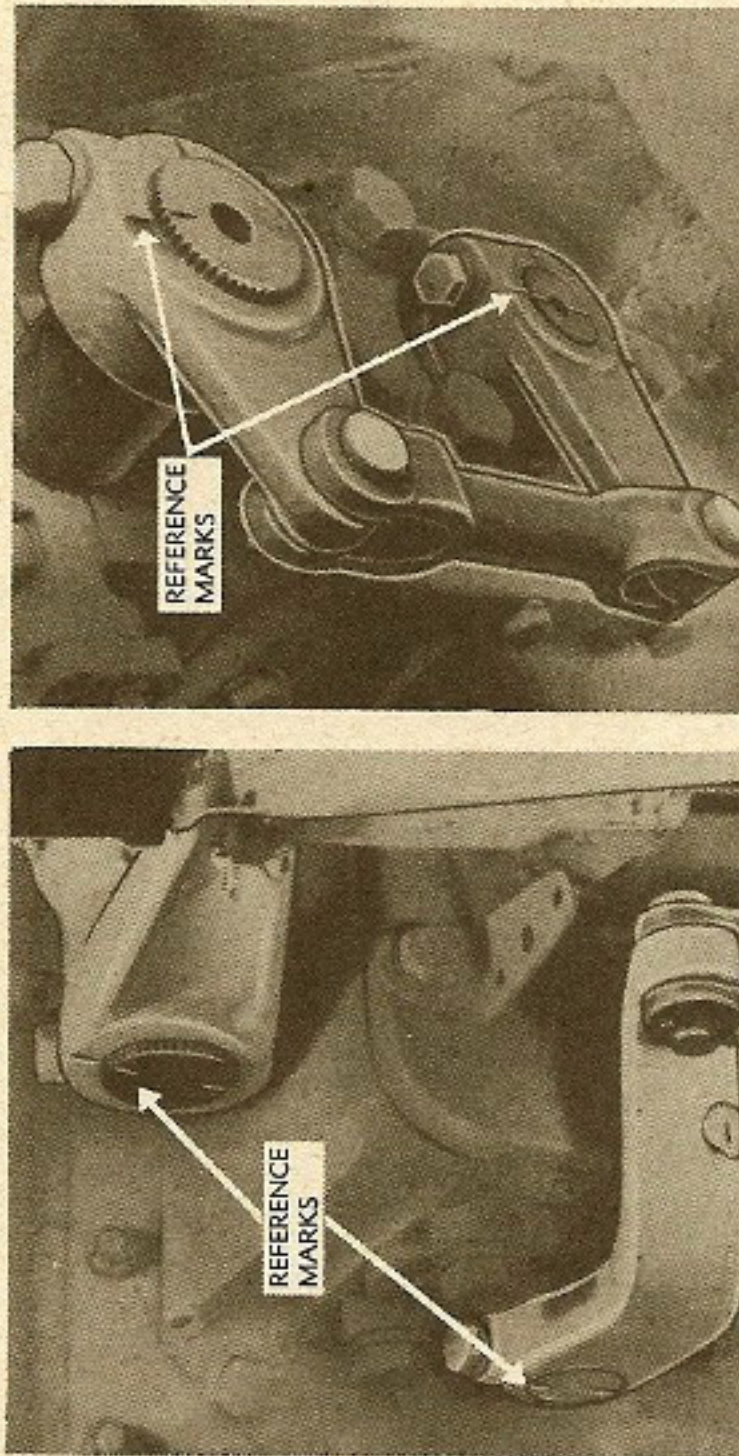


Fig. F—Each lever belongs in a certain place on the shaft. When the mark on the lever meets the mark on the shaft—it's in the right position.

that makes the steering linkage cockeyed. Get the reference marks lined up. You'll have to take the lever off to do it. Remember to take the clamp screw all the way out. It fits into a groove on the shaft. All the prying and hammering won't get the lever off—unless the clamp screw's all the way out. Slide the lever off and put it back with the reference marks in a straight and even column. Next see if this makes the lever come to the right position—according to the Figure of your brake system in Step B. If the lever's still too high or too low, bring it into the right position by changing the length of the control rod the lever fastens to. Lengthen or shorten the control rod till the lever comes to the exact position—within a few sixteenths of what the Figures in Step B call for.

Any lever that's out of adjustment should be corrected this same way.

(Two things that happen rarely, about as often as the first sarge smiles. They're worth watching. 1. Sometimes when the linkage is way to hell out of adjustment, you won't be able to get the levers the right distance above or below the edge of the final drive. They'll just go so far, and stop. Don't let it throw you. Be nonchalant. Take off the adjusting-hole screw plug or cover and turn the adjusting-rod nut till you get enough play to move the levers to the correct position (see Check 2, page 47, left). 2. On some grandfather tanks, with the old-type brakes (single anchor) you won't find any reference marks on the ends of the shafts. They never had any. It's

CONTINUED ON LAST PAGE

Polarity Switches

YOUR CHEVVIES HAD 'EM — IF THEY BOTHER YOU, JUST BYPASS 'EM

Among the gadgets designed to make life beautiful for you, is a little "polarity reversing switch" which was mounted on top of the starter housing of your early (about 1941) Chevy 1½-ton trucks. The idea behind this switch was to reverse the direction of the flow of current through the breaker points in order to keep the metal from pitting one point and building up on the other.

It seemed like a good idea at the time because of the critical tungsten situation (points contain tungsten) but things have eased up since then and besides, the polarity reversing switch has been giving some of the boys aggravation. Some say it's responsible for hard starting, some say it's just another possible source of trouble in the

electrical system without compensating benefit.

First of all, here's the way the switch works: As we say, it's mounted on top of the starter housing. Every time you hit the starter, an arm flicks the switch and causes the current to flow into the breaker points from a different direction. In other words, on your first trip out in the morning, you step on the starter and the current starts feeding into the breaker points from the breaker-lever side. You ride around for about half an hour—the current feeding in over the points from the breaker-lever side all the while.

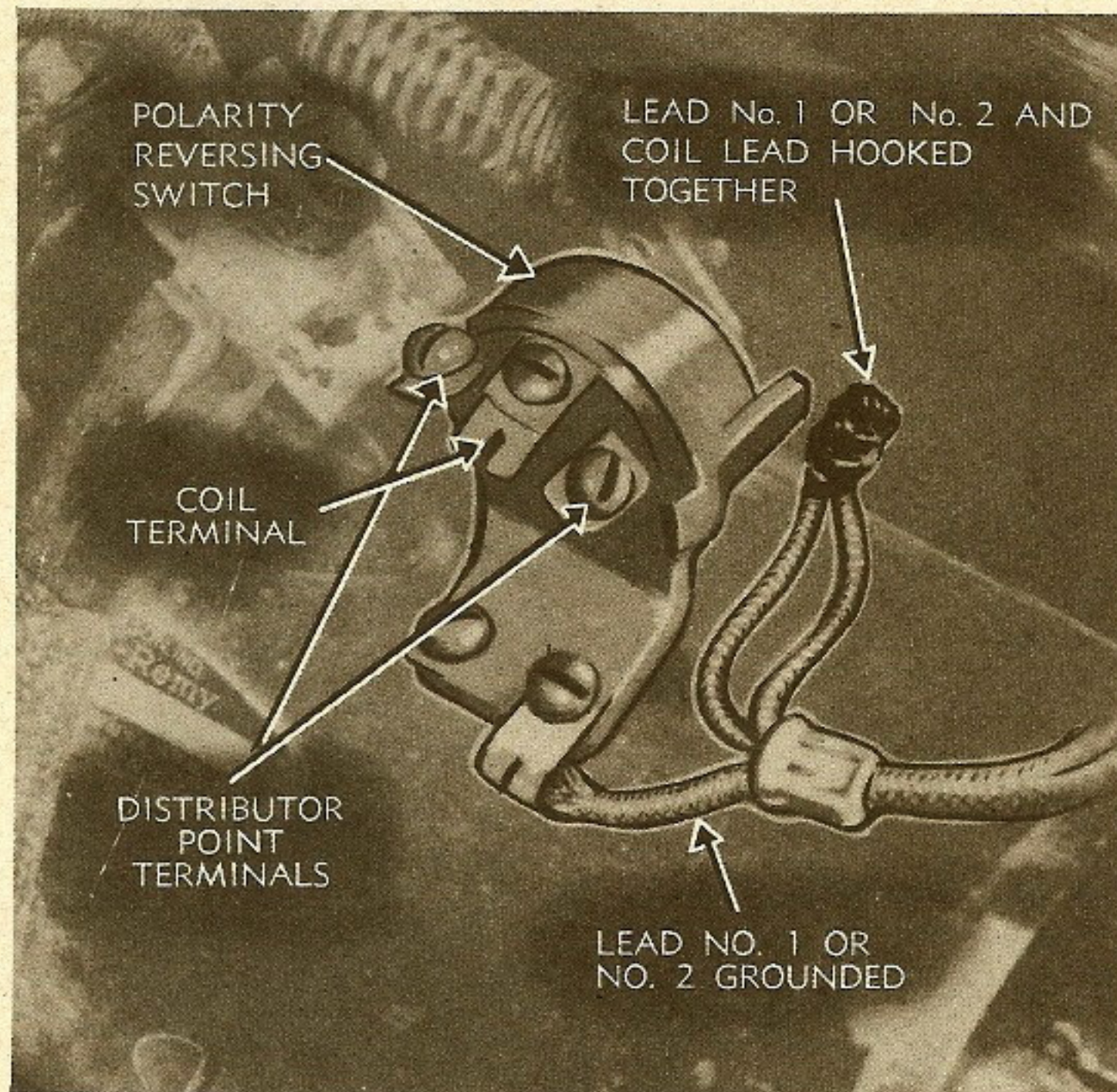
You stop to unload. Getting ready to shove off again, you hit the starter. When you do, the polarity reversing switch clicks and the circuit is changed so that

the current starts flowing into the points from the other side—the adjustable contact side.

That, in a nutshell, is the way the polarity reversing switch works. By constantly changing the direction of the flow of current, it keeps the metal from eating out of one of the breaker points and building up on the other.

If you suspect the polarity reversing switch of being the source of your electrical trouble, bypass it in this fashion (ignition turned off): take either the "No. 1" or "No. 2" wire off the terminal (see picture) and ground it under one of the screws holding the polarity switch to the starter housing. Now take the other two wires (say, "No. 2" and "Coil") and with a nut and bolt, connect them. Wind some insulating tape around this connection to keep it tight and prevent it from shorting on the frame or something. Turn on your ignition key and start your vehicle. Everything okay? Good—now you can just forget about the polarity reversing switch. Later on, if you like, you can obtain a replacement switch, but if you can't, just forget it.

But don't go away yet—there's one other very important thing you've got to do. A high capacity condenser was installed with the reverse polarity switch. Now if you just bypass the switch as described above without doing something about this high-capacity condenser, then you're really gonna get point pitting. And the life of your points is going to be short. What you've got to do is exchange the high-capacity condenser for a standard condenser. The high-capacity condenser now on your truck is No. DR 1882239 (0.28 to 0.34 microfarads). Take it off, obtain and install condenser No. DR 1869704 (0.18 to 0.23 mfd.). You can also identify the lower-capacity condenser by the fact that it has a removable bracket.



CONTRIBUTIONS



Dear Editor,

This battalion has found that while driving the half-track, M-5, in extreme blackout conditions, a decided driving fatigue occurs due to glare from blackout lights.

The lights throw a greenish glow that is reflected on the guard over the driving light. This peculiar glow on the metal attracts the eyes of the driver and consequent blindness occurs.

I have found that this difficulty can be overcome—without removing the brush guard—by painting the reflecting slide. The best paint to use is Stoner Smudge (S-1281), used in blackening gas chambers on M-1 rifles. An expedient that is satisfactory is any dull black paint mixed with a bit of red. This counteracts the green glow.

Lt. Philip J. Sandman
24th Armd. Engr. Bn.

Dear Editor,

We've had such a time trying to get top-bow-assembly pivots (Ford Part No. 1151270) for our ¼-tons, that we finally made our own.

Take a 1" pipe, 2¼" long, and cut a slot 1" wide down the entire length of the pipe. Using an old jeep bow pivot for a model, drill a ⅜" hole on each side of the slot. Tap one hole for a stud; weld a ⅜" nut to the other hole, and grind the shoulders off the nut.

This simple job takes but 20 minutes and has helped us get a lot of ¼-tons off the deadline.

T. B. Segner, Shop Supt.
1358th Service Command Unit

(Ed. Note—The reason you aren't able to get this particular part is that it's never been stocked; so your home-made pivot has even greater value.)

Dear Editor,

Here's a time saver for servicing the 2½-ton GMC hydrovac air cleaner.

Remove the screw that holds the hydrovac air cleaner element in place and weld or braze a 5/16" or ⅜" flat washer in the screwdriver slot on the head of the screw.

The washer serves as a wing nut and will eliminate feeling around in the dark for the screwdriver slot. It might also prevent some of the boys from overlooking this important air-cleaner servicing. And if the mechanic making the change has the driver remove the screw for him—the driver will be sure to know where the hydrovac is located and might even be curious enough to service it himself once in a while.

Don H. Holbrook
Civilian Automotive Advisor

Dear Editor,

Out on maneuvers recently, I

spotted a group of 28 trucks wearing tire chains. On 23 of the trucks the chains were mounted wrong, resulting in cut sidewalls. The trouble, of course, was that the drivers didn't know how to put the chains on—they didn't know that the smooth side of the chain is supposed to face toward the tire.

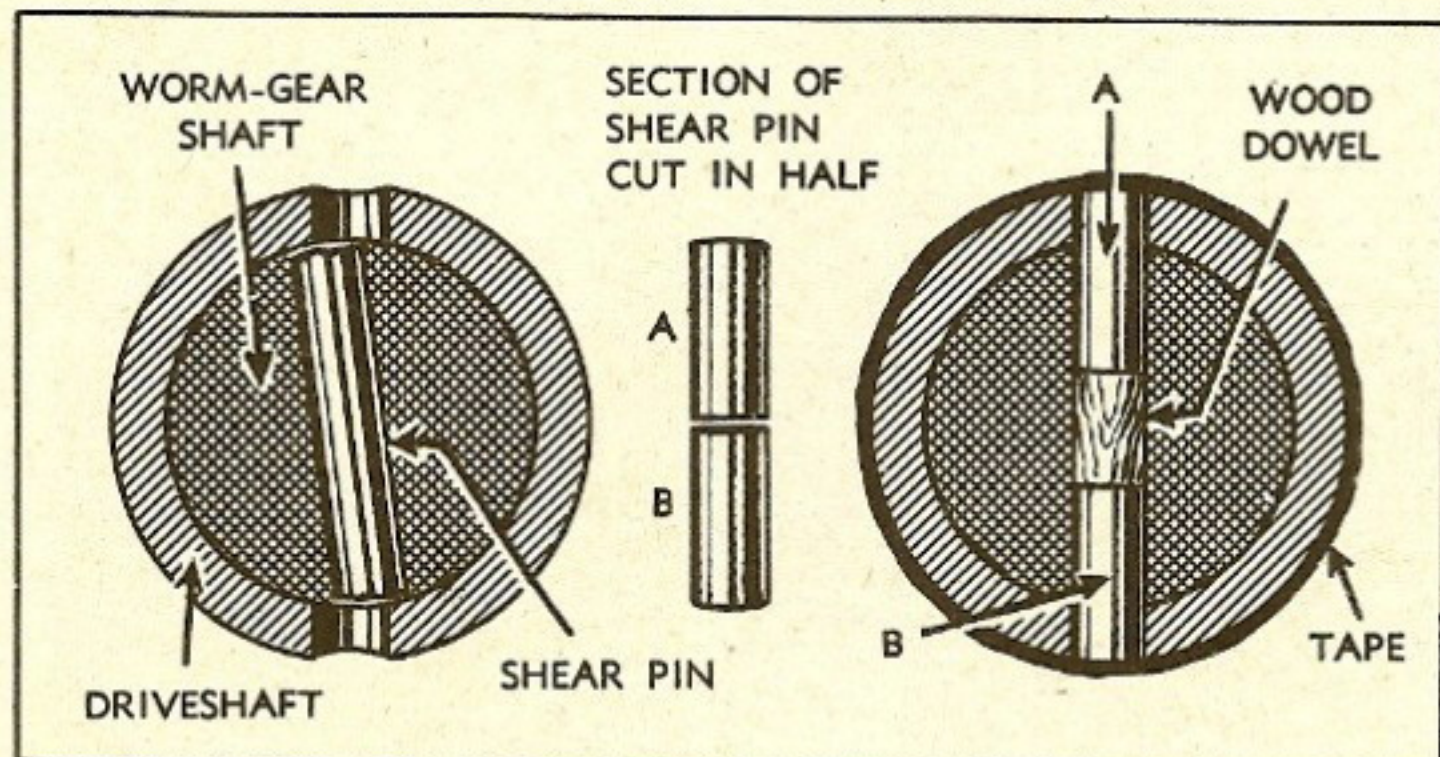
It's a little late in the season (in some places); but still I don't think it's ever too late for a motor sergeant to question each of his drivers and find out whether they really know the first thing about installing chains.

Pfc. Charles Eckel
33rd Cavalry Recon. Troop

From our old friend Sgt. Robert H. Fortin, Service Co., 5th Infantry, comes this temporary repair for broken shear pins, when new pins aren't available.

Punch out the piece of shear pin that's left in the worm gear shaft and cut the piece in half. Use a wood dowel between the two halves of the pin as shown in the diagram. A little friction tape over the ends of the shear pin sections will keep them in place.

The repair is only a temporary one and should be used **only** in an emergency, since spare shear pins ought always to be carried. If the pins are shearing off too often, you're probably overloading the winch cable. See Winch Shear Pin, ARMY MOTORS, November 1943.



ARE YOU A GENIUS?

Or maybe just a plain common-sense guy who has worked out a way to do your job easier and better? You got any tricks of your trade? Many of the contributions and suggestions sent in by the boys in the field have won the admiration of the engineers and technicians at the top of the automotive show. Show the world you're on the ball and help the other guys in the field. Friends, motormen, countrymen, lend us your ideas. If we like your idear, you'll get a personal subscription to **ARMY MOTORS**.

Dear Editor,

Have you heard of the GI's who close up the ends of muffler tail pipes just to hear the pretty sound? Every outfit that borrows our trucks has a few of these pranksters; but no one ever catches them. Apparently, they've never heard of engine back-pressure.

How about a blast in all directions on the harm this stunt does.

By the way, the best way we have found to get maintenance manuals into use is to **chain** them to a desk or table in some prominent part of the shop, and insist that if any mechanic isn't sure, he consult the manual.

The factory method of occasionally explaining new features to groups of mechanics may overcome the reluctance of the experienced mechanic to be seen looking at a maintenance manual.

Lt. Lawrence Dewhurst
Motor Maintenance Officer

(Ed. Note — You're right — not only does it cut down engine power, it burns up exhaust valves. GI's—consider yourselves "blast-ed.")

Dear Editor,

Several times we've had to tow our 3/4-ton Dodges back to the maintenance shops because the engines konked out and the drivers couldn't start them again.

Each time we found that mud, thrown by the rear wheels, was

packed so tight around the gasoline filler-cap that it plugged the vent. Result: complete fuel supply failure. This was particularly true of the early type vehicles with small fuel filler-caps.

Mr. Michael E. Coogan, head advisor of one of our divisions, devised the three splash shields we're passing on to your readers.

Each of the shields can be easily made from salvage material and will stop mud and water from being splashed from the left rear wheels up into the gasoline-cap vent.

All you'll need is a piece of tin or light sheet metal 8" by 13" for 3/4-ton Dodges, models WC 53 (carryall), or WC 56, 57, 58 (command cars). You'll need a piece 5" by 13" for WC 54 (ambulance). Two 1/8" brake-shoe rivets and two 1/4" metal screws complete your kit.

Cut the shield as shown in the inclosed sketches—depending upon the model you plan to install it on. Drill two 1/4" holes on the long straight edge of the shield (see Fig. 1) and two holes in the lower edge of the body (behind the left rear fender), so they line up with the holes in the shield.

Now drill two 1/8" holes at the straight end of the shield, and two holes in the lower edge of the left rear fender to line up with the 1/8" holes in the shield.

About one inch below the edge of the shield (where you drilled the 1/8" holes) bend the shield, install it on the vehicle (Fig. 2) and paint it.

John E. Tobin
Chief Automotive Advisor

Dear Editor,

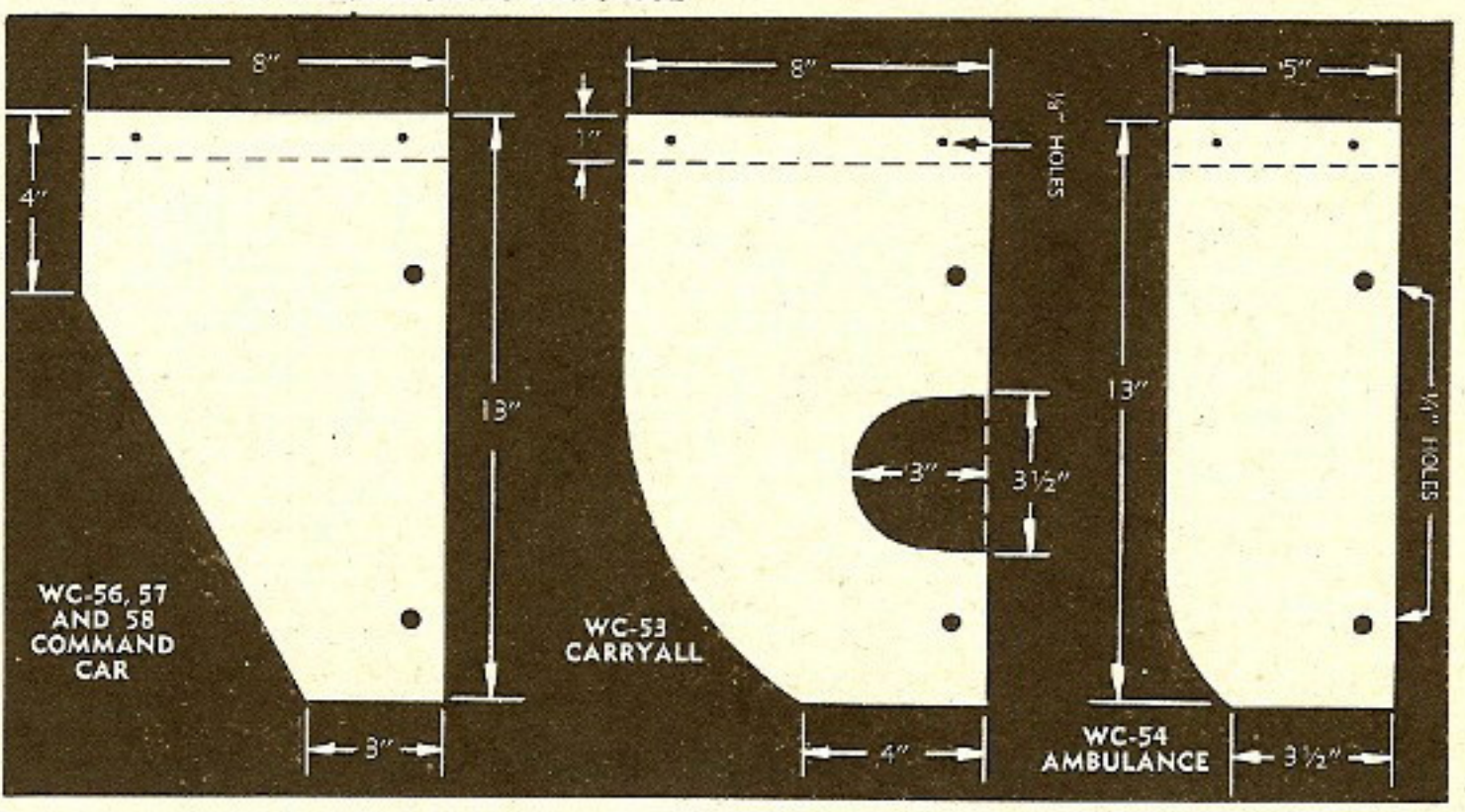
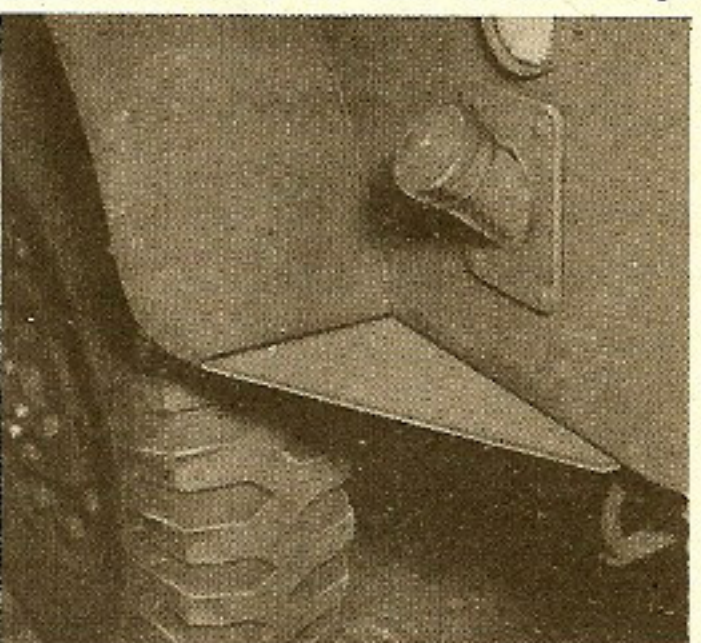
Have you ever faced the problem of building a road or hauling a lot of coal with only a few cargo trucks and with men at a premium?

If so, you'll be glad to spend a few hours making an "unloader" which can dump a full load of gravel or coal from a cargo truck in **less than two minutes**—and with the help of only two or three men.

The inclosed sketches show how to construct and how to use it. Notice that there are no moving parts to wear out!

For a 2 1/2-ton cargo truck, you'll need two 6 1/2-ft. lengths of 12" plank (3" or 4" thick), one 4-ft. length of 2x4, 8 wire-rope clips and about 75 ft. of wire rope, 1/2" or 5/8" in diameter. Most camps will have the material on hand (we used lengths of broken cable from power shovels and bulldozers).

Figure 1 shows the unloader set up. When you install it on the truck (see Fig. 2), leave about 1" clearance between the plank ends and the sides of the truck body.



Fasten the 2x4 to the cab rear-window screen with a loose wire to keep the front plank from falling over while you're loading. (Don't forget to unfasten the wire before you start unloading, or you'll unload the window screen.)

Place the rear plank in the center of the body, leaving some slack in the cable so you'll be able to dump the rearward load before the front load begins to slide off. (This eases the strain on the anchor truck when you're unloading and dumps the load in two piles—for easier spreading.) Now hang the draw cables over the tail-gate and you're ready to load.

Incidentally, if you're loading with a power shovel, the first shovel-full should be dropped on the rear plank carefully, so the plank won't be knocked over. (Unless it's vertical, it doesn't do much good.)

Now attach the draw cables to the bumper hooks of another truck which has the brakes set. This is the "anchor" truck—for a 2½-ton-cargo dumper, it should be another 2½-ton or a loaded 1½-ton job. Drive the cargo truck ahead in LOW gear—LOW range, and the load will slide off in nothing flat. While the truck is being unloaded, two or three men should

"ride" the forward plank so that the floor will be scraped clean.

After you've used the device once, you may have to readjust the clips so the planks will stay in their vertical position while being pulled out.

Using the unloader, our average unloading time was less than five minutes per truck, with five trucks hauling and eight men spreading. Our best time for unloading was 78 seconds from the time we dropped the tail-gate until the truck was underway for another load.

If you intend to use the device for unloading coal, you can operate it with a winch and snatch-block instead of an anchor truck.

Captain D. M. Googins
184th AAA Gun Bn.

(Ed. Note—Sounds like a swell idea. No doubt you'll use your own imagination and variations while making the device. Of course, you could drill holes through the planks for the cable, rather than wrap the cable around the sides. If you do, don't forget to anchor the rear plank to the cable, to prevent its slipping while the truck's being unloaded. (Salvage wire rope is plenty good enough for this job.)

Enough Is Enough!

Ordering ARMY MOTORS is just like ordering parts—requisition only what you need. We think our distribution basis is liberal enough to meet your requirements. But if it's **too** liberal in your case, don't think you have to take **all** the copies your T/O entitles you to. If you can get along with fewer magazines, please do. We want every single copy to get into hands that can use it. In File 13, ARMY MOTORS can't do nobody no good.

Dear Editor,

I have a suggestion for installing windshield defrosters and thought it should be passed on.

The use of cement on the rubber cups of the defrosters deteriorates the rubber—also, the cement hardens and cracks loose, allowing frost to accumulate between the defroster and the windshield.

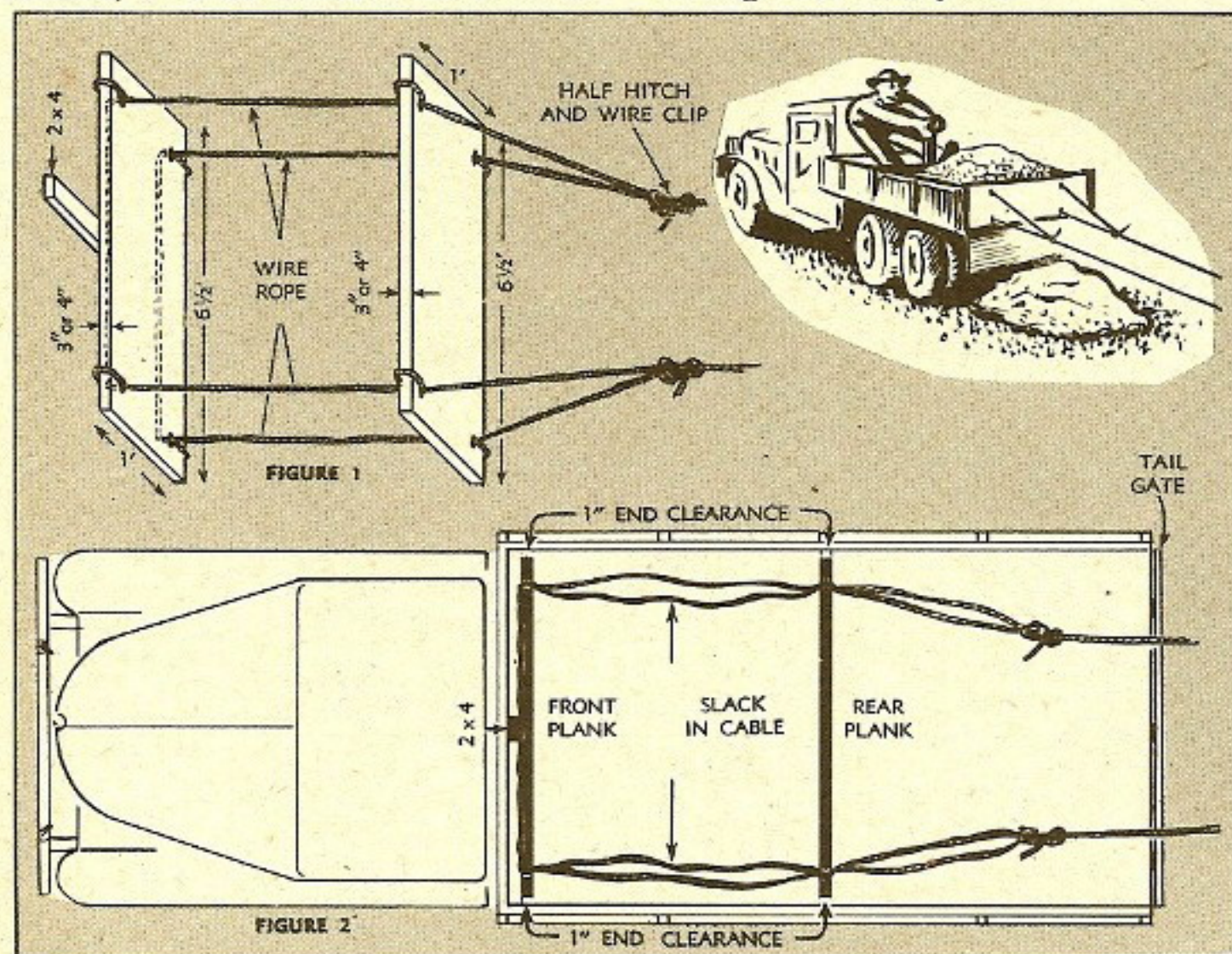
I've found that ordinary cooking molasses (in place of cement), if used sparingly with the vacuum cups clean, will not harden. The defrosters will function properly and not crack loose if a little care is used when pressing the vacuum cups in place and tightening.

Harley Stanton
Shop Foreman

(Ed. Note—We can't resist telling you it's a very "sweet" suggestion, Mr. Stanton.)

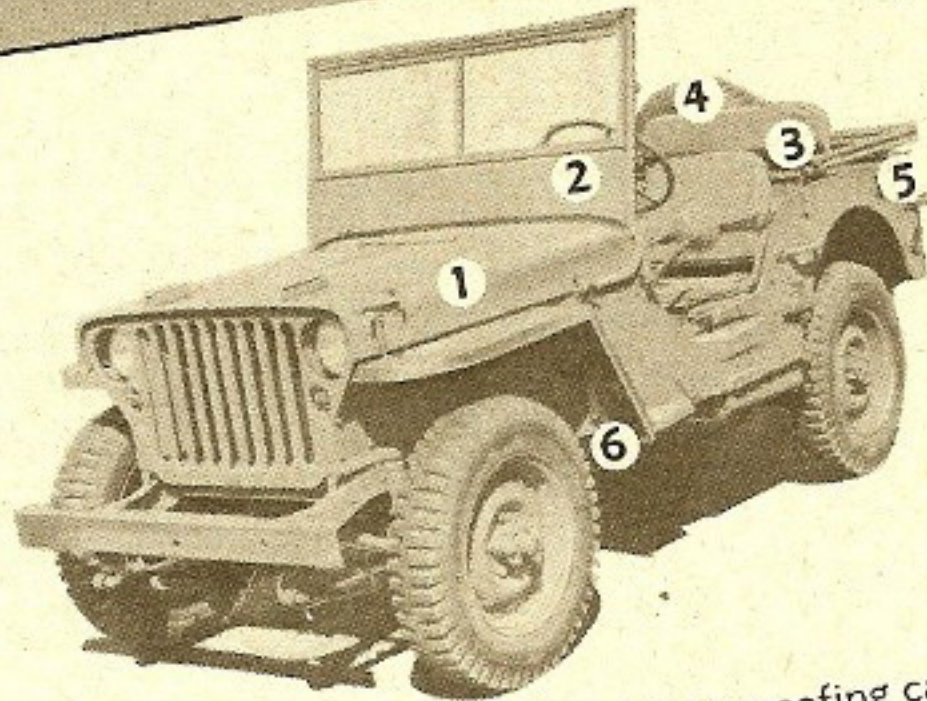
Pfc. John R. Espenan, 176th Engrs. (G.S.) Med. Det., says too many vehicles in his outfit are running around with ruined or without windshield-wiper blades. Reason is the trucks run into low-hanging branches, through thick bushes or strike the entrances to camouflage nets, or tents used as field garages.

To save yourself from getting caught without a blade when you need it bad, says Private Espenan, hop out and take a look at the blade everytime any such obstruction strikes it. Look for the wiper's elbow to be bent or for the blade to be loose enough to drop off. Or you can put a drop of solder in between the windshield wiper arm and blade. That ought to hold the blade in place.



How's Your Truck, Buck?

1/4-TON 4x4 WILLYS AND FORD



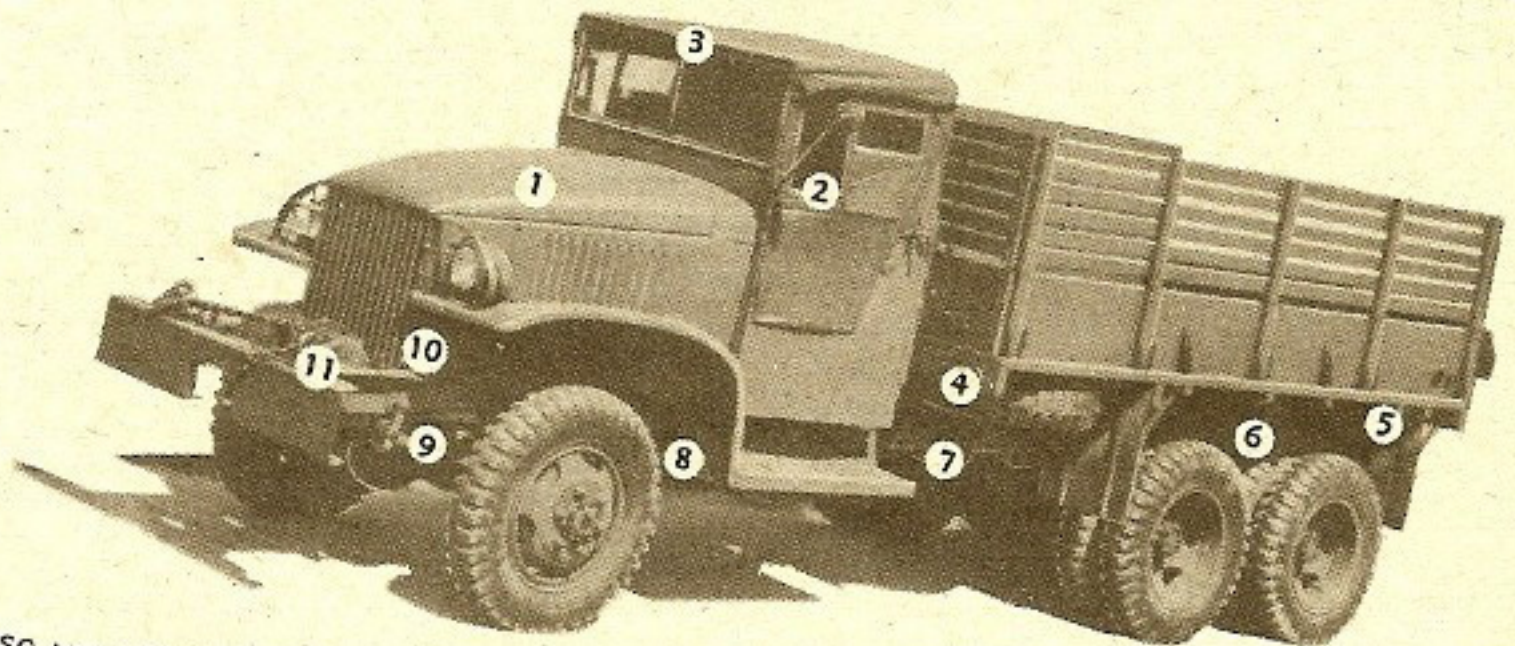
- 1- [FSMWO G503-W1, Surge tank installation
FSMWO G503-W5, Generator and battery
TB 700-101, Oil filter leakage
TB 800-13, Oil filter replacement element
TB 803-3, Carburetor air cleaner tube (Ford)
- 2- [TB 800-5, 1st-echelon spare parts kit (overseas)
TB 800-6, Decontaminating apparatus
TB 1800-2, Universal rifle bracket

- 3- [TB 850-12, Waterproofing canvas and duck
TB 1800-5, Gun mount installation
- 4- [TB 700-103, Spare tire carrier lock
- 5- [FSMWO G503-W2, Trailer lighting connection
TB 803-1, Rear panel reinforcement
- 6- [TB 800-17, U-joint lubricant passage
TB 1803-1, Transfer case and transmission

Here's a quick check list on the up-to-dateness of your pet jeep or GMC. We've tabulated the **noticeable** changes that should have been made up to 1 April of this year. If some of these are conspicuous by their absence, maybe you'd better take "appropriate action" to get your vehicle in the pink.

For other publications on these babies, see OFSB 1-1.

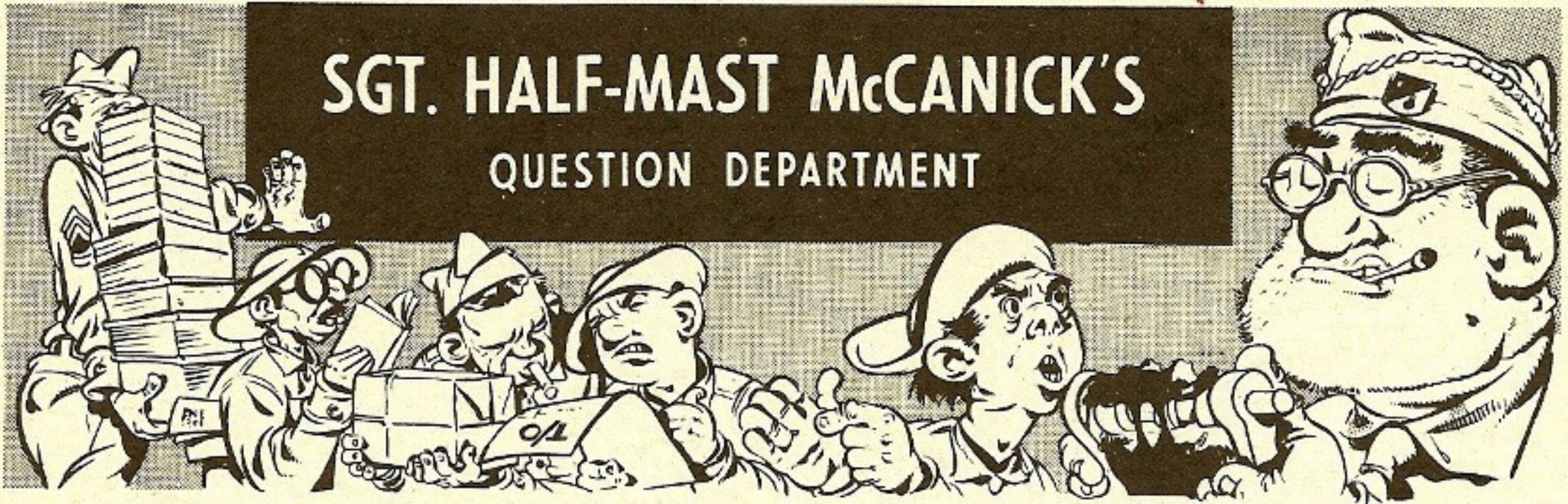
2 1/2-TON 6x6 GMC



- 1- [FSMWO G508-W1, Crankcase ventilating system
FSMWO G508-W2, Surge tank installation
FSMWO G508-W3, Carburetor air cleaner support
FSMWO G508-W5, Heavy duty air cleaner*
TB 700-101, Oil filter leakage
TB 800-13, Oil filter replacement element
TB 801-4, Distributor filter removal
TB ORD 13, Exhaust valve clearance
- 2- [TB 800-5, 1st-echelon spare parts kit (overseas)
TB 800-6, Decontaminating apparatus
TB 9-801-8, Electric brake controls
TB 1800-2, Universal rifle bracket
- 3- [TB 850-12, Waterproofing canvas and duck
TB 1800-5, Gun mount installation
- 4- [TB 700-103, Spare tire carrier lock
- 5- [TB 800-21, Pintle hook latch pin
- 6- [TB 801-6, Body channel and rear tires
- 7- [TB 800-17, U-joint lubricant passage
TB 1801B-2, Frame reinforcement
TB ORD 27, Fifth speed gear bushing
- 8- [TB 801-7, Spring-stop brackets
- 9- [FSMWO G508-W4 & C1, Pitman arm and shaft
FSMWO G508-W8 & C1, Steering arm ball
TB 1801A-1, Front axle U-joint filler plug
- 10- [TB 800-9, Spring-type radiator mounting
- 11- [TB 801-1, Winch worm housing

*Applies only to vehicle overseas, on Alcan Highway, or at Desert Training Center.

SGT. HALF-MAST McCANICK'S QUESTION DEPARTMENT



Dear Half-Mast,

While in combat experience in Africa and Italy, I've noticed that all late model trucks have luminous paint on the speedometer face, to show the 10 and 20 marks at night. Driving over mountain roads, hitting shell holes and by-passes in a convoy, we seldom look at the speedometer. Why not take the paint used on speedometers and put it on ammeter and oil pressure gages instead. Those are more important than how fast you're going.

Sgt. K. E.

Dear Sergeant,

I agree with you—there's a definite need for such markings—but I don't think it'd be such a good idea to take luminous paint off the speedometer. Sometimes ya gotta know how fast you're going—especially when you're at the head of a convoy.

Of course, the best set-up would be to have all three instruments visible at night. Tank and combat vehicles already have luminous figures on all gages—and I hear they're considering it for future transport vehicles, too.

Half-Mast

Dear Half-Mast,

During a 6000-mile check we put new constant-velocity front axles in a jeep that had a "misery noise" in the front end (whenever front wheel drive was engaged and the wheels were turned either way, maximum).

After the new axles were in, we checked the front-wheel turning angles and the noise was still there. We also have a GMC 2½-

ton 6x6 that has the same noise under the same conditions.

T/4 W. S.

Dear Sergeant,

If you're still being haunted by those "misery noises," you'd better recheck the turning angle of your front axle. On the jeep it's 26°, and on the GMC, 28° on the **inside** wheel when turning.

Maybe you did a lot of extra work for nothing when you changed the front axles. You see, lots of other things can cause noises like that:

1. Tires rubbing on the frame, drag link or fenders.
2. Wiping of tire tread on hard surfaces, since the front wheels of the ¼-ton aren't supposed to be exactly parallel when turned full right or left.
3. Play in the constant-velocity joint when full "out." The joint is "tight" when turned 10° or 15° either way, but has play at the extremes—when it's straight or fully cramped.

Half-Mast

Dear Half-Mast,

They issue us a costly piece of equipment called a half-track, and in its carburetor they put a float that's useless.

Those floats become pitted and porous and have been sinking. We could not draw floats for a long time so we repaired them with **old** toothbrush handles, dissolved in acetone. By dipping them we got a coating that would resist gas for a few weeks. We've even checked the fuel for water and impurities, but still we have trouble.

Can you suggest a remedy? Isn't there some way we can get a brass or copper float?

WOJG A. H. K.

Dear Mr. K.,

Damned clever, your use of toothbrushes, but you'll soon be able to go back to cleaning your teeth. I hear that new rust-resisting floats are being made for half-track carburetors. They carry the same stock number as the ones which rusted so easy. But be sure to tell the guy you want the rust-resistant float when you requisition.

Half-Mast

Dear Half-Mast,

There's one point in your Tool List article in the November issue that I'd like to have cleared up, and that is where you state that the OSPE contains a basis for issue of special tools the 2nd-echelon will need to maintain a particular vehicle.

After searching through our files, I find the OSPE Section of SNL G-502, Dodge ¾-ton, listed one solitary Drift for the "Regimental Maintenance Platoon" but that this item was cancelled by C1, 13 July 1943. The only other reference to any tools other than 1st-echelon, which I find in OSPE sections of SNL's on general purpose vehicles, is in SNL G-509, 4-ton Diamond T, which refers the reader to SNL N-19 for additional tool sets. Of course, on special purpose vehicles such as wreckers and repair trucks, a list of the tool sets comprising the vehicle load are given in the OSPE, but that's another matter.

By this, I'm forced to conclude that the only tools authorized for 2nd-echelon shops are those contained in SNL N-19 and which are issued on T/E basis. If there are any special tools for a particular make general-purpose vehicle authorized for 2nd-echelon shops, as indicated in the article, I'd sure like to know the basis of issue.

Civilian Automotive Advisor
J. R. R.

Dear Mr. R.,

Special tools for the 2nd-echelon are pretty scarce for general-purpose vehicles, but the OSPE books list lots of them for combat vehicles.

It's to everybody's advantage to keep the special tool load down to a minimum, so as to avoid manufacturing and carrying unnecessary scrap iron. And since most 2nd-echelon jobs on general-purpose vehicles can be done with common tools, very few special tools are authorized for them.

I won't go out on a limb and say there are none, because the allowances are always changing. But I'd say that whenever there are any, they'll be published in the OSPE booklet.

While I think of it, if you know of any 2nd-echelon jobs which can't be properly done with the tools now being handed out, drop me a line and I'll see what can be done about getting them added to the sets.

Half-Mast

Dear Half-Mast,

I think all drivers should be shown the position of the hydrovac air-cleaner, since it's often overlooked.

Is adjusting tappets a 2nd-echelon job?

We've been told to use grease, general purpose, No. 2, for repacking constant-velocity joints, as No. 1 is said to cause excessive leakage. I think No. 2 is too heavy.

T/5 J. L.

Dear Corporal,

Drivers certainly should be shown where the hydrovac air-cleaner is, if they don't already know. Most WD lube guides show the location. Hydrovac air-cleaners are listed on the Driver's Trip Ticket and the PM Service

Work Sheets for daily and weekly check-up.

Taking compression tests and adjusting valve tappets are a part of the regular 2nd-echelon 6000-mile check-up of engines.

The answer to your question about repacking constant-velocity joints is also found on the WD lube guides, which specify grease, CG-1 or CG-0—depending on the temperature. No. 1 if it's above 32°F; No. 0 if it's below. You're right—WB-2's 'way too heavy.

Half-Mast

Dear Half-Mast,

We are required to give drivers aptitude tests, and in connection with these tests have experienced difficulty in obtaining charts to determine color-blindness.

We have learned that Stillings Pseudo Isochromatic Color Plates are available from a surgical company in New York, at a cost of \$7.25—and we're not authorized this expenditure.

Can you advise us where color charts of this nature may be obtained through regular channels.

Lt. H. F. W.

Dear Lieutenant,

It seems to me that there aren't any GI color-blindness charts—but I can't say positively, because I don't claim to be an authority on that particular subject.

I'd suggest that you follow the color-vision test given in TM 21-300 ("Driver Selection and Training"). I quote, "A pile of red, yellow, green, blue, and orange pieces of paper should be mixed together. The subject should be required to pick out and sepa-

rate into two piles the red and green pieces. Fortunately, a person who is red-green color-blind can usually distinguish between red and green colors, but they may appear to him as different shades of gray. Consequently an individual who is red-green color-blind is not greatly handicapped in his driving, particularly if he is aware of the condition, makes it a point to watch carefully the action of other motor vehicle operators, and learns the relative position of red and green traffic lights in various localities." I unquote.

Half-Mast

Dear Half-Mast,

Our mechanics have broken the fittings which came on our grease guns, lubricating type lever, high pressure 1-lb. (chassis lubrication). The gun is listed in SNL N-19; Federal Stock No. 41-G-1330-60.

So far we've not been able to find the nomenclature or Part No. to replace the fittings—can you help us out?

S/Sgt. C. A. B.

Dear Sergeant,

The reason you can't find the stock number of the part you need is because it ain't listed nowhere. But don't groan—I hear that there's an SNL just being made up that'll contain all the information you need about lube gun parts.

In the meantime, look at the instruction sheet that came with your grease guns and order parts by manufacturer's number, until the official Ordnance stock numbers come out.

Who does the chaplain see when he's got trouble?

Half-Mast. Who's the original answer man? Half-Mast. Who hates chicken and never gives a T. S. Slip? Half-Mast. Something going wrong that you can't figure out? Is there something you wanta know? Ask the sarge. His time is your time and he'll drive himself crazy getting you an answer. Write "Dear Half-Mast," Army Motors Magazine, Office, Chief of Ordnance-Detroit, Detroit 32, Michigan.

I rather think that the part you need is a Coupler, Federal Stock No. 33-C-477-425—but check that instruction sheet anyway.

Half-Mast

Dear Half-Mast,

You have probably been confronted with this idea many times before. However, I would like to know why on Army vehicles we have never had a rear-view mirror on both sides of the vehicle. It would especially help the drivers in those countries that drive on the left side of the road and certainly help drivers anywhere.

CWO G. J. G.

Dear Mr. G.,

It's hard to say just why Army vehicles have never had rear-view mirrors on both sides. I'll agree that a truck designed for operation on the right side of the road isn't ideal in countries where trucks go down the left side of the road. But you'd have to make a lot more changes than just putting mirrors on both sides. For one thing, you'd have to move the driver to the right side, because he couldn't see much from a right-hand mirror in his present seat anyway.

Another thing—putting rear-view mirrors on both sides would double the number of parts required, and with the parts supply situation what it is now—it's not such a good idea. Besides, when a truck is backed up, the assistant driver is supposed to be outside to guide him.

Half-Mast

Dear Half-Mast,

We've often discussed the subject of a cold engine backfiring and why it stops when the engine is warmed up. Can you give us the correct answer to this?

Sgt. L. H. S.

Dear Sergeant,

I've always felt that backfiring is due to the explosion of unburned fuel in the muffler. But some guys around here think you have "cough-back." This is caused by either a lean mixture due to insufficient vaporization at low temperature, or by a sticking

valve letting the explosion back up in the intake manifold. When the engine gets warm the valve frees up—no more explosion.

Half-Mast

Dear Half-Mast,

I'm inclosing a list of several parts which have the same Dodge number but different Item Stock Numbers in the "Organizational Spares" booklets for the ¾-ton Dodge (SNL G-502) and the 1½-ton Dodge (SNL G-507). Can you straighten out these conflicts?

Also, I think I've found two typographical errors. The brake shoe assembly in SNL G-507 OSPE should be #571276 instead of #521276. Also, there are two listings for the blackout driving switch (Dodge #919925) in SNL G-502 OSPE. I think the first one is a mistake, as it appears to have the wrong Item Stock Number.

Civilian Automotive Advisor
J. H. W.

Dear Mr. W.,

Judging from your eagle eye, I'll bet you're peddling a pretty sharp brand of advice to the boys in your division.

By studying the Service Parts Catalogues, I figured out that there are several incorrect Item Stock Numbers listed in the OSPE book for SNL G-502. I'm correcting my copy as follows:

Dodge No.	Nomenclature	SNL Item Stock No. both vehicles
915499	Oil Seal Assembly	G121-03-82880
859224	Gasket, Cylinder Head	G121-01-93774
105456	Gasket, Oil pan drain	G133-01-93944
1056065	Gasket Set, Manifold	G502-01-94059
927512	Cap, Fuel Tank	G502-01-31577
614966	Belt, Gen. & Fan	G122-01-18250
923891	Distr. Assy.	G121-01-52000
922488	Gen. Assy.	G121-01-96300

Right both times about the typographical errors.

If I know the SNL trouble-shooters, you'll see all these corrections sooner or later in changes to the OSPE's—or in revised versions of same. Thanks to you, I might add. Meanwhile, you can just tattoo 'em on your chest.

Half-Mast

Dear Half-Mast,

According to TM 9-743, the crankcase oil capacity of the

Armored Car M8 and Utility Car M20 should be 7 quarts. But the full mark on the bayonet gage shows a capacity of about 5 quarts. Is the dipstick wrong? What instruction should we follow?

Lt. F. RL D. Jr.

Dear Lieutenant,

There's been plenty of confusion about the correct crankcase oil level of these 2 vehicles—but it's all straightened out now.

TM 9-743 (which says 7 quarts) has been superseded by WD Lube Order (30 June 43) which says 6 quarts, and the manufacturer agrees that 6 is right. The 7-quart capacity in the TM was based on pilot models of the vehicles which were later changed in production.

Refill capacities might not always be the same, since it's hard to drain the oil completely and since the oil filter isn't drained every time the oil's changed. You won't go wrong if you use your dipstick as a guide, and refill to the full mark. Then run the engine a few minutes, recheck the oil level and if it needs it, add more.

Half-Mast

Dear Half-Mast,

I've always read that you need a warm engine to test the strength of antifreeze. Tell me if I'm right, because we're forever getting "gigged" by technical inspectors who insist on testing the stuff when the engine's cold. Naturally the solution shows up weak.

Lt. J. W.

Dear Lieutenant,

Since most hydrometers are calibrated for warm solutions, the general practice is to test antifreeze solution while the engine's warm—so you're right.

Half-Mast

P. S. to Lt. C. T., Jr.:

When I answered your questions last month (P. 26), I forgot to tell you that GO 80-140 ain't issued any more. 'Scuse me. See OFSB 6-2 (9 Nov. 43).

Half-Mast

1½-Ton Dodge Coupling Troubles

When the 1½-ton and trailer take a sharp turn, pop goes the safety chain and cable. Here's how to fix it.

A little while back, M/Sgt. B. E. Vincent and Sgt. F. R. Hinds, both of Service Co., 264th Infantry, called to our attention the fact that you couldn't make a sharp turn when towing the one-ton, 2-wheel cargo trailer behind the 1½-ton, 6x6 Dodge, without breaking the trailer safety chains and electric light cable, for reasons we'll explain in a minute. Sgts. Vincent and Hinds went on to show how the condition could be fixed quickly and easily.

The next thing we knew, their idea had been incorporated on vehicles now on the assembly line.

Here's the story: As the early 1½ tons are now, the eye bolts that the trailer safety chains are supposed to fit into, are located too far apart. This has the effect of making the trailer safety chains too short. In addition, the trailer lighting cable is held by a front clip up on the lunette assembly, which doesn't allow enough slack when the truck and trailer make a sharp turn. Make a sharp turn and you'll either pull out or tear the cable.

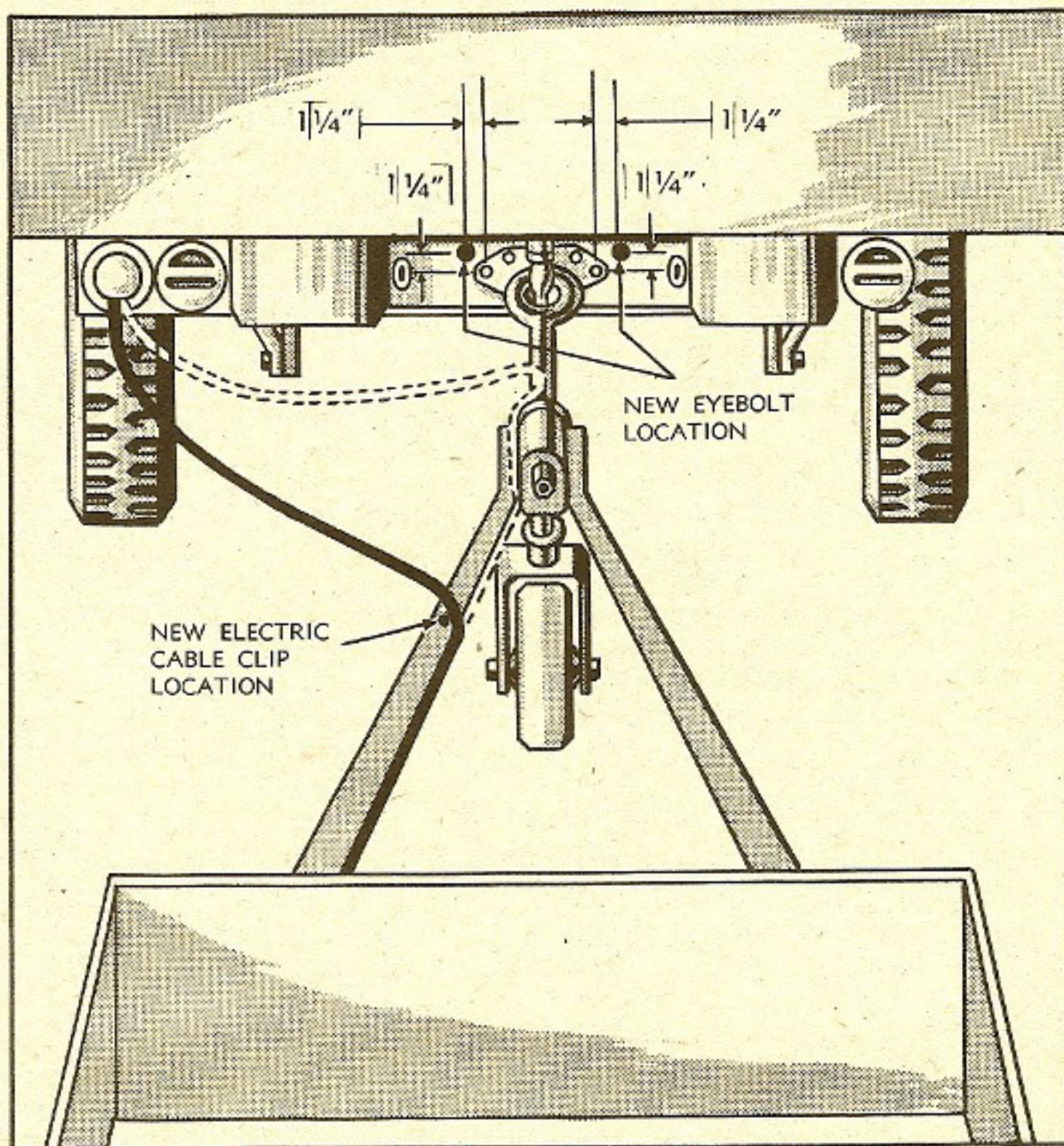
Thing for you to do then is give both the chain and the electric cable enough slack. You'll give the chain enough slack by simply moving the eyebolts on the truck in toward the pintle hook. Do it this way: (1) Remove the gas-tank shield which slopes up under and bolts onto the crossmember at the rear of the frame (it's in the

way of what you're going to do next). (2) Following the accompanying sketch, drill two 21/32" holes through the crossmember at the rear of the frame, 1¼" from and above the outside bolt of the pintle-hook bracket. So that you won't go drilling right on through to the gas tank, put a block of wood between the crossmember and the gas tank while drilling. (3) Remove the eye bolts from their original location and install

them in the drilled holes. In the holes from which the eyebolts were removed, install a cadmium plated 5/8"—18x2" hexagon-head capscrew, a cadmium-plated 5/8" small plain washer, cadmium-plated 5/8" standard lockwasher, and a cadmium-plated 5/8"—18 hex nut. (4) Reinstall the gas tank shield.

Giving the electric-light cable enough slack is easy: Either remove the front clip, on the lunette assembly of the trailer, that holds the cable or drill a hole farther back on the left-hand member of the drawbar and relocate the clip there.

A three-day pass (with weekend) to Sgts. Vincent and Hinds.



Relocating the safety-chain eyebolts and electric-cable clip gives the trailer enough slack to hang . . . onto the 1½-ton.

The Month's Directives

Your monthly check-list of War Dept. AGO and Ordnance publications affecting 1st and 2nd-echelon motor maintenance—and how to get them.

WAR DEPARTMENT AGO PUBLICATIONS

AR—Army Regulations
FM—Field Manual
TM—Technical Manual
TB—Technical Bulletin

MWO—Modification Work Order
TC—Training Circular
WDC—War Department Circular

Distributed through Post Adjutants by AG Depots in each Service Command:

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ORDNANCE DEPARTMENT PUBLICATIONS

FSMWO—Field Service Modification
Work Order
OFSB—Ordnance Field Service Bulletin
OPSI—Ordnance Publications for Supply Index

SNL—Standard Nomenclature List
Organizational Spare Parts and
Equipment (OSPE)
Service Parts Catalog (SPC)
List of All Parts (LAP)

Distributed through Ordnance Officers by AG Depots listed above.

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**OFFICE, CHIEF OF ORDNANCE-DETROIT, DOES NOT
DISTRIBUTE PUBLICATIONS TO THE FIELD**

ARMORED CARS

ALL ARMORED CARS

TB ORD 28, Sludge formation.

CAR, ARMORED, LIGHT, M8

TB 9-743-4, Cylinder head gasket.
SNL G-136, G-176 (25 Jan. 44).

CAR, ARMORED, UTILITY, M20

TB 9-743-4, Cylinder head gasket.
SNL G-136, G-176 (25 Jan. 44).

SCOUT CARS

CAR, SCOUT, M3A1

TB ORD 8, Surge tank operation.
TB ORD 23, Radio suppression.

GUN MOTOR CARRIAGES

ALL GUN MOTOR CARRIAGES
ON TANK CHASSIS

(Overseas Only)

TB ORD 22, Bogie and idler wheels.

CARRIAGE, MOTOR, 75-MM
GUN, M3

TB 9-710-23, Steering assembly maintenance.

CARRIAGE, MOTOR, 37-MM
GUN, M6

SNL G-121, ORD 7, OSPE (8 Feb. 44).

CARRIAGE, MOTOR, 105-MM
HOWITZER, M7

TB 9-731E-8, Lubrication instructions.

TB ORD 41, Idler eccentric shaft.

SNL G-128, ORD 7, OSPE (23 Jan. 44).

SNL G-128, ORD 7, OSPE, C1 (8 Feb. 44).

CARRIAGE, MOTOR, 75-MM
HOWITZER, M8

TB ORD 24, Flywheel housings.

SNL G-127, OSPE, C3 (3 Feb. 44).

CARRIAGE, MOTOR, 3-IN. GUN,
M10

TM 9-752, Operation and maintenance
(25 Nov. 43).

TB 752-8, Clutch release bearing lube fitting.

TB ORD 3, Crew hand holds.

TB ORD 41, Idler eccentric shaft.

SNL G-130, ORD 7, OSPE (20 Feb. 44).

CARRIAGE, MOTOR, 3-IN. GUN,
M10A1

FSMWO G170-W13, Engine lubricating system.

TB 9-731G-13, Surge tank extension.

TB ORD 3, Crew hand holds.

TB ORD 41, Idler eccentric shaft.

SNL G-170, ORD 7, OSPE (19 Feb. 44).

CARRIAGE, MOTOR, 155-MM
GUN, M12

TM 9-751, Operation and maintenance
(28 Jan. 44).

TB ORD 41, Idler eccentric shaft.

SNL G-158, ORD 7, OSPE, C1 (8 Feb. 44).

CARRIAGE, MOTOR, MULTI-
PLE GUN, M15A1

SNL G-102, Vol. 16, OSPE, C4 (6 Feb. 44).

CARRIAGE, MOTOR, MULTI-
PLE GUN, M17

SNL G-147, Vol. 6, OSPE, C2 (12 Jan. 44).

CARRIAGE, MOTOR, 76-MM GUN, M18 (T70)

TB 755-2, Torsion bar setting.
TB 9-755-4, Steering brake lever.
TB 9-755-5, Battery connection.
TB 9-755-6, Gun traveling lock.
TB 9-755-7, Compensator link oil seals.
TB 9-755-8, Floor plate latch.
TB 9-755-9, Differential lubricant.
TB 9-755-10, Oil cooler blower fan.
TB 9-755-11, Front axle housing mounting.
SNL G-163, C2 (2 Feb. 44).

CARRIERS

CAR, HALF-TRACK, M2

TB 9-710-23, Steering assembly maintenance.
SNL G-102, Vol. 1, OSPE, C1 (25 Dec. 43).

CARRIER, PERSONNEL, HALF-TRACK, M3

TB 9-710-23, Steering assembly maintenance.
SNL G-102, SPC (30 Sep. 43).
SNL G-102, Vol. 3, OSPE (12 Jan. 44).

CARRIER, PERSONNEL, HALF-TRACK, M3A1

SNL G-102, SPC, (30 Sep. 43).

CARRIER, 81-MM MORTAR, HALF-TRACK, M4

TB 9-710-23, Steering assembly maintenance.

CARRIER, 81-MM MORTAR, HALF-TRACK, M21

SNL G-102, Vol. 15, ORD 7, OSPE (15 Jan. 44).

CARRIER, CARGO, M29 (T24)

SNL G-179, ORD 7, OSPE (8 Jan. 44).

CARRIER, CARGO, M30

TM 9-751, Operation and maintenance (28 Jan. 44).
TB ORD 41, Idler eccentric shaft.
SNL G-158, ORD 7, OSPE, C1 (8 Feb. 44).

HALF-TRACKS

(See also individual vehicle listings)

ALL HALF-TRACK VEHICLES

TB ORD 8, Surge tank operation.
TB ORD 28, Sludge formation.

ALL BASIC HALF-TRACKS

(White, Autocar, Diamond T)
TB ORD 23, Radio suppression.

LIGHT TANKS

ALL LIGHT TANKS (Overseas)

TB ORD 22, Bogie and idler wheels.

TANK, LIGHT, M3A1

SNL G-103, Vol. 5, Sec. 9, Chap. 2, LAP, C1 (23 Dec. 43).
SNL G-103, Vol. 5, ORD 7, OSPE (2 Feb. 44).

TANK, LIGHT, M3A3

SNL G-103, Vol. 7, ORD 7, OSPE (2 Feb. 44).

TANK, LIGHT, M5

FSMWO G103-W40, Impulse relay and new solenoid.
TB ORD 24, Flywheel housings.
TB ORD 30, Turret traversing mechanism.

TANK, LIGHT, M5A1

FSMWO G103-W40, Impulse relay and new solenoid.
TB 9-732-28, Emergency ignition switch.
TB ORD 24, Flywheel housings.
TB ORD 30, Turret traversing mechanism.

TANK, LIGHT, T9E1

SNL G-148, SPC (15 Jan. 44).
SNL G-148, ORD 7, OSPE (22 Jan. 44).
SNL G-148, ORD 7, OSPE, C1 (7 Feb. 44).

MEDIUM TANKS

ALL MEDIUM TANKS

(Overseas)

TB ORD 22, Bogie and idler wheels.

TANK, MEDIUM, M3

TB ORD 19, Bogie wheel bearings and seals.
SNL G-104, Vol. 1, ORD 7, OSPE (7 Jan. 44).

TANK, MEDIUM, M3A1

TB ORD 19, Bogie wheel bearings and seals.

TANK, MEDIUM, M3A2

TB ORD 19, Bogie wheel bearings and seals.

Gotta Go?

ARMY MOTORS WANTS TO FOLLOW YOU WHEREVER YOU GO. BUT WE'RE NOT PSYCHIC. WHENEVER YOU MOVE, WON'T YOU PLEASE **NOTIFY US PROMPTLY OF CHANGE OF ADDRESS** AND INCLUDE BOTH YOUR OLD AND NEW ADDRESSES WHEN YOU WRITE.

TANK, MEDIUM, M3A3

TB ORD 19, Bogie wheel bearings and seals.
TB ORD 41, Idler eccentric shaft.
SNL G-104, Vol. 5, ORD 7, OSPE (5 Feb. 44).

TANK, MEDIUM, M3A4

TB ORD 19, Bogie wheel bearings and seals.
TB ORD 41, Idler eccentric shaft.
SNL G-104, Vol. 3, ORD 7, OSPE (6 Feb. 44).

TANK, MEDIUM, M3A5

TB ORD 19, Bogie wheel bearings and seals.
TB ORD 41, Idler eccentric shaft.
SNL G-104, Vol. 10, ORD 7, OSPE (5 Feb. 44).

TANK, MEDIUM, M4

FSMWO G104-W100, Auxiliary generator fuel filter.
TB ORD 11, Turret bearing race.
TB ORD 30, Turret traversing mechanism.
TB ORD 41, Idler eccentric shaft.
SNL G-104, Vol. 6, 11, 14 (15 Feb. 44).

TANK, MEDIUM, M4 (105-MM HOWITZER)

TB ORD 30, Turret traversing mechanism.
SNL G-104, Vol. 6, 11, 14 (15 Feb. 44).

TANK, MEDIUM, M4A1

FSMWO G104-W100, Auxiliary generator fuel filter.
TB ORD 11, Turret bearing race.
TB ORD 30, Turret traversing mechanism.
TB ORD 41, Idler eccentric shaft.
SNL G-104, Vol. 6, 11, 14 (15 Feb. 44).

TANK, MEDIUM, M4A1 (76-MM GUN)

FSMWO G104-W100, Auxiliary generator fuel filter.
TB ORD 30, Turret traversing mechanism.
SNL G-207 (30 Dec. 43).

TANK, MEDIUM, M4A2

FSMWO G104-W100, Auxiliary generator fuel filter.
TB ORD 11, Turret bearing race.
TB ORD 19, Bogie wheel bearings and seals.
TB ORD 30, Turret traversing mechanism.

TB ORD 41, Idler eccentric shaft.
SNL G-104, Vol. 7, ORD 7, OSPE (20 Jan. 44).

SNL G-104, Vol. 7, ORD 7, OSPE, C1 (5 Feb. 44).
SNL G-104, Vol. 7, SPC (25 Feb. 44).

TANK, MEDIUM, M4A3

FSMWO G104-W100, Auxiliary generator fuel filter.
FSMWO G104-W102, Engine lubricating system.

TB ORD 11, Turret bearing race.
TB ORD 19, Bogie wheel bearings and seals.
TB ORD 30, Turret traversing mechanism.
TB ORD 41, Idler eccentric shaft.
SNL G-104, Vol. 8, ORD 7, OSPE, C2 (19 Jan. 44).

TANK, MEDIUM, M4A4

FSMWO G104-W100, Auxiliary generator fuel filter.
TB ORD 11, Turret bearing race.
TB ORD 30, Turret traversing mechanism.
TB ORD 41, Idler eccentric shaft.
SNL G-104, Vol. 9, ORD 7, OSPE (21 Jan. 44).
SNL G-104, Vol. 9, ORD 7, OSPE, C1 (6 Feb. 44).

TANK, MEDIUM, M4A6

TM 9-756, Operation and maintenance (21 Dec. 43).
FSMWO G104-W100, Auxiliary generator fuel filter.
TB ORD 11, Turret bearing race.
TB ORD 30, Turret traversing mechanism.
SNL G-104, Vol. 13, ORD 7, OSPE (7 Feb. 44).

VEHICLE, TANK RECOVERY, M31

SNL G-169, ORD 7-8-9 (15 Jan. 44).

VEHICLE, TANK RECOVERY, M32 SERIES

TM 9-738, Operation and maintenance (9 Dec. 43).
TB ORD 41, Idler eccentric shaft.

HEAVY TANKS

TANK, HEAVY, M6

TB 9-721-1, Exhaust system maintenance.
SNL G-118, Vol. 1, ORD 7, OSPE (9 Feb. 44).

TANK, HEAVY, M6A1

TB 9-721-1, Exhaust system maintenance.

SNL G-118, Vol. 2, ORD 7, OSPE (9 Jan. 44).
SNL G-118, Vol. 2, ORD 7, OSPE, C1 (9 Feb. 44).

TANK, HEAVY, M6A2

TB 9-721-1, Exhaust system maintenance.

TRUCKS

ALL TRUCKS

TB ORD 28, Sludge formation.

TRUCKS, 6x6 and 6x4
(All Makes)

TB ORD 26, Adjustment and lubrication, roller type spring seat bearings.

TRUCK, ¼-TON, 4x4 (WILLYS, FORD)

TB 9-803-4, Gear case levels.
SNL G-503, (15 Jan. 44).
SNL G-503, C1 (10 Feb. 44).

TRUCK, ¾-TON, 4x4 (DODGE)
SNL G-502, Suppl. 1, SPC (15 Dec. 43).

TRUCK, 1½-TON, 4x4 (CHEV.)
TM 9-805, Operation and maintenance (30 Dec. 43).
SNL G-506, OSPE (21 Jan. 44).

TRUCK, 1½-TON, 6x6 (DODGE)
TB 9-810-1, Engine replacement.
SNL G-507, Part II, SPC (1 June 43).

TRUCK, 2½-TON, 4x2, DUMP
(FEDERAL)

SNL G-539 (1 Feb. 44).
SNL G-539, C1 (9 Feb. 44).

TRUCK, 2½-TON, 6x6 and 6x4
(GMC)

TB 9-801-8, Electric brake controls.
TB ORD 13, Exhaust valve clearance.
TB ORD 27, Fifth speed gear bushing.
SNL G-508 (29 Dec. 43).

TRUCK, AMPHIBIAN, 2½-TON,
6x6 (GMC)

MWO G501-W23, Tire inflation system.
TB ORD 5, Emergency field maintenance.
TB ORD 13, Exhaust valve clearance.

TRUCK, 2½-TON, SMALL ARMS
REPAIR, M7 & M7A1 (GMC)

SNL G-138, Vol. 1, OSPE, C4 (1 Jan. 44).
SNL G-138, Vol. 1, ORD 7, OSPE (16 Feb. 44).
SNL G-138, Vol. 2, ORD 7, OSPE, C3 (2 Mar. 44).

TRUCK, 2½-TON, TOOL AND
BENCH, M13 (GMC)

SNL G-143, Parts and equipment, C2 (22 Dec. 43).

TRUCK, 2½-TON, SPARE
PARTS, M14 (GMC)

SNL G-144, Vol. 2, OSPE, C2 (23 Dec. 43).

SNL G-144, Vol. 1, ORD 7, OSPE, C3 (23 Feb. 44).

TRUCK, 2½-TON, MACHINE
SHOP, M16 AND M16A1,
LOAD F (GMC)

SNL G-146, Vol. 5, OSPE, C1 (9 Jan. 44).

TRUCK, 2½-TON, 6x6 AND 6x4
(STUDEBAKER)

TM 9-807, Operation and maintenance (16 Dec. 43).
TB 9-807-3, Winterization kit.

TRUCK, 4-TON, 6x6 (DIAMOND
T)

SNL G-509, OSPE, C1 (24 Jan. 44).

TRUCK, 6-TON, 6x6, CLOSED
CAB (WHITE)

SNL G-514, ORD 7, OSPE (14 Jan. 44).

TRUCK, 10-TON, 6x4, DIESEL
(WHITE)

SNL G-642, ORD 7, OSPE (2 Feb. 44).

TRUCK, WRECKING, HEAVY,
M1 (KENWORTH)

TB 9-796-1, Crane mounting brackets.

TRUCK, WRECKING, HEAVY,
M1 (CORBITT)

SNL G-63, ORD 7, OSPE (30 Jan. 44).

TRUCK, TRAILER, 45-TON,
TANK TRANSPORTER, M19

TB ORD 10-1225-1, Auxiliary transmis-
sion bolt.
SNL G-159, ORD 7, OSPE (29 Jan. 44).

*Sorry, We're
Fresh Out!*

As far as you're concerned, ARMY MOTORS is **always** "fresh out" of other publications. So please don't ask us for any—whether they be Ordnance, AGO, or Super-Duper Comics. If you've got questions about publications, we'll dig up the answers. To get actual copies, follow the SOP on page 60.

TRACTORS

TRACTOR, HIGH SPEED,
13-TON, M5

SNL G-162 (1 Jan. 44).

TRACTOR, HIGH SPEED,
18-TON, M4

TM 9-785, Operation and maintenance (1 Nov. 43).

SNL G-150, ORD 7, OSPE, C1 (15 Feb. 44).

TRACTOR, 38-TON, HIGH
SPEED, M6

SNL G-184 (1 Mar. 44).

TRAILERS

TRAILER, GENERATING UNIT,
M7

TM 9-881, C1, Operation and maintenance.

TRAILER, ¼-TON PAYLOAD,
2W, CARGO

SNL G-529 (11 Feb. 44).

TRAILER, 1-TON PAYLOAD,
2W, 250 GAL. WATER TANK
(ALL MAKES)

TB 9-883-1, Landing wheel traveling position.

SNL G-527 (31 Jan. 44).

TRAILER, 1-TON PAYLOAD,
2W, CARGO (ALL MAKES)

TB 9-883-1, Landing wheel traveling position.

TRAILER, 5-6 TON, 4W, CARGO,
(HOBBS)

TM 9-887, Operation and maintenance (17 Nov. 43).

TRAILER, CLAMSHELL, M16

SNL G-201, ORD 7, OSPE (27 Dec. 43).

TRUCK, TRAILER, 45-TON,
TANK TRANSPORTER, M19

SNL G-159, ORD 7, OSPE (29 Jan. 44).

SEMITRAILER, 6-TON PAY-
LOAD, 10-TON GROSS, 2W,
VAN

TM 9-888, Operation and maintenance (18 Dec. 43).

SNL G-545 (Olson only) (1 Feb. 44).

PASSENGER CARS

ALL PASSENGER CARS

TB ORD 28, Sludge formation.

GENERAL

AR 850-5, C9, Marking of clothing, equipment, vehicles, and property (27 Jan. 44).

AR 850-15, C3, Miscellaneous, motor vehicles (23 Feb. 44).

TC 14, Shifting transfer case in heavy duty trucks (8 Mar. 44).

WDC 87, Evacuation by motor transportation (28 Feb. 44).

WDC 89, Maintenance of materials handling equipment (29 Feb. 44).

WDC 90, Unserviceable property disposition (29 Feb. 44).

WDC 95, Motor fuel conservation (6 Mar. 44).

WDC 98, Civilian automotive advisors (8 Mar. 44).

WDC 100, Fuels and lubricants (9 Mar. 44).

WDC 101, Simplified property accounting procedure (10 Mar. 44).

WDC 107, Maintenance responsibility, special services and morale services equipment (15 Mar. 44).

WDC 109, Salvage of superseded forms (16 Mar. 44).

WDC 110, Monthly report, petroleum products (17 Mar. 44).

WDC 113, Maintenance of materials handling equipment (20 Mar. 44).

WDC 114, Redesignation of WD Lubrication Guides (21 Mar. 44).

TM 9-850, C1, Cleaning, preserving, lubricating, and welding materials, etc.

TB 9-2810-1, Revised PM instructions.

TB 9-2830-19, Oil and grease seal reclamation.

TB 31-200-3, Mounting synthetic tubes and flaps.

TB ORD 12, All Ordnance vehicles, propeller shaft U-joint lube.

TB ORD 20, Caution tags in vehicles.

OPSI, ORD 2 (1 Mar. 44).

OFBS 1-8, C2, Publications for the Ordnanceman (24 Jan. 44).

SNL N-19, ORD 6, C2, Tool sets, motor transport (24 Jan. 44).

PERPETUAL INDEX

Your monthly reference guide to all subjects covered in the last 12 issues of ARMY MOTORS

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2C-Inside Front Cover, 3C-Inside Back Cover, 4C-Outside Back Cover.

TANK STEERING BRAKES

CONTINUED FROM PAGE 50

worth your time to put the marks on. Once you do, you won't have all the aggravation and guesswork of checking and re-checking to find out if your brakes are adjusted. Here's how: Get your control rods and brake-and-cross-shaft levers all in the correct position (according to the Figure of your brake system—see Step B). Then remove the adjusting-hole screw plug or cover. Put in a ruler alongside the adjusting nut, so the ruler reaches way back and touches the pin at the back of the nut. Unless you get a measurement like the one shown in Figure G (at right), slide the brake-shaft lever off. Move the lever around one or two serrations on the shaft till the rule shows the right measurement within a few sixteenths (Fig. G). Then lengthen or shorten your control rod so you can connect it to the lever. To preserve all this good work, take a cold chisel and stamp the reference marks on the ends of the shafts).

By the time you charge through Steps A, B, and C, and have your steering linkage right, you've done a job. You've done a "major" adjustment. It should last a long time **unless** you get your final drive removed for some reason, or get a new final drive put in, or have the brake bands recentered at the 3000-mile (or 300-hour) maintenance service, or have new brake linings installed. Then you have to follow Steps A, B, and C again, and make a new "major" adjustment of your brakes.

Just a minute—you've not quite done a **complete** brake adjustment. After the Steps above, just take the time to race through Checks 1, 2, and 3—go back and start on page 47, left-hand column. On tanks with the **old-type** brake system (single anchor) those 3 Checks are the last thing. You can pack your tools back in the bag. But on the **new-type** brake set-up (double anchor) there's **one** more thing after you make the "minor" adjustments shown on pages 47, 48, 49, and 50 (left-hand column). Make the adjustment shown on the photograph at right (Fig. H). It's to give your steering brakes the right slack so when you drive in reverse, they'll still operate OK. This is the last thing. You're all done—and a job a good motor officer will be proud of you for doing.

END

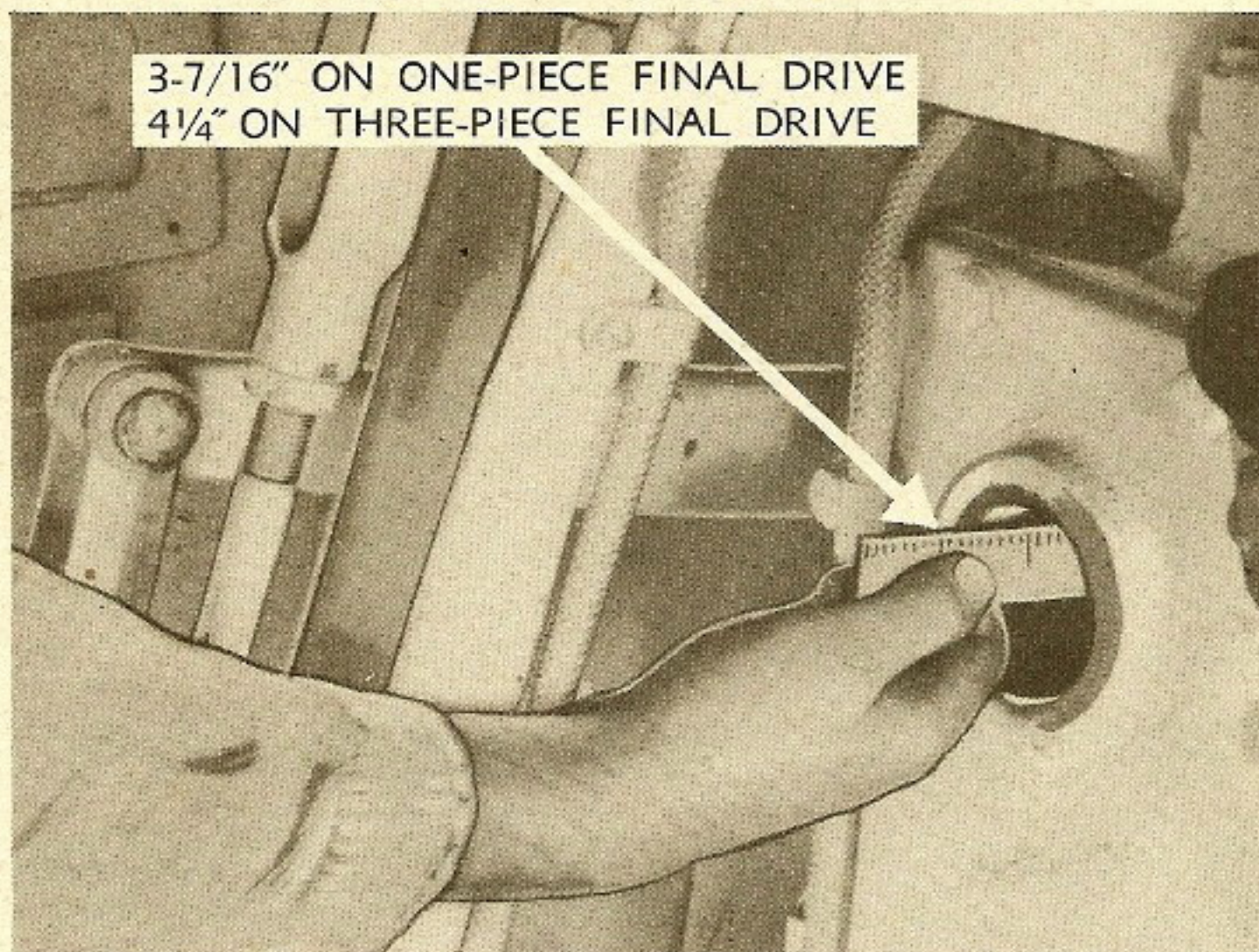


Fig. G—There's a pin in back that the adjusting-rod nut sits against. Your rule should go back to that pin. Make sure—use your flashlight.

LOOSEN LOCK NUT
Tighten down adjusting nut. Back it off a **turn and a half**.

RE-TIGHTEN LOCK NUT

LOOSEN LOCK NUT
Tighten down thrust bolt. Back it off **one** turn.
RE-TIGHTEN LOCK

TEST YOUR ADJUSTMENT. Grab hold of the bolt with a pair of pump pliers and try to pull it out. If the bolt moves out from the final drive housing $1/16$ " to $1/8$ " you're OK.

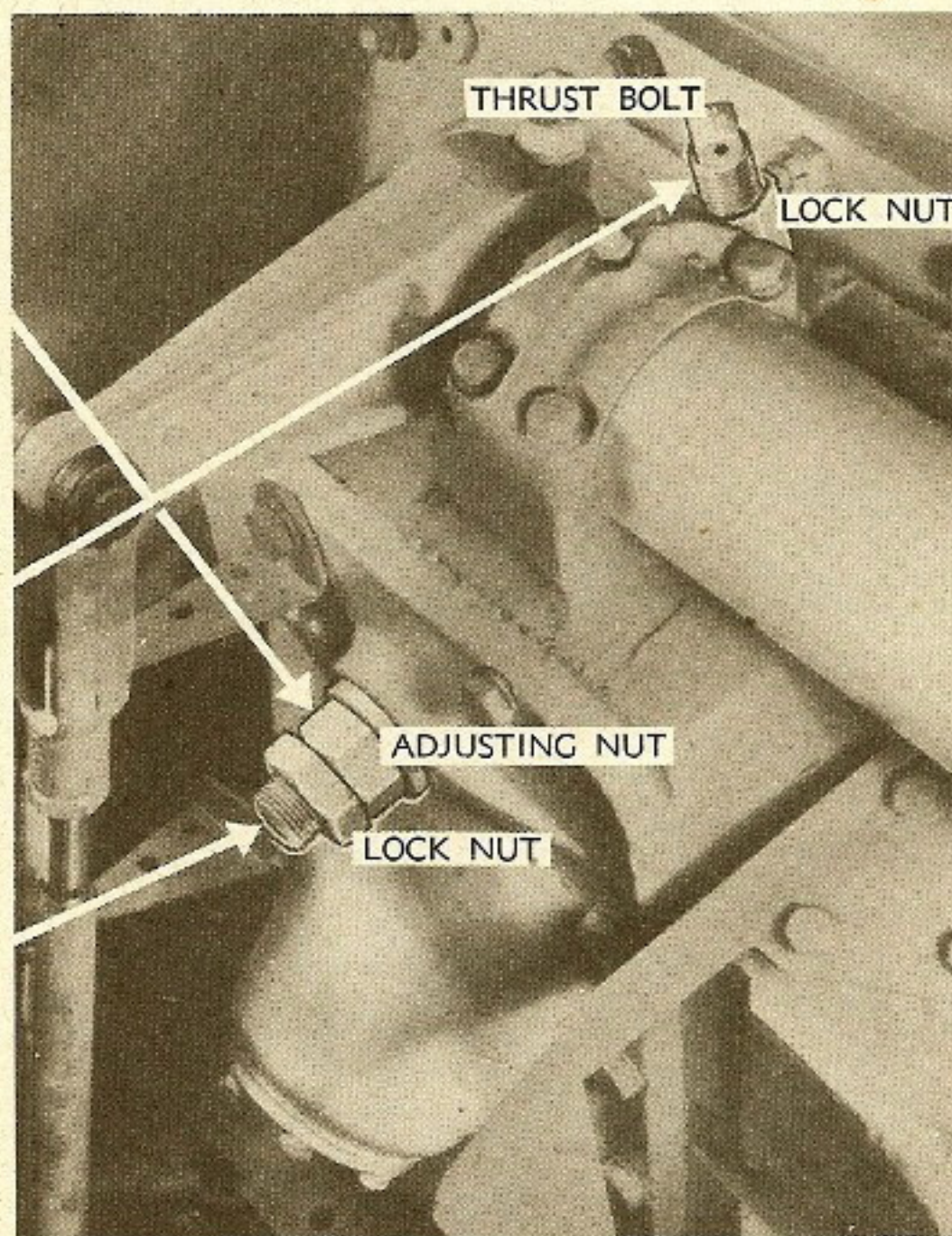


Fig. H—Absolutely, positively the last adjustment to be made on new-type brakes (double anchor). If you can't get a wrench large enough, try your pump pliers.

• • NEWS FLASHES • •

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

Drivers, organizational mechanics.—A slew of new Technical Manuals for old trucks and motorcycles have been printed recently. Maybe the TM for your truck is **out of date** and superseded by a **new one**. Look through the list here. If you've got any of these trucks or motorcycles with the old TM's, trade the manuals in to your adjutant for new ones.

Vehicle	Old Manual	Superseded By
¼-ton 4x4 Truck (Willys-Overland & Ford)	TM's 10-1103, 10-1207, 10-1349, 10-1513.	TM 9-803
¾-ton 4x4 Truck (Dodge)	TM's 9-808 (12 May 43), 10-1531.	TM 9-808 (31 Jan. 44)
1½-ton 4x2 Truck (Ford)	TM 10-1347	TM-9-806
2½-ton 6x6, 2½-5-ton 6x4 Trucks (Studebaker)	TM's 10-1385, 10-1387, 10-1565, and C1, 10-1503.	TM-9-807
4-ton 6x6 Trucks (Diamond T—Cargo, Wrecker, Ponton, Dump)	TM's 10-1297, 10-1335, 10-1517, 10-1533, 10-1605, 10-1607.	TM 9-811
4 to 5-ton Tractor-Truck (Federal)	TM's 10-1107, 10-1407, 10-1459.	TM 9-820
6-ton 6x6 Truck (White, Corbitt, Brockway)	TM's 10-1109, 10-1159, 10-1221, 10-1553, 10-1529.	TM 9-813
10-ton 6x4 Truck (Mack, Model NR)	TM's 10-1197, 10-1421, 10-1545.	TM 9-818
Motorcycles (Harley Davidson)	TM's 10-1175, 10-1177, 10-1331, 10-1359, 10-1361.	TM-9-879

* * *

News pictures taken overseas show 6x6 trucks sloshing around hub-deep in mud. Some of them we noticed have chains on **only one half** the rear wheels. Why, nobody knows. If you got the chains, put them on **all the rear wheels**. Two smart reasons. You get **twice** as much traction that way, and second, you have less chance of rupturing your transfer case. With chains on only one pair of wheels, there's unequal traction and unequal strain on the transfer-case gears. Technicians mumble about the dreaded "Windup" of gears. Put chains on **all rear wheels** and get the last ounce of traction safely.

Yesterday, we watched them print a Technical Bulletin that's on the ball **TB ORD 67**, on **Storage Batteries**. Pages and pages of good battery information that's been buried in a shelf of TM's, old Bulletins, and other misc. memos. Here it is—a lot of things you'll want to know about Storage Batteries stored up in **TB ORD 67**. If the TB doesn't get bucked down to your organization, worry your adjutant for a copy.

* * *

If you see some peculiar white shapes riding around on vehicles in your vicinity—don't shoot, they're not enemy ski-troops. Most likely they're the **new** "national symbols" authorized by Changes 10 to AR 850-5 (25 March 1944).

Vehicles assigned to **tactical units** anywhere, and designated **administrative** vehicles **overseas**, still wear the familiar **white star**. But **all** other vehicles now sport the following "national symbols" instead: **ASF vehicles** (except contractor operated ones at class IV installations) wear the insignia of the appropriate Service Command; **AAF vehicles** flash an insignia prescribed by the Commanding General, AAF; **AGF vehicles** carry a symbol specified by the Commanding General, AGF. What could be symboler?

* * *

T/OP's are **O/UT**. No more **Tables of Ordnance Publications** will be prepared or distributed, says the AGO. If your organization never got one, you can still compile your own list of essential maintenance publications (FM's, TM's, TB's, MWO's, SNL's, etc.) from **FM 21-6** and **OFSB 1-1**. To keep up-to-date, just follow **The Month's Directives** right here in **ARMY MOTORS**.

A little oil

DID THIS!

A little oil—not much more than a canteen-cup full—curved that hefty connecting rod. Once the rod looked like its 8 brothers in the engine. Straight and strong and tough enough to take the gaff of powerful explosions that hammer against the piston and rod hundreds of times a minute. Till the piston met a little oil . . . oil in the combustion chamber.

That oil—plus the driver—murdered the engine.

During the 5 or 6 hours the tank was standing, the oil mist in the engine condensed and dribbled into the cylinders hanging head down. When the driver hit the starter, the crankshaft spun around, the piston pushed down and smacked the oil. Oil won't compress. The piston stopped dead. Something had to give, the head, or the rod, or the piston, buckled, flailed around, and smashed the engine. In this tank the rod gave—on the sidelines.

It doesn't happen to a good driver. Before he starts, he unbuckles the hand crank, puts it in, and winds it around 50 times. That pumps out any oil in the combustion chambers . . . and keeps your fighting engine in one working piece.

**BEFORE STARTING AN M4, M4A1, M7, M12, or M18
HAND CRANK THE ENGINE 50 TURNS**

Continental Engine
R975C-1 from M4A1 Tank