ARMY MOTORS

VOLUME 5 NUMBER 12

MARCH 1945

'Big Two' Conference

The relationship between a driver and a 2nd-echelon mechanic can be beautiful. Instead of regarding the monthly and semi-annual inspections as a pain in the shanks—and the driver as the village idiot—the mechanic can help get the driver on the ball by letting him in on the little scandals of automotive design and pointing out the special nursing that certain assemblies demand.

The mechanic handles practically every part on the vehicle. He knows the stuff they're made of and what they'll stand. If the driver understands all this, he'll know just how far he can go before the straw breaks the camel's achin' back. He'll know—if the mechanic tells him. And the time of the scheduled PM servicing, when the driver acts as the mechanic's assistant, is a good time to tell him.

Take the Case of the Chattering Clutch. Everybody drums into the head of the driver the warning to keep the engine mounting-bolts tight. The obvious reason is to keep the engine from dropping out of the truck. But there's a less obvious reason—the sort of thing that only a mechanic would think to tell a driver. And that is that loose engine mounts make the engine too bouncy—when the clutch is engaged, the engine jumps skittishly away and the clutch goes chattering and grabbing after it.

The driver of an up-and-coming vehicle like the cargo carrier M29 and M29C, toting a load of wounded over a muddy pasture under enemy fire, can save the lives of all aboard by observing a piece of advice that a mechanic can best give him. Picture the driver knocking himself out to dodge the enemy artillery. He makes a sharp turn out of a rut and suddenly hears the heavy thumping that means the track has tilted away from the drive sprocket and is running off. Reinstalling the track by the numbers is quick death in a spot like this. But wait!—there is a trick that will get that track back on in a split second. The driver stops the vehicle immediately, throws it in reverse and backs up. The track runs back into place and he's on his way again.

Toddling along behind as the mechanic opens the hood of his truck, the driver mentions that a couple of days ago he had to blow out the gas line, but that when he went to tighten up the brass fitting, it leaked. The mechanic shows him how to wind a piece of string or rag around the threads of the fitting to make it seal.

There's a thousand tricks up the man's greasy sleeve. Passed on to the driver, they'll fall into willing hands. For although once upon a time we heard that the driver was a goof-off, we don't hear it so much anymore. Living in the hell of the forward areas has trimmed the fat off all our heads. Any driver that has **had it** is an "A" student, an eager beaver, a solid scholar.

The prime time for him to pick up those little extra somethings is the time of the meeting of the Great Minds—the regular scheduled PM servicings.

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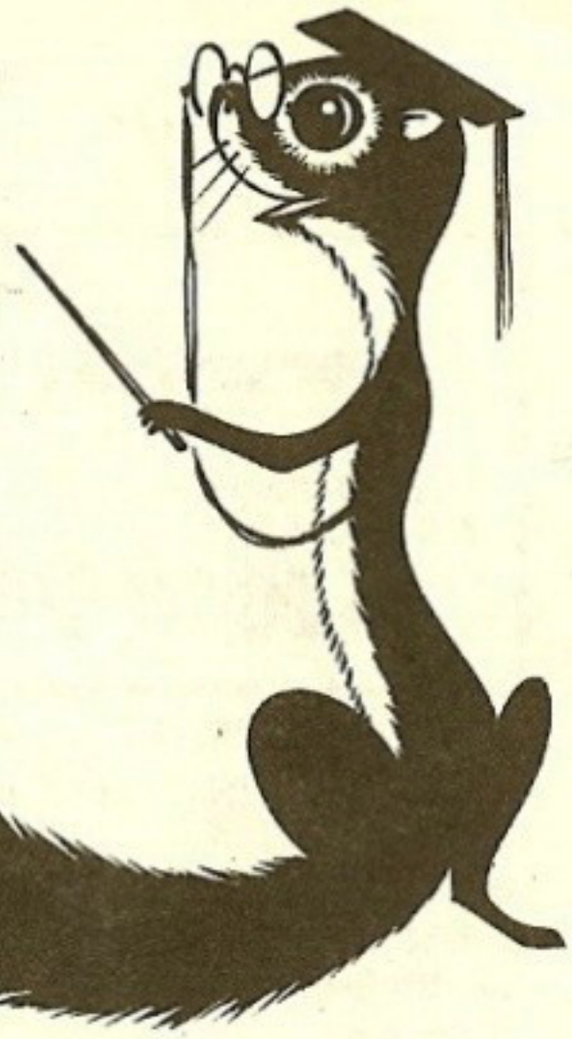
get wise to your WEASEL



HAVE YOU HEARD HOW THEY'RE BEEFING-UP THE TRANSMISSION? THE NEWS ABOUT THE NEW TRACK TOOL? WHAT TO DO WITH THE LITTER BRACKETS?

A vehicle that was once upon a time supposed to do one special kind of job and die, has lived to make a name for itself in the dirtier places where men are fighting. In the cold, snow-drifted fields in and around the Siegfried Line, they say, "you can send us a lot more of these." In the jungles, they call them "jungle babies" and admire the way they walk across deep mud. Most everybody agrees they're doing a job like nothing ever did it before.

The vehicle is the cargo carrier M29 and M29C, nicknamed the "Weasel." The reason for all the shouting is the extraordinary flotation, due to the light weight and the wide (20-inch) tracks,* which takes this vehicle over surfaces that swallow up other vehicles.

Since its birth many moons ago, the Weasel has been "volunteered" into a variety of jobs. It has performed so satisfactorily that it's now perched securely in the line-up of familiar combat-transport vehicles. All arms and services can expect to see more of it in the future.

Because of its former "expendable" nature, the Weasel was slightly short-sheeted on certain features. For instance, you can't reach the starter motor to oil it at 1000-mile servicing intervals. This shouldn't cause you too much consternation, though, because the factory declares that the lubricant in there is good for up to a year's "normal" operation. However, the problem of how to get at the starter motor continues to be worked on—and you can help by sending in any good ideas you've doped out on your own. In addition, you have already seen a batch of TB's and MWO's designed to beef-up certain other assemblies.

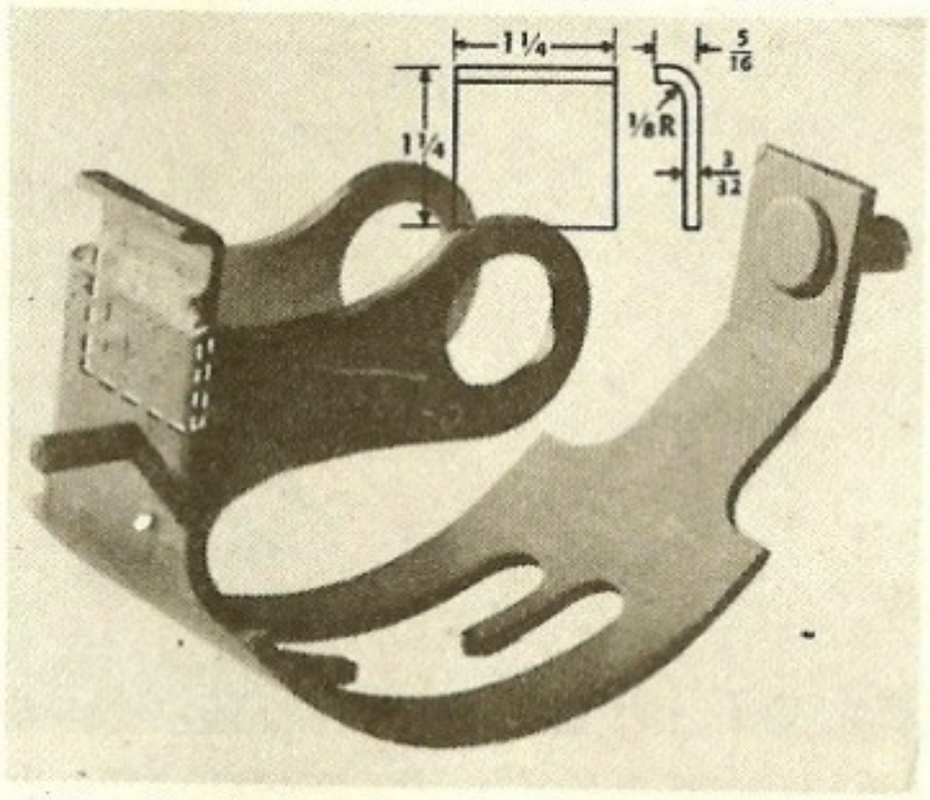


Fig. 1—A leg for the shift-lever guide-bracket to stand on—brogans won't bend it.

One of these is MWO ORD G179-W5 (red group), dated 20 Nov. 44, which provides a couple of kits "to increase the life of the transmission by installing heavier parts and increasing the oil capacity."

This MWO answers the letters of all you people who have been writing in to describe how you've strengthened the little transmission shifter-shoe for low and reverse in early-production M29's and M29C's. A stronger shifter-shoe is included in one of the kits offered by the MWO, for vehicles with Serial Nos. from 3 to 5000. This kit also furnishes, among other things, a replacement for the transmission countershaft. A second kit for vehicles with Serial Nos. from 3 to 2368 includes more muscles and guide brackets for the transmission controls.

As you have already guessed, these modifications are 4th-echelon.

SHIFT-LEVER H-PLATE

One of the items included in the kits above is an H-Plate (Fig. 1) to guide the transmission shift-lever into proper channels. As it was furnished in some of the early kits, this H-plate is unsupported at one end. Stout drivers, leaping recklessly into their seats, often brought their heavy brogans down with a smash on top of the H-plate, bending the threaded shaft at the other end. This more than takes away the advantages bestowed by the gadget in the first place.

The cure for this is a little foot welded onto the unsupported end of the H-plate. Make it yourself by following the drawing in Fig. 1.

NEW TRACK TOOL

A new tool for checking track tension is being provided in the cargo carrier as a replacement for the gage now used. The report is that many people don't know how to use the present gage—

*See TB 9-772-FE3 (9 Jan. 45) for latest dope on parts needed for changing from 15" to 20" tracks on early vehicles.

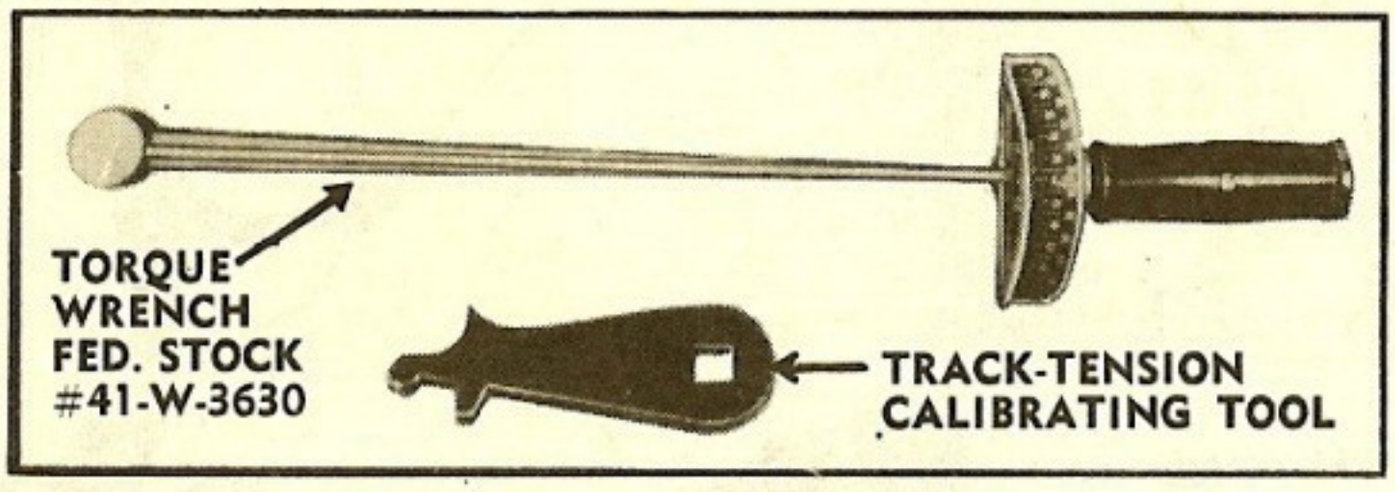


Fig. 2—Checking track-tension is made easy with this new tool—used with torque wrench (2nd echelon and higher).

which is also claimed to be unreliable if the leaf spring holding the track under tension happens to be bent.

The new tool (Fig. 2) is used with a torque wrench. (Fed. Stock No. 41-W-3630, 2nd-echelon set and higher). It fits on the end of the torque wrench sort of like an adapter and works very simply. All you do with the new tool is see how much torque is needed to move the spring eye about ⅛" (but no more) away from the spring top. If it takes 42 to 47 ft.-lbs. torque, the track adjustment is okay.

By the numbers, here's how you use the new tool (Fig. 3): (1) Stick the tool on the end of the torque wrench. (2) Fit the nose of the tool (there's a ball bearing in it) into the spring eye. (3) Rest the pivot point of the tool on the underside of the spring top. (4) Pull up on the torque wrench until there's a clearance of ⅛" (no more) between the top of the spring eye and the bottom of the spring stop. If the wrench reads between 42 and 47 ft.-lbs. torque, the track is in adjustment. Any more or less, it needs adjusting.

At the factory, they're already taking the present tension-checking gage out of the vehicle tool-set and putting in the new tool. Of course, they're not throwing in a torque wrench for every vehicle—you have to use the torque wrench (41-W-3630) in your echelon set. And because torque wrenches aren't passed out by the barrelful, we wouldn't throw away the track-spring-tension checking gage in our present M29's and M29C's. We'd continue to use the present gage at times when the torque wrench wasn't handy—it's much better than not checking the tension at all.

For people who say they always miss out on special tools, we're including a drawing (Fig. 4) showing how you can make the new "Track-Tension Calibrating Tool." (That's the official nomenclature for it. The Fed. Stock No. is 41-T-3079-525, but don't try to order them yet because they're **not** available—we'll let you know when.)

The new tool is not too easy to make because it's got to be cut exactly to specifications and hardened properly. But your good Ordnance shop ought to be able to turn some out for you. Incidentally, the new tool will be sealed with a kiss and made official by a bulletin now on the way.

Note: No matter what tool you use to check your track tension, you can still be fooled. Your track-tension tool might show that the spring-adjusting bracket is set right—but the track may still be too loose because of loose guide-wheel brackets, bogie-spring lever-brackets, and bogie-spring hold-down bolts. Best thing you can do is check and tighten these parts weekly.

THAT SINKING FEELING

Many a driver, out on the water in a Weasel, has suddenly realized as the vehicle slowly sank beneath him that it's important to actually look and be sure that all the drain plugs are in their appointed places. On our own personal **M29C** with the built-in coke machine, we counted five drain plugs in the left side of the hull and one on the left side of the front and rear pontoon—**seven** all told. There are **five** hull drain-plugs in the **M29.** The hull and pontoons of both Weasels must be drained after every trip on the water (or if they've been left out in the rain). We have seen some of these vehicles with about two-and-a-half feet of water in the hull—reading from front to back, the radiator core was damaged, the crankcase had collected a bellyful, the transmission, propeller shaft, and final drive had been damaged.

One way to tell the driver about the drain plugs is to stencil a little note on the sides of all your Weasels (Fig. 5). In the future, SB 9-4 orders that such notes will be stenciled on both M29's and M29C's before shipment. Reading: "INSTALL DRAIN PLUGS IN HULL BOTTOM BEFORE AT-

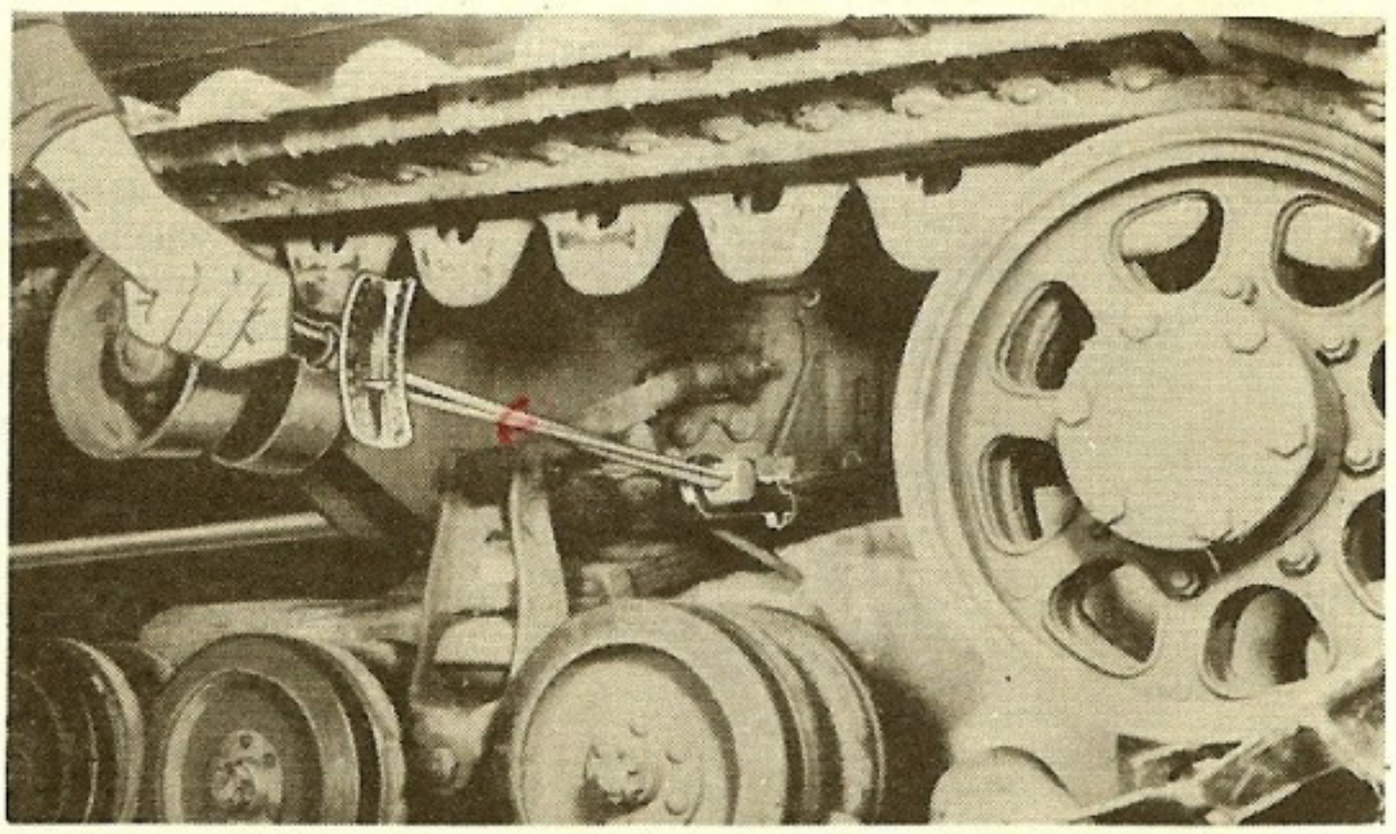


Fig. 3—How it's done—just pull the leaf spring down ⅛" (no farther) away from the spring-adjusting bracket.

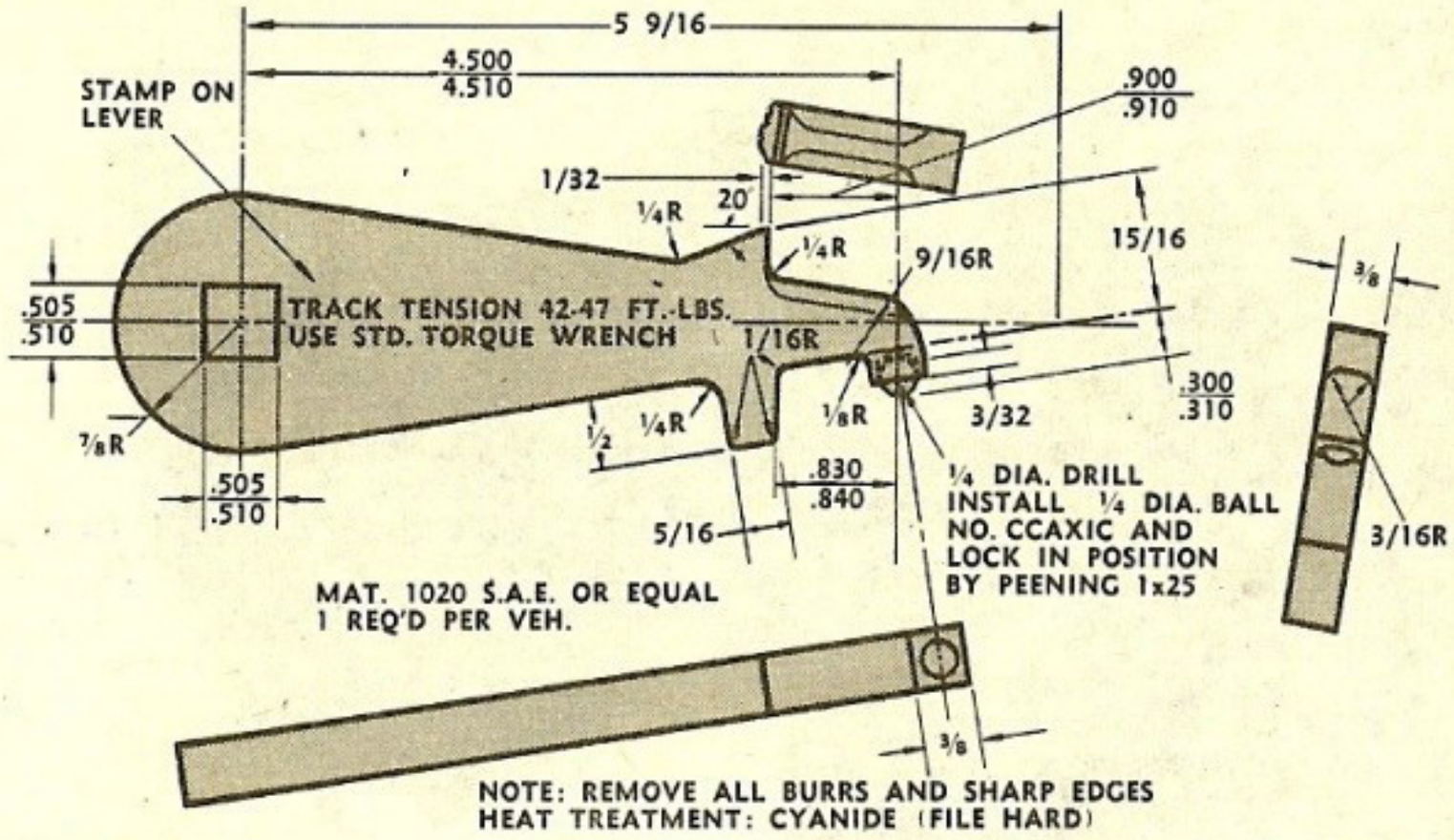


Fig. 4—So you never get special tools, eh? Okay, here's the drawing—roll your own.

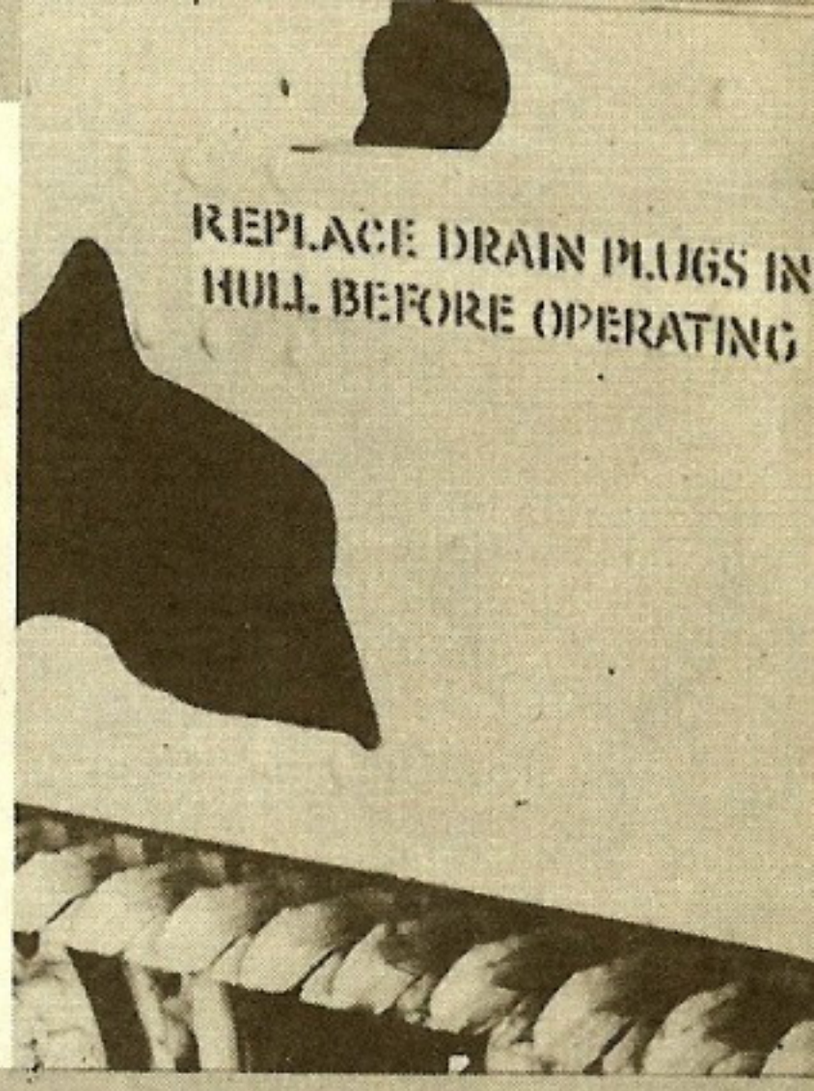


Fig. 5 (right)—Stencil this drain-plug memo to the driver—uncorked carriers sink.

TEMPTING TO FLOAT." It might not be a bad idea, when you stencil your vehicles, to specify how many drain plugs the driver should look for: "INSTALL 7 DRAIN PLUGS . . ." Or 5.

Not only will forgotten drain plugs give the cargo carrier submarine characteristics, but also looseness of the capscrews used to fasten the various brackets to the hull (any capscrews running into the hull) will allow the water to leak in. Check the tightness of all capscrews and, better yet, when installing a bracket or suchlike, do a businesslike job of waterproofing by smearing Compound, joint-sealing, Fed. Stock No. 51-C-1616 (1 lb.) on the threads and under the bracket.

HOTFOOT PREVENTIVE

The Weasel runs pretty hot. According to our jungle correspondents, the heat thrown off by the engine into the bottom of the driver's compartment, even on mild days, sometimes leads the driver to believe that his dogs are resting in a bed of glowing coals. At the factory, they are now cutting a hole for ventilation in the panel at left of the driver's feet (Fig. 6). This will allow some of the air running down the shaft to the radiator to run into the driver's compartment and cool the driver's feet. You can do likewise on the vehicles you now have by following the drawing (Fig. 7). In addition, the factory is installing a felt seal around the shafts (Fig. 8) to shut off the blasts of hot air that come in through the opening.

Fig. 6—Your feet burst into flame? Cut a hole in the side panel for air-conditioning.

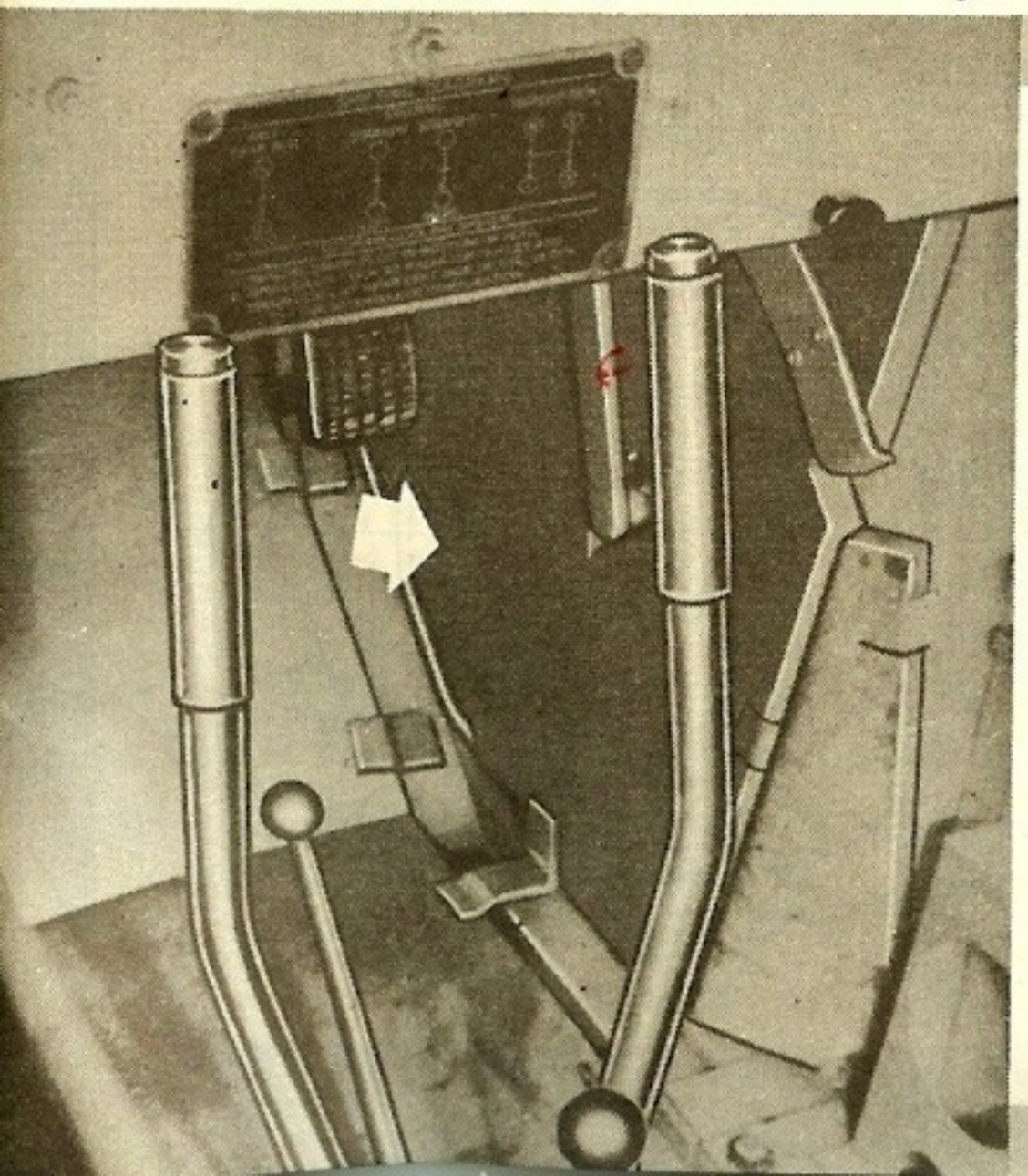
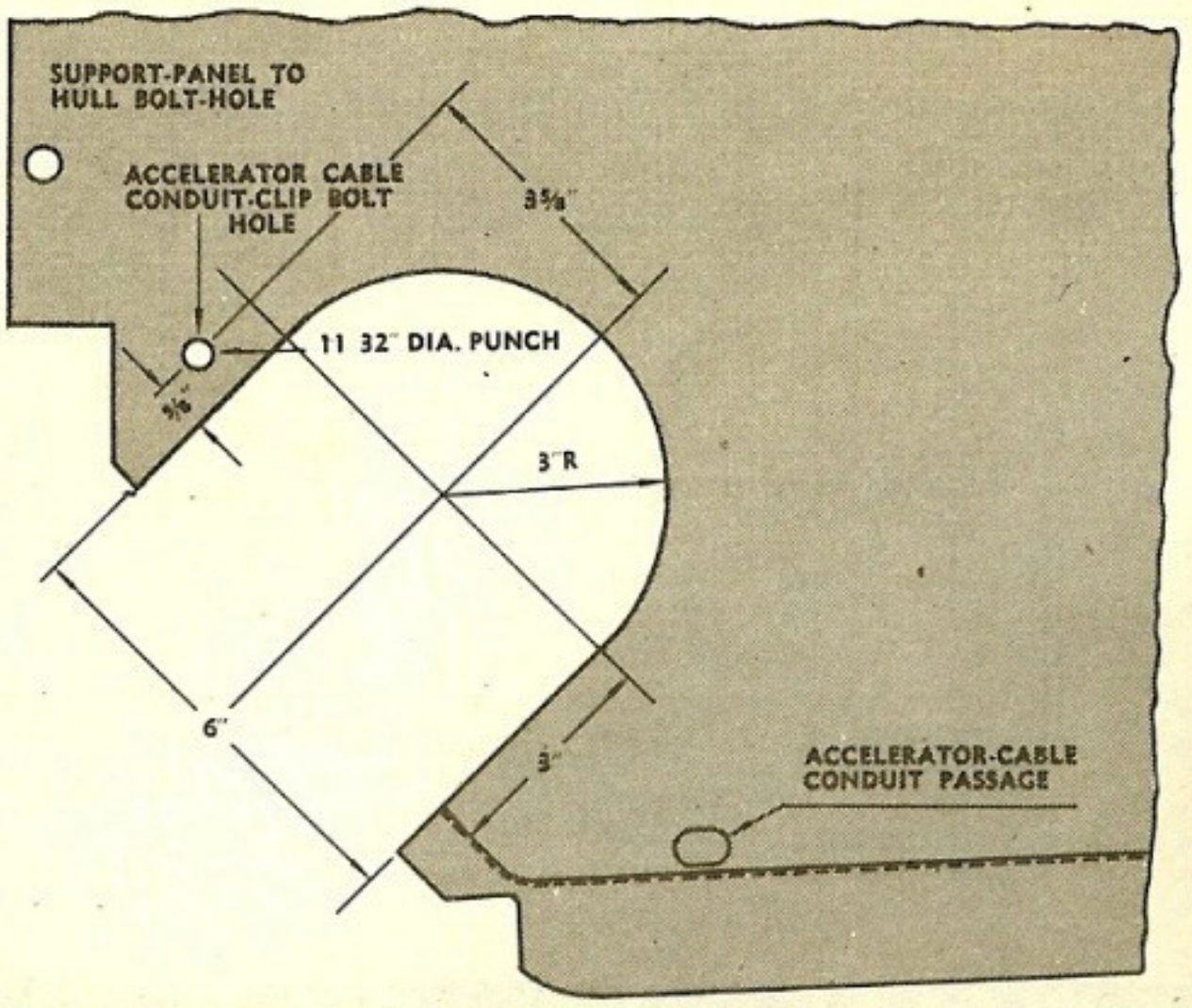


Fig. 7—Here's how the factory's doing it. Be careful of the accelerator cable.



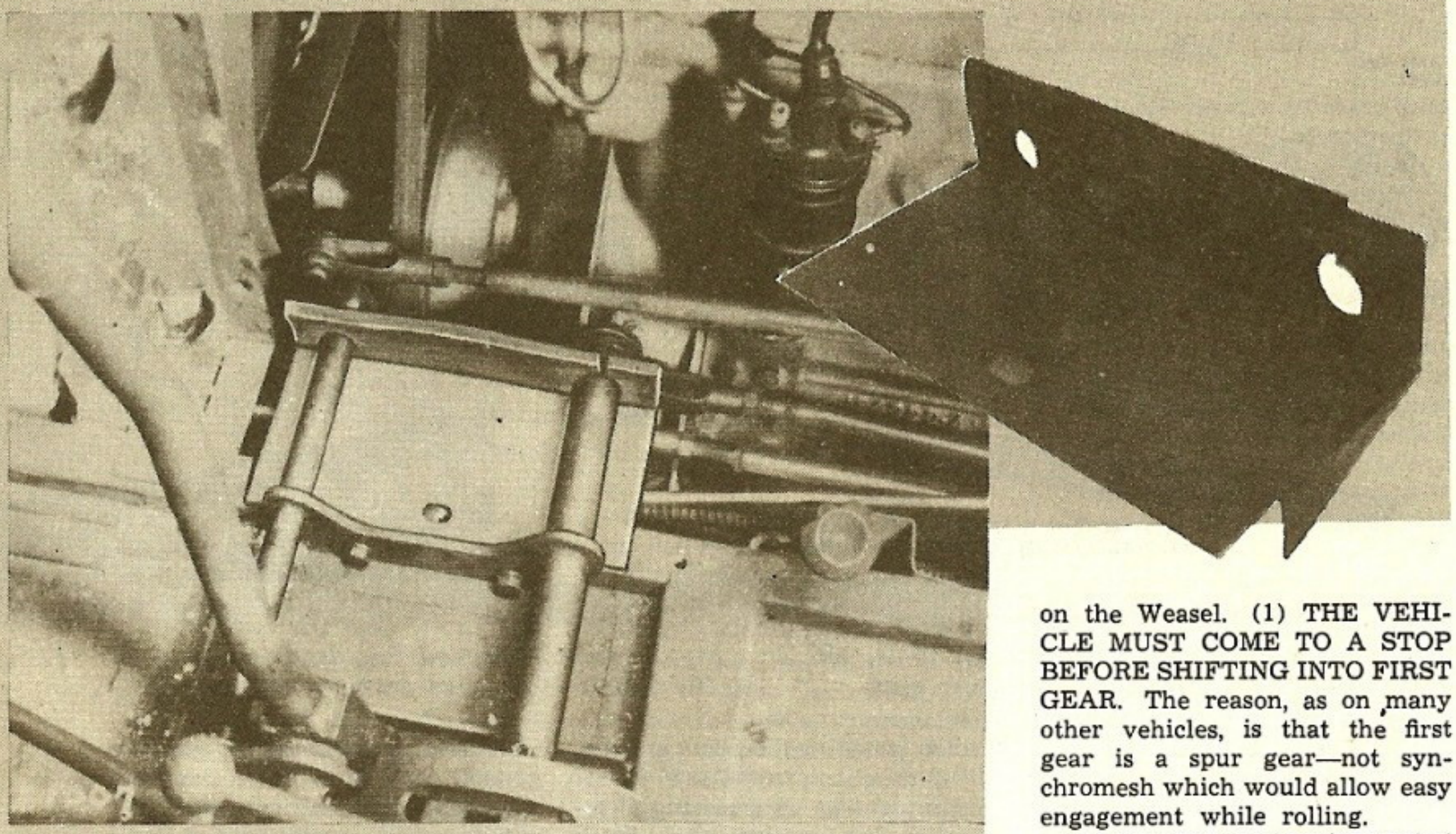


Fig. 8—The factory's plugging the hot-air that shoots out the shaft holes. (Inset) the seal; (left) in action.

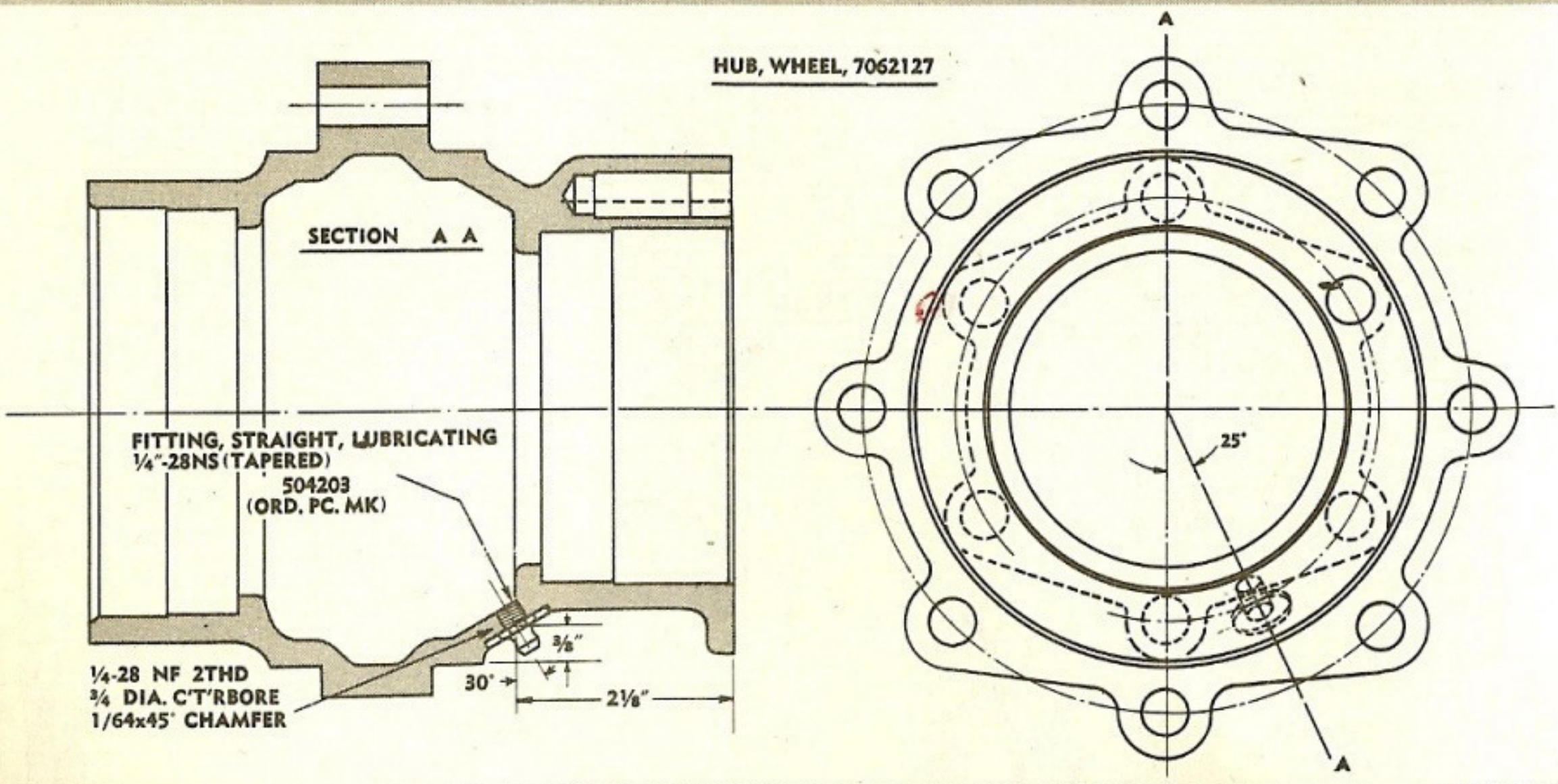
P.S.—In case you hadn't noticed it, the TM for the Weasel (9-772) mentions an additional thermostat for operation in hot climates. This thermostat (Item Stock No. G154-04-00093) opens at 155°—the alternate thermostat opens at 174°. Try the lower thermostat if your cargo carrier runs too hot (be sure the cooling system is in good shape first).

CAUTION STENCILS

Another bulletin, now winging its way out to the field, prescribes a couple of cautions to be stenciled on the Weasel. (1) THE VEHICLE MUST COME TO A STOP BEFORE SHIFTING INTO FIRST GEAR. The reason, as on many other vehicles, is that the first gear is a spur gear—not synchromesh which would allow easy engagement while rolling.

(2) DO NOT COAST VEHICLE WITH CLUTCH DISENGAGED. The reason: There's a very high gear ratio in the Weasel. For instance, low-low gives you a ratio of 35 to 1—get rolling along, disengage the clutch and the tracks will spin the clutch driven-plate up enough rpm's to burst it apart. According to the bulletin, these

Fig. 9—Why take the idler and drive wheels off to grease the bearings? Install fittings in the hub (like the factory).



warnings are to be stenciled on the engine-compartment lid of all vehicles that don't come with a caution plate, so that they stare the driver right in the eye.

A third caution, which is training doctrine born of combat experience in the Pacific Ocean Areas, is BRING THE VEHICLE TO A STOP BEFORE SHIFTING INTO HIGH OR LOW RANGE. The reason is that the gear in the rear axle that shifts into high and low range is not so finely "syncromeshed" that you can slam the gears back and forth, in and out of high and low range.

A final warning, which every driver should stencil in his own mind, is to avoid having his vehicle banged around by another Weasel—any vehicle for that matter—either to get it started or to move it around. The hull is pretty light, easily pierced and torn. Also, because of the extreme gear reduction between the engine and final drive, the final drive is liable to suffer. Use the pintle in the rear and the eye in front to pull the Weasel around.

To make it easier to help a stalled cargo carrier out of a hole and to make it possible to use it in tandem with another cargo carrier, a kit is now being worked up (not ready yet—we'll tell you when) which will install a drawbar on the front of the vehicle. For cargo carriers that don't already have the proper pintle (same one as used on the jeep) on their rear end, you'll have to requisition one from stock and fabricate an adapter plate (MWO ORD G179-77 will soon tell you how). The early pintles won't fit the new drawbar.

SPROCKET GREASE-FITTING

To grease the idler and final-drive sprockets of the first couple thousand cargo carriers produced, you had to take the sprockets off. Later on, however, somebody got the bright idea of installing a grease fitting on the sprocket—then you didn't have to take the sprockets off to grease them.

If you've got M29's or M29C's without these fittings, there's no reason why you shouldn't install them. See drawings in Fig. 9.

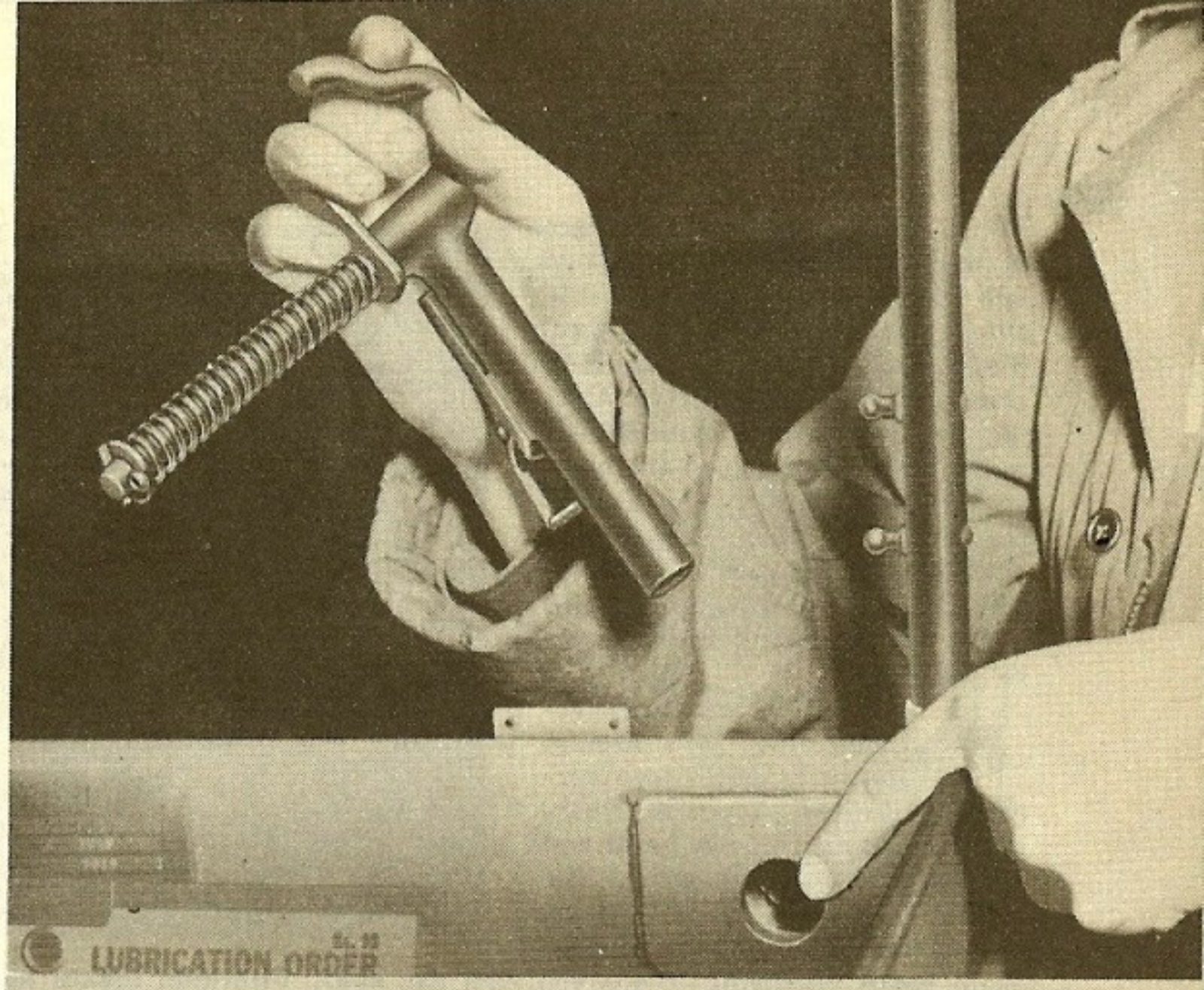


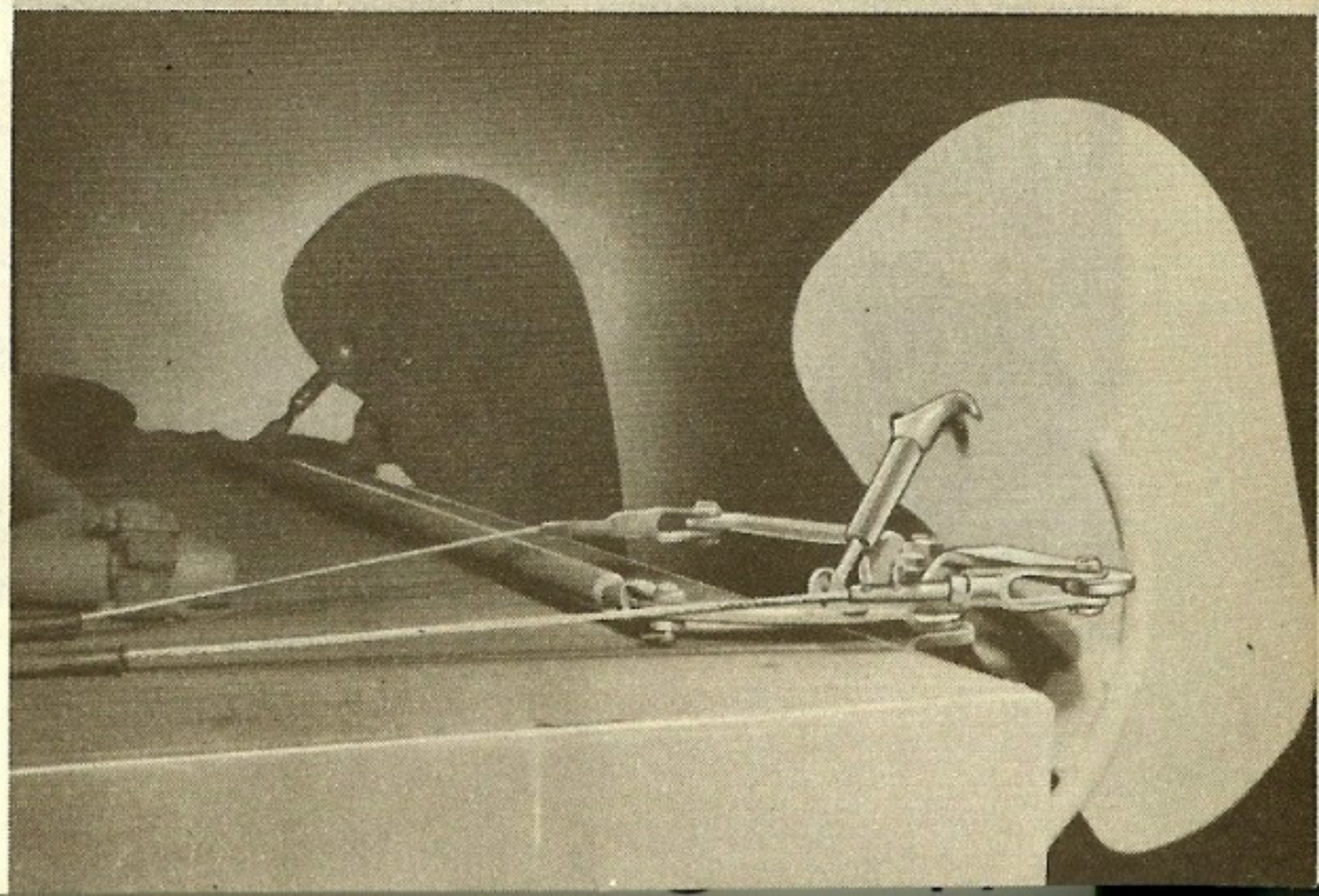
Fig. 10—Use the eyes for lifting your Weasel. And get the litter brackets out of your hair (see story).

LITTLE ACORNS

Sitting up on the bulkhead like four green birds on a fence, the litter brackets, when they're not being used, will keep getting in your way. You'll scratch your hands on them and generally they'll behave like a small-time hazard. To get them out of the way and still have them handy for use without stowing them, install them upside-down in their holes on the bulkhead. To do this you have to exchange the position of the outside brackets with the inner brackets—otherwise the little arm with the spring on it will be in the way and you won't be able to fit it in the hole.

You may or may not know that those two little holes or eyes, one on each side, at the top of the bulkhead (Fig. 10) that separate the front from the back, are good for lifting the cargo carrier. They're located so that they balance the vehicle nicely when

Fig. 11—An oil can a day around the rudder linkage keeps corrosion away. Get the habit.



lifted. One catch is that the edges of the lifting eyes are too sharp and may cut the rope or cable sling you pass through there. Since you'll have a job finding standard shackles to fit, try sticking a bolt or small bar through the lifting eye and loop the sling around that. Also, when attaching the lifting sling, be sure the outside little brackets are installed upside-down as described above so they won't be damaged by the sling.

As with any other vehicle that plays around in water, the cargo carrier is subject to much corrosion. Get the oil-can habit and keep after such linkages as the rudder linkages (Fig. 11). Also, as we keep saying over and over again about your amphibious vehicles, the best way to protect the hull from corrosion is to prime it with **Zinc-Chromate Primer (Fed. Stock No. 52-P-20624, 1-gal. can)**, paint it, and then coat the paint with **Compound, Rust-Preventive, Thin-Film (14-C-507-10, 5 gal. can).** Thin-film makes the surfaces slippery—tell the boys to watch their step when trompin' around on top the hull.

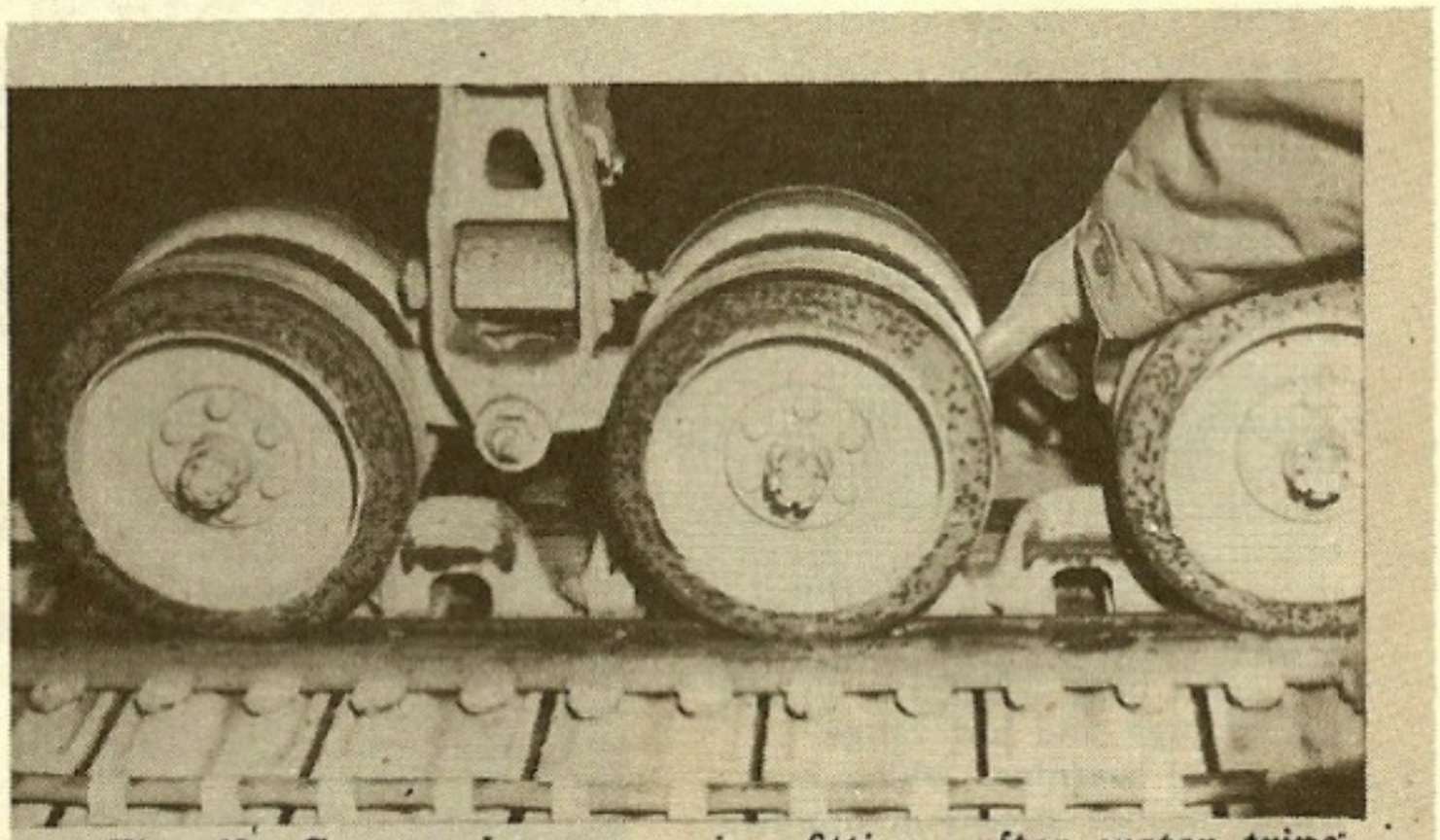


Fig. 12—Grease the suspension fittings after water trips. Be sure you don't miss the one between the bogies.

Besides draining the hull of your cargo carrier after every trip on the water, it's a wise idea to give the bogies, bogie-spring support-arms, etc., a squirt of grease. This'll force out any water that might have gotten into the bushings and bearings. Don't forget the grease fitting sandwiched away between the bogie wheels (Fig. 12).

Fix Your Full-Vision-Cupola Lock

A COTTER PIN MAKES IT BOUNCE-PROOF

Wondering why the plunger-type hold-open lock on the full-vision cupola isn't doing its job—why so many fingers have been pounded, but hard, and noggins slammed way out of shape? The answer goes for all tanks with the commander's vision cupola.

As the tank lurches across rough terrain, the open cupola door joggles so much that the plunger falls out of the lock case and the door flips shut with a vengeance. (See Fig. 1. The chain and cotter pin are the newly added features.)

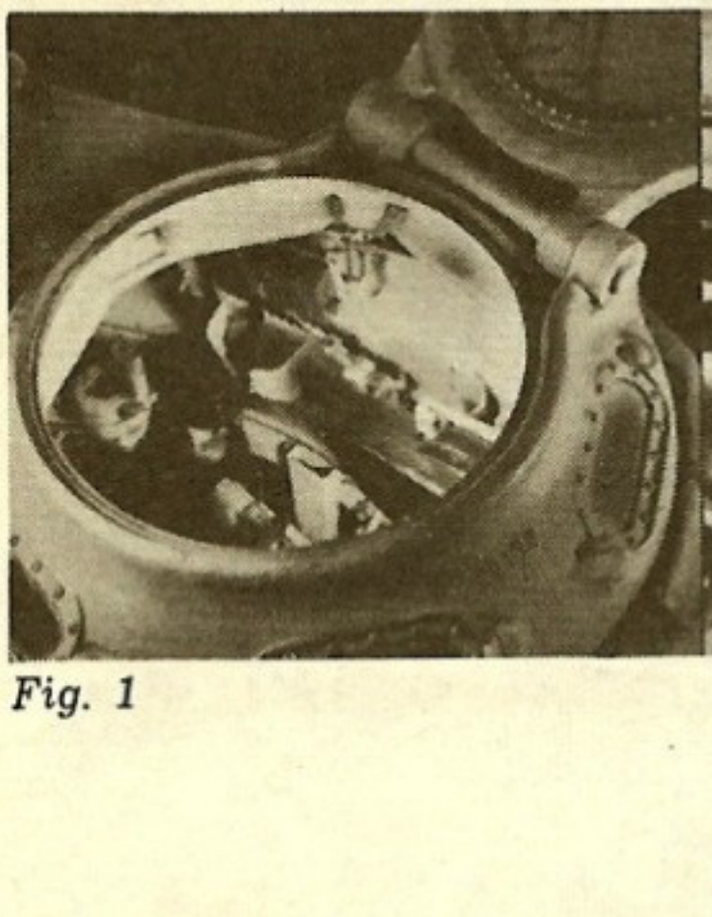


Fig. 1

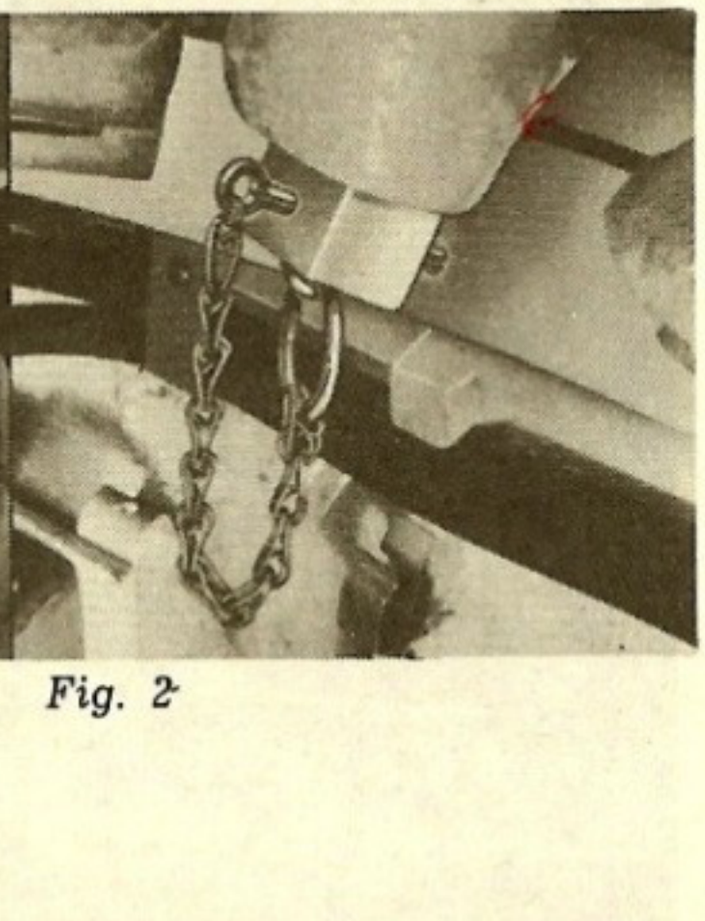


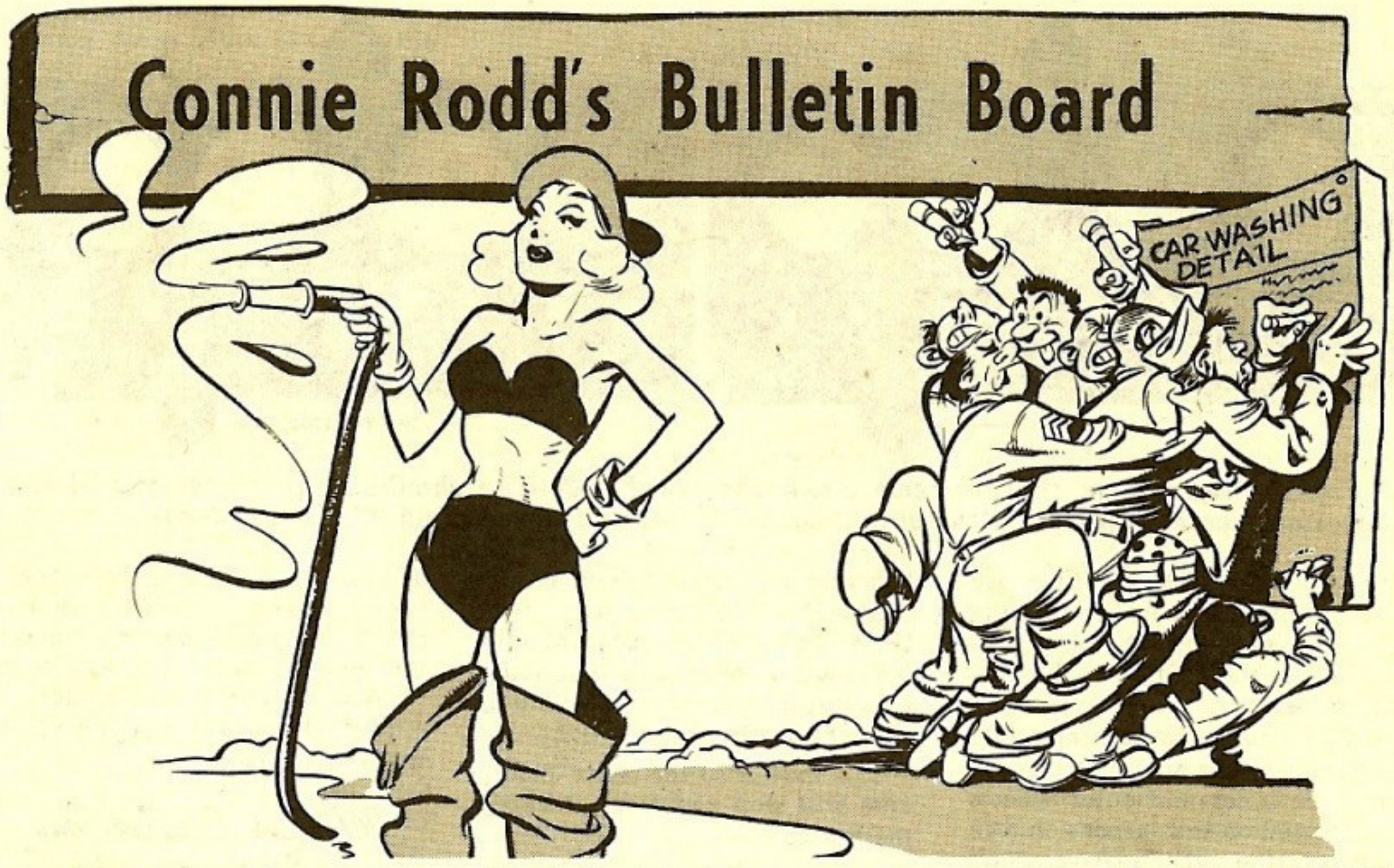
Fig. 2

With the plunger in locked position, drill a 5/32" hole through the brass hex-head of the lock case and through the **exact center** of the plunger. Take a ⅛"x1½" cotter pin (spread slightly so it'll fit snugly in the hole you've just drilled) and attach it to the plunger ring with a short piece of light chain (Fig. 2) so it won't get lost.

With the cupola door open, insert the cotter pin through the hole in the lock case and plunger. Now the plunger can't be forced out of locking position.

A trigger-type lock on the vision cupola is the best answer, of course, and maybe you'll be getting one—but not for quite a while. Better be doing this fix in the meantime.

Connie Rodd's Bulletin Board



Ignition Timing on Mack Trucks

Got a list of Mack trucks the other day (6-ton 6x6, 7½-ton 6x6, and 5-ton 4x2) with complaints about their engines not giving out with enough power. The reason for the loss of power is because some people are setting the ignition timing at an engine speed of 500 rpm's. That's all wrong.

According to what's cricket, the timing on these engines should be given a rough set at the following figures with the engine still and quiet:

Model	Timing	Breaker-Point Gap
NM	10° BTC	.018-.024
NO	10° BTC	.018-.024
EH	7° BTC	.018-.024

Then check the timing (with your neon light) at an engine speed of **300 rpm's** and adjust for proper timing position at that speed. The check should be made at an engine speed of 300 rpm's for a couple of good reasons:

First, you've got an automatic spark-advance mechanism in the distributor that starts working at about 400 rpm's; and second, there's the automatic vacuum-advance that could start operating at about 500 rpm's. With both these devices advancing the spark, you haven't a chance of getting the proper timing.

So the safest bet is a timing check and adjustment at no more than 300 rpm's, which is just a nice idle for those Macks.

Chevvy Dust-Seal Installation

There's something new that's nice to know about installing the outer-end dust seal (CV-3664897) on the front-axle housing of your 1½-ton 4x4 Chevrolet. It's now okay to cut the seal, so you won't have to take off the wheel and tire and dismantle the whole steering-knuckle assembly whenever you have to replace it. Just make a neat cut through the seal with your trusty jack-knife or bolo—and when you slip it on, make sure the cut is at the top.

Inner Bogies on Horizontal Volutes

The inside bogie-wheels of M4-series medium tanks with horizontal volute-spring suspension are situated just right to be forgotten. The capscrews of the outside bogies are within easy reach and it's no trick at all to put a wrench on them and tighten them as much as they need tightening. But to get at the capscrews of the inside bogies, you've got to crawl under the tank. This puts you in a position where it's hard to get all the muscle you need on the capscrews. Loose capscrews lead to loose bogies—maybe you'll lose some capscrews, maybe some bogie wheels. Bad in either case.

The Feb. ARMY MOTORS (page 338) showed you how to use a socket on a sliding T-handle, plus a crowbar, to get at the inside-bogie capscrews. This gives you more tightening leverage—but next time you change the inside bogies, remember this: Experience shows that it takes **three** tightenings of the inside-bogie capscrews to get them really tight. So, 50 miles after you've installed the bogie wheels, tighten again. At 250 miles, give them a final tug.

Incidentally, while you're under there, notice the grease fitting on each bogie (on early-model suspensions, same location as on the

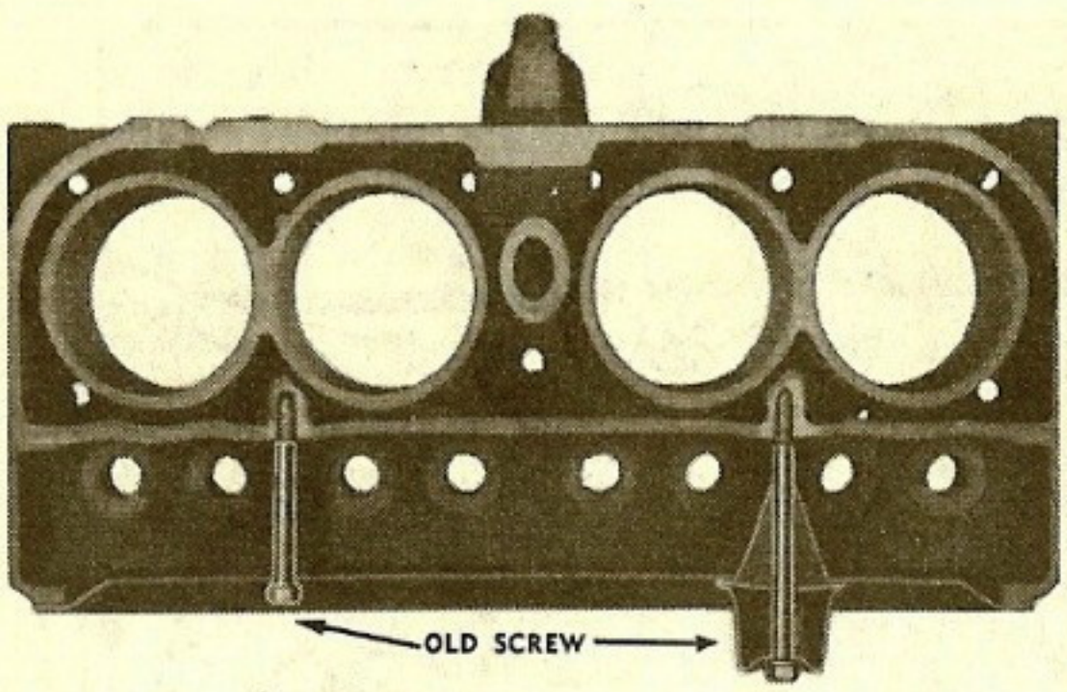


Fig. 1—Pressure on these screws crack the bosses and water can leak in the crankcase.

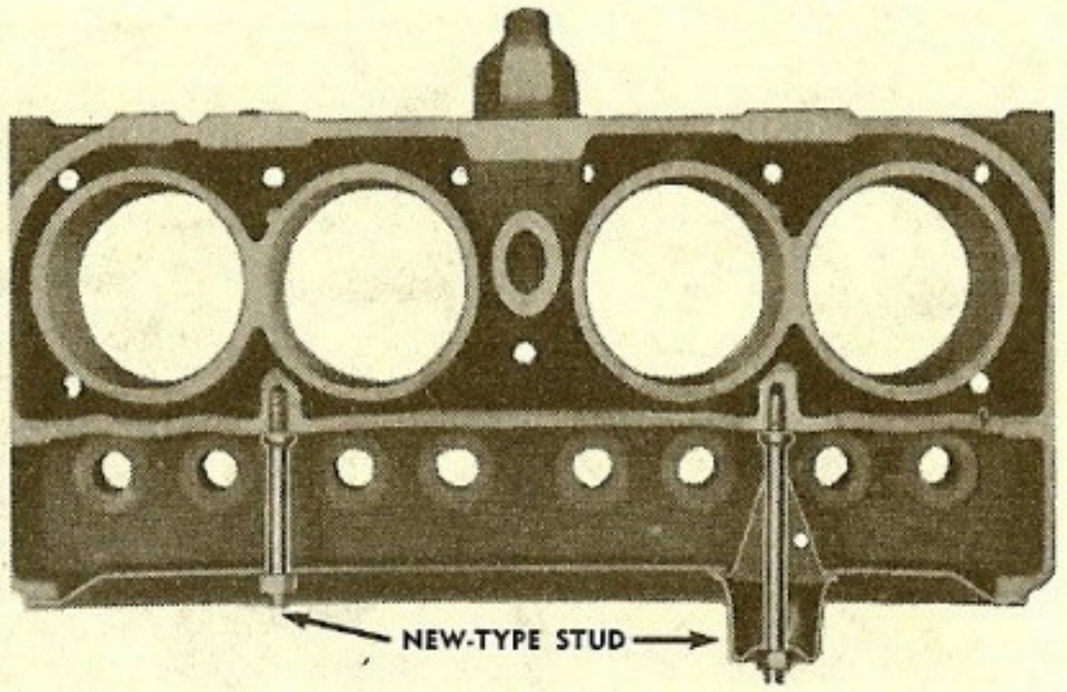


Fig. 2—The shoulders on these studs'll stop them from causing cracks and leaks.

outside bogies). These fittings are just as important, in keeping the bogie-wheel bearings from burning out, as the fittings on the outside wheels.

On later-model horizontal-volute suspensions, the grease fittings for both the inner and outer wheels are located on the suspension arm between the wheels—you won't have to do any crawling around beneath tanks to get at fittings.

New Studs for Some Jeep Valve-Covers

If you're a big, brawny boy and you've got a ¼-ton 4x4 Ford **less** than six months old, better leap right out and take a look at the serial number (on the side of the engine). If it falls anywhere between Nos. **232051** and **243405** (inclusive), you've got a little job to do. Last October the manufacturers changed the design of the bosses that the valve-cover screws fit into. What they did was separate the bosses from the cylinder walls (see Fig. 1), using the same screws as formerly. After manufacturing this type for about two months (covering the serial numbers given above), it was found that if you put too much pressure on these screws, they're likely to crack or break the bosses. This'll let water leak into the crankcase.

What you've got to do is remove the two old screws (Mfr's Part Nos. FM-355451-S and FM-355452-S) and replace them with new shoulder-type studs as shown in Fig. 2. You can get these studs through regular channels (front stud, GPW-6547, and rear stud, GPW-6548). Before installing, dip the new stud ends up to the shoulders into Permatex (or something similar) so they'll hold tight.

This fixes it so the studs' shoulders will stop you from cracking the bosses.

Towing Tricks for Tankmen

Want to know how to tow M4-series medium tanks (and gun motor carriages on the same chassis) without ruining precious bearings or gears? If your vehicle's to be towed more than a mile, these tricks are well worth the trouble: (1) shift the transmission into fifth speed; (2) disengage the engine by holding the clutch pedal down, or disconnect the U-joint at the transmission end of the prop shaft.

M4-series medium tanks and related gun and howitzer motor carriages are all equipped with the same basic transmission and controlled-differential assemblies. They're lubricated by an oil pump in the transmission, driven by gears connected to the power-input shaft. This means that the oil pump **does not operate** when the engine isn't running, because the input shaft isn't rotating. So if your vehicle's towed with the transmission in neutral, the ring and pinion gears and the transmission output-shaft will rotate without being properly lubricated. That's a neat way to score bearings and gears—which may not show up right away, but'll make an unholy mess for somebody (maybe you) to clean up later.

TB ORD 243 (15 Jan. 45) plays this same tune.

Winch Brake on M25 Tank Transporters

It might cost you a lot of trouble, if you pay out the cable under load on the M25 40-ton tank transporter truck-trailer the way it tells you in TM 9-767. On page 51, par. 9 *b* (5), it says, "When paying out a cable which is under load, place gearshift hand-lever in its 'IN' position, which will place the drum in its drawing-in position (reverse), thereby causing the cable to pay out under a brake." These instructions, of course, are opposite to what they should be. If you followed them, the cable would probably do nothing or—much worse—snap off. To pay out a cable under load, place the gearshift hand-lever in its "OUT" position (TB 9-767-2, 26 Oct. 44).

Here are a couple of other points that oughta be cleared up in this TM. On page 427, par. 201 *b* (1), for the brake adjustment of the winch, it gives the length of the brake spring as 1⅝" (dimension "A" shown in Fig. 263). Actually, this dimension's the **approximate** length. Because when you test the brake for final readjustment,

in order to stop the load from coming down more than 2", the length of the brake spring might vary a bit, depending on the condition of it and the lining. Also, in this same paragraph it says, "Rocker holds contact at 'O' (Fig. 263)." But since there's no "O" shown in this picture, that oughta read "C" instead.

Fuel Filters

For some time now, the gasoline filter on your truck has had an element made of thin paper discs (Fig. 3)—they used to be thin brass discs. I don't have anything frightfully new on it, it's just that I'm wondering whether you've been cleaning this element with an air hose. Okay, I've seen where it says to blow 'em out (from the center out) with an air hose—BUT. These are pretty thinsy-winsy little paper discs and it doesn't take much to crush them up like dead leaves. So what say we all take a pledge to keep the big strong air hose away from these elements and clean 'em by just swishing them around in solvent? They'll get just as clean and we won't hurt something that can't defend itself.

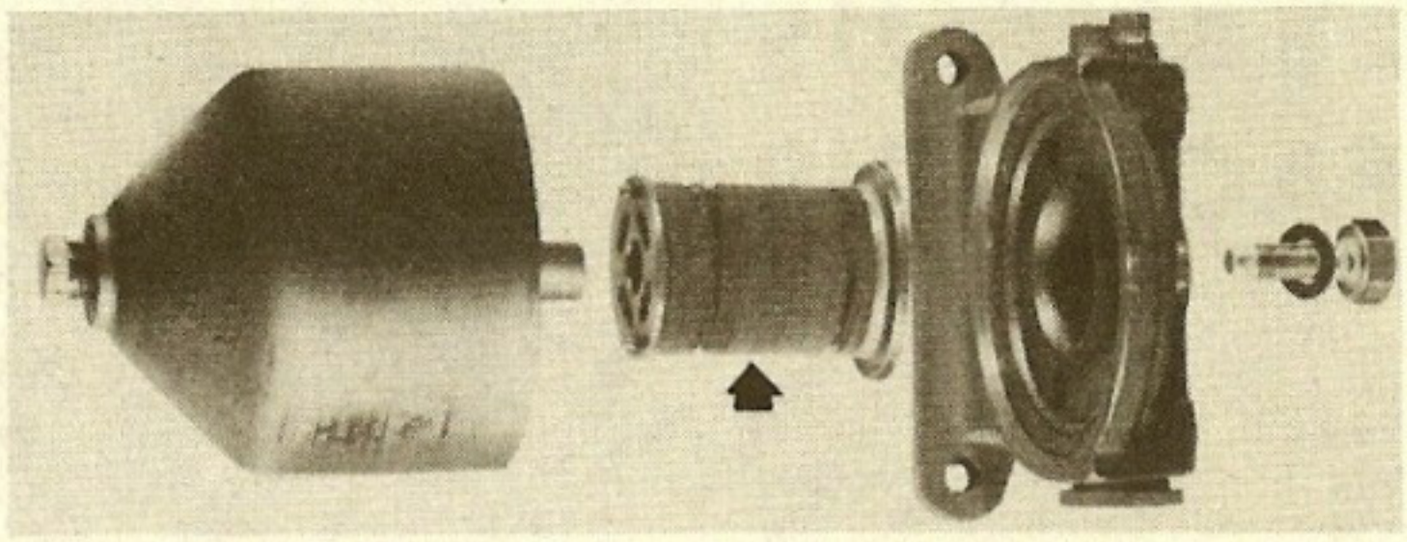


Fig 3—Fragile paper discs replace the brass in the fuel filter.

Removal of Tank Shipping Fixtures

When medium tanks, M4-series, are tied down for rail shipment, there's an assortment of bolts and brackets and hold-down rods put on the tanks to keep them secure.

They're supposed to be stripped of these shipping attachments when you tankers get them, but some M4's get delivered to the field with those trimmings still on. Some of them can cause a pack of damage if they're left thataway. Take the horizontal-volute-suspension bolts and brackets that are part of the shipping hook-up (see Fig. 4): Unless they're removed and replaced in the front and rear suspensions on both sides of the tank with regular suspension bolts (you'll find them in the turret oddment-box), your track is in for punishment the first time you hit rough terrain. Picture it yourself—as the tank humps itself over uneven ground, up comes the track and gouges itself against the protruding shipping bracket. Fig. 5 shows the correct bolts reinstalled; you'd better put 'em on in jigtime if your tank doesn't look like the picture.

Turn in the shipping attachments from any M4-series tanks to your Post Ordnance Property Officer. The regular suspension hex-head bolts carry Ord. Part No. 222578, if you can't find yours and have to requisition.

TB ORD 228 (4 Dec. 44) tells the same story, in case you want chapter and verse.

M8 Filter Mount

By special request, I'm repeating an important little tip on the armored car M8 and M20 which Half-Mast ran as part of his giant bull-session on these vehicles back in July. This tip has to do with the fact that the oil-filter mounting-base has passages for both oil and water—and there's nothing but a thin gasket separating them. If this mount comes loose or warps, if the gasket is bad—or, as was true on some early vehicles, if the base wasn't machined smooth—then the water pump may pull oil into the cooling system, or some water may find its way into the engine oil.

To prevent this, try installing two gaskets instead of one and check it pretty often to see that the bolts are tight.

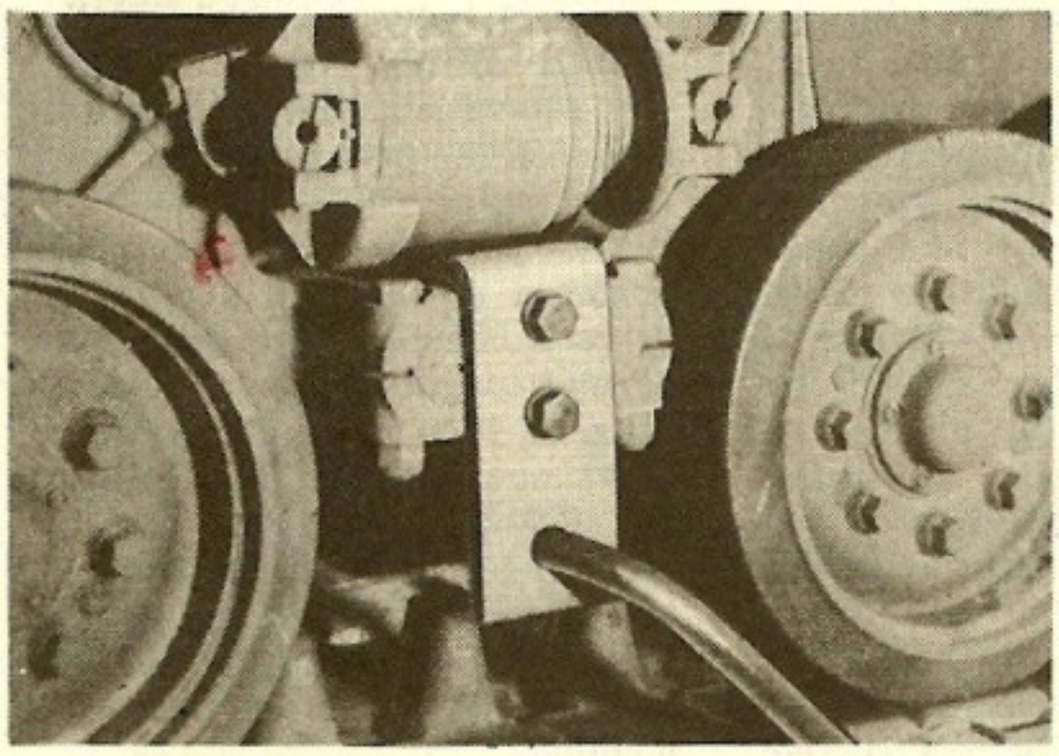


Fig. 4—Here're the shipment bolts you remove.

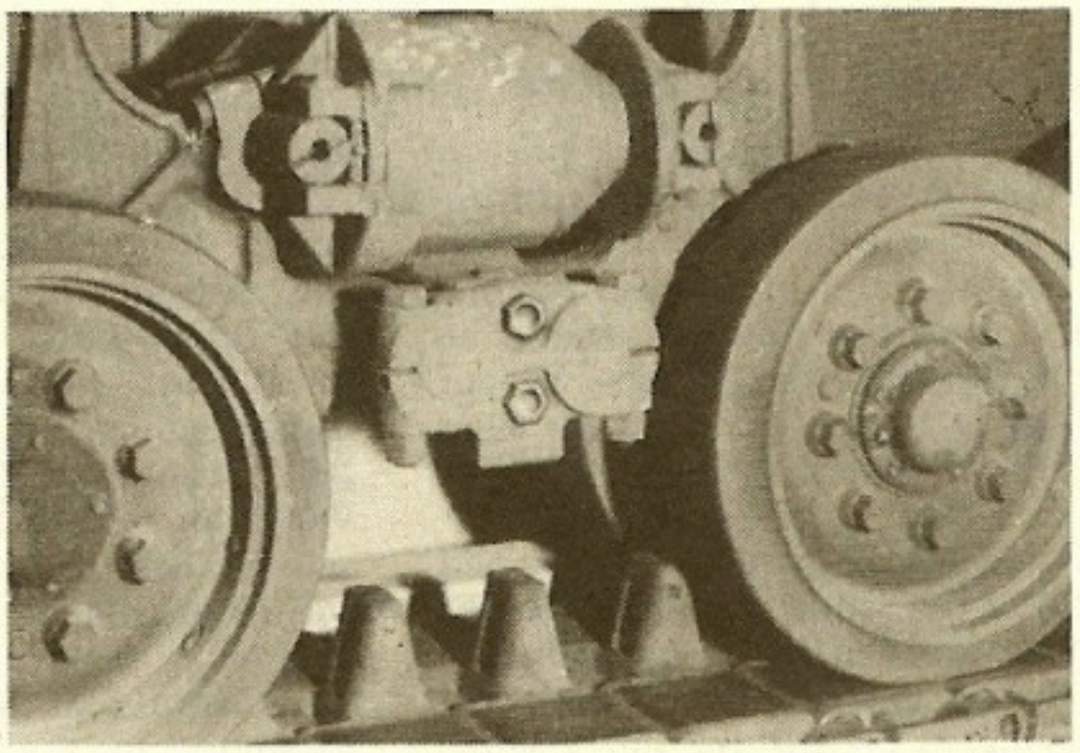


Fig. 5—Here're the hex-head bolts you put on.

LEAVE US FACE YOUR M4 TRACTOR TROUBLES

A lot of soldiers with 20/20 vision had to go clear overseas to get their first good look at an M4 high-speed tractor. Some of them thought they'd spotted a hot new vehicle, secret weapon maybe, till they were told it was the same job they knew back in the States (Texas, anyway) as the tracklaying dust-storm w/pintle.

Now that mud and/or snow nave superseded the dust, it's a different picture: You can see what the M4 tractor looks like and what she can do. She looks like a hefty hunk of machinery, which she is. And what she can do is pull no mean share of the guns and stuff toward Berlin and Tokyo —as long as she's off the deadline.

By the time this little session ends in a ten-minute break, you may know a few more ways to keep her off. Because we're here to hash over the M4 troubles and maintenance tricks we've heard most about from the field. If you've got others, brothers, you know where to write.

TORQUE-CONVERTER RADIATOR

The fluid-cooler radiator in the M4's torque-converter system has taken plenty of abuse, profane and otherwise. But it'll stand the gaff okay with proper care. Proper care consists of keeping the fluid pressure from going off-limits, that's all.

Too much pressure blows hell out of the radiator, and no amount of bracing it up or strapping it down is any real help. That's just trying to belittle the effect without going after the cause. The cause usually happens to be a sticking piston in the torque-converter pressure-relief valve or a stopped-up hole in the oil filter in the radiator-overflow return-line. Or both.

When driving your M4 tractor, keep a weather eye on the torque-converter pressure gage. If it shoots past 50 lbs., with the oil temperature above 150°, hold everything until you've done the following:

1. Clean out (by swishing in solvent) the filter element in the oil filter in the radiator-overflow return-line. Make sure the tiny (.040") hole in the filter restriction is open (this is a **must,** if it takes 50 checks a day). The filter's easy to get at, luckily, right there behind the engine as you reach in from the tractor's left side. It's next to the fluid reserve-tank, in the overflow return-line (SNL G-150, ORD 7, 8, 9, 15 Aug. 44, calls this a vent pipe, which it isn't). Incidentally, the M4's lube order calls for changing the element in this filter every 96 hours, come what may. If you can't get a new one, clean up the old one.

2. Disassemble the pressure-relief valve (Fig. 1) and check the clearance between the piston and the cylinder wall—it should be at least **.005".** You do this by disconnecting, at the elbow, the hose that runs from the relief valve to the torque-converter pump. Then disconnect the hose at the other end of the relief-valve assembly, remove the bolt from the clamp that holds the valve assembly to the battery-carrier bracket, and lift out the valve.

Take off the valve cap and measure the length of the adjusting screw above the locknut (Fig. 1); jot that down so you'll have exactly the same pressure adjustment when you reinstall the screw.

A strip of .005" shim stock, ⅛" wide, will serve as a gage for your piston clearance. Use crocus cloth or fine emery cloth to rub down the diameter of the piston until there's a full .005" clearance between the piston and the cylinder wall.

Reassemble the relief-valve assembly in the order shown in Fig. 1, making sure that the measurement on the adjusting screw is exactly what it was when you removed it.

After you've put everything back where it belongs, start your engine and take another look at the torque-converter oil-pressure gage. If it reads between 40 and 50 lbs. at normal operating speed (with the oil temperature at 150° or more), your mission's accomplished. If it's higher or lower, you'll have to adjust the adjusting screw on the pressure-relief valve accordingly.

Your particular M4 tractor may sport a caution plate in the driver's compartment, giving the normal torque-converter-pressure range as 40 to 60 lbs. But the engineers now say you'll do well to figure **50 lbs.** as the top limit on all M4's—and the grapevine says there'll be a bulletin soon, making that official. It's what your TM has specified all along, if you remember.

It's best to check **both** the filter

SOME BIG AND LITTLE BITS OF BIZNESS THAT'LL HELP KEEP YOUR 18-ton HIGH-SPEED PRIME MOVER PRIMED FOR MOVING

and the relief-valve, as outlined above, whenever your fluid pressure's over the 50-lb. ceiling. But there is a way to fix the blame: Stop the engine for a minute and then turn on the ignition again. If the gage shows the pressure's still up, the trouble's in your oil filter. If the gage reads zero, the piston in your relief valve is stuck.

If we've used the terms "oil" and "fluid" pretty loosely in connection with the torque-converter system, it's because TM 9-785 (1 Nov. 43) tells you to use either #2 Diesel fuel or kerosene in it. Fact is, though, that kerosene should be used **only** in emergencies (when you can't get Diesel fuel). You're bound to get some internal corrosion when you use kerosene, and you're apt to have trouble with the free-wheeling unit, which gets its only lubrication from the Diesel fuel. If you do have to use kerosene, dump in about 3½ pints of engine oil (preferably OE 10) along with it.

Torque-converter radiators which have already blown their tops (or bottoms) can usually be repaired in 4th-echelon shops, but it'll do you no good to resort to ordinary welding, brazing, or Wrigley's Spearmint. What it takes is **Solder, silver, class 4, 1/16" dia., Fed. Stock No. 46-S-611 (1-oz. roll)**— you'll find it in SNL K-2 and the stuff is available **now.** By all means, take a shot at having your radiator fixed up before you start bellowing for a replacement. Those radiators are made of super-critical materials. Ditto for the transmission oil-cooler radiators on M4's. There'll soon be a higher-echelon bulletin on how to repair both kinds.

If it's worth anything to you, torque-converter and transmission radiators on M4 tractors have recently been strengthened in production. There'll be a bulletin giving out with the serial numbers soon.

TORQUE-CONVERTER PUMP

Too damn many gears have been chewed up in M4 torque-converter pumps because the shaft froze for want of lubrication. That's another thing that happens when you use kerosene as the torque-converter fluid—it seeps into the pump gear-housing and shoots the oil seal. Out goes the lube and the gears are goners. You can prevent this by draining and refilling the housing frequently—after every 8 hours of operation isn't a bit too often. The pump housing takes a quart of engine oil—**not** Diesel fuel, mind you. Don't be confusing the pump with the torque-converter fluid reservoir when you're filling either one.

OVERRUNNING CLUTCH

Maybe your M4 has been deadlined because its overrunning clutch has gone to pot. And maybe that's happened because you didn't realize how little punishment it can take. The present life expectancy of this assembly is only 500 hours, so go easy if you want it to last. Use low gear only when you can't get by with engine brake or creeper.

In the works is an engineering project to prolong the life of the overrunning clutch. But since you're not billeted in the Allis-Chalmers plant, waiting for such an M4 to come off the line, you can use this news to better advantage: As an **emergency field expedient,** when replacement parts can't be had, the overrunning clutch can be eliminated entirely from the M4 transmission.

You don't actually yank it out and throw it away. What you do is turn the overrunning clutch into a non-functioning part—which of course deprives you of low gear. But doing without low gear is better than doing without your tractor. So watch closely:

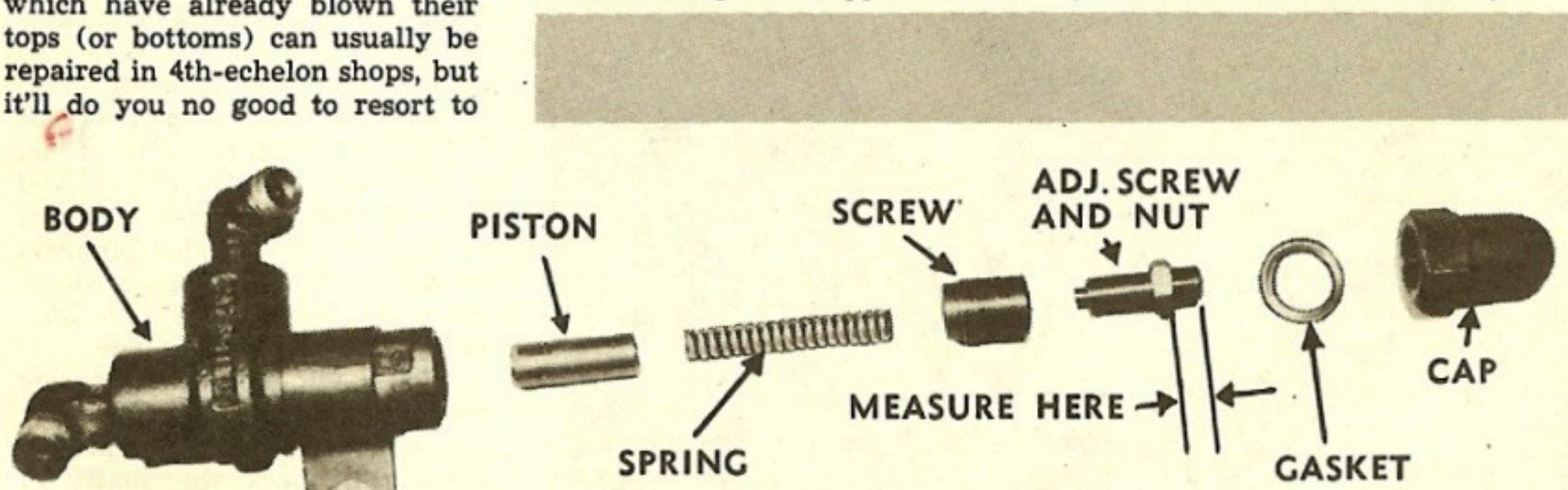


Fig. 1—The pressure-relief valve comes to pieces in this order.

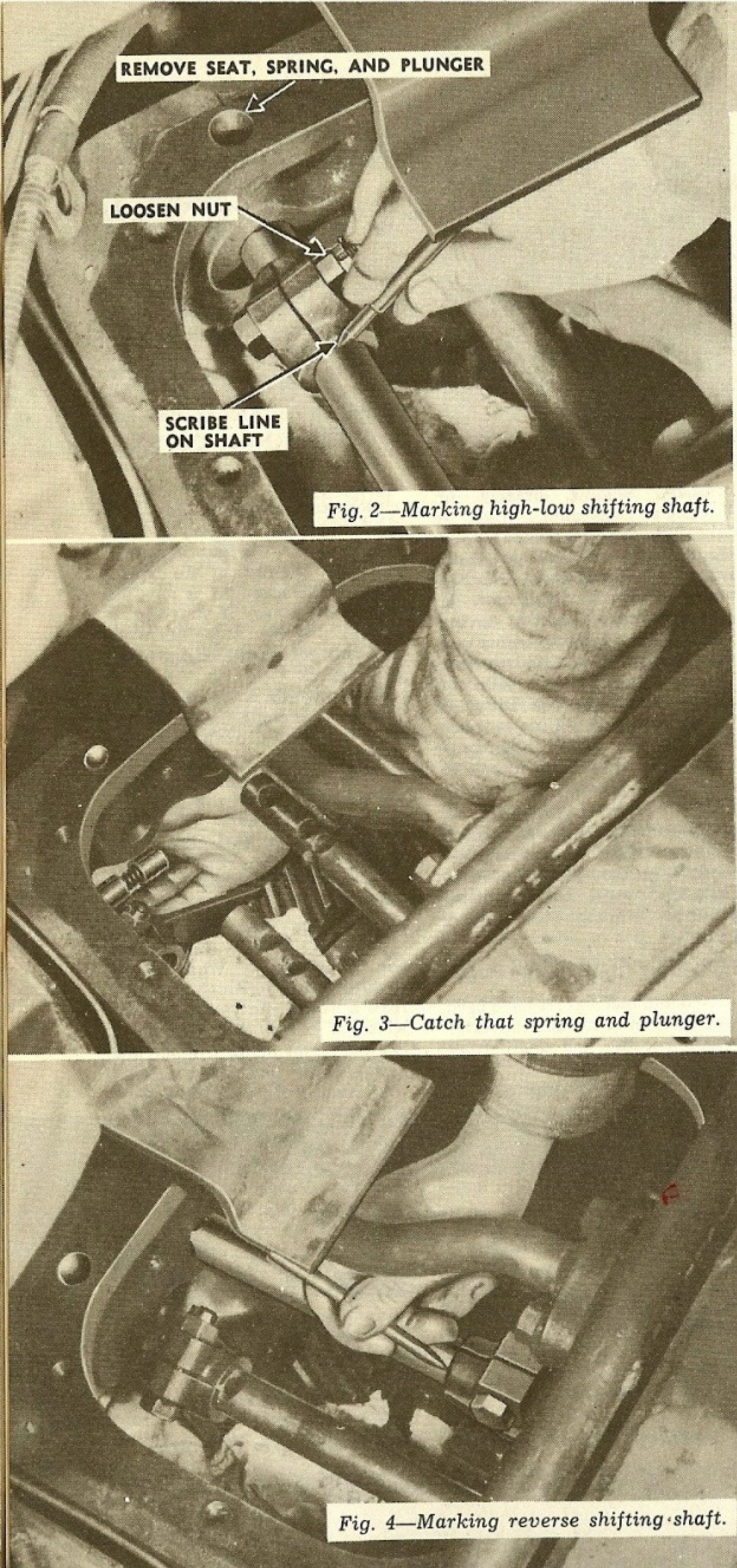


Fig. 2—Marking high-low shifting shaft.

Fig. 3—Catch that spring and plunger.

Fig. 4—Marking reverse shifting shaft.

Put the gearshift lever into neutral.

Take off the differential cover.

Lift off the transmission cover (first, you'll have to unbolt the oil line from its bracket on the torque converter, so you can lift the oil line out of the way).

With the transmission innards exposed, cover the gears at the right-rear corner with a cloth so you can't drop anything down in there. Remove the vertical high-low-shifting-shaft interlocking spring and plunger (complete with seat) from the right-rear top edge of the transmission case. Scribe a mark on the high-low shifting shaft—that's the first shaft on the right side of the transmission (Fig. 2)—so you can put back the fork in the same position when you finish the fix.

Summoning up all your powers of concentration, loosen the clamp bolt on the high-low shifting-fork and move the shaft forward, holding the fork steady. Careful now—spring is coming. As soon as the shaft is clear of the first plunger, the spring will fly right out. Be ready to play shortstop when it does (Fig. 3). If the second plunger doesn't want to come out easy, you'll have to go to work on the reverse shifting-shaft—that's the one in the middle. Scribe a mark on that shaft, too (Fig. 4), for future reference. Loosen the clamp bolt on the fork and slide the shaft forward. Now you can get your finger in the hole to push the second plunger out.

Purpose of all this is just to get ahold of those two plungers so you can whittle 'em down a bit.

In their original size and shape, the interlocking plungers fit too snugly for you to shift from neutral into high when low gear is out of the picture. So what you do is grind down their noses and trim off their backsides as shown in Fig. 5. The modified plungers should be 55/64" long—a shade less than ⅞", in case your rule isn't broken down that fine.

Replace the plungers and spring the way you found them, between the high-low and reverse shifting-shafts. Put back the shafts in neutral position, lining up the edge of the forks with the marks you

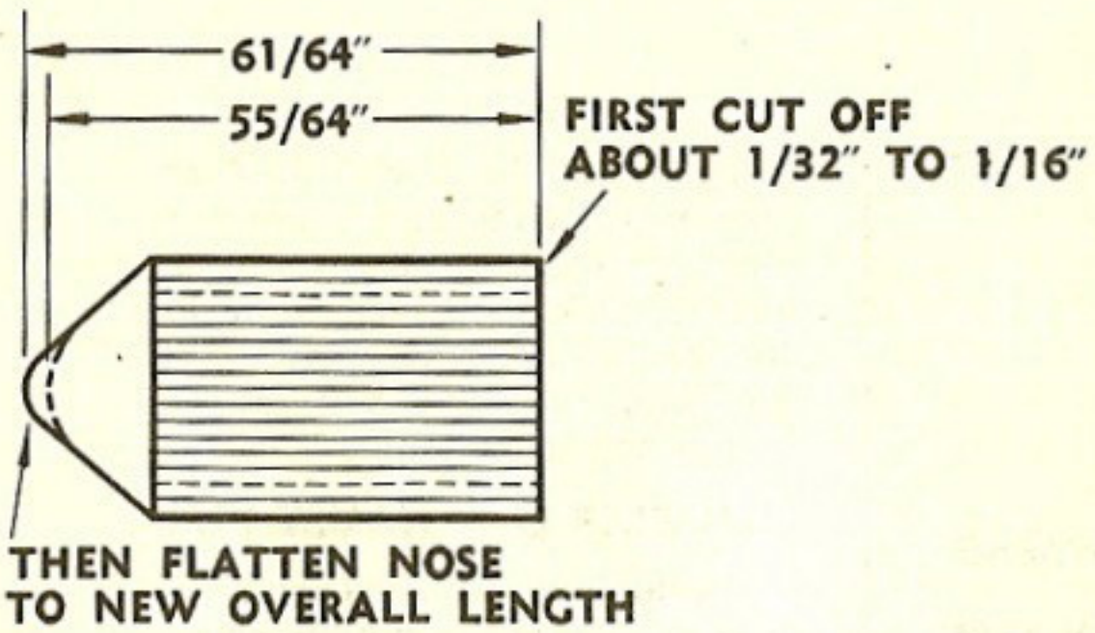


Fig. 5—Grind down both plungers thusly.

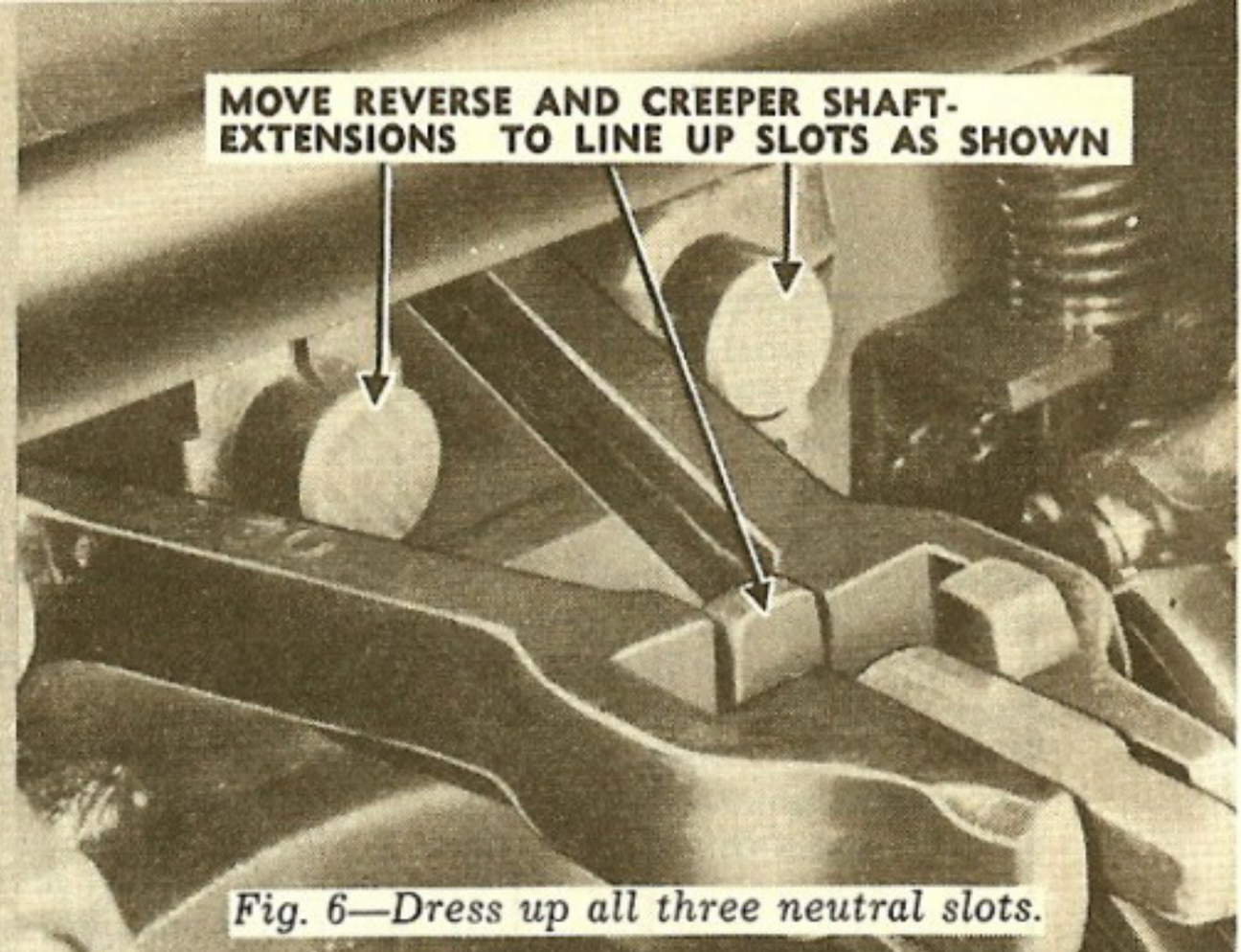


Fig. 6—Dress up all three neutral slots.

scribed, and tighten the clamp bolts. Replace the vertical interlocking plunger, spring, and seat in the right-rear top edge of the transmission case.

Next, loosen the clamp bolts on the reverse and creeper shifting-shaft extensions which reach into the differential housing. Making sure your shifting shafts are in neutral position, slide the shaft extensions back about 9/16", till the neutral slots in these extensions fall exactly in line with the slot in the high-low shifting-shaft extension (Fig. 6). Figs. 7 and 8 give you the "before" and "after" on this deal—when your slots look like the latter, tighten the extension clamp-bolts and that's that.

With a passing glance at the vertical interlocking-plunger seats, to see that they're in place in the top edge of the case, replace the transmission cover (don't be like the surgeon who left the sponge in the patient—remember to pull out that cloth befor it's too late).

Put back the differential cover next, inserting the lower shifting-lever into the slots in the shifting-shaft extensions.

To wind up the operation, remove the shifting-lever guide from the differential cover and cut out the sections shown in gray in Fig. 9. When you put it back on the cover, slide the modified guide plate as far forward as the elongated holes will let it go—then tighten the bolts.

Your overrunning clutch troubles are now gone with your overrunning clutch. Next time you drive your M4, keep reminding yourself that that old gearshift, she ain't what she used to be. High gear, engine brake, creeper, and reverse are just about where they always were. But what used to be LOW is now NEUTRAL, and your low gear's a thing of the past.

Even with those plungers ground down, you may not find it too easy to shift into high or engine brake when your tractor's in motion. You'll have to be even more careful than you used to be to shift at the right engine speed, or you'll clash your gears some-

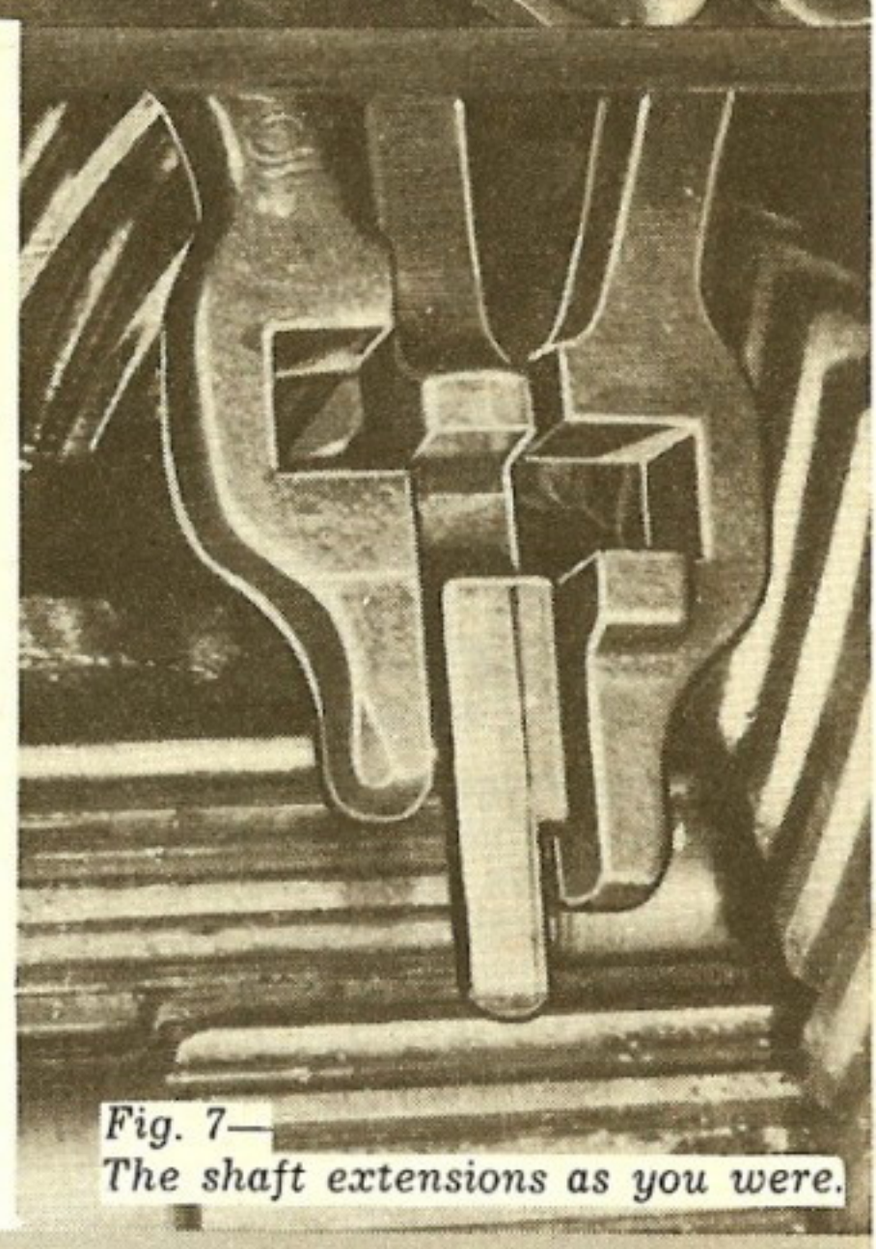
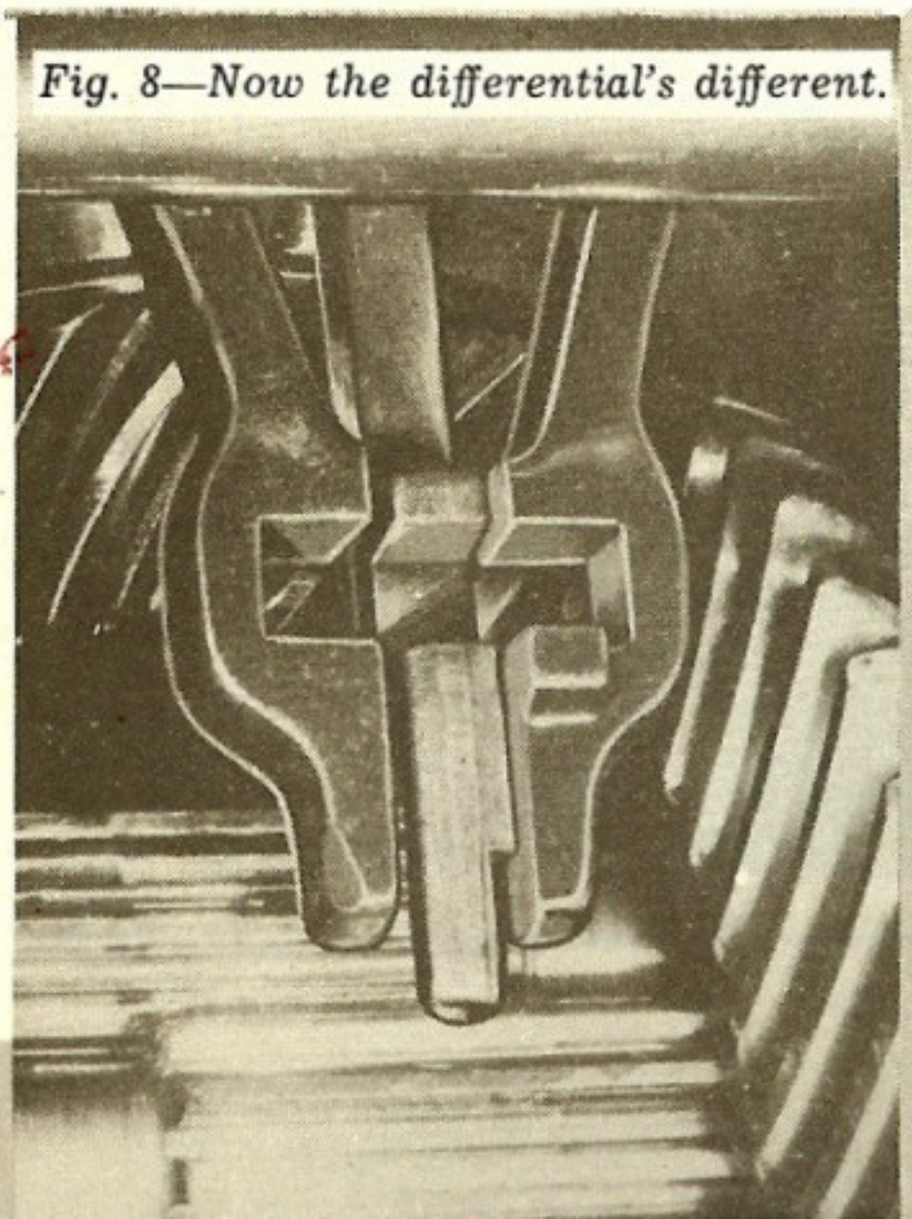


Fig. 7—
The shaft extensions as you were.

Fig. 8—Now the differential's different.



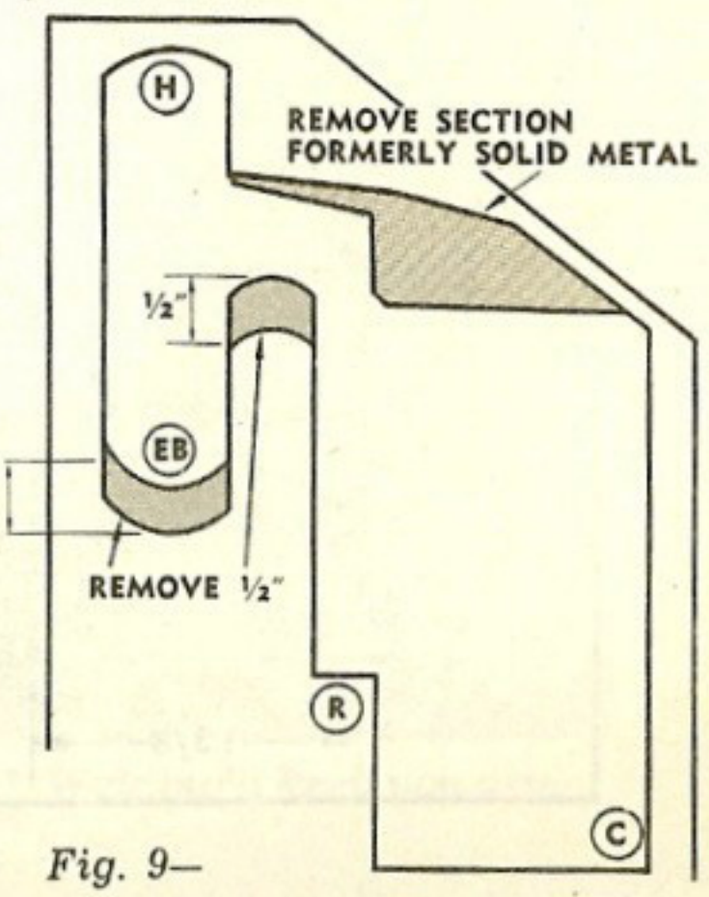


Fig. 9—
Guide to new shift-lever guide.

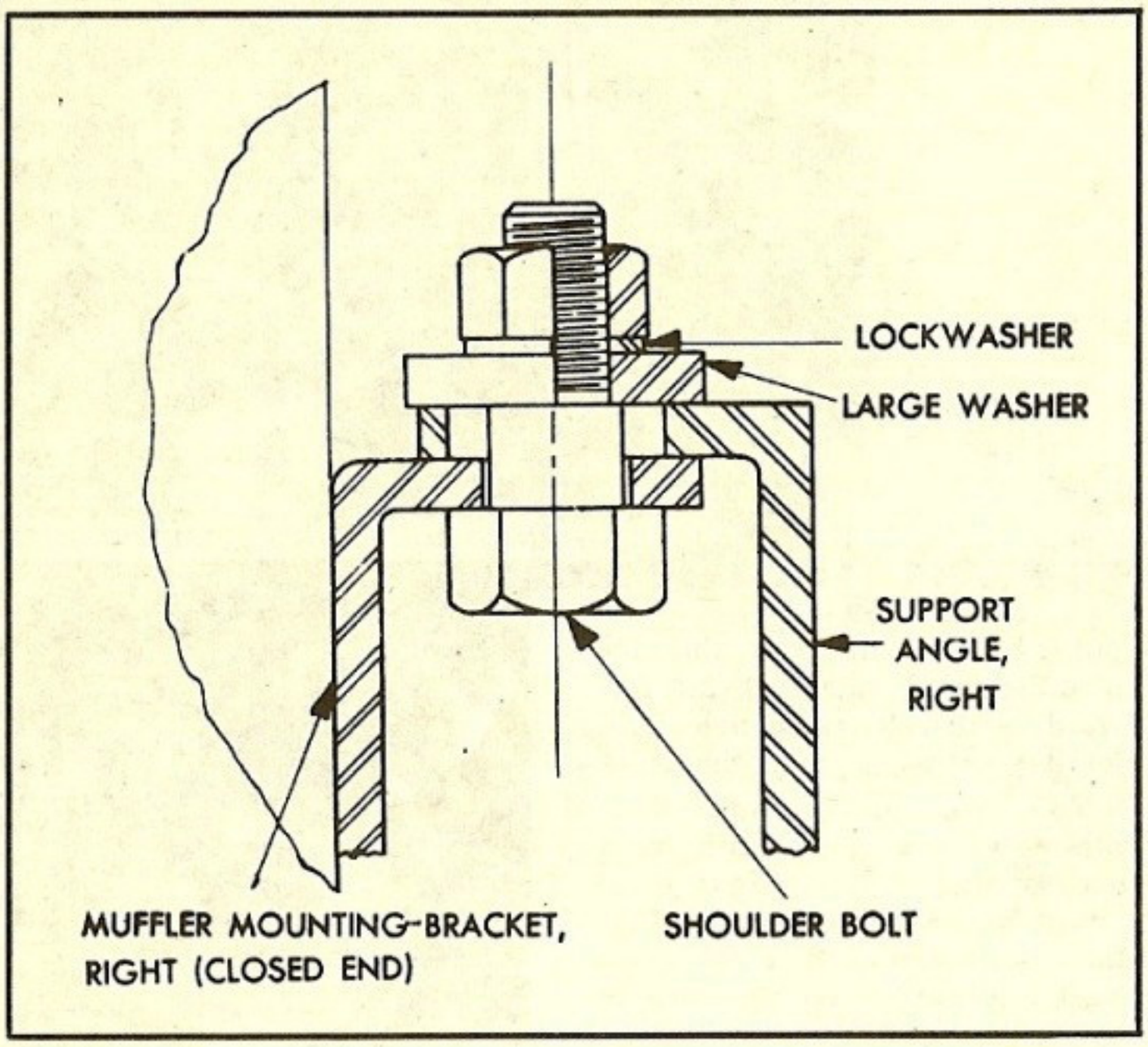
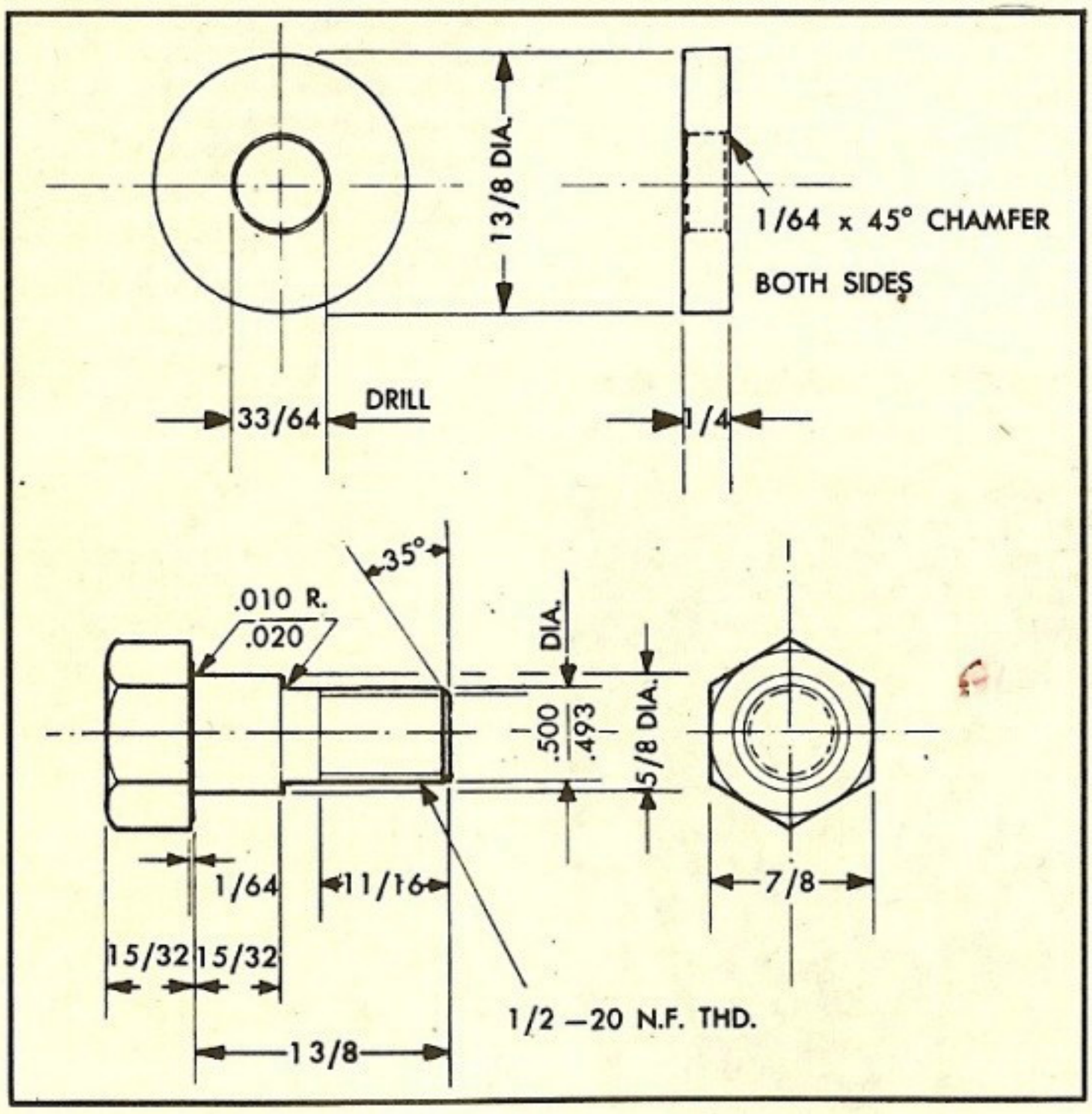


Fig. 10—All jerk and no play makes a shot muffler. The new bolt and washer stack up this way. Fig. 11 (below)—And here's how to rack 'em up if you'd rather do this than paperwork.



thing brutal. And, with no overrunning clutch to smooth out your shifting, it's more important than ever to pick the proper gear for the grade or terrain before you get going. But now you **can** get going—that's the point.

MUFFLER & EXHAUST PIPE

Uh-huh, they break. They break because they're too rigidly mounted and because of violent backfiring, to name two reasons. For a solution to the rigidity problem, we turn to TB ORD FE16 (17 Oct. 44)—which applies to the M6 high-speed tractor as well as the M4. Unless your vehicle has had the new shoulder bolt and stylish-stout washer put on at the factory (which has been done for several months now), here's how to give your muffler a little more play for expansion, contraction, and flexing. It's not guaranteed to cure every known muffler ailment, but you'll find it does help.

Remove the capscrews that hold the muffler to its support angles, and junk the capscrew from the one at the closed end. In the support angle at this same end (right side of tractor), enlarge the 9/16" hole to a full 1" in diameter. Also widen the elongated hole in the muffler bracket, at the closed end of the muffler, to 11/16" wide; get rid of any excess weld that could interfere with free movement of the muffler on the new shoulder bolt.

Put in the shoulder bolt from underneath, through the muffler bracket and the support angle. On top, stack the new thick washer, the old lockwasher, and the old hex nut (Fig. 10) and tighten the nut to seat the big washer against the shoulder of the bolt.

Through regular supply channels, you can requisition (for each tractor) one Bolt, shoulder, Item Stock No. G184-7050197, and one Washer, thick, G184-7050198. If they don't come through—or if you'd rather not wait—the bolt and washer can be made up as shown in Fig. 11. The shoulder bolt, by the way can be turned down from a ⅝-18NF x 1½" hex-head alloy-steel bolt, Item Stock No. H1-01-16339.

Of course, you'll have less trouble with the M4 muffler if you don't let backfiring get the better of you—there's no faster way to blast out the end of it. If your M4 lays down a backfire barrage, invite the 3rd echelon into your carburetor. Chances are that the piston in the accelerating vacuum-pump is loose or on the blink, causing the carburetor to meter too lean a mixture, which pays off in high exhaust temperatures and severe backfire.

CAB-FLOOR SLOTS

At the front of the M4, on both sides of the lower hull just below the bumper, you've got a couple of nasty little slots (Fig. 12) that make a specialty of covering the driver, his passengers, and everything else in the cab with water and mud, thus damaging working parts, shoe shines, and morale. If you haven't already stuffed up those holes, you can plug them permanently by welding and calking. Weld against the hull section **above** the slot, not to the separate plate beside it.

AMMUNITION BOX

To work on the M4 tractor's engine, you've got to get the ammunition box out of the way. No need to heave it overboard, though. Just take out the dozen bolts that hold it down, disconnect the wiring at the rear, and ease the box back along the body channels with a crowbar. After it's back where you want it, line up the box over the nearest bolt holes and insert two bolts to keep it steady, tightening the nuts with your fingers.

TRACK ADJUSTMENT

Track sag on the M4 high-speed tractor (as on the M5 and M6) should be not less than ½" and not more than ¾", midway between the track-support rollers. This is specified by TB ORD 200 (20 Sep. 44), which is the latest word on track tension for these vehicles. To get the most accurate measurement, let the tractor roll to a stop **without using the brakes,** and do it on the smoothest, evenest ground that's handy.

A new track that's still stretching needs adjustment more often than one sot in its ways. And any time you can't tighten it up to a ¾" sag, just take out a track link and go on from there.

As a general rule-of-thumb, people in the field have found that one of those adjusting notches on the idler equals ½" of sag on the track.

While we're on or near the subject, we might mention that a new cast-steel idler wheel for the M4 was authorized by TB 9-1785B-2 (29 Jul. 44) to replace the welded spoke-type wheel that's been cracking all over the place. If you're still on the waiting list, there's no reason why you can't fix yours up by welding steel gussets over the spaces between the spokes.

Just a word about bogie-wheel tires, too. The ribbed or grooved synthetic-rubber ones have been causing plenty of pains where M4 maintenance men sit down. They (the tires, not the men) wear unevenly, pick up rocks that chew them to shreds, and generally play havoc with tracks. So you'll be cheered to hear that no more such tires are being installed at the factory or issued for replacement in the field.

FUEL SYSTEM

Having trouble with sticking throttles, maybe? Well, it's okay to increase the tension of the throttle-return spring in the carburetor linkage (adjust it with the valve plates closed). Better still, clean the linkage frequently.

Many new M4's, we hear tell, arrive in the field with their carburetor float incorrectly adjusted. It's worth looking into, if you're lucky enough to land a new one.

If you're bothered by a loose carburetor, shake-proof lockwashers on the attaching screws will help. The factory's now putting them on and so can you.

The M4 high-speed tractor runs best, of course, on 80-octane gas—so use it when you can. She'll manage on 75-octane if she has to, but never give her anything less potent than that.

ELECTRICAL STUFF

Drivers are often tempted to tighten that nut on the generator lead of the voltage regulator—it's easy to get at and easy to tighten. Too easy. What happens is that you turn the whole post and short it out. A mechanic should do it right, by holding one nut while he tightens the other.

If your M4 siren keeps sounding surprise alerts, cover the exposed terminals of the switch on the cab floor with tape or a hunk of old innertube. Then when something like a canteen cup falls on the switch, it won't short and start shouting.

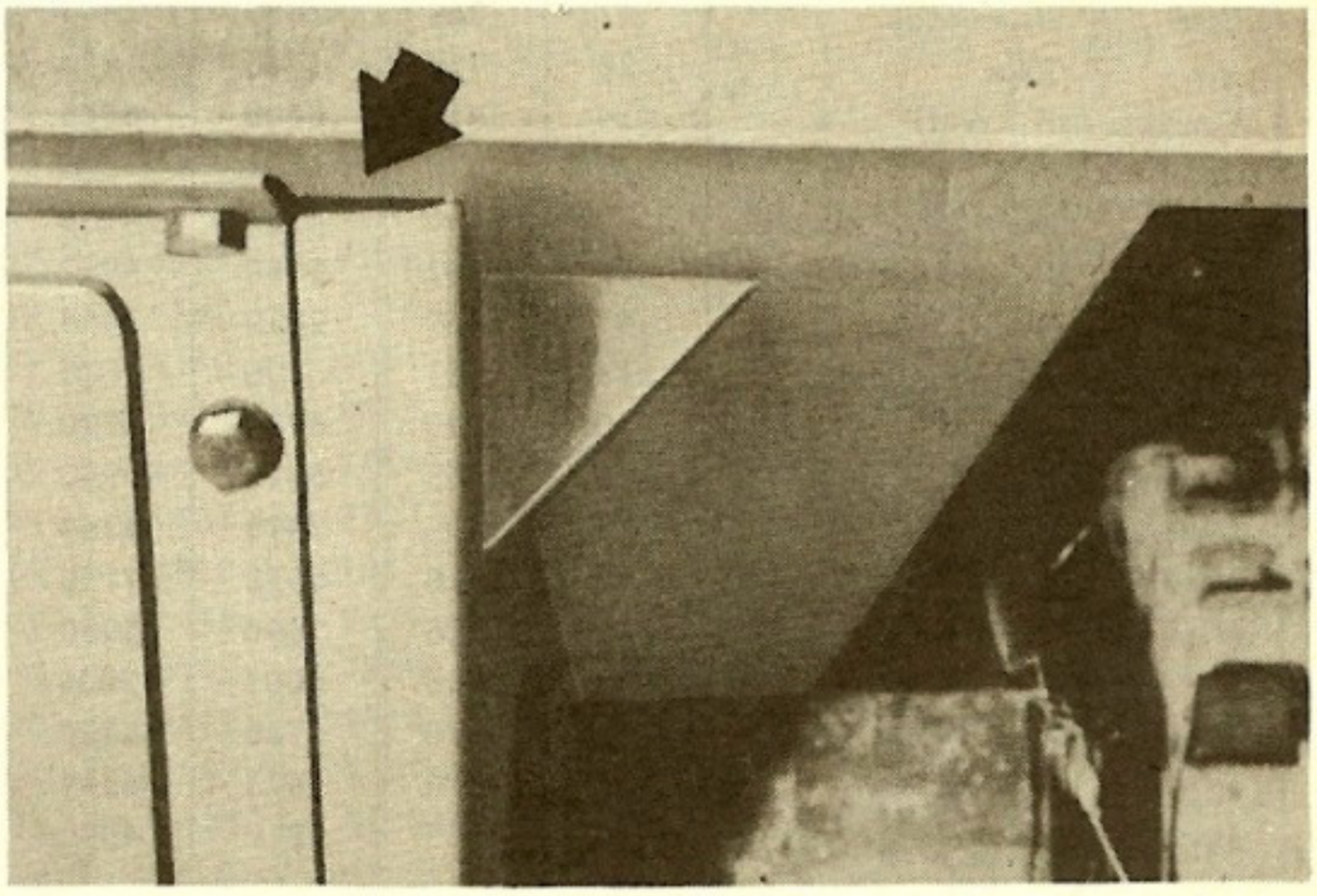


Fig. 12—Is your M4 a slot machine? Welding'll keep you dry.

NOW YOU DUMP-TRUCK OPERATORS CAN'T SAY 'I Didn't K

The Difference in the Weight of That Stuff You're Hauling Makes Either a Load or a Colossal Overload. These Charts Tell You Which

When have you got a load on your dump truck? When it won't hold any more? That's one answer, but a smarter answer is, "It all depends." Because there's a powerful big difference between the weights of some of those bulk materials you're hauling. And this difference in weight often means the difference between a load and an overload that's way beyond the intestinal fortitude of your truck. Nobody'll kick about overloading if you float over the landscape with your dump heaped sky-high with feathers. But if you pile it high with gneiss (a laminated or foliated metamorphic rock like feldspathic plutonic rock, as if you didn't know) that's something else again—you're lugging 165 lbs. per cu. ft. of space.

Up to now, there's been no handy way for you people to know the weights of bulk materials—such as clay, coal, or coral rock—except by just taking a hard look and making a wild guess, like how many beans in the bottle. To give you something really definite to go by in figuring the approximate weight of your load, we've made up two Material-Weight Charts which you can clip out and tuck in your dump truck's map compartment. These give the weights of the more common bulk materials, together with their total weights when dump trucks are filled level-full and when they're piled high. Chart No. 1 shows the cubic capacity of the dump trucks (the 2½-ton 6x6 is given with the gate both up and down), the cubic weights of the

APPROX. WEIGHT OF LOAD WHEN LEVEL WITH TOP OF SIDE-PANELS

CHART No. 1

	Weight in Lbs. Cu. Ft.	Weight in Lbs. Cu. Yd.	1½-Ton 4x4 Dump 108"x70" x14" Cu. Cap. 61.25 cu. ft. or 2.27 cu. yds.	2½-Ton 4x2 Dump 96"x78" x12" Cu. Cap. 52 cu. ft. or 1.93 cu. yds.	2½-Ton 6x6 Cargo-and-Dump Gate Up 108"x80" x14" Cu. Cap. 70 cu. ft. or 2.59 cu. yds.	2½-Ton 6x6 Cargo-and-Dump Gate Down 147"x80" x14" Cu. Cap. 95.28 cu. ft. or 3.53 cu. yds.	4-Ton 6x6 Dump 120"x80" x17" Cu. Cap. 94.44 cu. ft. or 3.50 cu. yds.	5-Ton 4x2 Dump 114"x84" x24" Cu. Cap. 133 cu. ft. or 4.93 cu. yds.
Ashes (Soft Coal)	44	1188	2695	2288	3080	4190	4155	5852
Cinders	46	1242	2818	2392	3220	4383	4344	6118
Clay — Dry	63	1701	**3859**	3276	4410	**6003**	5950	8379
Clay — Wet	110	2970	**6738**	**5720**	**7700**	**10481**	**10388**	**14630**
Coal — Anthracite	52	1404	**3185**	2704	3640	4955	4911	6916
Coal — Bituminous	47	1269	2879	2444	3290	4478	4439	6251
Coal — Coke	28	756	1715	1456	1960	2668	2644	3724
Concrete Mix (Wet)	134	3618	**8208**	**6968**	**9380**	**12768**	**12655**	**17822**
Coral Rock	25	675	1531	1300	1750	2382	2361	3325
Earth — Dry or Moist (Loose)	80	2160	**4900**	4160	**5600**	**7622**	7555	**10640**
Earth — Dry or Moist (Packed)	96	2592	**5880**	4992	**6720**	**9147**	**9066**	**12768**
Garbage — Wet	47	1269	2879	2444	3290	4478	4439	6251
Garbage — Dry (Wrapped)	13	351	796	676	910	1239	1228	1729
Gravel	110	2970	**6738**	**5720**	**7700**	**10481**	**10388**	**14630**
Limestone (Crushed)	95	2565	**5819**	4940	**6650**	**9052**	**8972**	**12635**
Masonry (Dry Rubble)	122	3294	**7473**	**6344**	**8540**	**11624**	**11522**	**16226**
Mortar (Dry Rubble)	138	3726	**8453**	**7176**	**9660**	**13149**	**13033**	**18354**
Mud	115	3105	**7044**	**5980**	**8050**	**10957**	**10860**	**15295**
Sand — Dry (Loose)	98	2646	**6003**	**5906**	**6860**	**9337**	**9255**	**13034**
Sand — Dry (Packed)	110	2970	**6738**	**5720**	**7700**	**10481**	**10388**	**14630**
Sand — Wet or Moist	122	3294	**7473**	**6344**	**8540**	**11624**	**11522**	**16226**
Stones (Loose)	95	2565	**5819**	4940	**6650**	**9052**	**8972**	**12635**

Boldface figures are over the **rated payload.** They may or may not be over the load you're permitted to

Know It Was Loaded'

materials, and their weights when the trucks are level-full. Chart No. 2 lists the weights of the materials and the cubic contents when the vehicles are piled with a heaping load. The diagrams on the charts will show you what we mean by level-full and piled high (with the top of the heap 16" to 19" above the top of the body side-panels).

Thanks to our Machine, Calculating, M1 (blonde), you can tell by these charts what your load adds up to. And what's more important, whether or not it's an overload. Because if you don't know the weight of the stuff you're hauling, it could easily happen that the truck might be bending under a burden it was never built to take and can't take for long. For instance, in Chart 1, you'll find that sometimes just a level-full load equals twice the vehicle's rated capacity, like dry sand in the 1½-ton 4x4. And a level-full load of concrete mix in this truck puts you about 5,000 lbs. over the rated payload. In Chart 2, you'll see that the 4-ton 6x6, piled heaping full of wet sand, is carrying more than double its rated capacity.

(The 2½-ton 6x6 cargo-and-dump truck has a gate that's to be put up when it's used as a dump truck. The only reason these charts include figures when the gate's down is to emphasize that when it's used that way as a dump truck, most of the time it'll be hauling a load far greater than its payload.)

Remember that an overload needs an overdose of preventive maintenance, too. Not only because the hoist and axle shafts might crack under the strain, but because the whole power train takes on the extra weight. This means parts pooping out too fast, and maybe broken parts at the worst possible moment. You can relieve some of this strain on your truck by careful maintenance. The big thing, of course, is to keep your dump trucks hauling loads instead of increasing the load on the deadline.

APPROX. WEIGHT OF LOAD WHEN DUMP TRUCK IS HEAPING FULL

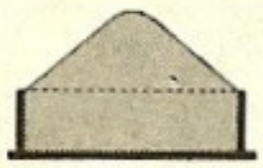


CHART No. 2

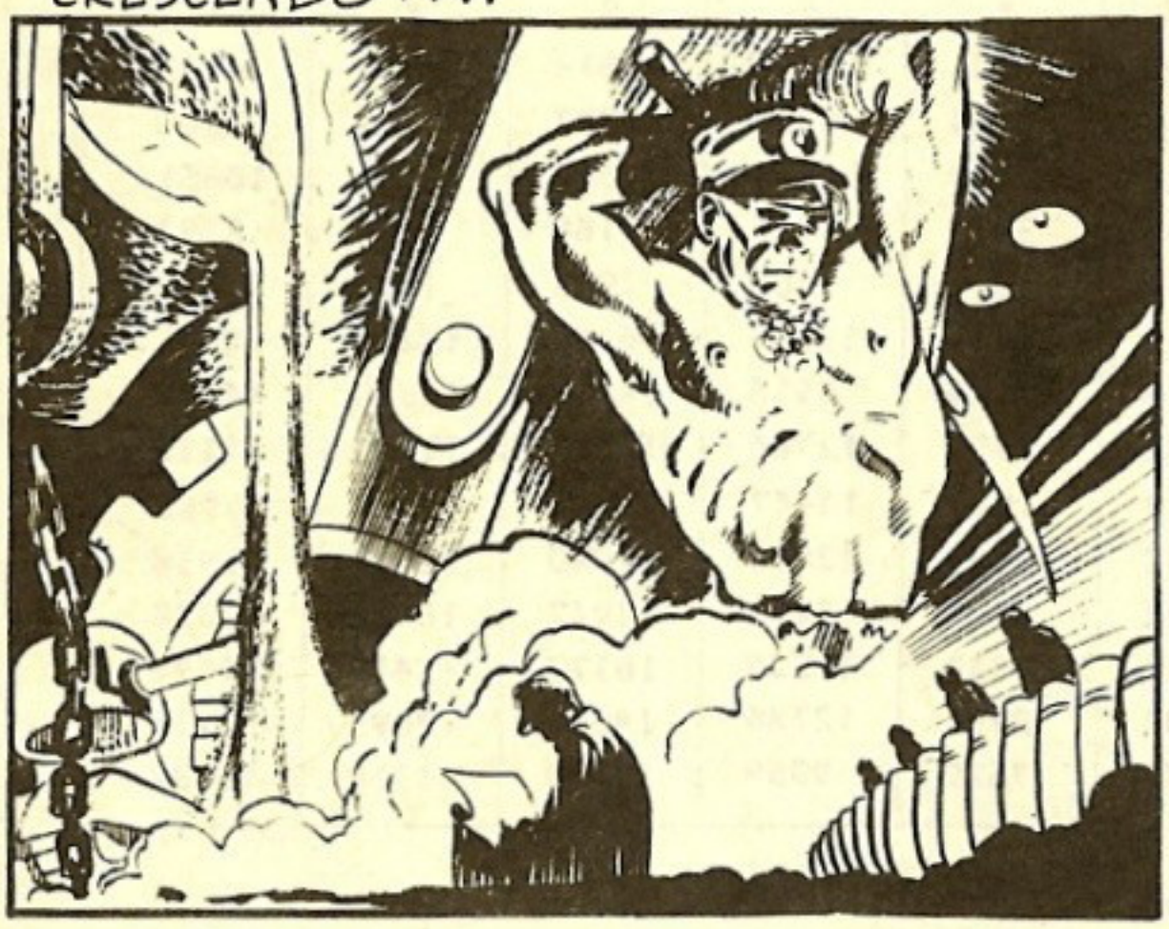
	Weight in Lbs. Cu. Ft.	Cu. Yd.	1½-Ton 4x4 Dump	2½-Ton 4x2 Dump	2½-Ton 6x6 Cargo-and-Dump		4-Ton 6x6 Dump	5-Ton 4x2 Dump
			Cu. Cap. 89.2 cu. ft. or 3.3 cu. yds.	Cu. Cap. 80.3 cu. ft. or 2.97 cu. yds.	Gate Up Cu. Cap. 104.83 cu. ft or 3.88 cu. yds.	Gate Down Cu. Cap. 152.52 cu. ft. or 5.65 cu. yds.	Cu. Cap. 140.11 cu. ft. or 5.19 cu. yds.	Cu. Cap. 173.55 cu. ft or 6.43 cu. yds.
Ashes (Soft Coal)	44	1188	**3925**	3533	4611	**6711**	6165	7636
Cinders	46	1242	**4103**	3694	4821	**7016**	6445	7983
Clay — Dry	63	1701	**5620**	**5059**	**6602**	**9609**	**8827**	**10934**
Clay — Wet	110	2970	**9812**	**8833**	**11528**	**16777**	**15412**	**19091**
Coal — Anthracite	52	1404	**4638**	4176	**5450**	**7931**	7286	9025
Coal — Bituminous	47	1269	**4192**	3774	4926	**7168**	6585	8157
Coal — Coke	28	756	2498	2248	2934	4271	3923	4859
Concrete Mix (Wet)	134	3618	*	*	*	*	*	*
Coral Rock	25	675	2230	2008	2620	3813	3503	4339
Earth — Dry or Moist (Loose)	80	2160	**7136**	**6424**	**8384**	**12202**	**11209**	**13884**
Earth — Dry or Moist (Packed)	96	2592	**8563**	**7709**	**10061**	**14642**	**13451**	**16661**
Garbage — Wet	47	1269	**4192**	3774	4926	**7168**	6585	8157
Garbage — Dry (Wrapped)	13	351	1160	1044	1362	1983	1821	2256
Gravel	110	2970	**9812**	**8833**	**11528**	**16777**	**15412**	**19091**
Limestone (Crushed)	95	2565	**8474**	**7629**	**9956**	**14489**	**13310**	**16487**
Masonry (Dry Rubble)	122	3294	**10882**	**9797**	**12786**	**18607**	**17093**	**21173**
Mortar (Dry Rubble)	138	3726	**12310**	**11081**	**14467**	**21048**	**19335**	**23950**
Mud	115	3105	**10258**	**9235**	**12052**	**17540**	**16113**	**19958**
Sand — Dry (Loose)	98	2646	**8742**	**7869**	**10270**	**14947**	**13731**	**17008**
Sand — Dry (Packed)	110	2970	**9812**	**8833**	**11528**	**16777**	**15412**	**19091**
Sand — Wet or Moist	122	3294	**10882**	**9797**	**12786**	**18607**	**17093**	**21173**
Stones (Loose)	95	2565	**8474**	**7629**	**9956**	**14489**	**13310**	**16487**

ed to carry under local conditions. These ARMY MOTORS charts are intended only as a guide.

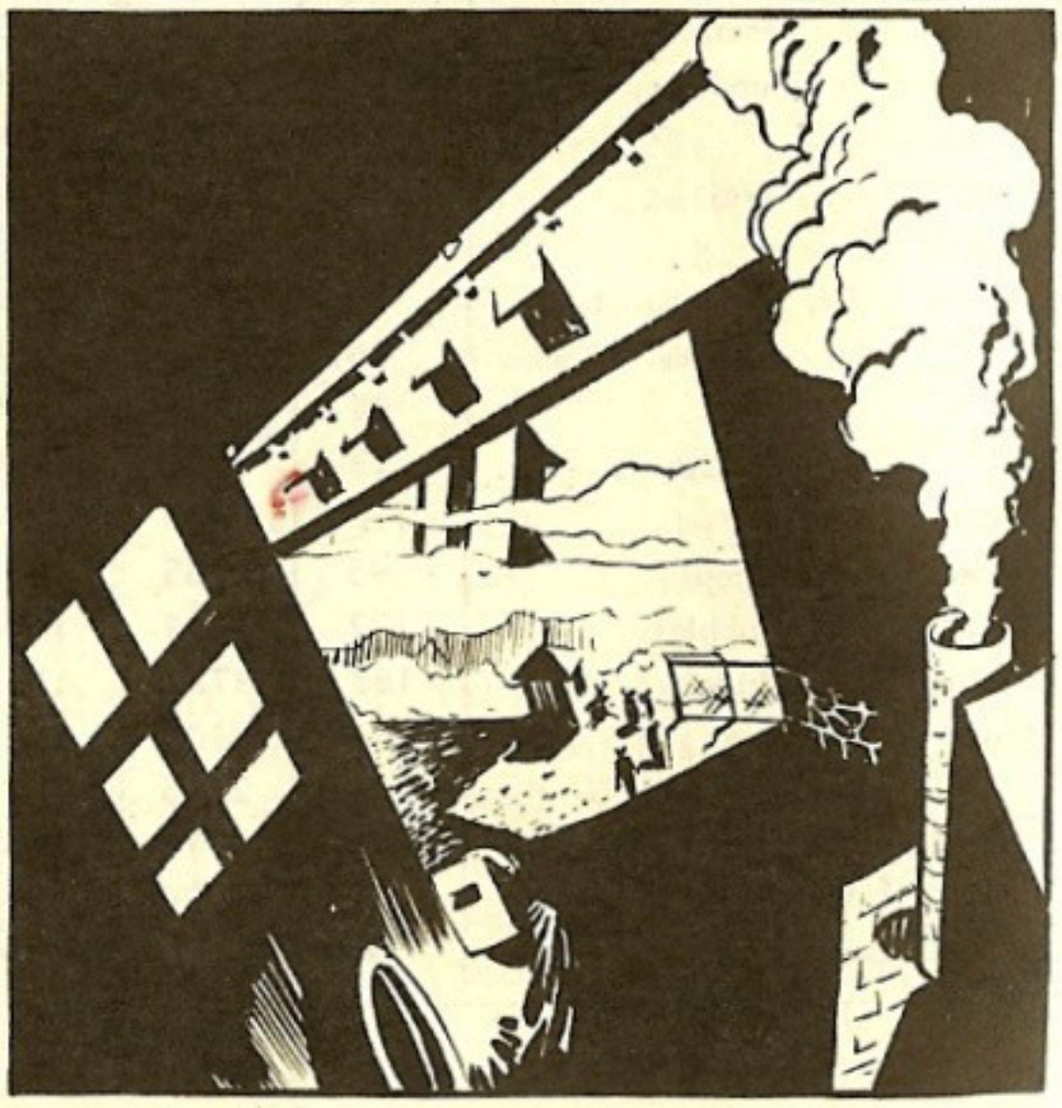
* Can't be heaped

JOE DOPE IN "ARMAGEDDON"

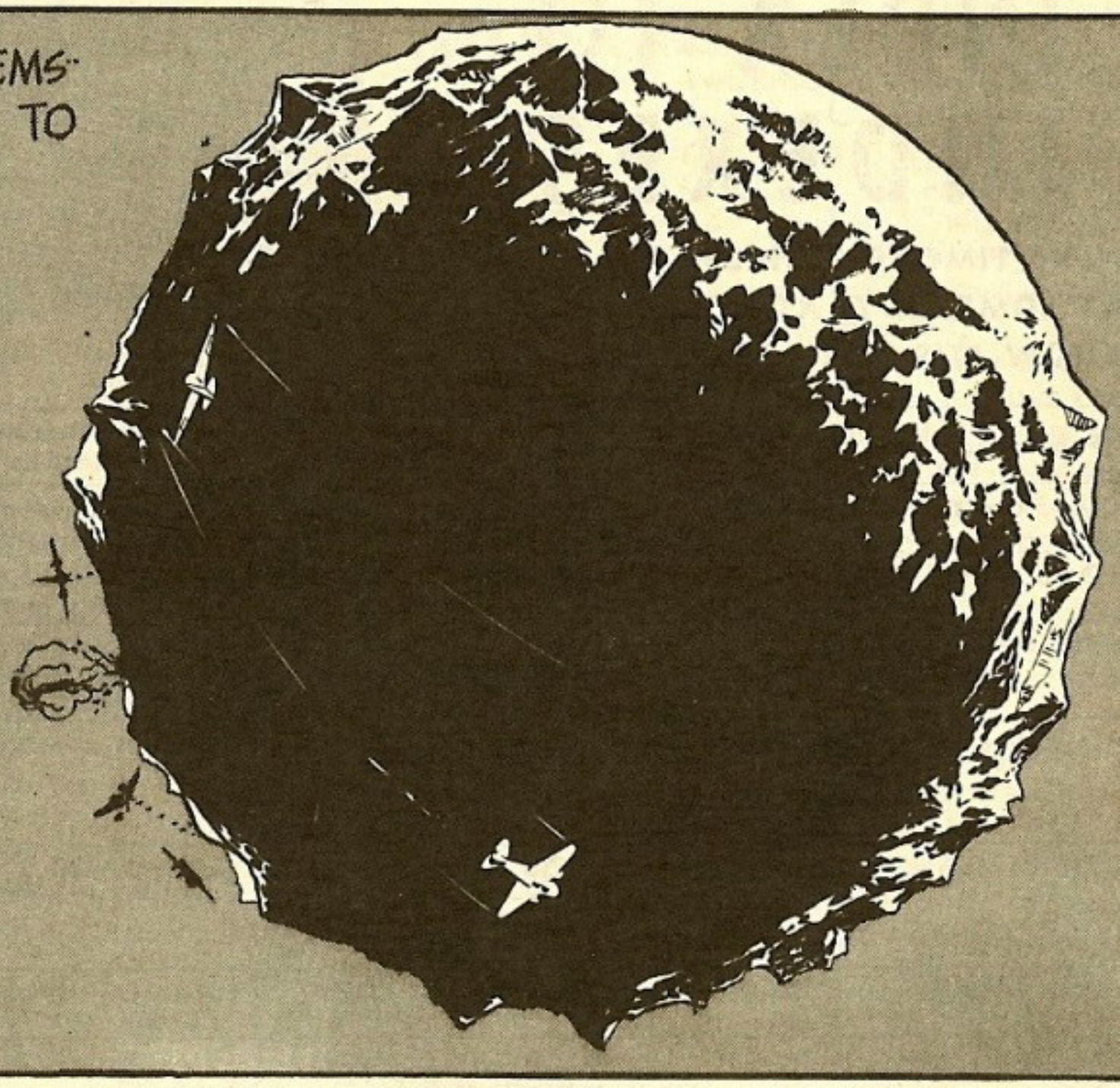
IN THE ARSENALS OF FREEDOM.... IN THE LANDS OF THE LIBERATED, IN THE VERY BOWELS OF THE EARTH, MEN GIRD THEMSELVES FOR THE CLIMAX THAT IS SWEEPING UPON THEM WITH THE INEXORABLE FORCE OF A SYMPHONIC CRESCENDO!!!!



FACTORIES, MILLS, FORGES... ALL OPERATING AT PEAK EFFICIENCY— WASTING NOTHING...SPARING NO ONE!

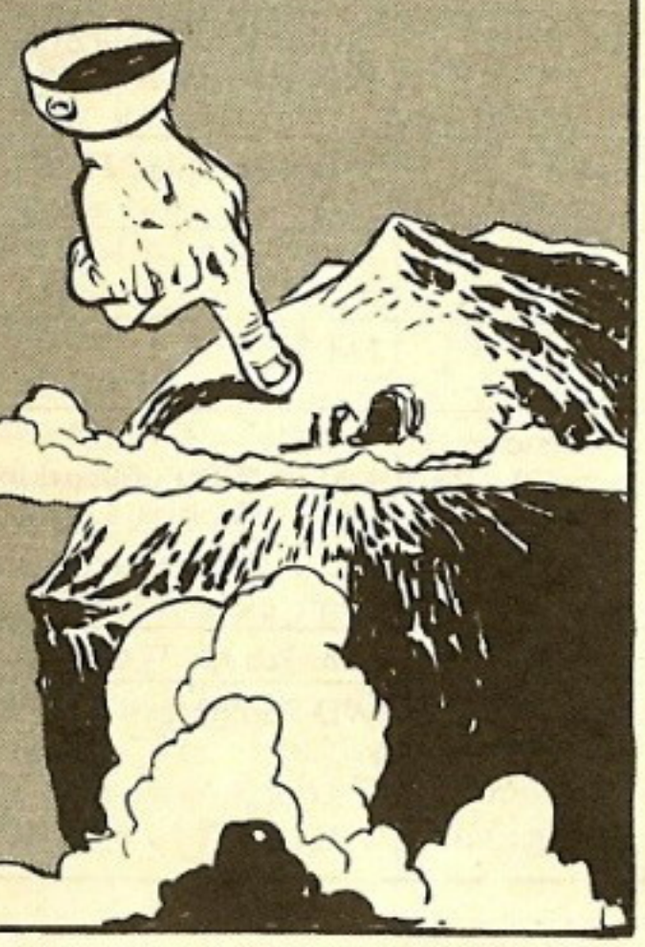


THE EARTH ITSELF SEEMS TO PAUSE ON ITS AXIS TO STEEL ITSELF FOR THE MIGHTY ARMAGEDDON GATHERING ON ITS BROW.....

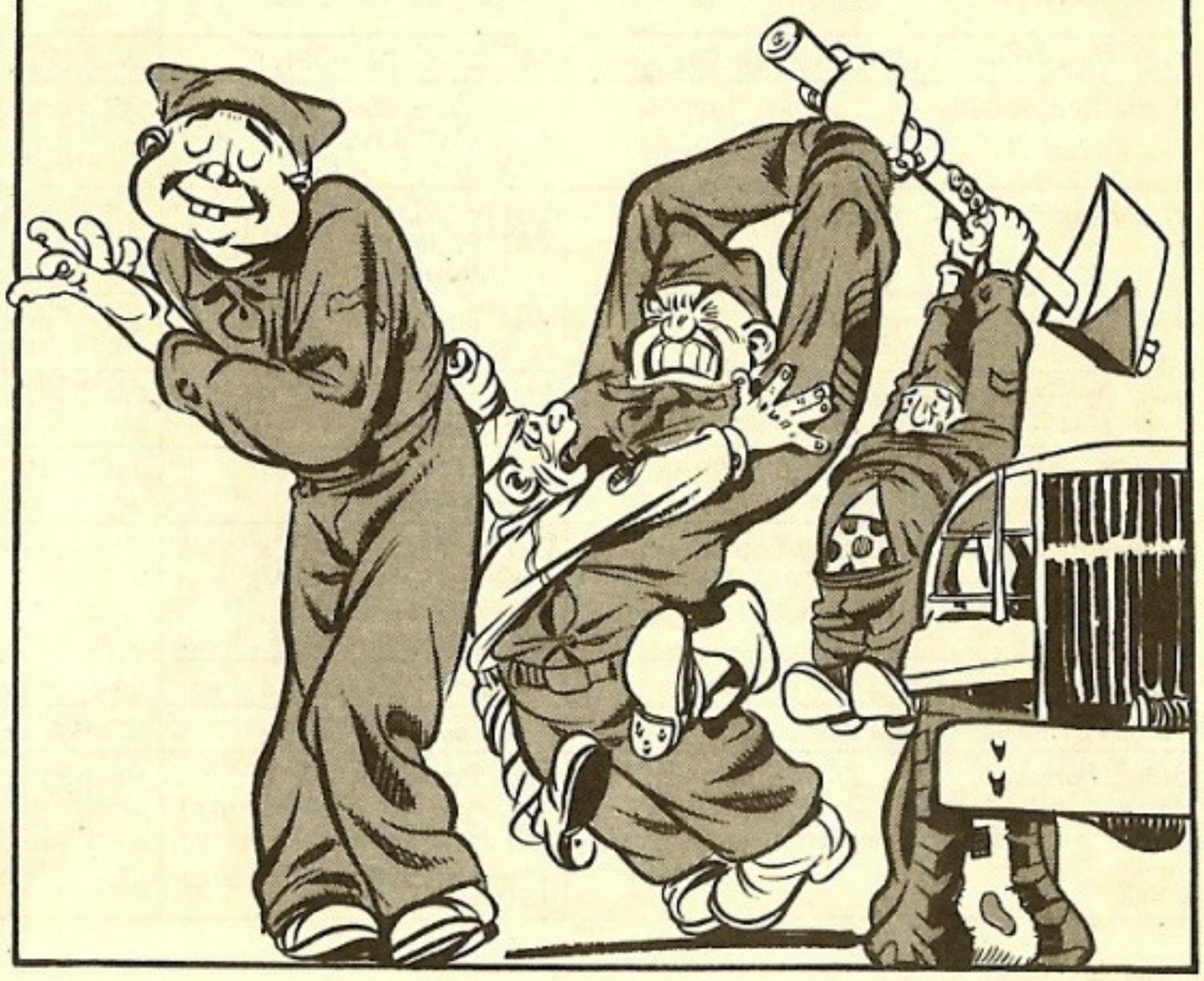


WHILE...

SOMEWHERE ON THIS TORTURED PLANET.....



OUR @*★!!@@ **JOE DOPE** STILL BURNS UP PRECIOUS TIRES AND GEARS BECAUSE HE PERSISTS IN DRIVING OVER **DRY SMOOTH ROADS** IN **FRONT-WHEEL DRIVE!**



INDEX TO INDEXES

NEXT TIME YOU THROW THE BOOK AT SOMEBODY, AT LEAST YOU'LL KNOW IT'S THE LATEST EDITION

Ever wonder if your outfit's publications are up-to-date? Are you using the latest forms? Ordering parts by the latest SNL's? Lubing according to the latest lube orders? Got the latest TM's, all current TB's and MWO's on your vehicles? Here's an index to the indexes that tell you the score.

Publication	Listed and Indexed in	Amended, Rescinded, or Superseded by	Rescissions or Supersessions Published in
War Department Field Manuals	FM 21-6 (Monthly)	Changes, revisions of FM, WDC's, and TC's	WDC's and FM 21-6
War Department Technical Manuals	FM 21-6 (Monthly)	Changes, revisions of TM, TB's, and TC's	WDC's and FM 21-6
War Department Training Circulars	FM 21-6 (Monthly)	TC's, TM's, FM's, or other War Department publications*	FM 21-6 and TC's
War Department Modification Work Orders	WD Pamphlet 12-6 (Monthly)	Changes to MWO's	WD Pamphlet 12-6 (after Nov. 44) FM 21-6 (before Nov. 44)
Field Service Modification Work Orders**	OFSB 1-1 (1 Jan. 44) SB 9-9 (5 Oct. 44)	Listing in FM 21-6 and WD Pamphlet 12-6	WD Pamphlet 12-6 (after Nov. 44) FM 21-6 (before Nov. 44)
War Department Technical Bulletins	FM 21-6 (Monthly)	TM's, FM's, changes to TB, and other TB's	FM 21-6
Ordnance Field Service Bulletins**	OFSB 1-1 (1 Jan. 44) SB 9-9 (5 Oct. 44)	TM's, FM's, SB's, and TB's	WD Pamphlet 12-6 (after Nov. 44) FM 21-6 (before Nov. 44)
ASF. Catalogs, Ord. Supply Catalogs	ASF Cat., Ord 2, Index (Bi-monthly with changes in intervening months)	Changes and revisions of SNL's as parts of ASF Cat. series	ASF Cat., ORD 2, Index
War Department Supply Bulletins	WD Pamphlet 12-6 (Monthly)	SB's or changes to SB	WD Pamphlet 12-6 (after Nov. 44) FM 21-6 (before Nov. 44)
War Department Lubrication Orders	FM 21-6 (Monthly)	WDLO's	FM 21-6
Army Regulations	AR 1-5 (Index, 1 Jan. 44) AR 1-10 (List, 1 Jan. 45) WD Pamphlet 12-6	AR's and WDC's	WD Pamphlet 12-6 List of WD Publications***
War Department Circulars	List of WD Publications*** WD Pamphlet 12-6 (Monthly)	AR's and WDC's****	List of WD Publications*** WD Pamphlet 12-6
War Department Pamphlets	WD Pamphlet 12-6 (Monthly)	WD Pamphlets	WD Pamphlet 12-6
War Department Graphic Training Aids	FM 21-8 (14 Feb. 44 and changes)	FM 21-8	FM 21-8
War Department Films and Film Strips	FM 21-7 (1 Jan. 44 and changes)	FM 21-7	FM 21-7
Tables of Organization and Equipment	List of T/O&E, T/E's, T/O's, T/A's, T/BA's (1 Sep. 44)*** WD Pamphlet 12-6	Change and revision	WDC's List of WD Publications*** WD Pamphlet 12-6
Tables of Allowances	Same as for T/O&E's	Change and revision	Same as for T/O&E's
Tables of Basic Allowances	Same as for T/O&E's	Change and revision	Same as for T/O&E's
Blank Forms	WD Pamphlet 12-3 (25 Aug. 44 and changes) (to Jan. 45) WD Pamphlet 12-6 (after Jan. 45)	Revised forms	WD Pamphlet 12-6

REMOVING REAR-WHEEL NUTS FROM 2½-TON TRUCKS & DUCKS

You have a right to howl when you're removing the rear wheels from 2½-ton 6x6 trucks and ducks and find the wheel-stud outer-nut bound tight to the wheel-stud inner-nut.

It's tough if the two are rusted together so bad that when you're backing off the outer nut (Fig. 1), the inner nut is backing off the stud at the same time. At that rate, the inner nut comes off the wheel stud before you get the outer nut off the inner nut. You end up with the wheel off, all right, but the two nuts are bound in the wheel mounting-hole (Fig. 2) and there's not enough wrenching surface left on the inner nut to separate it from the outer nut so's you can get them **both** out of the wheel.

Now you've got a problem, because you sure can't put on a spare wheel without those nuts, nor can you use the same wheel for an inner wheel with the nuts stuck in the hole. The question is how to get the nuts out of the hole—and here's the answer if you haven't already guessed it:

Find yourself a bolt or capscrew to fit the inner threads on the inner nut, and then a locknut to fit the screw. Best bets: Screw, cap, hex-hd., S., ¾-16NF-2x1¾ (Item Stock No. H001-10-13345) and Nut, jam, hex., s-fin., S., ¾-16NF-2 (Item Stock No. H001-07-16028). If you can't lay a hairy paw on those, try a longer screw and thicker nut: Screw, cap, hex-hd., S., ¾-16NF-2x2 (Item Stock No. H001-10-13346) and Nut, regular, hex., s-fin., S., ¾-16NF-2 (Item Stock No. H001-07-18028).

Twirl the nut on the screw, then twist the screw in the inner nut. Tighten the nut on the screw until it's flush and tight against the end of the wheel-stud inner-nut. Use the screw head for wrenching surface, and work the rusted outer nut off the inner nut.

Working off the outer nut may take a little time, but use some penetrating oil and you'll be successful. (Connie wrote about penetrating oil and substitutes for same last month—any very thin oil will creep and work its way into close clearances.) You'll have those rear-wheel-stud nuts separated before you exhaust your repertoire of profanity.

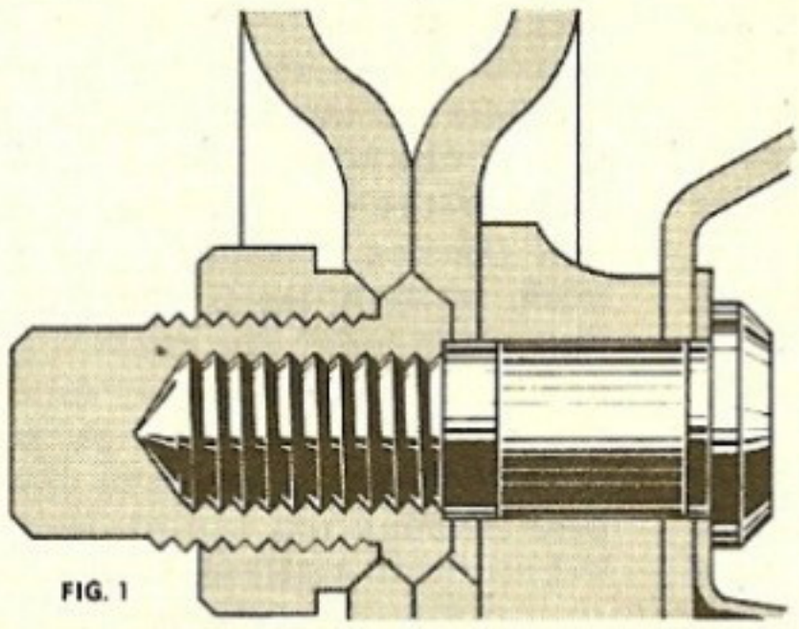


FIG. 1

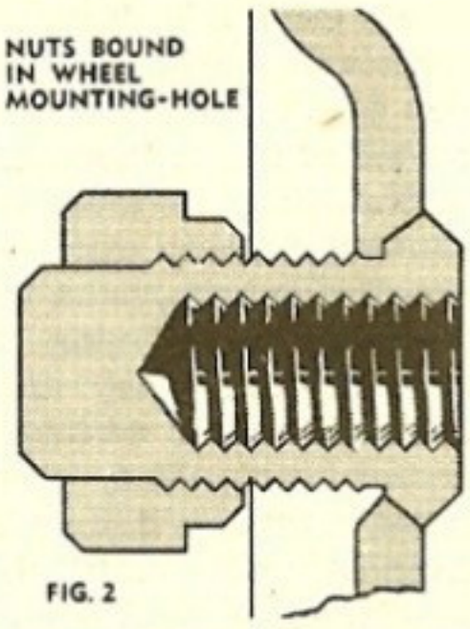


FIG. 2

*The expiration date is printed on TC's put out on and after 1 Jan. 44. TC's published prior to that date are current until superseded or rescinded.

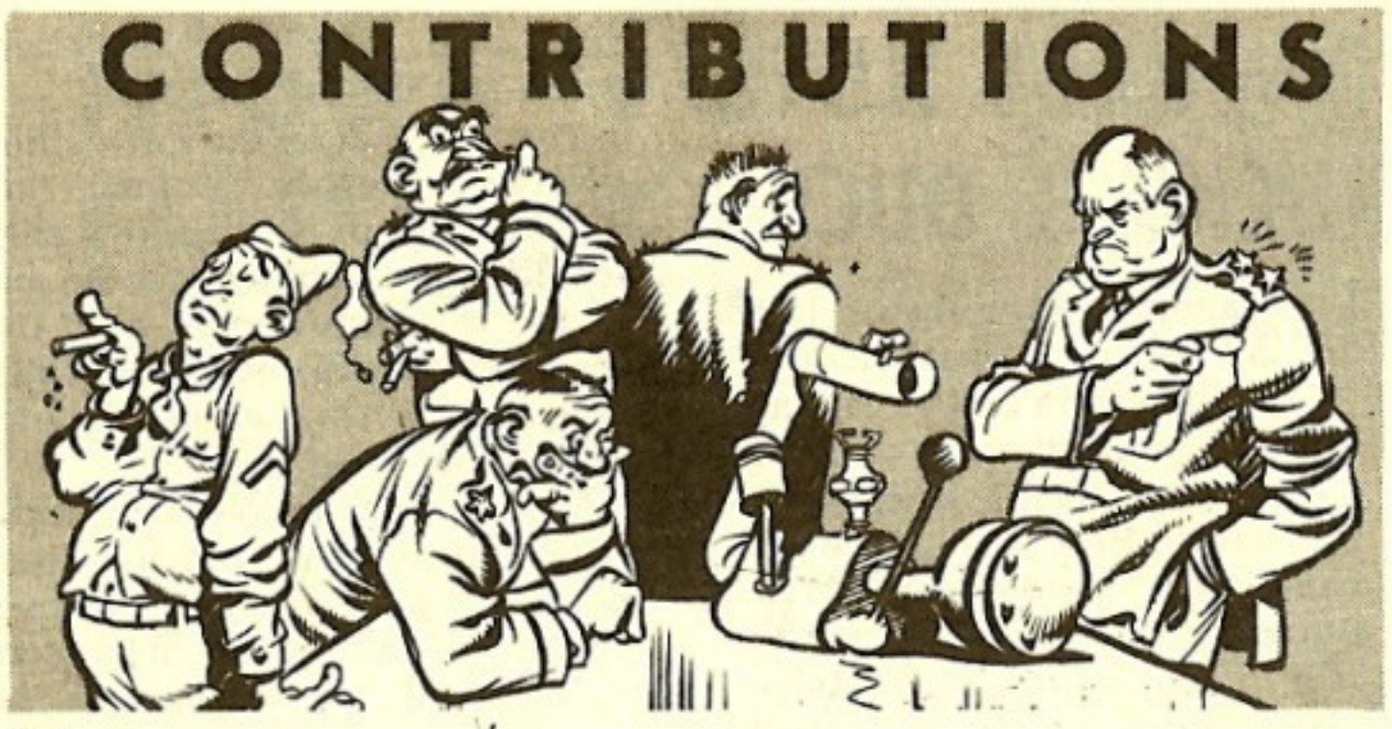
**New FSMWO's, OFSB's, and OFSTB's haven't been published for over a year now (and never will be again), but some of the old ones are still current. The only place where the current ones are indexed and listed is in the last OFSB 1-1 (1 Jan. 44) and SB 9-9 (5 Oct. 44). OFSB 1-1 includes all those that came out up to the time it was printed, and SB 9-9 picks up all those that came out too late for OFSB 1-1.

You'll have to do a little checking to find out if a publication shown as current in OFSB 1-1 is still good. That's in the Supersessions and Rescissions Department of FM 21-6 (1 Feb. 44) and changes (if you didn't hang onto 'em, **don't** send the AGO a requisition—cause there aren't any more), and in WD Pamphlet 12-6. A new supply bulletin (SB 9-1) is being prepared now to supersede OFSB 1-1, and we'll give you that story when the publication comes out.

When the AGO are fresh out of copies of current FSMWO's, OFSB's, and OFSTB's, they reprint the info as War Department publications—FSMWO's as WD MWO ORD's, with the same number—OFSB's as WD SB's and WD TB's, with a new number—and OFSTB's as WD TB's. When an OFSTB referring to just one TM gets reprinted as a WD TB, the number doesn't change, except that a "9-" is put ahead of the old number to show it's about Ordnance materiel. But when the OFSTB refers to more than one TM, it's reprinted as a WD TB ORD with a brand-new number—like TB ORD 16, a reprint of OFSTB 700-39. These reprints will be shown as reprints in revisions of FM 21-6, so you won't be ordering the reprint when you've already got the info in an old OFSTB.

***List of WD Publications, General Orders, and Numbered Circulars (1 Jan. 44). Additions, revisions, supersessions, and changes have been listed in monthly supplements to this publication up to 1 Jan. 45. Since that date, they're included in War Department Pamphlet 12-6.

****The expiration date is printed on WDC's put out on and after 1 Nov. 44. All WD Circulars published prior to that date are current until superseded, or rescinded.



Here's a shining example of how far GIngenuity can go when you have to either improvise a needed part or deadline a vehicle.

S/Sgt. Stanley Kalinowski, S/Sgt. Claude N. Butler, and **T/4 Francis H. Dash,** of an AAF Ord. S & M Co. in the South Pacific, needed brake linings to keep their trucks going. In their search for a substitute, they tried everything —cartridge belts, palm tree strips, even Jap brake lining. No good. Then one day they accidentally stumbled over a white-oak plank on the beach. They grabbed the plank, cut it into thin strips, boiled them in water until they were pliable, and wound the wet strips around the brake drums to dry. Result: Brake linings! They say these linings—used on vehicles operated over coral and through the jungle—lasted for more than 5,000 miles, nearly twice as long as ordinary linings under ditto conditions.

Dear Editor,

Here's a quick and easy way to stop the oil leak out of the rear main bearing of M8 and M20 armored cars.

Remove the oil pan of the Hercules JXD engine. You'll notice a series of holes just under the rear main bearing and a deep channel in the bell housing, through which the oil should drain back into the oil pan (this channel can't be seen from the outside unless the crankshaft is out or the bell housing removed). The leak is caused by carbon and sludge piling up in the channel and holes, preventing the oil from draining back into the oil pan.

Take a length of discarded **inner** speedometer-cable (with the outside wrapping off to make it smaller around) and leave it a little ragged at one end. Insert the ragged end of the cable through the hole on the far right or left side. Push it completely around through the deep channel of the bell housing, twisting it as you push, until it meets the hole it first went into. The cable, being flexible and strong, easily follows the channel. It should be kept well dosed with solvent to do the best cleaning job.

Alfred R. Bideaux
Automotive Advisor

Ed. Note—Thanks to the Army's detergent oil, there shouldn't be too much trouble with carbon and sludge collecting in that channel. But this is a neat way to lick the problem when it does rear its ugly head.

Dear Editor,

The clutch pedal on some of our 7½-ton 6x6 Mack prime movers wouldn't return to the proper floorboard clearance. We looked into the linkage and found that the needle bearing on the short shaft, bolted to the clutch pedal, needed lubricating very badly. It can't be greased except by disassembly of the clutch-pedal linkage.

No doubt a lot of clutches have been opened and shims removed or new springs installed, and still the trouble of clutch-pedal return hasn't been corrected.

We suggest that a hole be drilled down the length of the short shaft to a point where the needle bearing rests. Then drill a hole through the shaft to contact the first hole (see Fig. 1). A grease fitting can be installed at the end of the shaft.

M/Sgt. Daniel S. Warner
MOMU-SU 3894

Ed. Note—This is a good deal—now being done in production. Be sure the hole's drilled (when you do it in the field) so it comes out on the bottom side of the shaft. First locate the keyway, then drill the holes and you're all set.

That shaft only rotates a little, so the lubrication needs to spill out the bottom, like the picture shows you.

You'll want to put a 45° fitting on the shaft, otherwise your grease gun can't reach it. Fed. Stock No. for the fitting is 45-E-8900 (Elbow, lubricating).

Dear Editor,

Many mechanics go to a lot of trouble and waste valuable time repairing the malleable iron hook on the Dodge truck dashboards. This is the hook used to hold the windshield in an upright position.

Usually the two bolts are removed at once, allowing the metal

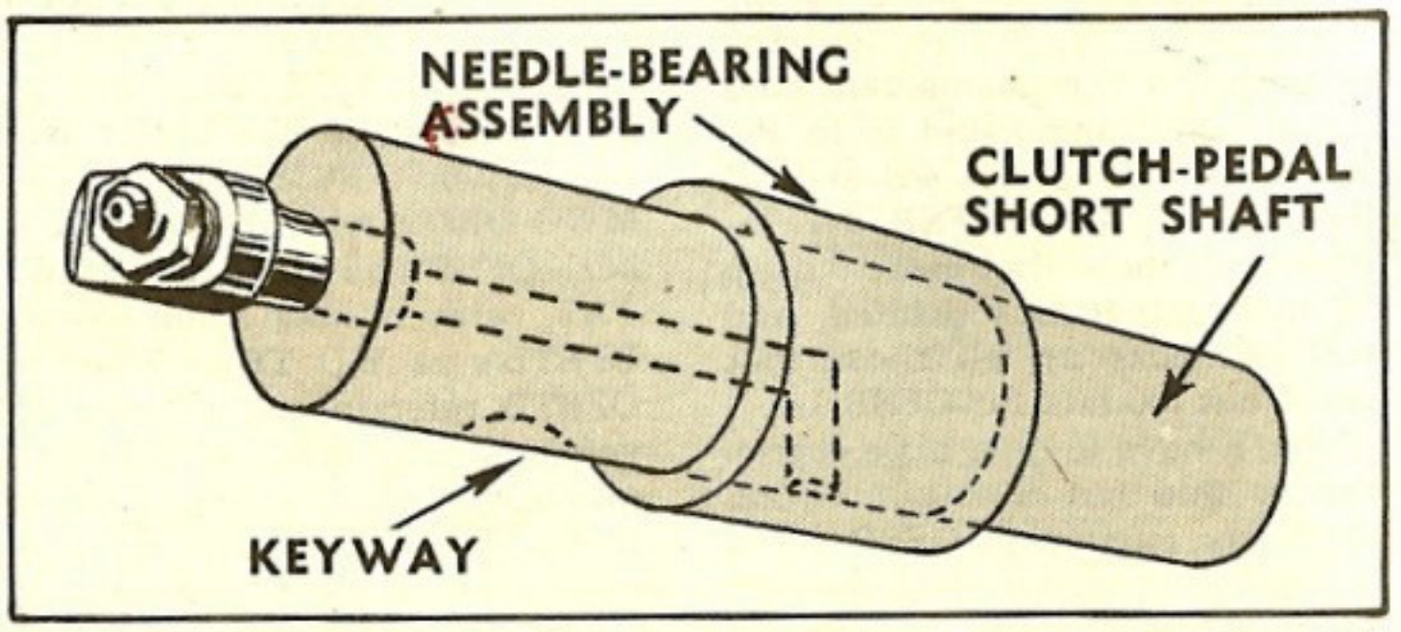


Fig. 1—Grease fitting on the 7½-ton prime-mover clutch pedal.

piece to drop down. Replacing the hook requires the removal of the metal plate, and even in some cases the fire-extinguisher bracket.

I've found that by simply loosening the top bolt four or five turns, and removing the lower bolt, you can swing the hook aside so that you can replace the lower bolt to hold the backing in place. Then you can reverse the steps and remove the top bolt.

These hooks need replacing or brazing quite often over here, and this procedure saves a lot of time.

Cpl. A. A. Perreault,
APO 528

Dear Editor,

I had trouble removing wheel-bearing lockwashers until I got this idea during a little hard bunk-fatigue one day.

It's simply a rod with a hooked end. I made mine out of a piece of welding rod flattened on one end and bent to a 90° angle (see Fig. 2). The hook should be hardened and not more than ⅛" wide. The handle is a piece of broomstick.

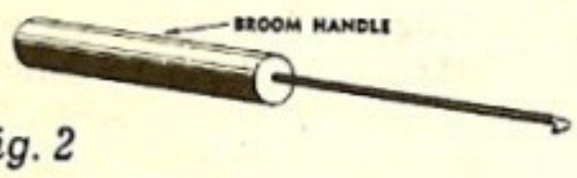


Fig. 2

By using two of these tools—one on each side of the washer—I've saved a lot of time and unprintable language.

Pfc. Everett D. Troop
Hq. & Hq. Det., Fort Lawton

Dear Editor,

In a great many cases, the GMC carburetor oil-bath air-cleaners have been falling off and landing on the starting-motor switch, causing a short and a fire. This is due to the way the wicking is placed in the clamp assembly.

If the wicking is not installed so that it's **flush** with the bottom of the clamp (Fig. 4), the air cleaner can't be tightened enough. The wicking should be installed in the clamp assembly flush with the bottom of the clamp, then the clamp assembly should be fastened onto the air cleaner. Press or drive the wicking up on the air cleaner so that it will not extend below the bottom of the air cleaner. When the air cleaner is placed on the carburetor air-horn, the bottom of the clamp assembly should be **flush on the shoulder** of the carburetor (Fig. 5).

If the installation is made correctly, the air cleaner can be tightened enough to prevent its falling off.

W. B. Schell
Automotive Adviser

Ed Note—Another reason for loose air cleaners is not enough clearance between the cleaner and the radiator tie-rod. This happens when the new and larger clamp-on-type air-cleaner (GM-1543051) is used, replacing the earlier type air-cleaner (1542074). When they changed air cleaners in production, they also redesigned the tie rod to get the necessary clearance. In the field, the tie rod alongside the air cleaner should be bent for at least 1" clearance. After bending the tie rod, adjust it at the dash so there's ¾" clearance between the fan and radiator core. Might be a good idea to eyeball your truck and make sure there's enough clearance between tie rod and air cleaner.

There's also an old red-group FSMWO (G508-W3, 1 Apr. 43) that authorizes a steel support between the air cleaner and cylinder head. The support stops excessive vibration and helps to fight looseness. All vehicles that didn't get the support in production should be fixed in the field.

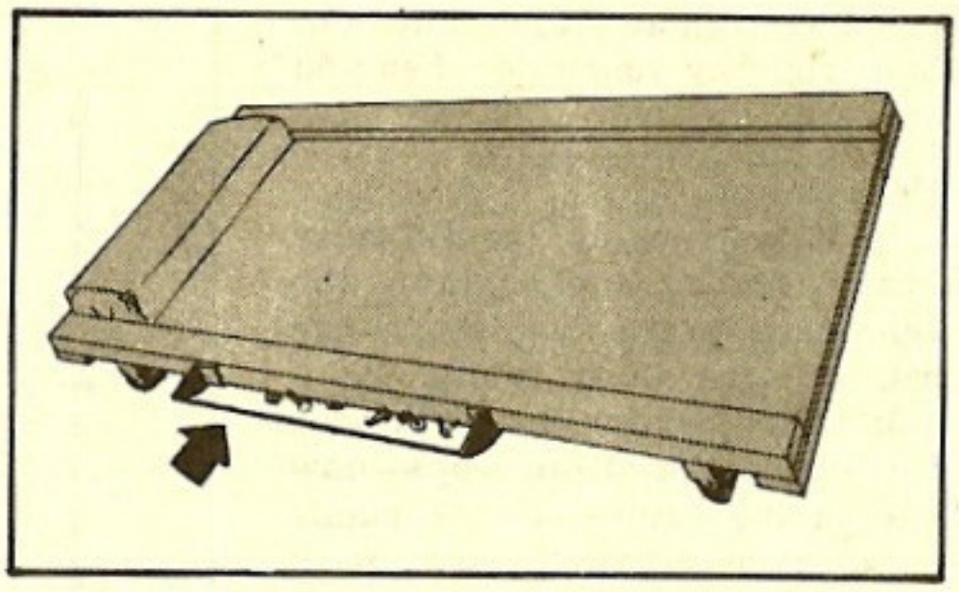
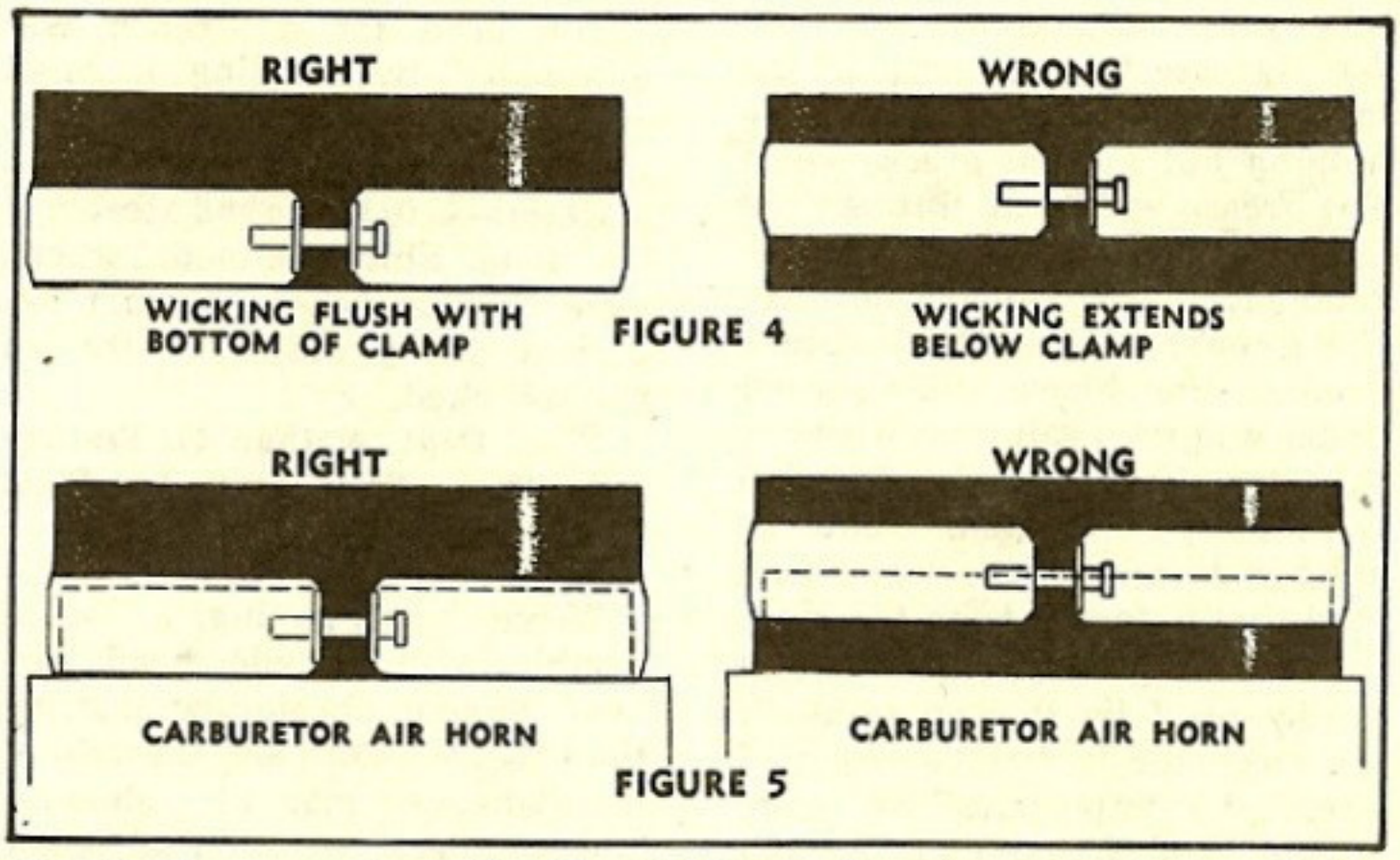


Fig. 3—Tray attached to creeper.

If you've got a creeper in your shop, a good way to keep nuts and bolts at your finger tips when you're scraping your nose under a vehicle is to weld or bolt a cradle-shaped sheet-metal tray on the side of the creeper like **Sgt. LeRoy Buchan, APO 928,** did.

Cut out the two ends of the tray as high as the creeper side-rail (see Fig. 3), and as wide as you want the tray to be with the outer edges curved. For the body of the tray, use a piece of sheet metal whatever length you want, and measure the width by fitting it around the circular edges of your end pieces. Then weld or bolt (depending on whether your creeper's metal or wood) this metal to the creeper's lower-side edge, and weld the tray ends on it by pulling up the piece of metal and fitting it around the end's curved edges (Fig. 3). This way,



Here's the way to make the GMC carburetor air-cleaner tight.

you'll keep those elusive nuts and bolts right by your side when you need 'em.

Dear Editor,

In ¼-ton tune-up, the difficulty lies in finding and chalking the Ign. mark on the flywheel, so one can use the neon timing light. I find that locating the mark once is sufficient for all tune-ups—now and in the future—if one paints a ⅛" stripe across the Ign. mark with white paint.

Once all your ¼-tons are marked, it becomes simple for one man to do a job in short order—without the inconvenience of standing on one's head to put on a chalk mark that has vanished by the time you need it again.

T/4 W. W. Fluharty, Jr.
APO 655

Dear Editor,

We have had difficulty keeping U-joint needle bearings lubricated. The universal joint is so located that it is exposed to dust, dirt, mud, and water—and these exposures leave the needle bearings very dry. The following solution should be the answer to a mechanic's prayer.

Take a narrow flat tool (preferably a 12" screwdriver) and force the release valve shut. The release valve is located on the rear of the universal joint—and don't use a hammer or chisel—the valve is fragile and shouldn't be banged up.

While holding the valve shut, take your hand grease gun and force grease through each of the universal-joint bearing-cups. (Use nothing but a hand grease gun.) The grease will come through the universal joint at the cork grease retainer. If any cup does not take the grease, drive the vehicle around the block, then crawl under and try again—until you're sure that each needle-bearing cup is properly lubricated. You'll be amazed to see all the water and mud that is forced from the cups.

The cork grease retainer won't be damaged by this operation if the mechanic is careful. Again I stress the importance of using only a hand grease gun. At any rate, I believe it is far better to have properly lubricated needle bearings at the sacrifice of a few cork gaskets, than to replace universal joints about every 2000 miles.

S/Sgt. Jack J. Gicone
891st Ord. HAM Co.

Ed. Note—A new relief valve that'll hold tight until the grease gets to the bearings is being manufactured. In the meantime, there's another solution on page 163, ARMY MOTORS, Sep. 44.

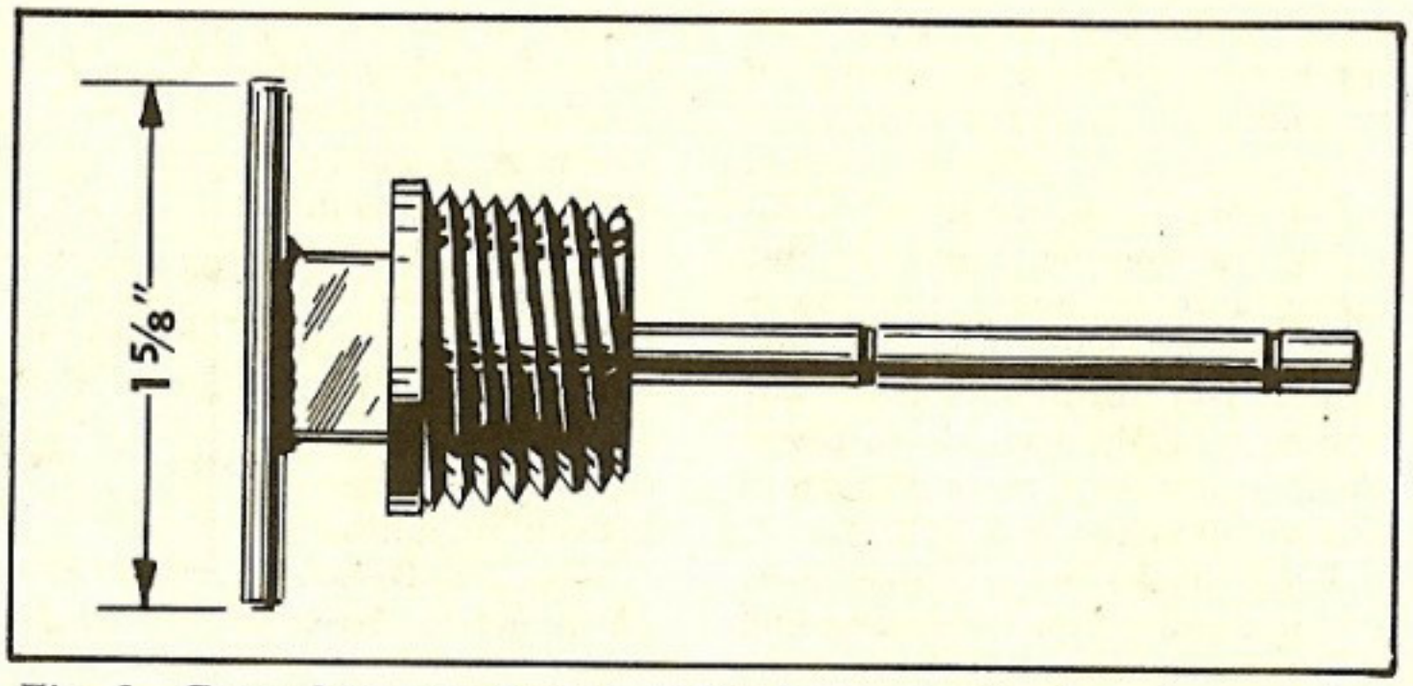


Fig. 6—Cross-bar on oil plug of Cushman 3-wheel motor-scooter.

Dear Editor,

Before we made a modification on the Cushman 3-wheel-motor-scooter oil-plug, it was necessary for the driver to have a wrench to remove the plug-and-gage assembly. This, of course, was always the driver's excuse for not checking his oil before operation. In several instances, it resulted in engines being run without oil, completely burning them up.

The need for a wrench was eliminated by welding a small cross-bar to the top of the filler plug (see Fig. 6). We used scrap material—a 5/16" round steel-rod, 1⅝" long. Since the modifications have been made, we haven't experienced any difficulty—the oil gets checked.

Capt. Nathon G. Findley
Sioux Falls Army Air Field

Dear Editor,

We've been having a lot of trouble with cylinder-head gaskets, though we follow instructions in TM 9-2810 and the vehicle maintenance manuals showing how to check for external leaks. Since neither gives a check for internal leaks, we decided to do something about it.

We found a very simple test, which we make on all vehicles in for 6000-mile inspections. When checking the cylinder head and gasket, we attach two feet of hose to the overflow pipe of the radiator, placing the free end in a bucket of water. Then we start the engine. If bubbles appear in the water, we tighten the cylinder-head bolts as stated in the TM. If no bubbles appear, we leave well enough alone.

M/Sgt. William L. Sobeck
APO 958

Dear Editor,

Here's how you can make a very simple tool to clean out distributor-cap sockets.

Find a salvaged piece of ⅛" cold-rolled steel about 2" long, cut a couple of slots criss-cross with a hack-saw on one end for prongs, and you've got the tool (Fig. 7).

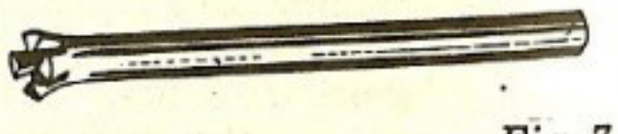


Fig. 7

Put the tool in a drill chuck, place a little wad of fine steel wool in the distributor socket, and whirl the steel wool with your hand drill. This'll take out corrosion much better than any soda solution.

T/3 R. H. Fortin
APO 350

Dear Editor,

When installing transmissions in 2½-ton GMC's, difficulty is often experienced in getting the splines

lined up so the transmission will slip into place. To get the job done easier and faster, try this:

(1) Make yourself two guide studs, 2½" long, with the same thread as the transmission bolts (½" U.S.S.). Be careful not to cut them longer than 2½" or you won't be able to get one of them out when the transmission's in place.

(2) Screw the studs in the two top bolt-holes in the bell housing, about three or four turns. Then lift up the transmission assembly so its top holes will line up with the studs in the bell housing. Slide the transmission forward onto the studs until the splines come into contact with each other.

(3) Apply a forward pressure from the rear of the transmission assembly and turn the engine by crank (if help is available) to get the splines lined up. As soon as the splines line up, the forward pressure on the transmission will slide it into place.

I believe this method can be used when installing transmissions of any kind, if there's difficulty lining up the splines.

Sgt. Herbert F. Bryant
APO 520

Ed. Note—Just don't use so much pressure that you force the transmission in place.

Dear Editor,

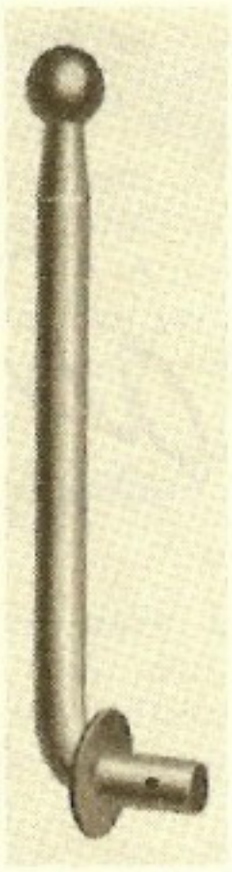
I've had a little trouble with the sealed beam headlights on some of our ½-ton Dodges. When only one light works and the wires look okay, I've found that rust and dirt have gummed up the springs in the socket contact-points and lamp contact-prongs, and vibration has worn them down so there isn't proper contact any more.

By taking out the sealed beam unit and putting a drop or two of kerosene on the contact springs in the socket, I can scrape them clean. I do the same thing to the lamp contact-prongs. Then I put a drop of solder on the prongs to replace metal that has worn away from vibration and that I've scraped away—then the lights work perfectly.

Pvt. Henry R. Hamann
Anniston Army Air Field

Dear Editor,

I'm inclosing a modified accelerator connecting-link (see Fig.) for the ¼-ton jeep that I believe will eliminate some irregularities in the link's function.



The accelerator connecting-link's joined to the accelerator arm, just below the vehicle floorboard, by a 90° elbow placed through a hole in the accelerator arm and held in place by a cotter key.

As pressure's applied to the accelerator connecting-link, there's a tendency to wear on the link at the connecting point. This wear enables the link to loosen at the connection and freeze in place because of an abnormal position.

I think spot-welding a ¼" flat washer on the accelerator connecting link, as close as possible to the 90° elbow without impairing operation, will keep the connecting link from slipping into an abnormal position when it's worn, and prevent its freezing in place.

Cleveland J. Day
Automotive Advisor

Dear Editor,

After reading a contribution by Lt. John N. Harmon in ARMY MOTORS (Apr. 44) on installing Chevrolet and GMC distributors, I'd like to make this suggestion. If you're working alone, use a crescent wrench or a 25/32" open-end wrench on the flat bar of the starter linkage just above the starter. You can then operate the starter while installing the distributor. Remember the clearance that must be maintained at the upper and lower ends of the distributor housing before tightening the clamp bolts.

Guy R. Spigle
Civilian Inspector

Dear Editor,

Both TM 9-801 and TM 10-1563—for the 2½-ton 6x6 GMC—tell you to remove shims to add torque, when adjusting the steering-knuckle assembly on a split-type axle. But what if you have no shims left and still need more torque?

Here's what I'm doing: When the bearings are still in good shape, I take a piece of .010 shim stock and cut a 1⅝" hole in it. I trim the outside to fit the shoulder of the trunnions, put them inside of each cone and then add shims as needed. This'll save a new set of bearings.

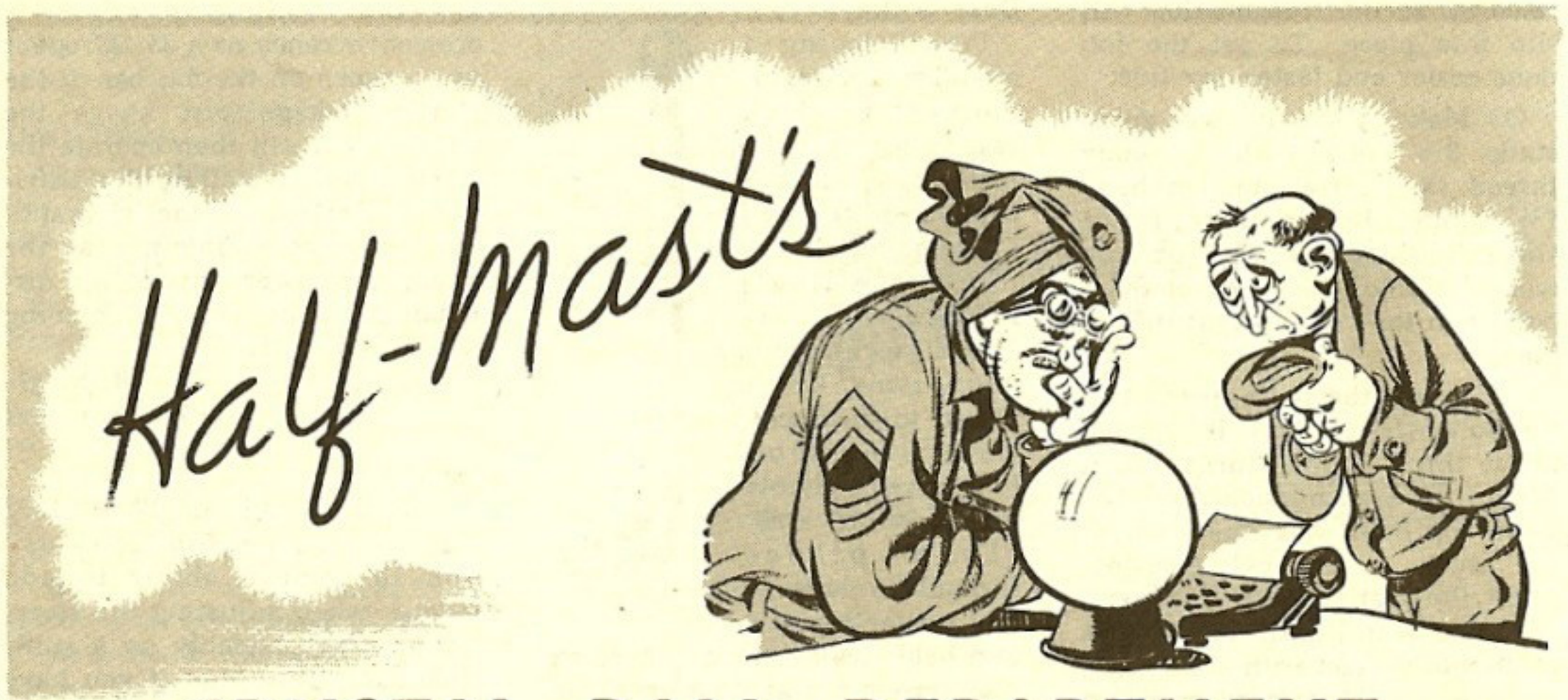
M/Sgt. E. V. Mitchell
APO 417

*Ed. Note—Inserting those shims will raise up the knuckle-bearing cones and keep the pin bearings from coming loose, but when you put in the shims, make sure the CV joint inside the ball housing has plenty of room to rotate—otherwise that axle is doomed. Shims used under the bearing **cups** work fine, too.*

What Do You Think About?

Okay, what else do you think about? Do you f'rinstance think about new tricks, gadgets, or ways to make maintenance on trucks and tanks easier? When you do figger out a better way to do a job, what do you do with it? Do you leave it to gather flyspecks in the corner of your skull—or do you pass it on for somebody else's benefit?

Pass on them bright idees. Tell 'em to the GI world by telling them to ARMY MOTORS MAGAZINE, Office, Chief of Ordnance-Detroit, Detroit 32, Michigan. You'll get a personal subscription for being sharp.



CRYSTAL BALL DEPARTMENT

Dear Half-Mast,

I drive an M6 tractor. The other day a mechanic and I were discussing carburetors and he said the ones on the M6 were balanced. Our battalion motor officer says they aren't. The TM only says that they're Zenith downdraft carburetors.

We'll leave it up to you, Sarge. Which are they, balanced or unbalanced?

Pfc. E. G. W.

Dear Pfc.,

The M6 high-speed tractor does have balanced carburetors — in fact, all Zeniths used on tractors are balanced.

If there's a passage connecting the float chamber or float bowl with the air horn, the carburetor's balanced. This passage guarantees the same air pressure in the float bowl as in the air horn, so the carburetor won't load up if the air cleaner gets clogged and the pressure in the air horn takes a nosedive.

Now, who buys the brew—and for who?

Half-Mast

Dear Half-Mast,

There seems to be a little disagreement on the fluid that should be used in the throttle and clutch-operating hydraulic system of the M22 (T9E1) light tank. The lubrication guide in TM 9-724 says to use OH, while a paragraph in the Preventive-Maintenance Services section recommends hydraulic-brake fluid. Which is right?

Also, do all hydraulic systems having rubber parts require a vegetable-base fluid or can a mineral oil be used if the rubber is synthetic?

WOJG C. E. B.

Dear Mr. B.,

The lube guide in the TM's wrong—the PM section's right. Use HB in the throttle and clutch system. Next time a TM 9-724 comes off the press, the lube order in it will read like it should.

About the only way I can answer your other question is to tell you to take the word of each vehicle's lube order and use whatever the LO says the hydraulic system oughta have. You can't depend on a field check to tell you whether the rubber's synthetic or not, so you can't be sure whether to use a vegetable-base fluid or a mineral oil. It's tricky business, telling natural rubber from synthetic, and in this case it ain't good to guess.

Half-Mast

Dear Half-Mast,

On two different occasions we've had 2½-ton GMC's lose their left-rear wheels. Whether it was due to the negligence of the mechanic (failing to lock the lockwasher) or whether the bent-over part of the washer broke, allowing the nut to loosen, I don't know. But to make things easier, why don't manufacturers make the locknut and spindle with left-hand threads, so if either of those things happens, the locknut will tighten instead of come loose?

Sgt. N. M.

Dear Sergeant,

It looks from here like you can blame the loss of those two left-rear wheels on the driver or mechanic. Because if the mechanic had locked the adjusting nut properly in the first place, it shoulda stayed put. And if the nut did come loose, the driver shoulda noticed an overdose of brake drag and yelled about it before anything else had a chance to happen.

As for locknuts and spindles with left-hand threads, the manufactures did try that once, but they stopped making 'em because the torque that sometimes winds the nut loose can also wind it too tight if it isn't locked correctly. That'd mean bound and overloaded bearings. And then, the way it is, there ain't as many parts to be manufactured and stocked, and you get interchangeability in the bargain.

It might help you to know that there are various types of lockwashers used to lock the wheel-adjusting nuts securely — three different types on GMC's alone. First, there's GM-657023, which is perforated, and locks the adjusting nut when the holes in the washer line up with the dowel pins in the nut and the inner tang rests in the spindle groove. Next is GM-072415; this is a split-type washer, and locks the adjusting nut by bending the inside half (and part of the outer half) of the washer over the nut, with the tang in the spindle groove and the locknut pulled up tight against the washer. Then there's GM-3660090, with tangs spaced around the outer edge and one on the inside which fits in the spindle groove; the nut is locked by bending the outside tangs in the notches of the nut. All clear?

Half-Mast

Dear Half-Mast,

A question has arisen as to the advisability of painting spark-plug wires. On a recent inspection, we found this was being done.

The reason: We're in the tropics, on a very small island off the coast of South America, and our vehicles are subject to salt spray from the ocean. The men say that after painting them they have no trouble starting the vehicles. We've experimented enough to make me think they've got something—only this morning, the vehicles with painted wires started and the rest had to be towed to start.

What do you recommend?

Lt. D. E. W.

Dear Lieutenant,

Painting the spark-plug wires of salt-sprayed vehicles is strictly on the ball. It's a good idea to do this to the low-tension wires, too.

Matter of fact, this is now being done in production on all vehicles slated for amphibious operations. The manufacturers have used Compound, insulation, ignition (U.S.A. Spec. No. 3-182, Fed. Stock No. 52-C-3099-5). Recent tests show there's an even better material for this job, though. It's listed in SNL K-1 as Paint, synthetic (glyptal) red, No. 1201 (Fed. Stock No. 52-P-8057-700 for ½ pt., 52-P-8057-710 for 1 gal.). The thinner for this paint is Spec. 3-176.

The compound they've been using in the factory (Spec. 3-182) is colorless; the glyptal is red. Anyway, both are okay, and like you say, they'll save you plenty of trouble.

Half-Mast

Dear Half-Mast,

Here in this area we have a well-known General who said, "There will be no new ignition points installed. They do not wear out."

We have thirty-one ¾-ton Dodge vehicles, all ambulances but one. There have been no new points put in, the points are in bad condition, and we aren't supposed to use a file on them. What do you suggest?

Incidentally, the General is quite right. Points do not wear out—they **burn** out.

S/Sgt. J. J. W.

Dear Sergeant,

Here in this area we have a well-known M/Sgt. who says: It's okay to file points — even the manufacturers'll go along with you on that score—if you use the Contact-point dresser, Fed. Stock No. 41-D-1410. Here's how you work it:

Remove the distributor cap and rotor and turn the engine until the points are closed. Then open the points with your finger just enough to insert the dresser. Move the dresser back and forth until the points are clean and smooth. Check the point gap and adjust the timing of your engine ignition by loosening the major adjustment lockscrew and rotating the distributor body until you get your proper timing. Be sure and keep the point gap at .020". This is the adjustment at which your ignition spark is formed—it oughta be maintained at all times, whether you're filing an old point or inserting a new one.

If you ain't got that tool, use a fine emery wheel or stone to clean points. But don't **never** use emery cloth or sandpaper, because they'll leave imbedded particles that'll cause point burning. You don't have to remove all the pits in contact points. Just file enough so the contacts have smooth surfaces toward each other. See that oil and grease stay off the points, too.

Half-Mast

Dear Half-Mast,

Here's a joker on Willys jeeps we've run into and puzzled over—front-wheel alinement.

When all adjustments were made and clearances were normal, if the steering wheel was placed in position for the mid-point of gear mesh, the front wheels were 3 degrees, more or less, away from the straight-ahead position they should be in. Moving the pitman arm one spline on the sector shaft changed the steering-wheel rim travel 18". We're trying to correct an error of about half a spline, an average of 9" measured at the steering-wheel rim, or 7/16" or less of drag-link travel.

This was the adjustment procedure we followed: Disconnected the drag link, checked for defec-

tive springs and ball seats, or pitman ball-end; checked for column bind at the dash, adjusted the worm bearings and mesh of the worm and sector; single chalk-marked the steering wheel's lower rim for the mid-point of gear mesh, and tightened the column to the dash. Then we adjusted the bell-crank-shaft nut and also the toe-in (squaring bell crank to front axle); checked the front end of the drag link for defects and proper adjustment; connected the rear of the drag link to the pitman arm; placed the front wheels in straight-ahead position, and double chalk-marked the steering wheel's lower rim for straight-ahead of the front wheels.

In many cases, the two different chalk marks were from 2" to 9" apart. And there's our problem.

We've checked the bell crank and pitman arm for bend, and measured the drag link for variation in length a number of times and rarely found any defects. Several bell cranks and pitman arms, discarded because of worn ball-ends, were tested in the hydraulic press.

A lot of remedies were tried, but what we want is the correct solution to this problem. If you've followed us this far, now is your cue to step out and give the a la kazook kazook ka zam to our chestnut.

Combined Maintenance Service
Shop No. 1

Dear Combined Maintenance
Service Shop No. 1,

You sure gave me plenty of clues, and I've sherlocked your problem all the way from the zook to the zam.

There's still another angle you can work on. The tie-rods could be improperly adjusted when squaring the bell crank to the axle (see TM 9-803, page 187). And it seems to me, if your steering gear is at the mid-point, the drag link attached and the wheels 3 degrees away from the straight-ahead position, you should be able to adjust both halves of your tie-rod enough to straighten the wheels.

Half-Mast

Dear Half-Mast,

That was a swell article on pop-off valves on page 257 of the December ARMY MOTORS. It's a swell idea, but howinell can we get the required valves and adapters when the depot says, "Sorry, Pal, it's not in the SNL."

Can someone convince the depot that issuance of this valve, even though the number isn't in the SNL, will make so many people happy?

Lt. D. M. L.

Dear Lieutenant,

That pop-off valve **is** in an SNL (K-3, ORD 5, 28 Oct. 44—the last item on page 14). The depot probably hadn't gotten their copies of K-3 when they processed your requisition.

There's a slight discrepancy between the Fed. Stock No. in ARMY MOTORS and the one in the SNL. We said 45-V-18129, but when K-3 came out, it showed the number as 45-V-18129-3. The SNL number is correct, and is the one to use when you requisition the valves.

They've been shipped into Anniston Ordnance Depot (master depot for all Group K stuff), and if they haven't got 'em in your distribution depot, your requisition will be extracted on Anniston for supply. Shoot your requisition **through your supply channels again** for Valve, lubricating, pressure-relief, 1500 lbs., ⅛-27NPT, male, short, Fed. Stock No. 45-V-18129-3.

Half-Mast

Dear Half-Mast,

What are your recommendations for the grade of oil in air cleaners? According to the boys who are getting gigged, the crews that are doing spot inspections say air cleaners are to have OE 50 in them and I don't see why. It's no hotter here in Hawaii than it was in the desert, and they raised hell with us for using OE 50 in California. Also, according to the TM's and recent orders that have **not** been cancelled, oil (either new or used) of the same grade as in the engine is to be used. I'll agree that the air cleaner that sets up high, like the GMC or the ½-ton Dodge, needs OE 50 because it won't splash out or all over, like the others.

S/Sgt. C. F. H.

Dear Sergeant,

If the boys are using the grade oil in air cleaners that's specified on their vehicle lube orders, they shouldn't oughta get gigged. Whatever oil they're using in the crankcase is what they should be using in the air cleaner, like you said. The LO's the last word, y'know—on lubrication, it's an order.

Half-Mast

Dear Half-Mast,

We've run into a bit of a quandary over here where present regulations conflict with what we learned in training.

On the mounting of decontaminating apparatus M2 in ½-ton and ¾-ton command cars, TB 700-58 states "inside top of rear trunk compartment." We were of the opinion that the M2 was for the driver's protection in squirting his way out of his vehicle when it's contaminated. In this case, it should be readily available to the driver or his assistant. As it stands now, the driver of the vehicle contaminated with chemicals would have to get out and open the trunk compartment before getting at the M2. By that time, he would probably need to use the contents on himself. It sounds rather illogical to us. Can you help us out?

Lt. F. W.

Dear Lieutenant,

That decontaminating apparatus **is** for the driver's protection, and if I were sitting in the driver's seat, I'd have it right up there beside me—just in case.

There's no law against it, either. The TB's "inside top of rear trunk compartment" is only a **suggested** location—you don't have to put it there. Oughta be plenty of room under the dash cowl on the left side in both the ½-tons and ¾-tons to mount the apparatus horizontally there. If you can find a better spot, that's okay, too.

Half-Mast

The Month's Directives

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

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TM—Technical Manual
TB—Technical Bulletin
MWO—Modification Work Order
TC—Training Circular
WDC—War Department Circular
SB—Supply Bulletin

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Service Parts Catalog (SPC)
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ARMORED CARS

CAR, ARMORED, LIGHT, M8
SNL G-136, ORD 7, OSPE (24 Oct. 44).

CAR, ARMORED. UTILITY, M20
SNL G-176, ORD 7, OSPE (24 Oct. 44).

GUN MOTOR CARRIAGES

CARRIAGE, MOTOR, HOWITZER, 75-MM, M8
SNL G-127, ORD 7, OSPE (17 Nov. 44).

CARRIAGE, MOTOR, GUN, 3-IN., M10
SNL G-130, ORD 7, OSPE, C1 (15 Dec. 44).

CARRIAGE, MOTOR, GUN, 76-MM, M18
FM 18-16, Crew drill (23 Oct. 44).
MWO ORD G163-W4, Dry-cell-battery lighting.

CARRIERS

CARRIER, CARGO, M29 (T24)
MWO ORD G179-W5, Heavier transmission parts and increased oil capacity.

CARRIER, CARGO, M29C, AMPHIBIAN
MWO ORD G179-W5, Heavier transmission parts and increased oil capacity.

HALF-TRACKS

ALL HALF-TRACK VEHICLES (WHITE, AUTOCAR, DIAMOND T)
SNL G-102, ORD 9, SPC (1 Dec. 44).

LIGHT TANKS

TANK, LIGHT, M5 SERIES
FM 17-68, C1, Armored crew-drill (4 Dec. 44).

TANK, LIGHT, M22 (T9E1)
MWO ORD G148-W9, Eliminating premature firing of 37mm gun.

TANK, LIGHT, M24
MWO ORD G200-W1, Driver's door safety-latch.
TB 9-729-2, Hydrostatic lock.
SNL G-200, ORD 7, 8, 9 (1 Nov. 44).

MEDIUM TANKS

TANK, MEDIUM, M4 SERIES
FM 17-67, C1, Crew drill (8 Jan. 45).
TB ORD 228, Horizontal volute-suspension capscrews.

TANK, MEDIUM, M4A1, 75-MM GUN, DRY
SNL G-104, Vol. 11, ORD 7, OSPE (2 Dec. 44).

TANK, MEDIUM, M4A3, 75-MM GUN, WET
SNL G-204, ORD 9, SPC (22 Dec. 44).

TRUCKS

TRUCK, ¼-TON, 4x4 (WILLYS, FORD)
TB 9-803-FE4, Differential - oil - seal guard.
TB 9-803-6, Timing chains and sprockets, inspection.

TRUCK, 1½-TON, 4x4 (CHEVROLET 1941, 1942, 1943)
SNL G-506, ORD 7, OSPE (3 Dec. 44).

TRUCK, 1½-TON, 6x6 (DODGE T223)
SNL G-507, ORD 7, 8, 9, C1 (20 Jan. 45).

TRUCK, BOMB SERVICE, M6 (CHEVROLET)
MWO ORD G85-W17, Providing light for night bomb-loading.

TRUCK, 2½-TON, 4x2, DUMP (IHC K-7)
TM 9-822, Operation and maintenance (7 Nov. 44).

TRUCK, 2½-TON, 6x4 (GMC CCW-353)
SNL G-508, ORD 7, 8, 9, C1 (25 Jan. 45).

TRUCK, 2½-TON, 6x6, AMPHIBIAN (GMC DUKW 353)
SNL G-501, ORD 7, 8, 9, C1 (15 Jan. 45).

TRUCK, 2½-TON, 6x6 (GMC AFKWX 353, CCKWX 353, CCKW 352, 353)
SNL G-508, ORD 7, 8, 9, C1 (25 Jan. 45).

TRUCK, BOMB SERVICE, M27
SNL G-508, ORD 7, 8, 9, C1 (25 Jan. 45).

TRUCK, 2½-TON, 6x6, ARTILLERY REPAIR, M9 and M9A1
SNL G-140, ORD 7, OSPE (4 Dec. 44).

TRUCK, 2½-TON, 6x6, WELDING, M12 AND M12A1
SNL G-142, ORD 7, OSPE (20 Dec. 44).

TRUCK, 2½-TON, 6x6, MACHINE SHOP, M16 and M16A1 (LOAD D)
SNL G-146, Vol. 4, ORD 7, OSPE (24 Nov. 44).

TRUCK, 2½-TON, 6x6, ELECTRICAL REPAIR, M18, M18A1, M18A2
SNL G-149, ORD 7, OSPE (28 Oct. 44).
SNL G-149, ORD 7, OSPE, C1 (9 Dec. 44).

TRUCK, TRACTOR, 4-5 TON, 4x4, C.O.E. (AUTOCAR U-7144-T)
SNL G-510, ORD 7, OSPE (12 Oct. 44).

TRUCK, 6-TON, 6x6, BRIDGE ERECTION (WHITE 666)
SNL G-690, ORD 7, 8, 9 (1 Dec. 44).

TRUCK, WRECKING, HEAVY, M1 AND M1A1 (WARD LA FRANCE SERIES 1, 2, 3, 4, 5, KENWORTH 570, 571, 572, 573)
SNL G-116, ORD 7, OSPE (5 Dec. 44).

TRACTORS

TRACTOR, HIGH-SPEED, 13-TON, M5
TB 9-786-FE1, Capscrews connecting fender side-sheets to final drives.

BUSSES

BUS, 37-PASSENGER (IHC K-7, KS-7)
TM 9-822, Operation and maintenance (7 Nov. 44).

SCOOTERS

SCOOTER, MOTOR, 2W, AIRBORNE (CUSHMAN 53)
TB 9-876-1, Correct tire pressure.

EQUIPMENT

CHARGER, BATTERY, PORT., GASOLINE- ENGINE-DRIVEN, 15 v., 133 amp. (ONAN OTC-33) COMPLETE (17-C-9635)
SNL J-441, ORD 7, OSPE (18 Dec. 44).

CHARGER, BATTERY, PORT., GASOLINE- ENGINE-DRIVEN, 15 v., 133 amp. (ONAN OTC-33H) COMPLETE (17-C-9635)
SNL J-458, ORD 7, OSPE (18 Dec. 44).

COMPRESSOR, AIR, GASOLINE-ENGINE-DRIVEN, 3 cu.-ft.-per-min. (DE VILBISS UAJE 5101) COMPLETE (66-C-1369)
SNL J-411, ORD 7, OSPE (16 Nov. 44).

COMPRESSOR, AIR, GASOLINE-ENGINE-DRIVEN, 3 cu-ft-per-min. (DE VILBISS UAJE 5103, UAJE 5103-1) COMPLETE (66-C-1369)
SNL J-108, ORD 7, OSPE (16 Nov. 44).

COMPRESSOR, AIR, GASOLINE-ENGINE-DRIVEN, 3 cu-ft-per-min. (KELLOGG GE 140-S13632, JOHNSON ENGINE) COMPLETE (66-C-1369)
SNL J-114, ORD 7, OSPE (16 Nov. 44).

COMPRESSOR, AIR, GASOLINE-ENGINE-DRIVEN, 6 cu-ft-per-min. (KELLOGG GE 320) COMPLETE (66-C-1370)
SNL J-412, ORD 7, OSPE (16 Nov. 44).

GENERAL

FM 18-22, Tank destroyer reconnaissance platoon (Nov. 44).
FM 21-6, Training publications (Dec. 44).
FM 21-7, C8, Training films (12 Dec. 44).
TM 20-205, C2, Dictionary of U. S. Army terms (18 Jan. 44).
WDC 477, Glove-insert, light weight (21 Dec. 44).
WDC 481, Change in WD Pamphlet 12-5 (23 Dec. 44).
WDC 484, Track laying vehicles, zone of interior operation (27 Dec. 44).
SNL H-1, ORD 5, C1, Standard hardware (12 Dec. 44).
SNL H-4, ORD 5, C2, Electrical fittings (12 Dec. 44).
SNL H-5, ORD 5, C2, Electrical piece material (12 Dec. 44).
SNL H-6, ORD 5, C3, Pipe and hose fittings (12 Dec. 44).
SNL H-7, ORD 5, C3, Pipe, tubing and hose (12 Dec. 44).
SNL H-9, ORD 5, C3, Piece material (12 Dec. 44).
SNL H-10, ORD 5, C2, Ferrous metal (12 Dec. 44).
SNL H-13, ORD 5, Oil seals (5 Dec. 44).
SNL J-1, ORD 5, C2, Abrasion and compression tools (21 Dec. 44).
SNL J-2, ORD 5, C2, Cutting, boring and tweezer tools (21 Dec. 44).
SNL J-4, ORD 5, C3, Punch, drift, fastening and scraping tools (21 Dec. 44).
SNL J-7, ORD 7, OSPE, Welding, forging, vulcanizing, soldering and brazing equipment (16 Nov. 44).
SNL J-7, ORD 5, C2, Welding, forging, vulcanizing, soldering, and brazing equipment (21 Dec. 44).
SNL J-8, ORD 5, C2, Hand tool appurtenances (21 Dec. 44).
SNL J-9, ORD 5, C3, Measuring and testing instruments (21 Dec. 44).
SNL J-15, ORD 5, C4, Benches, tool boxes, cabinets, bins, tool chests, tool rolls, etc. (20 Dec. 44).
SNL K-1, ORD 5, C1, Cleaning, preserving, and lubricating materials; recoil fluids, special oils, miscellaneous related items (12 Dec. 44).
SNL K-2, ORD 5, C1, Soldering, brazing and welding materials; gases and related items (12 Dec. 44).
SNL K-3, ORD 5, Lubricating equipment, accessories, related dispensers (28 Oct. 44).
SNL K-3, ORD 5, C1, Lubricating equipment, accessories, and related dispensers (12 Dec. 44).
SNL M-1, ORD 5, C3, Electrical apparatus units and parts (12 Dec. 44).
WD Pamphlet 12-3, C2, Forms stocked by AG Depots (25 Oct. 44).
WD Pamphlet 12-3, C3, Forms stocked by AG Depots (1 Nov. 44).
WD Pamphlet 12-3, C4, Forms stocked by AG Depots (23 Dec. 44).
WD Pamphlet 12-6, Administrative and supply publications list (15 Nov. 44).
SB 9-40, Ordnance motor-vehicle assemblies (20 Nov. 44).

PERPETUAL INDEX

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

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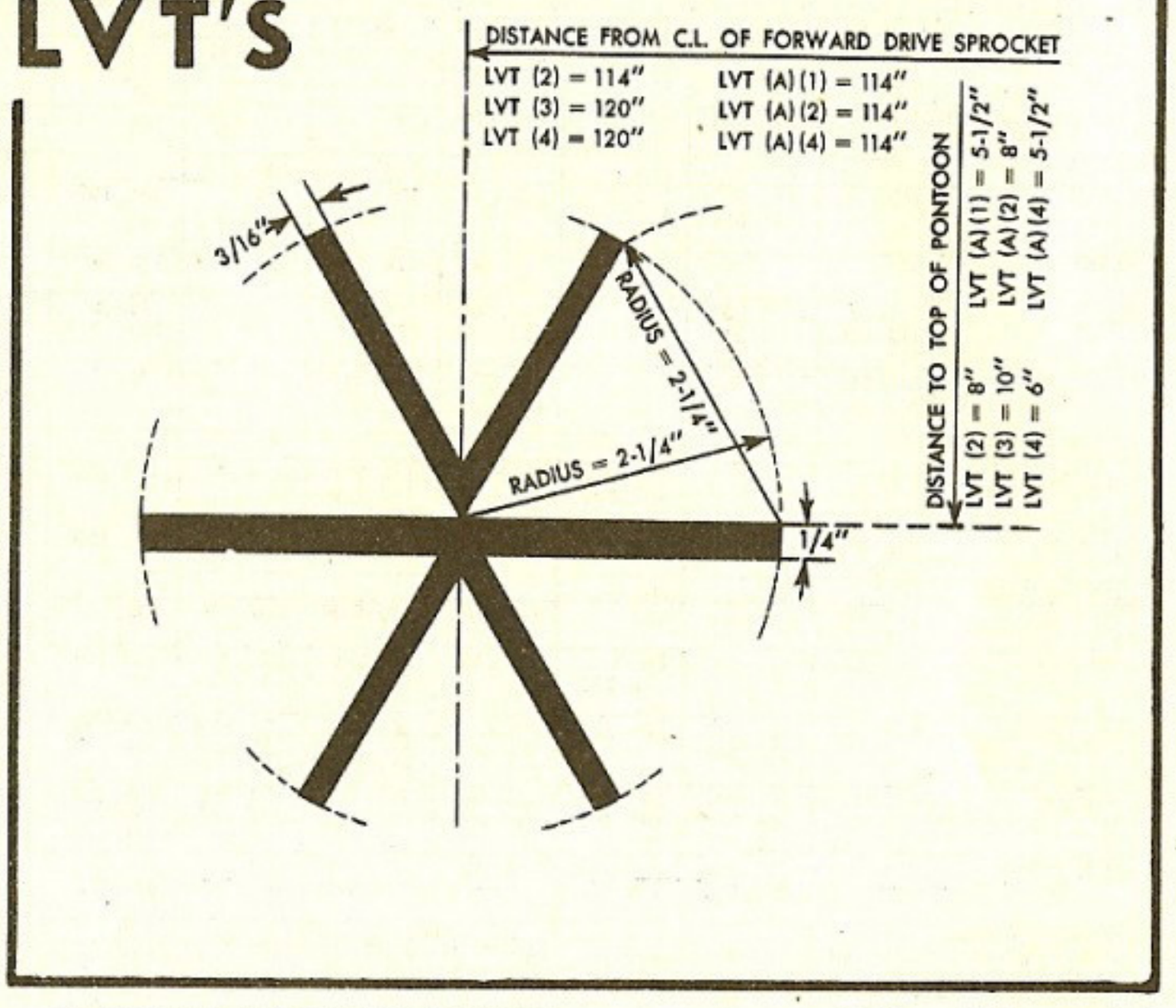
2C-Inside Front Cover 3C-Inside Back Cover 4C-Outside Back Cover.

'SAY WHEN' MARK FOR YOUR LVT'S

Imagine your LVT settling lower and lower in the water as you load more and more goods into it, until suddenly there's a large bubble and no more LVT.

To keep this from happening to you, the Dept. of Oceans and Rivers, OCO-D, has worked up a "draft" or "say when" mark to be painted on the sides of your LVT's. When your LVT has settled in the water up to that mark, you know it's got a full load on. Anything over is dangerous.

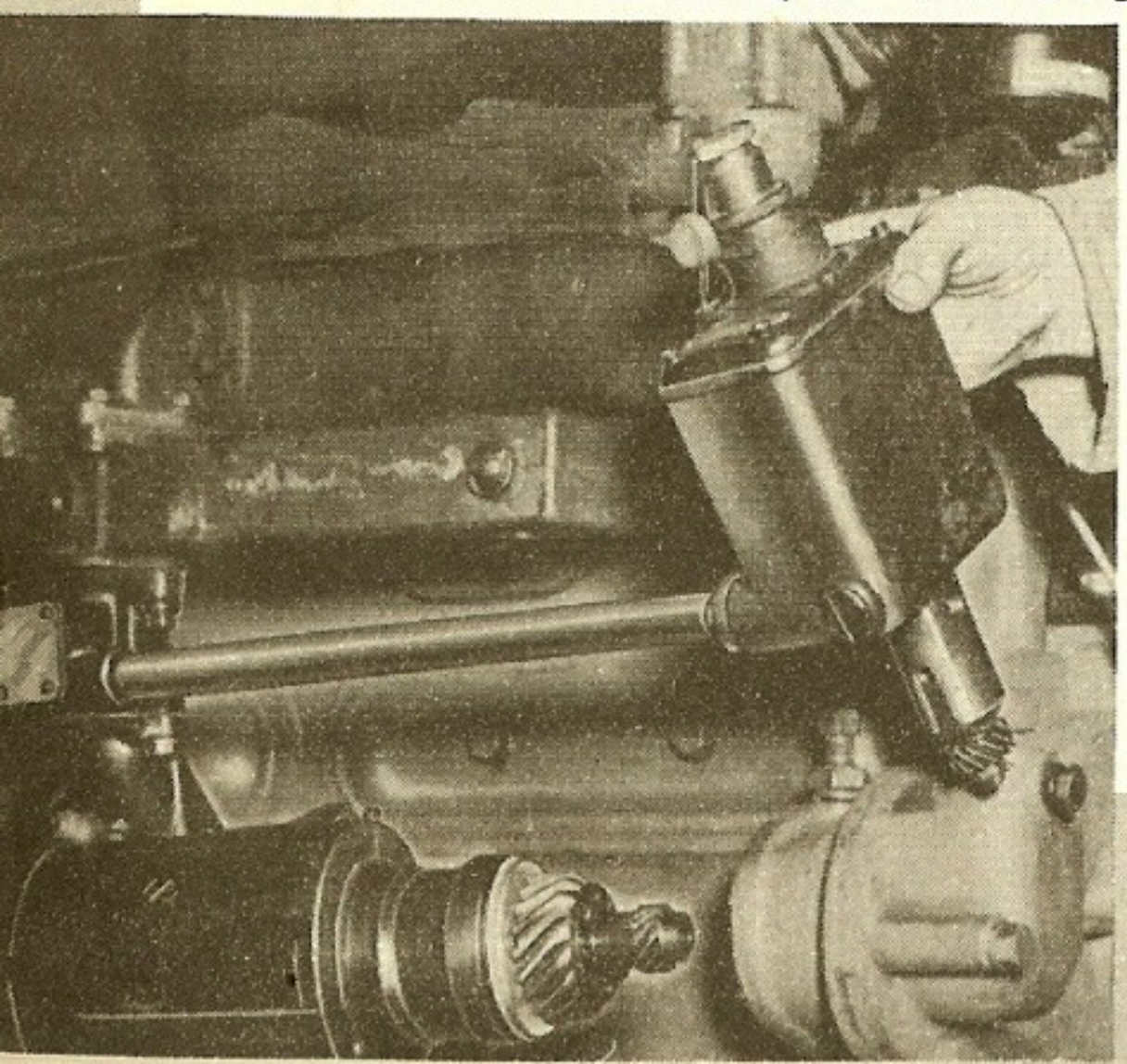
The location of the mark has been scientifically worked out for all models of LVT and the adjoining Fig. shows how to locate the mark for each model. The chart at the top of the Fig. tells you to measure, for the LVT (2) for instance, 114 inches "from the centerline of the forward drive-sprocket." The chart reading sidewise tell you to measure, for the LVT (2), 8 inches from top of pontoon.



Now that you have the location of the mark, outline it with centerpunch marks or a light bead of welding (so it'll be there whenever you repaint) and then paint it on with two coats of black paint. Of course, you'll make the mark on both sides of your LVT.

HERCULES GOVERNOR TIP

Replacing a generator on a Hercules RXC engine can run you into some trouble with the governor on this engine. The Hercules RXC, as you may know, is used in the 4-ton Diamond T and, of course, in the 4-5 and 5-6-ton Autocar, Federal, and White truck-tractors. The governor is that funny mechanical-flyball type that drives off the generator and runs through a couple of shafts to the carburetor (see Fig. at left).



Anyway, the generator is sleeve-mounted and is held in place by a set screw. Some people, installing a replacement generator on this engine, just take off the old generator and attempt to push in the new. But the generator is kind of a tight fit on the mounting sleeve and men have been known to pound at the generator to get it in there.

But there's a little helical gear on the end of the generator that engages another little helical gear on the end of the governor (watch the picture closely). A guy forcing a generator in may cause the gear on the end of the generator to bang into and raise hell with the governor drive-gear.

To save your governors and generators, do it this way: Raise the governor drive-end clear up out of the housing where it meets the generator. Now go ahead and put in your new generator. Finally, drop the governor drive-end back in the housing, being careful that it engages the helical gear on the end of the generator. You may have to turn the engine over to engage the two gears.

The wisdom is in taking the little extra trouble of lifting the governor clear out of the way—instead of just hammering the generator into the housing.

••NEWS FLASHES••

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

You can kiss your Duty Roster goodbye—as a PM record, anyway. Change 8 (27 Jan. 45) to AR 850-15 announces a brand-new form for this purpose. It's WD AGO Form 460, Preventive-Maintenance Roster—and two sample copies will be distributed to each company early in March. Soon as you take a look at it, order the quantity you need. Form 6 is not to be used as a PM schedule after receipt of the new Form 460, on which we hope to have further details for you next month.

* * *

Someone sure torqued too much when they told us (as we told you in October) that the truck, trailer, 40-ton tank-transporter wheel-ring studs should be tightened to 400 foot-pounds. This amount of heave-to will neatly twist those studs right off—**275 ft.-lbs.** are plenty. And it'll help to prevent them from breaking if you give all the studs on a wheel an equal dose of torque. You can look for a larger (⅞"), improved stud in the fairly near future.

* * *

Here's a part-number change for your little black book: When you requisition a clutch-release lubricator-tube for your M5 high-speed tractor, use Item Stock No. **G162-7023079.** That'll bring you the neoprene tube instead of the old metal-woven type. They both had the same number up to now.

* * *

An assembly's a complete assembly ready for installation when it has all the subassemblies and parts called for in the chart in **SB 9-40** (20 Nov. 44). Better consult that supply bulletin before exchanging major assemblies. The chart in WD Circular 274 (30 Oct. 43) doesn't go, 'cause that circular has been rescinded by WD Circular 20 (16 Jan. 45).

* * *

Standard product nomenclature—specification number—stock number—container size—total quantity in proper units of measure—all are **musts** on requisitions for fuels, lubricants, hydraulic fluids, and other petroleum products; that is, if you want the stuff quick.

You'll find all the standard fuels and lubricants for Army equipment in a chart in **SB 10-139** (11 Oct. 44). The chart describes the material, tells what it's used for, which service issues it, and everything else you need to know when requisitioning. Every guy who orders fuels and lubes oughta have a copy handy.

For your M4-series medium tank with large-type hatches, there's a stronger hold-open lock-pin to keep the hatch from crashing down on your skull. The kits are now available, says **MWO ORD G1-W19** (11 Aug. 44), and your Ordnance mechanic will be more than happy to do the job for you.

* * *

Another Ordnance Field Service Bulletin can be put away in the morgue now. OFSB 2-16 (28 Dec. 42) and Change 1 (27 Mar. 43) have been superseded by **Supply Bulletin 9-43** (26 Dec. 44), "Storage and Shipment of Rubber Tires, Tubes, and Camelback." Your Division Headquarters and supporting Ordnance Company should have copies of the new SB. Beg, borrow, or steal one and see what it has to say about tires mounted on vehicles in limited and dead storage.

* * *

Quartermaster has stocked a nylon glove-insert that'll keep fingers from sticking to cold metal, and keep hands warm enough (briefly) to make delicate adjustments and whatnot. They're worn under your GI wool gloves, which you pull off when you go to work. Occupational specialists—014 mechanics included—stationed in super-cold climates (Arctic, Zone 1, and mountainous areas) can get 'em through QM. **WD Circular 477** (21 Dec. 44) tells the story.

* * *

Does the M9A1 range finder on your M36 (90mm gun motor carriage) get booted all over the floor? Now that **TB 9-758-FE1** (10 Jan. 45) has got everything under control, by providing stowage in the right-rear bulkhead, you can quit kicking it around. The TB tells you how to make straps for brackets and where to weld them.

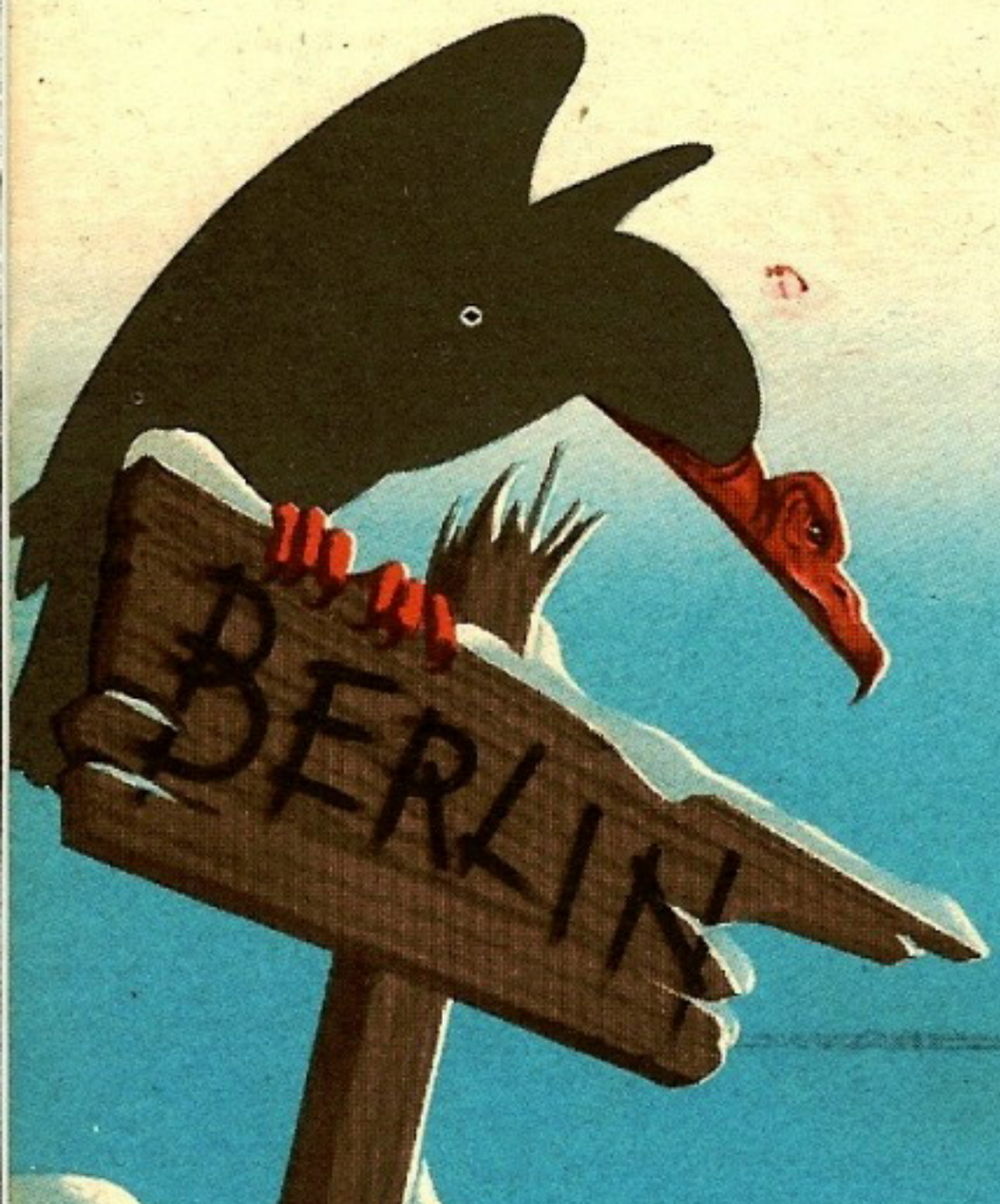
Production's taking care of putting brackets on new M36's to hold the range finders and carrying cases.

* * *

According to **AAF Letter 65-54** (2 Feb. 45) you guys who are driving Army Air Forces vehicles in the States are going to have to get on the PM ball twice as hard to keep your vehicles off the deadline. Account of you won't be able to get replacements for axle assembles, transfer cases, transmissions, and such for your ¼-ton, 1½-ton, and 2½-ton trucks. Until the sudden heavy demand lets up—probably won't be for some time yet—all those parts are going to fill overseas requisitions **only.**

The Secret of the Russians' Success!

EVITNEVERP ECNANETNIAM



It's the same thing that sent the American Army of the West galloping 250 miles in five weeks, right up to the gates of Germany. EVITNEVERP ECNANETNIAM: the most important pair of words in the vocabulary of any man who drives or maintains a vehicle.

No matter which way you look at it (try looking at it backward), it spells a better fighting machine.